

Form 3160-3
(June 2015)FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER 1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other 1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		5. Lease Serial No. NMSF078763 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. NMNM078407E/ROSA UNIT 8. Lease Name and Well No. ROSA UNIT 694H 9. API Well No. 30-039-31497
2. Name of Operator LOGOS OPERATING LLC 3a. Address 2010 AFTON PLACE, FARMINGTON, NM 87401 3b. Phone No. (include area code) (505) 278-8720		10. Field and Pool, or Exploratory BASIN MANCOS/BASIN MANCOS 11. Sec., T. R. M. or Blk. and Survey or Area SEC 8/T31N/R5W/NMP
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NWNE / 783 FNL / 1970 FEL / LAT 33.919104 / LONG -107.383488 At proposed prod. zone NENW / 182 FNL / 1325 FWL / LAT 36.920911 / LONG -107.436692		12. County or Parish RIO ARRIBA 13. State NM
14. Distance in miles and direction from nearest town or post office* 38 miles	15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 182 feet	16. No of acres in lease 17. Spacing Unit dedicated to this well 2435.69
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20 feet	19. Proposed Depth 6977 feet / 22270 feet	20. BLM/BIA Bond No. in file FED: NMB001820
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6347 feet	22. Approximate date work will start* 04/01/2024	23. Estimated duration 65 days
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|---|---|
| 1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature (Electronic Submission) Title REGULATORY SPECIALIST	Name (Printed/Typed) LACEY GRANILLO / Ph: (505) 324-4145	Date 11/21/2023
Approved by (Signature) (Electronic Submission) Title AFM-Minerals	Name (Printed/Typed) DAVE J MANKIEWICZ / Ph: (505) 564-7761 Office Farmington Field Office	Date 06/06/2025

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



(Continued on page 2)

*(Instructions on page 2)

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to a new evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks**Location of Well**

0. SHL: NWNE / 783 FNL / 1970 FEL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 33.919104 / LONG: -107.383488 (TVD: 0 feet, MD: 0 feet)
PPP: LOT 1 / 0 FSL / 0 FEL / TWSP: 31N / RANGE: 6W / SECTION: 12 / LAT: 36.920819 / LONG: -107.407778 (TVD: 0 feet, MD: 0 feet)
PPP: LOT 1 / 0 FSL / 0 FEL / TWSP: 31N / RANGE: 5W / SECTION: 7 / LAT: 36.920819 / LONG: -107.407778 (TVD: 0 feet, MD: 0 feet)
PPP: NENE / 0 FSL / 0 FEL / TWSP: 31N / RANGE: 5W / SECTION: 7 / LAT: 36.920775 / LONG: -107.394748 (TVD: 0 feet, MD: 0 feet)
PPP: NENW / 182 FNL / 1592 FWL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 36.92075 / LONG: -107.38698 (TVD: 0 feet, MD: 0 feet)
PPP: NENW / 285 FNL / 2340 FWL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 36.920474 / LONG: -107.386741 (TVD: 0 feet, MD: 0 feet)
PPP: NENE / 0 FSL / 0 FEL / TWSP: 31N / RANGE: 6W / SECTION: 12 / LAT: 36.920869 / LONG: -107.423119 (TVD: 0 feet, MD: 0 feet)
PPP: NENW / 365 FNL / 2630 FWL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 36.920255 / LONG: -107.385751 (TVD: 6987 feet, MD: 7359 feet)
BHL: NENW / 182 FNL / 1325 FWL / TWSP: 31N / RANGE: 6W / SECTION: 11 / LAT: 36.920911 / LONG: -107.436692 (TVD: 6977 feet, MD: 22270 feet)

BLM Point of Contact

Name: CHRISTOPHER P WENMAN
Title: Natural Resource Specialist
Phone: (505) 564-7727
Email: cwenman@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

CONFIDENTIAL

Conditions of Approval

Operator: LOGOS Resources, LLC (LOGOS)
Well Names: Rosa Unit Pad 34 Natural Gas Wells Project
Legal Location: Sec 8 T31N R5W, Rio Arriba County, NM
NEPA Log Number: DOI-BLM-NM-F010-2025-0013-EA
Onsite Date: July 18, 2023
Lease Number: NMSF078763

The following conditions of approval will apply to LOGOS Rosa Unit Pad 34 Natural Gas Wells Project, and other associated facilities, unless a particular Surface Managing Agency or private surface owner has supplied to Bureau of Land Management and the operator a contradictory environmental stipulation. The failure of the operator to comply with these requirements may result in an assessment or civil penalties pursuant to 43 CFR 3163.1 or 3163.2.

1. **Disclaimers:** BLM's approval of the APD does not relieve the lessee and operator from obtaining any other authorizations that may be required by the BIA, Navajo Tribe, State, or other jurisdictional entities.
2. **Copy of Plans:** A complete copy of the APD package, including Surface Use Plan of Operations, Bare Soil Reclamation Plan, Plan of Development (if required), Conditions of Approval, Cultural Resource Record of Review, Cultural Resources Compliance Form (if required), and Project Stipulations (if required) shall be at the project area at all times and available to all persons.
3. **Review of NEPA documents:** It is the responsibility of the operator to follow all the design features, best management practices, and mitigation measures as contained in the Environmental Assessment DOI-BLM-NM-F010-2025-0013-EA, which contains additional design features and best management practices that must be followed. Copies of the EA, Decision Record, and Finding of No Significant Impact may be obtained from the BLM FFO public room, or online at: [EplanningUi \(blm.gov\)](https://www.blm.gov/planning).
4. **Best Management Practices (BMPs):** Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of well site pads, access roads, pipeline ties, facility placement or any other surface disturbing activity associated with this project. Bureau wide standard BMP's are found in the Gold Book, Fourth Edition-Revised 2007. Farmington Field Office BMP's are integrated into the Environmental Assessment, Surface Use Plan of Operations, Bare Soil Reclamation Plan, and COAs.

Construction, Production, Facilities, Reclamation & Maintenance

5. **Construction & Reclamation Notification:** The operator or their contractor will contact the Bureau of Land Management, Farmington Field Office Environmental Protection Staff at (505) 564-7600 or by email, at least 48 hours prior to any construction or reclamation on this project. The operator or their contractor will contact the grazing permittee to give notice at least 10 days prior to start of construction operations.

6. **Grazing Allotments, Permittee Notification, and Concerns:** The operator will notify the grazing lease operator of the Rosa Community allotment at least ten business days prior to beginning any construction activity to ensure there will be no conflicts between construction activities and livestock grazing operations. The operator is not obligated to cease or delay construction unless directed by the Authorized Officer (AO). Any range improvement (fences, pipelines, ponds, etc.) disturbed by construction activities will be repaired immediately following construction and will be repaired to the condition the improvement was in prior to disturbance. Cattle guards will be installed to replace any livestock fencing or gates removed for road construction. No cattle guards needed. If fencing has to be temporarily open to place layflat, ensure fencing secured.
7. **Livestock Grazing:** Cattle are in allotment between 5/1 and 10/31. Industry may need to coordinate with permittee if concerns of livestock in area during construction.
8. **Production Facilities:** As marked in the APD, design and layout of facilities will be deferred until an onsite with BLM-FFO surface protection staff is conducted to determine the best location. LOGOS or their contractor will contact the Bureau of Land Management, Farmington Field Office, Surface, and Environmental Protection Staff (505) 564-7600 to schedule a facility layout onsite.
9. **Open Trenches:** No more than ½ mile of trench or the amount of trench that can be worked in one day will be open at any given time.
10. **Staking:** The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with the plan of development. If stakes are disturbed, they shall be replaced before proceeding with construction.
11. **Weather:** No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts more than 6 inches deep, the soil shall be deemed too wet.
12. **Stockpile of Soil:** The top 6 inches of soil material will be stripped and stockpiled in the construction zones around the pad [construction zones may be restricted or deleted to provide resource avoidance]. The stockpiled soil will be free of brush and tree limbs, trunks, and roots. The stockpiled soil material will be spread on the reclaimed portions of the pad [including the reserve pit, cut and fill slopes] prior to re-seeding. Spreading shall not be done when the ground or topsoil is frozen or wet.
13. **Painting of Equipment:** Within 90 days of installation, all above ground structures not subject to safety requirements shall be painted by the Holder to blend with the natural color of the landscape. A reflective material may be used to reduce hazards that may occur when such structures are near roads. Otherwise, the paint use shall be a non-glare, non-reflective, non-chalking color of: Federal 595a-34127 (Juniper Green)
14. **Storage Tanks:** All open top permanent production or storage tanks regardless of diameter made of fiberglass, steel, or other material used for the containment of oil,

condensate, produced water and or other production waste shall be screened, netted, or otherwise covered to protect migratory birds and other wildlife from access.

15. **Compressors:** Compressor units on this well location not equipped with a drip pan for containment of fluids shall be lined with an impervious material at least 8 mils thick and a 12-inch berm. The compressor will be painted to match the well facilities. Any variance to this will be approved by the Authorized Officer (AO). Noise mitigation may be required at the time of compressor installation.
16. **Acquisition of Water:** Water acquired to construct, produce, and maintain actions authorized by this permit to drill must be acquired from permitted water sources, or water authorized for use by the New Mexico Oil Conservation Division (OCD). Upon request the AO shall be provided with documentation of water sources.
17. **Culverts:** No culverts smaller than 18" will be installed. Silt Traps/Bell Holes will be built upstream of all culvert locations. Rip-rap will be placed at the downstream end of all culverts to prevent undercutting.
18. **Driving Surface Area:** All activities associated within the construction, operation, maintenance, and abandonment of the well location is limited to areas approved in the APD or ROW permit. During the production of the well, vehicular traffic is limited to the daily driving surface area established during interim reclamation construction operations. This area typically forms a keyhole or teardrop driving surface from which all production facilities may be serviced or inspected. A v-type ditch will be constructed on the outside of the driving surface to further define the driving surface and to deter vehicular traffic from entering onto the interim reclamation areas.
19. **Berms:** Berms or firewalls will be constructed around all storage facilities sufficient in size to contain the storage capacity of 110% of the largest tank, or 110% of the combined capacity of tanks if a rupture could drain more than one tank. Berm walls will be compacted with appropriate equipment to assure proper construction. Metal containment barriers, used for secondary containment, will be properly installed, per the manufacturer directions.
20. **Contouring of Cut and Fill Slopes:** The interim cut and fill slope grade shall be as close to the original contour as possible. To obtain this ratio, pits and slopes shall be back sloped into the pad during interim reclamation. Only subsurface soil and material shall be utilized in the contouring of the cut and fill slopes. Under no circumstances shall topsoil be utilized as substrate material for contouring of cut and fill slopes.
21. **Seed Mix:** The Pinyon/Juniper Seed Mix will be used for interim and final reclamation. The SUPO in the approved APD contains information on the specific seed mix and application rate. Seeding shall be accomplished within 120 days after final construction (time frame may be extended on a case-by-case basis with AO approval). Seeding shall be repeated if a satisfactory stand is not obtained as determined by the AO upon evaluation after the second growing season.
22. **Maintenance:** In order to perform subsequent well operations, right-of-way (ROW) operations, or install new/additional equipment, it may be necessary to drive, park, and

operate on restored, interim vegetation within the previously disturbed area. This is generally acceptable provided damage is promptly repaired and reclaimed following use. Where vehicular travel has occurred as a “convenience” and interim reclamation/vegetation has been compromised, immediate remediation of the affected areas is required. Additionally, where erosion has occurred and compromised the reclamation of the well location, the affected area must be promptly remediated so that future erosion is prevented, and the landform is stabilized.

23. **Non-Permitted Disturbance:** Construction maintenance or any other activity outside the areas permitted by the APO will require additional approval and may require a new cultural survey and clearance.
24. **Layflat Lines:** Layflat lines used for development of the wells may be on the ground for a maximum of 6 months and shall be retrieved within 30 days of ending completion operations. If the layflat lines are needed for longer than 6 months or cannot be retrieved within 30 days of ending completion operations, a Sundry NOI shall be submitted to the BLM FFO for review and decision that includes a rationale for the time extension.
25. **“Hotwork” and Construction Affecting Fire Safety:** The holder or its contractors will notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. The holder or its contractors may be held liable for the cost of fire suppression, stabilization and rehabilitation. In the event of a fire, personal safety will be the first priority of the holder or its contractors.

The holder or its contractors shall:

- a. Operate all internal and external combustion engines (including off-highway vehicles, chainsaws, generators, heavy equipment, etc.) with a qualified spark arrester. Qualified spark arresters are maintained and not modified, and meet the Society of Automotive Engineers (SAE) Recommended Practices J335 or J350. Refer to 43 CFR §8343.1.
 - a. *Refueling of any combustible engine equipment must be minimum of 3 meters away from any ignition source (open flame, smoking, etc.).*
- b. Maintain and clean all equipment regularly to remove flammable debris buildup and prevent fluid leaks that can lead to ignitions.
- c. Carry at least one shovel or wildland fire hand tool (combi, Pulaski, McLeod) per person working, minimum 5 gallons of water, and a fire extinguisher rated at a minimum as ABC - 10 pound on each piece of equipment and each vehicle.
- d. When conducting “hotwork” such as, but not limited to welding, grinding, cutting, spark-producing work with metal, work that creates hot material or slag; choose an area large enough to contain all hot material that is naturally free of all flammable vegetation or remove the flammable vegetation in a manner compliant with the permitted activity. If adequate clearance cannot be made, wet an area large enough to contain all hot material prior to the activity and periodically throughout the activity to reduce the risk of wildfire ignition. Regardless of clearance, maintain readiness to respond to an ignition at all times. In addition, keep one hand tool per person and at least one fire extinguisher ready, minimum, as specified earlier (#3) during this activity.

- e. Keep apprised of current and forecasted weather at <https://www.weather.gov/abq/forecasts-fireweather-links> and fire conditions at www.wfas.net and take additional fire precautions when fire danger is rated High or greater. Red Flag Warnings are issued by the National Weather Service when fire conditions are most dangerous, and ignitions escape control quickly. Extra precautions are required during these warnings such as additional water, designate a fire watch/patrol and tools. If work is being conducted in an area that is not clear of vegetation within 50 feet of work area; then, when fire danger is rated High or greater and 1. There is a predicted Red Flag warning for your area or 2. If winds are predicted to be greater than 10 mph, stop all hotwork activities for the day at 10 am.
- f. In the event of an ignition, initiate fire suppression actions in the work area to prevent fire spread to or on federally administered lands. If a fire spreads beyond the capability of workers with the stipulated tools, all will cease fire suppression action and leave the area immediately via pre-identified escape routes.
- g. Call **911** or the **Taos Interagency Fire Dispatch Center (575-758-6208)** immediately of the location and status of any fire.

AND

Notify the respective BLM field office for which the permit or contract was issued immediately of the incident.

Farmington Field Office at 505-564-7600

Taos Field Office at 575-758-8851

26. **Noxious Weeds:** Inventory the proposed site for the presence of noxious and invasive weeds. Noxious weeds are those listed on the New Mexico Noxious Weed List and USDA's Federal Noxious Weed List. The New Mexico Noxious Weed List or USDA's Noxious Weed List can be updated at any time and should be regularly check for any changes. Invasive species may or may not be listed as a noxious weed but have been identified to likely cause economic or environmental harm or harm to human health. The following noxious weeds have been identified as occurring on lands within the boundaries of the Farmington Field Office (FFO). There are numerous invasive species on the FFO such as Russian thistle (*Salsola spp.*) and field bindweed (*Convolvulus arvensis*).

Russian Knapweed (<i>Centaurea repens</i>)	Musk Thistle (<i>Carduus nutans</i>)
Bull Thistle (<i>Cirsium vulgare</i>)	Canada Thistle (<i>Cirsium arvense</i>)
Scotch Thistle (<i>Onopordum acanthium</i>)	Hoary Cress (<i>Cardaria draba</i>)
Perennial Pepperweed (<i>Lepidium latifolium</i>)	Halogeton (<i>Halogeton glomeratus</i>)
Spotted Knapweed (<i>Centaurea maculosa</i>)	Dalmation Toadflax (<i>Linaria genistifolia</i>)
Yellow Toadflax (<i>Linaria vulgaris</i>)	Camelthorn (<i>Alhagi pseudalhagi</i>)
African Rue (<i>Peganum harmala</i>)	Salt Cedar (<i>Tamarix spp.</i>)
Diffuse Knapweed (<i>Centaurea diffusa</i>)	Leafy Spurge (<i>Euphorbia esula</i>)

- a. Identified weeds will be treated prior to new surface disturbance if determined by the FFO Noxious Weed Coordinator. A Pesticide Use Proposal (PUP) must be

- submitted to and approved by the FFO Noxious Weed Coordinator prior to application of pesticide. The FFO Noxious Weeds Coordinator (505-564-7600) can provide assistance in the development of the PUP.
- b. Vehicles and equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.
 - c. Construction equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.
 - d. Fill dirt or gravel may be needed for excavation, road construction/repair, or for spill remediation. If fill dirt or gravel will be required, the source shall be noxious weed free and approved by the FFO Noxious Weed Coordinator.
 - e. The site shall be monitored for the life of the project for the presence of noxious weeds (includes maintenance and construction activities). If weeds are found the FFO Coordinator shall be notified at (505) 564-7600 and provided with a Weed Management Plan and if necessary, a Pesticide Use Proposal (PUP) . The FFO Coordinator can provide assistance developing the Weed Management Plan and/or the Pesticide Use Proposal.
 - f. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. (Company Name)'s weed-control contractor would contact the BLM-FFO prior to using these chemicals.
 - g. Noxious/invasive weed treatments must be reported to the FFO Noxious Weed Coordinator. A Pesticide Application Record (PAR) is required to report any mechanical, chemical, biological or cultural treatments used to eradicate, and/or control noxious or invasive species. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.
27. **Bare ground vegetation trim-out:** If bare ground vegetation treatment (trim-out) is desired around facility structures, the operator will submit a bare ground/trim-out design included in their Surface Use Plan of Operations (SUPO). The design will address vegetation safety concerns of the operator and BLM while minimizing impacts to interim reclamation efforts. The design must include what structures to be treated and buffer distances of trim-out. Pesticide use for vegetation control around anchor structures is not approved. If pesticides are used for bare ground trim-out, the trim-out will not exceed three feet from the edge of any eligible permanent structure (i.e., well heads, fences, tanks). Additional distance/areas may be requested and must be approved by the FFO authorized officer. The additional information below must also be provided to the FFO:
- a. Pesticide use for trim out will require a Pesticide Use Proposal (PUP). A PUP is required **prior** to any treatment and must be approved by the FFO Noxious Weed Coordinator. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. LOGOS' weed-control contractor would contact the BLM-FFO prior to using these chemicals and provide Pesticide Use Reports (PURs) post treatment.

- b. A Pesticide Use Report (PUR) or a Biological Use Report (BUR) is required to report any chemical, or biological treatments used to eradicate, or control vegetation on site. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.
28. **Paleontology:** Any paleontological resource discovered by the Operator, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant scientific values. The Holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the Holder.
29. **Visual Resources:** Dark Sky COAs need to be applied to existing lighting, which is not dark sky friendly and to any additional lights added as part of pad expansion. All permanent lighting will use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above an imaginary horizontal plane passing through the lowest part of the light source). All permanent lighting will be pointed straight down at the ground in order to prevent light spill to the sides. All permanent lighting will be 4000° Kelvin or less with 3000° Kelvin preferred. Warmer light colors are less noticeable by humans and cause less impact to wildlife. All permanent lighting will be controlled by a switch and/or timer which allows the lights to be turned on when workers are on location during dark periods but will keep the lights off the majority of the time.
30. **Wildlife:** The proposed project is not anticipated to have significant impacts on small or big game species. However, the project is located within the BLM FFO-designated Rosa Mesa Wildlife Area, requiring a closure from December 1st through March 31st of each year. This stipulation applies only to construction, drilling, and completion activities. It does not apply to operation and maintenance of production facilities.
31. **Hazards:** Wildlife hazards associated with the proposed project would be fenced, covered, and/or contained in storage tanks, as necessary.
32. **Migratory Birds:** The BLM/FFO migratory bird policy requires a bird nest survey between May 15 - July 31 for any projects that would remove 4.0 or more acres or vegetation. The proposed project is estimated to disturb more than four acres of vegetation, a survey will be required if construction occurs within the specified timeframe. The operator would equip all open-top pits, tanks, ponds, and pipes containing hydrocarbons with nets, screens, or other avian exclusion devices to prevent injury or death to migratory birds (NTL-FFO/AUFO-2004-01, IM No. WO-2013-033, Onshore Order #7 III E-3). Exemptions to this stipulation would be made by the BLM/FFO Authorized Officer. Nest surveys will be conducted within 48 hours of scheduled construction by BLM/FFO personnel or approved biologist. Any active nests will require a disturbance buffer to eliminate impacts to nesting birds. Active nests will not be disturbed. Applicant will adhere to timing limitations and management measures if any new raptor nests are discovered within the project area. These timing limitations are species specific depending on the raptor that is discovered.

33. **Threatened, Endangered or Sensitive Species:** If, in operations the operator/holder discovers any Threatened, Endangered, or Sensitive species, work in the vicinity of the discovery will be suspended and the discovery promptly reported to the BLM-FFO T&E specialist at (505) 564-7600. The BLM-FFO will then specify what action is to be taken. Failure to notify the BLM-FFO about a discovery may result in civil or criminal penalties in accordance with The Endangered Species Act (as amended).

Cultural Resources

34. **Discovery of Cultural Resources in the Absence of Monitoring:** Discovery of Cultural Resources in the Absence of Monitoring: If, in its operations, operator/holder discovers any previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the discovery promptly reported to BLM Field Manager. BLM will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the BLM will evaluate the significance of the discovery in accordance with 36 CFR Section 800.13, in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property, or in accordance with an approved program alternative. Minor recordation, stabilization, or data recovery may be performed by BLM or a third party acting on its behalf, such as a permitted cultural resources consultant. If warranted, more extensive archaeological or alternative mitigation, likely implemented by a permitted cultural resources consultant, may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any mitigations determined appropriate through the agency's Section 106 consultation are completed. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, the Native American Graves Protection and Repatriation Act (NAGRPA) of 1990, as amended, and other applicable laws.
35. **Discovery of Cultural Resources during Monitoring:** If monitoring confirms the presence of previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the monitor will promptly report the discovery to the BLM Field Manager. BLM will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the BLM will evaluate the significance of the discovery in accordance with 36 CFR Section 800.13, in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property, or in accordance with an approved program alternative. Minor recordation, stabilization, or data recovery may be performed by BLM or a third party acting on its behalf, such as a permitted cultural resources consultant. If warranted, more extensive archaeological or alternative mitigation, likely implemented by a permitted cultural resources consultant, may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any mitigations determined appropriate through the agency's Section 106 consultation are completed.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Farmington District Office
6251 College Blvd, Suite A
Farmington, New Mexico 87402



In Reply Refer To:
3162.3-1(NMF0110)

* LOGOS OPERATING LLC
#694H ROSA UNIT
Lease: NMSF078763 Agreement: NMNM78407E

SH: NW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 8, T.31N., R.5W.
Rio Arriba County, New Mexico
BH: NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 11, T.31N., R.6W.
Rio Arriba County, New Mexico
***Above Data Required on Well Sign**

GENERAL REQUIREMENTS FOR OIL AND GAS OPERATIONS ON FEDERAL AND INDIAN LEASES

The following special requirements apply and are effective when **checked**:

- A. ☒ Note all surface/drilling conditions of approval attached.
- B. ☒ The required wait on cement (WOC) time will be a minimum of 500 psi compressive strength at 60 degrees. Blowout preventor (BOP) nipple-up operations may then be initiated
- C. ☒ Test all casing strings below the conductor casing to .22 psi/ft. of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield (burst) for a minimum of 30 minutes. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.
- D. ☐ Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the Bureau of Land Management, New Mexico State Office, Reservoir Management Group, 301 Dinosaur Trail, Santa Fe, New Mexico 87508.
The effective date of the agreement must be **prior** to any sales.
- E. ☐ The use of co-flex hose is authorized contingent upon the following:
 1. From the BOP to the choke manifold: the co-flex hose must be hobbled on both ends and saddle to prevent whip.
 2. From the choke manifold to the discharge tank: the co-flex hoses must be as straight as practical, hobbled on both ends and anchored to prevent whip.
 3. The co-flex hose pressure rating must be at least commensurate with approved BOPE.

INTERIOR REGION 7 • UPPER COLORADO BASIN

COLORADO, NEW MEXICO, UTAH, WYOMING

I. GENERAL

- A. Full compliance with all applicable laws and regulations, with the approved Permit to drill, and with the approved Surface Use and Operations Plan is required. Lessees and/or operators are fully accountable for the actions of their contractors and subcontractors. Failure to comply with these requirements and the filing of required reports will result in strict enforcement pursuant to 43 CFR 3163.1 or 3163.2.
- B. Each well shall have a well sign in legible condition from spud date to final abandonment. The sign should show the operator's name, lease serial number, or unit name, well number, location of the well, and whether lease is Tribal or Allotted, (See 43 CFR 3162.6(b)).
- C. A complete copy of the approved Application for Permit to Drill, along with any conditions of approval, shall be available to authorized personnel at the drill site whenever active drilling operations are under way.
- D. For Wildcat wells only, a drilling operations progress report is to be submitted, to the BLM-Field Office, weekly from the spud date until the well is completed and the Well Completion Report is filed. The report should be on 8-1/2 x 11 inch paper, and each page should identify the well by; operator's name, well number, location and lease number.
- E. As soon as practical, notice is required of all blowouts, fires and accidents involving life-threatening injuries or loss of life. (See NTL-3A).
- F. BOP equipment (except the annular preventer) shall be tested utilizing a test plug to full working pressure for 10 minutes. No bleed-off of pressure is acceptable. (See 43 CFR 3172.6(b)(9)(ii)).
- G. The operator shall have sufficient weighting materials and lost circulation materials on location in the event of a pressure kick or in the event of lost circulation. (See 43 CFR 3172.8(a)).
- H. The flare line(s) discharge shall be located not less than 100 feet from the well head, having straight lines unless turns are targeted with running tees, and shall be positioned downwind of the prevailing wind direction and shall be anchored. The flare system shall have an effective method for ignition. Where noncombustible gas is likely or expected to be vented, the system shall be provided supplemental fuel for ignition and to maintain a continuous flare. (See 43 CFR 3172.8(b)(7)).
- I. Prior approval by the BLM-Authorized Office (Drilling and Production Section) is required for variance from the approved drilling program and before commencing plugging operations, plug back work, casing repair work, corrective cementing operations, or suspending drilling operations indefinitely. Emergency approval may be obtained orally, but such approval is contingent upon filing of a Notice of Intent sundry within three business days. **Any changes to the approved plan or any questions regarding drilling operations should be directed to BLM during regular business hours at 505-564-7600. Emergency program changes after hours should be directed to Virgil Lucero at 505-793-1836.**
- J. **The Inspection and Enforcement Section (I&E), phone number (505-564-7750) is to be notified at least 24 hours in advance of BOP test, spudding, cementing, or plugging operations so that a BLM representative may witness the operations.**
- K. Unless drilling operations are commenced within three years according to 43 CFR 3171.14, approval of the Application for Permit to Drill will expire. No extensions will be granted.

- L. From the time drilling operations are initiated and until drilling operations are completed, a member of the drilling crew or the tool pusher shall maintain rig surveillance at all times, unless the well is secured with blowout preventers or cement plugs.
- M. If for any reason, drilling operations are suspended for more than 90 days, a written notice must be provided to this office outlining your plans for this well.
- N. **Commingling:** No production (oil, gas, and water) from the subject well should start until Sundry Notices (if necessary) granting variances from applicable regulations as related to commingling and off-lease measurement are approved by this office. (See 43 CFR 3173.14)

II. REPORTING REQUIREMENTS

- A. For reporting purposes, all well Sundry notices, well completion and other well actions shall be referenced by the appropriate lease, communitization agreement and/or unit agreement numbers.
- B. The following reports shall be filed with the BLM-Authorized Officer online through AFMSS 2 within 30 days after the work is completed.
 - 1. Provide complete information concerning.
 - a. Setting of each string of casing. Show size and depth of hole, grade and weight of casing, depth set, depth of all cementing tools that are used, amount (in cubic feet) and types of cement used, whether cement circulated to surface and all cement tops in the casing annulus, casing test method and results, and the date work was done. Show spud date on first report submitted.
 - b. Intervals tested, perforated (include size, number and location of perforations), acidized, or fractured; and results obtained. Provide date work was done on well completion report and completion sundry notice.
 - c. Subsequent Report of Abandonment, show the way the well was plugged, including depths where casing was cut and pulled, intervals (by depths) where cement plugs were replaced, and dates of the operations.
 - 2. Well Completion Report will be submitted with 30 days after well has been completed.
 - a. Initial Bottom Hole Pressure (BHP) for the producing formations. Show the BHP on the completion report. The pressure may be: 1) measured with a bottom hole bomb, or; 2) calculated based on shut in surface pressures (minimum seven day buildup) and fluid level shot.
 - 3. Submit a cement evaluation log if cement is not circulated to surface.
- C. Production Startup Notification is required no later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site or resumes production in the case of a well which has been off production for more than 90 days. The operator shall notify the Authorized Officer by letter or Sundry Notice, Form 3160-5, or orally to be followed by a letter or Sundry Notice, of the date on which such production has begun or resumed. CFR 43 3162.4-1(c).

III. DRILLER'S LOG

The following shall be entered in the daily driller's log: 1) Blowout preventer pressures tests, including test pressures and results, 2) Blowout preventer tests for proper functioning, 3) Blowout prevention drills conducted, 4) Casing run, including size, grade, weight, and depth set, 5) How pipe was cemented, including amount of cement, type, whether cement circulated to surface, location of cementing tools, etc., 6) Waiting on cement time for each casing string, 7) Casing pressure tests after cementing, including test pressure and results, and 8) Estimated amounts of oil and gas recovered and/or produced during drill stem test.

IV. GAS FLARING

Gas produced from this well may not be vented or flared beyond an initial, authorized test period of * Days, 20 MMCF following its (completion)(recompletion), or flowback has been routed to the production separator, whichever first occurs, without the prior, written approval of the authorized officer in accordance with 43 CFR 3179.81. Should gas be vented or flared without approval beyond the test period authorized above, you may be directed to shut-in the well until the gas can be captured or approval to continue venting or flaring as uneconomic is granted. You shall be required to compensate the lessor for the portion of the gas vented or flared without approval which is determined to have been avoidably lost.

*30 days, unless a longer test period is specifically approved by the authorized officer. The 30-day period will commence upon the beginning of flowback following completion or recompletion.

V. SAFETY

- A. All rig heating stoves are to be of the explosion-proof type.
- B. Rig safety lines are to be installed.
- C. Hard hats and other Personal Protective Equipment (PPE) must be utilized.

VI. CHANGE OF PLANS OR ABANDONMENT

- A. Any changes of plans required to mitigate unanticipated conditions encountered during drilling operations, will require approval as set forth in Section 1.I.
- B. If the well is dry, it is to be plugged in accordance with 43 CFR 3162.3-4, approval of the proposed plugging program is required as set forth in Section 1.I. The report should show the total depth reached, the reason for plugging, and the proposed intervals, by depths, where cement plugs are to be placed, type of plugging mud, etc. A Subsequent Report of Abandonment is required as set forth in Section II.B.1c.
- C. Unless a well has been properly cased and cemented, or properly plugged, the drilling rig must not be moved from the drill site without prior approval from the BLM-Authorized Officer.

VII. PHONE NUMBERS

- A. For BOPE tests, cementing, and plugging operations the phone number is 505-564-7750 and must be called 24 hours in advance in order that a BLM representative may witness the operations.
- B. Emergency program changes after hours contact:

Virgil Lucero (505) 793-1836
Kenneth Rennick (505) 564-7742
Matthew Kade (505) 564-7736

C-102 Submit Electronically Via OCD Permitting	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	Revised July 9, 2024	
		Submittal Type	☒ Initial Submittal
			☐ Amended Report
		☐ As Drilled	

WELL LOCATION INFORMATION

API Number 30-039-31497	Pool Code 97232	Pool Name BASIN MANCOS
Property Code 320608	Property Name ROSA UNIT	Well Number 694H
OGRID No. 289408	Operator Name LOGOS OPERATING, LLC	Ground Level Elevation 6347'
Surface Owner: ☒ State ☐ Fee ☐ Tribal ☒ Federal		Mineral Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal

Surface Location

UL B	Section 8	Township 31N	Range 5W	Lot	Feet from N/S Line 783' NORTH	Feet from E/W Line 1970' EAST	Latitude 36.919104 °N	Longitude -107.383488 °W	County RIO ARRIBA
---------	--------------	-----------------	-------------	-----	----------------------------------	----------------------------------	--------------------------	-----------------------------	----------------------

Bottom Hole Location

UL C	Section 11	Township 31N	Range 6W	Lot	Feet from N/S Line 182' NORTH	Feet from E/W Line 1325' WEST	Latitude 36.920911 °N	Longitude -107.436692 °W	County RIO ARRIBA
---------	---------------	-----------------	-------------	-----	----------------------------------	----------------------------------	--------------------------	-----------------------------	----------------------

Penetrated Spacing Unit:

Dedicated Acres 2435.69	Entire Sections 5 & 6, T31N, R5W N/2 - Sections 7 & 8, T31N, R5W Entire Sections 1 & 2, T31N, R6W N/2 - Sections 11 & 12, T31N, R6W	Infill or Defining Well INFILL	Defining Well API	Overlapping Spacing Unit ☐ Yes ☒ No	Consolidation Code UNITIZATION
Order Numbers R-13457			Well setbacks are under Common Ownership: ☐ Yes ☒ No		

Kick Off Point (KOP)

UL B	Section 8	Township 31N	Range 5W	Lot	Feet from N/S Line 533' NORTH	Feet from E/W Line 2017' EAST	Latitude 36.919790 °N	Longitude -107.383650 °W	County RIO ARRIBA
---------	--------------	-----------------	-------------	-----	----------------------------------	----------------------------------	--------------------------	-----------------------------	----------------------

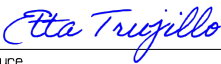
First Take Point (FTP)

UL C	Section 8	Township 31N	Range 5W	Lot	Feet from N/S Line 365' NORTH	Feet from E/W Line 2630' WEST	Latitude 36.920255 °N	Longitude -107.385751 °W	County RIO ARRIBA
---------	--------------	-----------------	-------------	-----	----------------------------------	----------------------------------	--------------------------	-----------------------------	----------------------

Last Take Point (LTP)

UL C	Section 11	Township 31N	Range 6W	Lot	Feet from N/S Line 182' NORTH	Feet from E/W Line 1325' WEST	Latitude 36.920911 °N	Longitude -107.436692 °W	County RIO ARRIBA
---------	---------------	-----------------	-------------	-----	----------------------------------	----------------------------------	--------------------------	-----------------------------	----------------------

Unitized Area or Area of Uniform Interest ROSA UNIT	Spacing Unit Type ☒ Horizontal ☐ Vertical ☐ Directional	Ground Floor Elevation 6317'
--	--	---------------------------------

OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.  Signature 12/18/24 Date Etta Trujillo Printed Name etrujillo@logosresourcesllc.com E-mail Address	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.  JASON C. EDWARDS Signature and Seal of Professional Surveyor Certificate Number 15269 Date of Survey DECEMBER 20, 2022
---	--

(RECORD) (RECORD)
 NO 03'E 2640.00 NO 03'E 2640.00
 NO 12'15"W 2641.61' NO 12'15"W 2641.61'
 (MEASURED) (MEASURED)

(RECORD)
NO °03'E 2907.30'
NO °13'15"W 2910.91
(MEASURED)

Page 19 of 19

BOTTOM HOLE LOCATION (G)		LAST TAKE POINT (F)	
182° FNL	1325' FWL	182° FNL	1325' FWL
SECTION 11, T31N, R6W		SECTION 11, T31N, R6W	
LAT 36.929086 °N	LAT 36.929086 °N	LAT 36.929091 °N	LAT 36.929091 °N
LONG -107.436608 °W	LONG -107.436608 °W	LONG -107.436692 °W	LONG -107.436692 °W
DATE/TIME: NAD1327	DATE/TIME: NAD1327	DATE/TIME: NAD1983	DATE/TIME: NAD1983

589°58.9'W 13,853.4'

```
INFECTION POINT(E
182' FNL 1592' FWL
SECTION 8 T34N R5E
LAT 36.920750°N
LONG -107.386988°W
DATUM: NAD1927

LAT 36.920756°N
LONG -107.389300°W
DATUM: NAD1983
```

N82°26.7'W 755.2'

INFECTION POINT (D)
285 FNL 2340' FWL
SECTION 8, T34N R5W
LAT 36.920468 °N
LONG -107.386138 °W
DATUM: NAD1927

N74°52.2'W 300.0'

```

FIRST TAKE POINT (C)
365' FWL 2630' FWL
SECTION 8 T31N, R5W
LAT 36.920249°N
LONG -107.385149°W
DATUM: NAD1927

LAT 36.920255°N
LONG -107.385751°W
DATUM: NAD1983

```

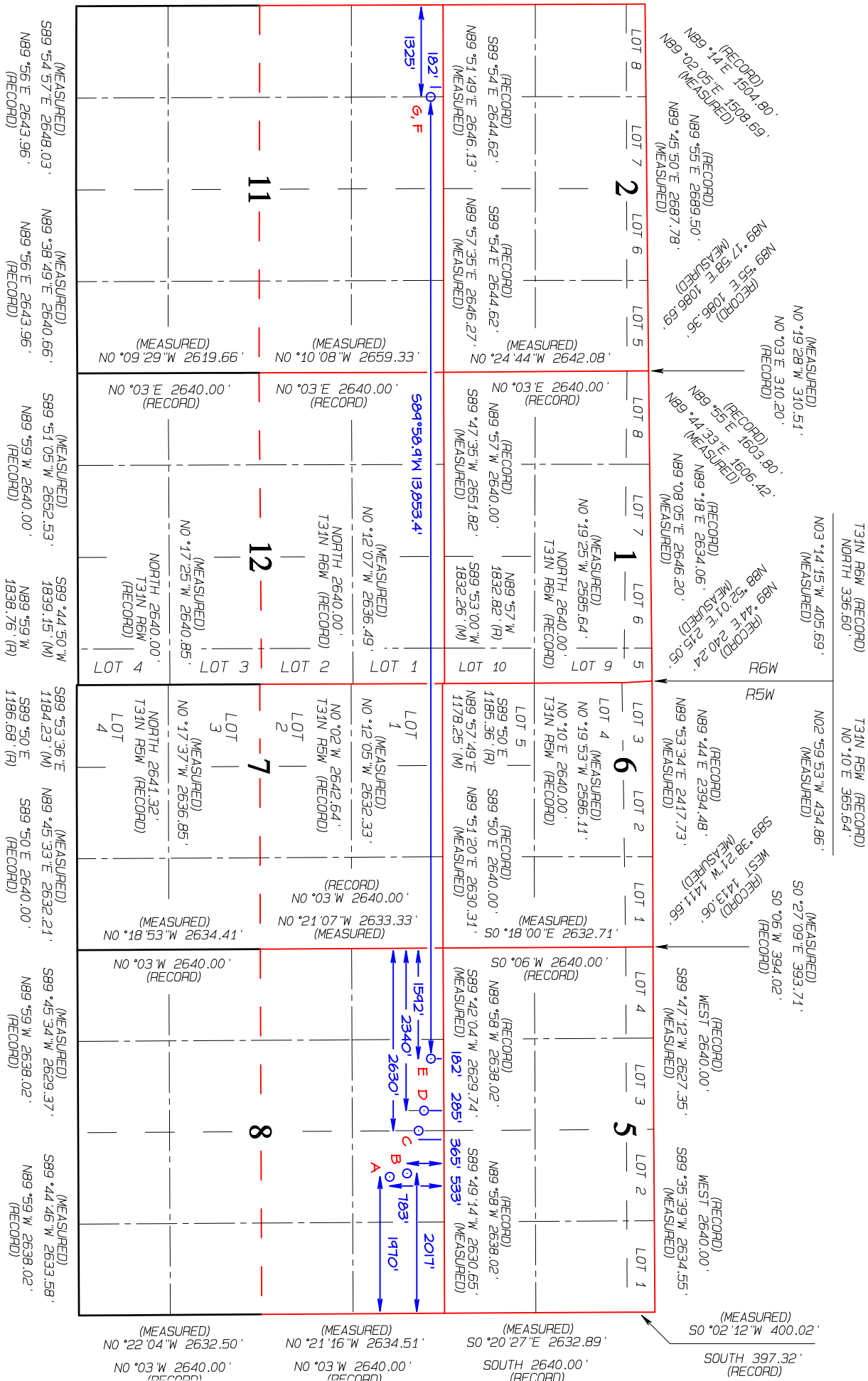
N74°52.2'W 637.1'

KICK OFF POINT (B)
5533 FNL 2017 FEL
SECTION 8, T34N, R5W
LAT 36.919784°N
LONG -107.383048°W
DATUM: NAD1927

LAT 36.919790°N
LONG -107.383650°W
DATUM: NAD1983

SURFACE LOCATION (A)
783' FNL 1970' FEL
SECTION 8, T34N, R5W
LAT 36.919098°N
LONG -107.362886°W
DATUM: NAD1927

LAT 36.919104°N
LONG -107.363488°W
DATUM: NAD1983



State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description Effective May 25, 2021

I. Operator: LOGOS Operating, LLC **OGRID:** 289408 **Date:** 1 / 29 / 2025

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Rosa Unit 672H	30-039-pending	B-8-31N-5W	713'FNL, 1931'FWL	N/A	23,527	771
Rosa Unit 674H	30-039-pending	B-8-31N-5W	713'FNL, 1941'FEL	N/A	22,790	746
Rosa Unit 690H	30-039-pending	B-8-31N-5W	748'FNL, 1950'FEL	N/A	17,013	609
Rosa Unit 692H	30-039-pending	B-8-31N-5W	766'FNL, 1960'FEL	N/A	18,265	597
Rosa Unit 694H	30-039-pending	B-8-31N-5W	783'FNL, 1970'FEL	N/A	22,790	746
Rosa Unit 696H	30-039-pending	B-8-31N-5W	801'FNL, 1980'FEL	N/A	16,661	597

IV. Central Delivery Point Name: Harvest Gathering System [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Rosa Unit 672H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 674H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 690H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 692H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 694H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 696H	30-039-pending	Pending	Pending	Pending	Pending	Pending

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

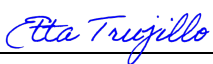
1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	
Printed Name:	Etta Trujillo
Title:	Regulatory Specialist II
E-mail Address:	etrujillo@logosresourcesllc.com
Date:	1/28/2025
Phone:	(505) 324-4154
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)	
Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

VI. Separation Equipment

The operator will select separation equipment for the maximum anticipated throughput and pressure to optimize gas capture. Separation equipment is sized according to manufacturer's design specifications. Separation vessels are built following the A.S.M.E. section VII division 1 codes for pressure vessel design, fabrication, inspection, testing and certification. Anticipated well pressures and production rates are evaluated to select separation equipment according to the equipment's designed operating pressure and throughput.

After completion, the operator utilizes flowback equipment, including separators, to manage wellbore fluids and solids during the initial separation period. After the initial flowback period is complete the operator utilizes iterative facility separation equipment to ensure that optimal separation is achieved.

VII. Operational Practices 19.15.27.8 NMAC A through F

- A. The operator will maximize the recovery of natural gas and minimize the amount of gas vented or flared when technically and safely feasible as further described and detailed within the following subsections (B-F of 19.15.27.8). In all cases where natural gas venting and flaring requires regulatory reporting, reporting will be submitted accurately and within the required time frames.
- B. Venting and flaring during drilling operations:
 - a. New Drill HZ Oil Wells: The operator drills wells in the area by utilizing a balanced mud to safely drill the wellbore. This technique prevents gas from coming to surface during the drilling process. If there is an emergency or malfunction and natural gas does come to surface the natural gas will be captured or combusted, with an appropriately sized and located flare stack, if technically and safely feasible.
 - b. New Drill HZ Gas Wells: The operator drills wells in the area by balancing the mud weight to safely drill the wellbore with as minimal flaring as possible. When gas kicks enter the wellbore, sometimes it is necessary to circulate it out of the wellbore to an appropriately sized and located flare stack. The operator will estimate the volume flared and appropriately report.
- C. Venting and flaring during completion or recompletion operations:
 - a. New Drill HZ Oil Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. During the separation flowback period natural gas will be routed to a properly sized and located flare until the natural gas is of pipeline quality (less than 60 days). The natural gas will also be utilized on site as needed for fuel gas or injection gas.
 - b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During

initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.

D. Venting and flaring during production operations:

- a. New Drill HZ Oil Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. This facility will operate under a notice of intent (NOI) from the New Mexico Environment Department (NMED).

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

- (a) If there is an emergency or malfunction, vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
- (b) If the wellbore requires liquids to be unloaded to atmosphere, the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
- (c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging with minor exceptions.
- (d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will utilize a LACT system when available to minimize gas vented during oil tank loading.
- (e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
- (f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
- (g) Storage tanks and other low-pressure vessel normal operational venting will be minimized during the early life of the well with the installation of

a vapor recovery unit to limit the flash and working and breathing emissions to atmosphere.

- (h) No dehydration or amine units are anticipated to be set on location.
 - (i) Compressors, compressor engines, turbines, flanges, connectors, valves, and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operation.
 - (j) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
 - (k) When natural gas does not meet gathering pipeline specifications, for example high nitrogen content after a nearby frac, gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
 - (l) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.
- b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

- (a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
- (b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
- (c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
- (d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.

- (e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
- (f) Electric controllers and pumps, or instrument air, will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
- (g) No dehydration or amine units are anticipated to be set on location.
- (h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
- (i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
- (j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
- (k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:

- a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.
- b. All tanks that are routed to a control device that is installed after 5/25/2021 will have an automatic gauging system to minimize the amount of vented natural gas.
- c. If a flare stack is installed or replaced after 5/25/2021 it will be equipped with an automatic ignitor or continuous pilot. The flare stack will be properly sized and designed to ensure proper combustion efficiency. The flare stack will be located 100 feet away from the nearest wellhead or storage tank.
- d. AVO inspections will be conducted weekly for the year after completion and for all wells producing greater than 60,000 cubic feet of natural gas daily. The AVO inspection will include all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated pipeline to identify any leaks and releases by comprehensive auditory, visual, and olfactory inspection. The AVO inspection records will be maintained for 5 years which will be available at the department's request. Identified leaks will be repaired as soon as feasible to minimize the amount of vented natural gas.

F. Measurement or estimation of vented and flared natural gas.

- a. The volume of natural gas that is vented, flared or consumed for beneficial use will be measured when possible, or estimated, during drilling, completions, or production operations.
- b. Equipment will be installed to measure the volume of natural gas flared for all APD's issued after 5/25/2021 on facilities that will have an average daily gas rate greater than 60,000 cubic feet of natural gas. Measurement equipment will conform to API MPMS Chapter 14.10 regulations. The measurement equipment will not have a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment. If metering is not practical then the volume of gas will be estimated.



LOGOS Operating, LLC Operations Plan

Note: This procedure will be adjusted onsite based upon actual conditions

Date:	December 5, 2024	Pool:	Basin Mancos
Well Name:	Rosa Unit 694H	GL Elevation:	6347
Surface Location:	Sec 8, T31N, R5W 783' FNL, 1970' FEL 36.919104° N -107.383488° W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 11, T31N, R6W 182' FNL 1325' FWL (36.920911° N, -107.436692° W – NAD83)	Measured Depth:	22,270' (KB)
Lease Serial CA Serial	# NMSF078763 # NMNM78407E	County:	Rio Arriba

I. GEOLOGY

II.

A. Formation Tops (Based on KB Elevation): Estimated top of important geological markers:
SURFACE FORMATION – NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,441'	2,439'	*POINT LOOKOUT	5,641'	5,635'
KIRTLAND	2,561'	2,559'	*MANCOS	6,244'	6,238'
*FRUITLAND	2,861'	2,858'	KICKOFF POINT	6,358'	6,352'
*PICTURED CLIFFS	3,372'	3,368'	LANDING POINT	7,359'	6,987'
LEWIS	3,475'	3,471'	TD	22,270'	6,977'
CHACRA	4,654'	4,649'			
*CLIFF HOUSE	5,432'	5,426'			
MENEFEE	5,467'	5,461'			

* indicates depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered.

B. **MUD LOGGING PROGRAM:** Mudlogger on location from KOP to TD.

C. **LOGGING PROGRAM:** LWD GR from conductor casing to TD.

D. **NATURAL GAUGES:** Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

II. DRILLING

A. **MUD PROGRAM:** LSND mud (WBM) was used to drill the 26"/24" conductor hole. LSND (WBM) will be used to drill the 17-1/2" surface hole and 12-1/4" intermediate hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

Above ground steel pits will be used for fluid and cuttings while drilling. In the unlikely event that a tank develops a leak, upon immediate visual discovery, the fluid would be transferred to another tank and contaminated soil would be removed and disposed. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times.



- B. BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **3000 psi (High) for 10 minutes**. Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. BOP equipment will be tested every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip or but not more than once a day. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when initially installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30 day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30 day interval of first full test.
- C. GeoHazards:** There are no Geohazards
- D. Maximum Anticipated Pressure:** $6987' \text{ TVD} \times 0.43 = 3,005 \text{ psi}$
- E. H2S Concerns:** There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
CONDUCTOR (Pre-set)	26" or 24"	350' (GL) or Greater	20"	94 LBS	J-55 or equiv	LTC/BTC
SURFACE	17.5"	3,418'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,319'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	22,270'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

NOTE: All casing depths are approximate, based on KB elevation and will be based on drilling conditions +/- 50'. Weights, grades and connections will be based on availability and may vary but will be equivalent or greater.

B. FLOAT EQUIPMENT:

- CONDUCTOR CASING:** 20" cement nose guide shoe. Place float shoe 1 joint above shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
- SURFACE CASING:** 13-3/8" cement nose guide shoe with float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,000ft., 1,500 ft., 1,000 ft., and 500ft.
 - Casing will be kept fluid filled during drilling
- INTERMEDIATE CASING:** 9-5/8" cement float shoe. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancellation plugs for DV tools may be used if losses while cementing are not encountered. Optional use of an ICP may be used in conjunction with DV Tools.
- PRODUCTION CASING:** Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer



program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

(Note: Cement type and volumes may be adjusted onsite due to actual conditions and availability)

1. CONDUCTOR: Casing shall be set at ~ 350' and cemented to surface. TOC at Surface.

Conductor - 20"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Type G	-	350	0.9599	1.3	487	87	1.10	442	15.8
Type III		350	0.9599	1.3	487	87	1.39	350	14.6
24" hole									
Set Depth	350								

2. SURFACE: Surface casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The surface casing will be cemented in 1 stage. If cement does not circulate to the surface, a CBL will be run to determine TOC.

Surface - 13-3/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	2,822	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	350	2,472	0.6947	1.3	2,232	398	1.90	1175	12.4
Stage 2 Lead - Cased	-	350	1.019	1	357	64	1.90	188	12.4
					3,165	564		1886	
Set Depth	3422								

3. INTERMEDIATE : Intermediate casing shall be kept fluid filled while running in to the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools in order to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools and optional ICP's above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancellation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to surface, a CBL will be run to determine

Intermediate - 9-5/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,819	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,729	1,090	0.3132	1.3	444	79	1.90	234	12.4
					664	118		434	
Stage 2 Tail	4,129	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,322	807	0.3132	1.3	329	59	1.90	173	12.4
Stage 2 Lead - Cased	3,222	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					609	108		347	
Int 2 Totals					1,273	227		780	
Contingency									
Stage 3 Tail	3,422	75	0.3132	1.3	31	5	1.58	19	13.2
Stage 3 Tail - Cased	2,922	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,922	0.3490	1	1,020	182	1.90	537	12.4
Contingency Stage 3 Totals					1,225	218		666	
Set Depth	6319								

TOC. Calculations based on 30% excess for open hole and cement to surface. Actual excess pumped will be determined by well conditions.



4. **PRODUCTION**: Production casing will be cemented in 1 stage with 100' of cement overlap above intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.

Production - 5-1/2"	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	6,219	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Lead	6,319	15,951	0.2291	1.15	4,208	749	1.59	2,646	13.2
					4,233	754		2,662	

Set depth 22270

Calculations based on 15% excess for open hole and 100' overlap into intermediate casing. Actual volumes will vary.

Cement calculations are used for volume estimation. Well conditions will dictate final cement job design. Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected. All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

IV. **COMPLETION**

A. **CBL**

CBLs and/or Temperature Surveys will be performed as needed or required to determine cement top if cement is not circulated.

B. **PRESSURE TEST**

- C. Pressure test 5-1/2" casing to 0.22 psi/ft * 6989' TVD = 1538 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. **STIMULATION**

Stimulate with sand and water. Isolate stages with flow through or dissolvable frac plugs. Drill out frac plugs and flowback lateral.

E. **PRODUCTION TUBING**

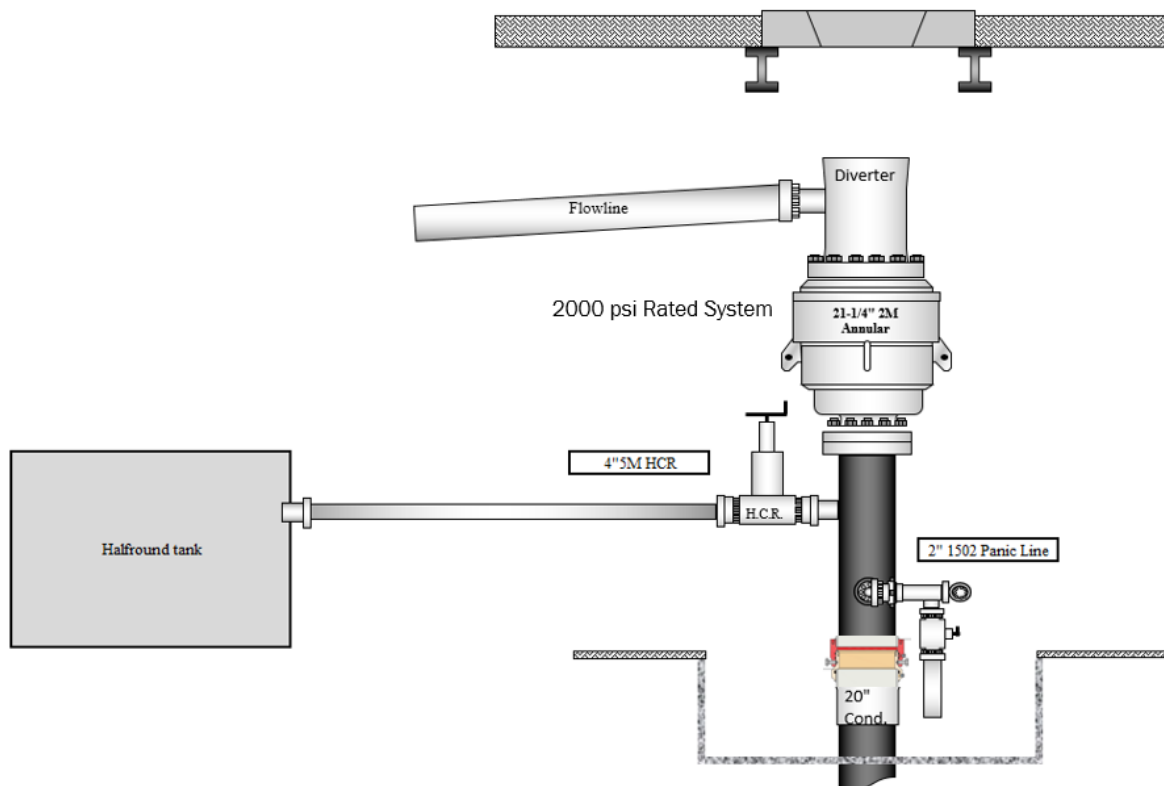
2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-36 months after completion.

*NOTE: Although this horizontal well may be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 8(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 8(2) NMAC, 19.15.16.15 8(2)NMAC, and 19.15.16.15. 8(4) NMAC.



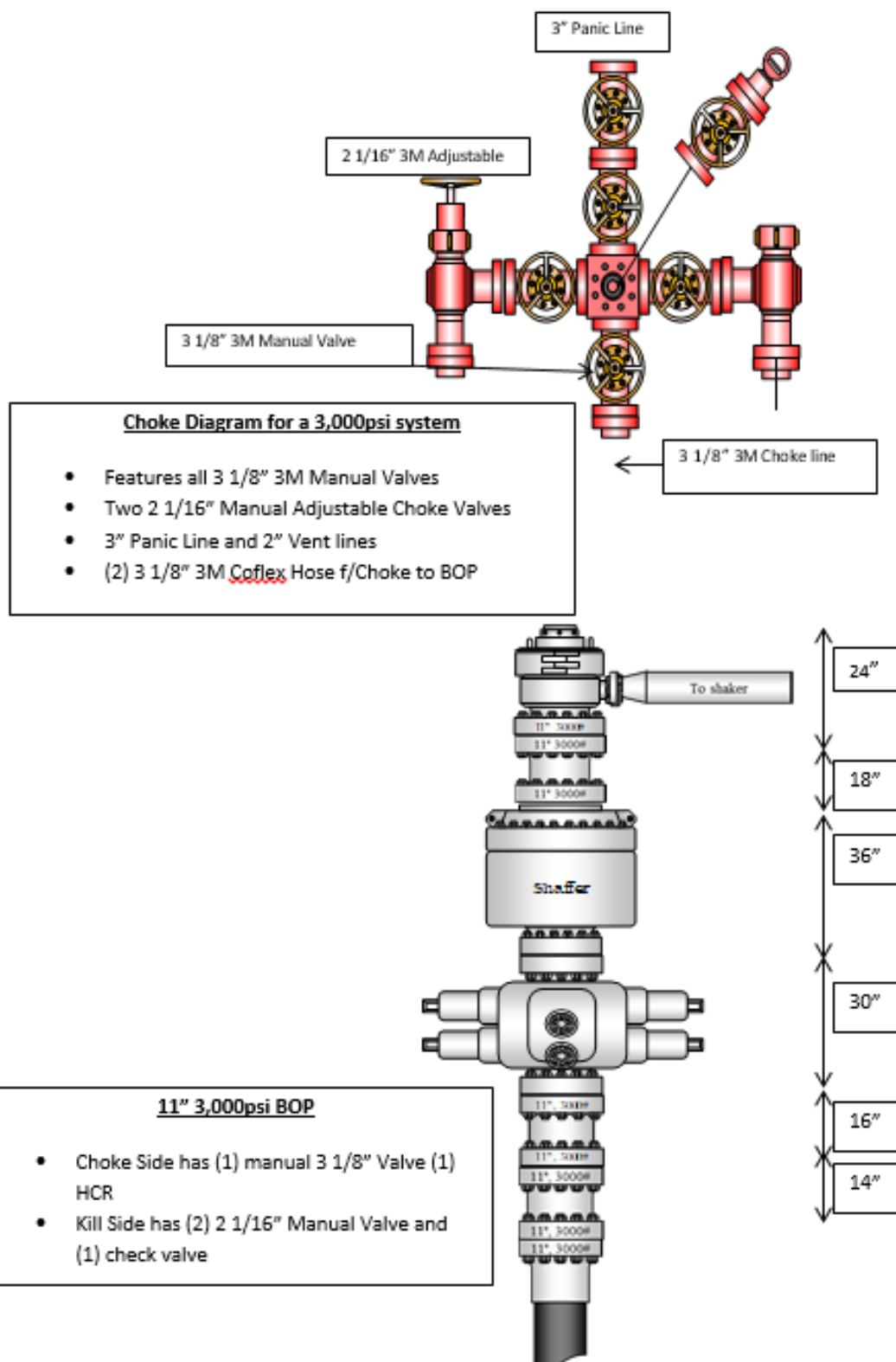
BOP Equipment

Surface Hole Diverter





3M 11" B.O.P.E Diagram



Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 34

Rosa Unit #694H

OH

Prelim 5

Anticollision Report

22 November, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Reference	Prelim 5		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCSWA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Max. Cent. Dist. of 99,999.00usft or Max. SF of 100	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	11/22/2024		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	22,269.73	Prelim 5 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Rosa Unit 34						
(O) Carson #1 - OH - OH-INC	500.00	641.00	8,564.65	8,551.60	656.727	CC
(O) Carson #1 - OH - OH-INC	6,400.00	6,535.56	8,612.26	8,446.44	51.938	ES
(O) Carson #1 - OH - OH-INC	7,050.00	7,058.73	8,940.16	8,754.14	48.062	SF
(O) Rosa Unit #041B - OH - OH-SVY	9,753.40	7,375.56	544.01	441.49	5.306	CC, ES
(O) Rosa Unit #041B - OH - OH-SVY	9,800.00	7,375.09	546.00	442.37	5.269	SF
(O) Rosa Unit #041C - OH - OH-SVY	886.20	865.19	27.14	22.16	5.447	CC, ES
(O) Rosa Unit #041C - OH - OH-SVY	900.00	878.49	27.39	22.29	5.364	SF
(O) Rosa Unit #053 - OH - OH-INC	562.54	551.54	354.19	342.43	30.127	CC
(O) Rosa Unit #053 - OH - OH-INC	800.00	788.32	355.84	338.97	21.088	ES
(O) Rosa Unit #053 - OH - OH-INC	6,650.00	6,622.94	590.34	426.68	3.607	SF
(O) Rosa Unit #072C - OH - OH-SVY	12,844.00	7,157.21	1,052.48	935.83	9.022	CC, ES
(O) Rosa Unit #072C - OH - OH-SVY	13,000.00	7,155.98	1,063.94	944.26	8.890	SF
(O) Rosa Unit #080A - OH - OH-INC	641.05	546.90	1,951.82	1,938.91	151.119	CC
(O) Rosa Unit #080A - OH - OH-INC	4,900.00	4,786.00	2,024.31	1,902.72	16.649	ES, SF
(O) Rosa Unit #107 - OH - OH-INC	5,904.85	5,731.97	4,713.97	4,577.86	34.632	CC
(O) Rosa Unit #107 - OH - OH-INC	6,400.00	6,209.10	4,714.86	4,567.22	31.935	ES
(O) Rosa Unit #107 - OH - OH-INC	6,900.00	6,646.15	4,856.76	4,698.35	30.661	SF
(O) Rosa Unit #108 - OH - OH-SVY	11,713.50	6,883.72	1,713.51	1,490.69	7.690	CC, ES
(O) Rosa Unit #108 - OH - OH-SVY	11,800.00	6,883.65	1,715.70	1,492.03	7.671	SF
(O) Rosa Unit #149 - OH - OH-INC	14,641.97	5,949.00	1,640.32	1,379.98	6.301	CC, ES
(O) Rosa Unit #149 - OH - OH-INC	14,700.00	5,949.00	1,641.35	1,380.50	6.292	SF
(O) Rosa Unit #149A - OH - OH-INC	16,019.66	6,000.00	1,924.82	1,681.85	7.922	CC, ES
(O) Rosa Unit #149A - OH - OH-INC	16,100.00	6,000.00	1,926.50	1,682.78	7.905	SF
(O) Rosa Unit #149B - OH - OH-INC	17,958.12	7,025.95	1,236.35	880.66	3.476	CC, ES
(O) Rosa Unit #149B - OH - OH-INC	18,000.00	7,025.91	1,237.06	881.07	3.475	SF
(O) Rosa Unit #149C - OH - OH-SVY	15,340.04	7,101.94	1,015.62	439.31	1.762	CC, ES, SF
(O) Rosa Unit #164 - OH - OH-SVY	16,946.01	4,604.00	3,337.36	3,199.99	24.294	CC
(O) Rosa Unit #164 - OH - OH-SVY	17,000.00	4,604.00	3,337.80	3,199.88	24.201	ES
(O) Rosa Unit #164 - OH - OH-SVY	17,400.00	4,604.00	3,368.10	3,227.00	23.870	SF
(O) Rosa Unit #164A - OH - OH-INC	15,031.10	6,060.00	1,878.85	1,615.11	7.124	CC, ES
(O) Rosa Unit #164A - OH - OH-INC	15,200.00	6,060.00	1,886.43	1,619.93	7.079	SF
(O) Rosa Unit #164B - OH - OH-SVY	17,123.33	7,535.58	609.73	381.59	2.673	CC, ES, SF
(O) Rosa Unit #164C - OH - OH-SVY	14,739.71	7,364.24	421.29	273.59	2.852	CC, ES, SF
(O) Rosa Unit #171 - OH - OH-INC	11,488.98	6,028.00	1,889.00	1,708.94	10.491	CC
(O) Rosa Unit #171 - OH - OH-INC	11,500.00	6,028.00	1,889.04	1,708.87	10.485	ES
(O) Rosa Unit #171 - OH - OH-INC	11,700.00	6,028.00	1,900.75	1,718.82	10.448	SF
(O) Rosa Unit #171A - OH - OH-SVY	12,717.06	3,337.00	4,077.79	4,007.97	58.411	CC, ES

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Rosa Unit 34						
(O) Rosa Unit #171A - OH - OH-SVY	14,400.00	3,337.00	4,411.42	4,335.38	58.013	SF
(O) Rosa Unit #171B - OH - OH-SVY	12,100.00	6,388.00	896.94	835.66	14.636	SF
(O) Rosa Unit #171B - OH - OH-SVY	12,242.55	6,388.00	885.54	826.14	14.908	CC, ES
(O) Rosa Unit #171C - OH - OH-SVY	13,500.00	6,990.00	971.77	882.67	10.906	SF
(O) Rosa Unit #171C - OH - OH-SVY	13,800.00	6,990.00	918.51	839.16	11.574	ES
(O) Rosa Unit #171C - OH - OH-SVY	13,817.77	6,990.00	918.34	839.57	11.659	CC
(O) Rosa Unit #226 - OH - OH-INC	15,512.63	3,135.00	4,078.05	3,966.50	36.557	CC, ES
(O) Rosa Unit #226 - OH - OH-INC	16,800.00	3,135.00	4,276.43	4,153.55	34.800	SF
(O) Rosa Unit #226A - OH - OH-SVY	15,614.00	4,777.67	3,854.69	3,766.66	43.784	CC
(O) Rosa Unit #226A - OH - OH-SVY	15,700.00	4,700.12	3,854.91	3,766.51	43.607	ES
(O) Rosa Unit #226A - OH - OH-SVY	17,500.00	3,487.00	4,012.83	3,913.62	40.448	SF
(O) Rosa Unit #228A - OH - OH-SVY	12,642.12	3,253.00	4,116.60	4,057.11	69.195	CC, ES
(O) Rosa Unit #228A - OH - OH-SVY	13,700.00	3,253.00	4,250.35	4,187.16	67.258	SF
(O) Rosa Unit #336 - OH - OH-INC	641.12	613.12	119.06	105.40	8.716	CC
(O) Rosa Unit #336 - OH - OH-INC	800.00	771.66	120.83	103.59	7.007	ES
(O) Rosa Unit #336 - OH - OH-INC	3,000.00	2,969.80	229.03	148.67	2.850	SF
(O) Rosa Unit #336A - OH - OH-INC	672.87	594.83	2,512.38	2,498.63	182.716	CC
(O) Rosa Unit #336A - OH - OH-INC	2,900.00	2,809.00	2,531.71	2,463.08	36.889	ES
(O) Rosa Unit #336A - OH - OH-INC	3,000.00	2,809.00	2,535.11	2,466.18	36.778	SF
(O) Rosa Unit #350A - OH - OH-SVY	0.00	283.89	7,279.80			
(O) Rosa Unit #350A - OH - OH-SVY	100.00	365.12	7,280.23	7,277.92	3,152.172	ES
(O) Rosa Unit #350A - OH - OH-SVY	6,450.00	3,645.00	8,659.15	8,619.25	217.003	SF
(O) Rosa Unit #46 - OH - OH-INC	539.74	503.72	144.63	133.39	12.865	CC
(O) Rosa Unit #46 - OH - OH-INC	800.00	764.02	146.38	129.06	8.450	ES
(O) Rosa Unit #46 - OH - OH-INC	5,500.00	5,458.43	373.13	241.96	2.845	SF
(O) Rosa Unit #80B - OH - OH-SVY	9,261.82	7,090.17	467.69	167.19	1.556	CC, ES, SF
(O) Rosa Unit #95 - OH - OH-INC	100.00	528.55	6,177.38	6,165.88	537.154	CC
(O) Rosa Unit #95 - OH - OH-INC	5,600.00	5,990.00	6,243.75	6,080.28	38.196	ES
(O) Rosa Unit #95 - OH - OH-INC	6,000.00	5,990.00	6,260.14	6,095.64	38.056	SF
(O) Rosa Unit 072B - OH - OH-SVY	12,320.23	7,532.38	2,320.27	2,188.76	17.643	CC
(O) Rosa Unit 072B - OH - OH-SVY	12,400.00	7,532.44	2,321.64	2,188.73	17.467	ES
(O) Rosa Unit 072B - OH - OH-SVY	12,700.00	7,532.66	2,351.14	2,214.23	17.172	SF
(O) Rosa Unit 148 COM - OH - OH-INC	20,762.68	6,950.92	625.37	209.79	1.505	CC, ES, SF
Rosa Unit #672H - OH - Prelim 5	500.00	500.00	79.99	76.62	23.737	CC, ES
Rosa Unit #672H - OH - Prelim 5	22,269.73	23,140.76	2,573.12	2,072.04	5.135	SF
Rosa Unit #674H - OH - Prelim 5	510.00	510.00	60.03	56.58	17.442	CC
Rosa Unit #674H - OH - Prelim 5	600.00	599.12	60.39	56.31	14.789	ES
Rosa Unit #674H - OH - Prelim 5	22,269.73	22,518.47	1,253.74	753.34	2.505	SF
Rosa Unit #690H - OH - Prelim 5	600.00	600.00	39.92	35.84	9.769	CC, ES
Rosa Unit #690H - OH - Prelim 5	900.00	896.26	47.29	41.08	7.615	SF
Rosa Unit #692H - OH - Prelim 5	700.00	700.00	19.96	15.16	4.156	CC
Rosa Unit #692H - OH - Prelim 5	849.89	849.04	20.13	14.25	3.428	ES
Rosa Unit #692H - OH - Prelim 5	900.00	898.86	20.59	14.36	3.307	SF
Rosa Unit #696H - OH - Prelim 5	700.00	700.00	20.10	15.30	4.185	CC
Rosa Unit #696H - OH - Prelim 5	800.00	800.35	20.55	15.03	3.723	ES
Rosa Unit #696H - OH - Prelim 5	6,523.10	6,527.33	122.09	75.49	2.620	SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 434-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Rule Assigned:		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	141.00	141.00	0.00	2.50	88.91	162.96	8,563.10	8,564.65				
100.00	100.00	241.00	241.00	0.25	4.27	88.91	162.96	8,563.10	8,564.65	8,560.12	4.52	1,894.495	
200.00	200.00	341.00	341.00	0.61	6.04	88.91	162.96	8,563.10	8,564.65	8,557.99	6.65	1,287.737	
300.00	300.00	441.00	441.00	0.97	7.81	88.91	162.96	8,563.10	8,564.65	8,555.86	8.78	975.352	
400.00	400.00	541.00	541.00	1.33	9.58	88.91	162.96	8,563.10	8,564.65	8,553.73	10.91	784.937	
500.00	500.00	641.00	641.00	1.68	11.36	88.91	162.96	8,563.10	8,564.65	8,551.60	13.04	656.727 CC	
600.00	600.00	741.14	741.14	2.04	13.13	88.91	163.16	8,563.10	8,564.65	8,549.48	15.17	564.429	
700.00	700.00	841.30	841.30	2.40	14.91	88.91	163.03	8,563.10	8,564.65	8,547.34	17.31	494.865	
704.45	704.45	845.76	845.75	2.42	14.98	99.66	163.02	8,563.10	8,564.65	8,547.25	17.40	492.167	
800.00	799.98	940.99	940.98	2.76	16.67	99.67	162.96	8,563.10	8,564.94	8,545.51	19.43	440.790	
849.89	849.82	990.83	990.82	2.94	17.55	99.68	162.96	8,563.10	8,565.30	8,544.81	20.49	417.979	
900.00	899.86	1,040.87	1,040.86	3.12	18.44	99.69	162.96	8,563.10	8,565.75	8,544.19	21.56	397.337	
1,000.00	999.73	1,140.82	1,140.81	3.48	20.21	99.73	163.17	8,563.10	8,566.63	8,542.95	23.69	361.660	
1,100.00	1,099.59	1,240.83	1,240.82	3.84	21.98	99.76	163.06	8,563.10	8,567.52	8,541.70	25.82	331.842	
1,200.00	1,199.45	1,340.46	1,340.45	4.20	23.76	99.80	162.96	8,563.10	8,568.41	8,540.45	27.96	306.504	
1,300.00	1,299.32	1,440.33	1,440.32	4.56	25.56	99.83	162.96	8,563.10	8,569.30	8,539.19	30.11	284.577	
1,400.00	1,399.18	1,540.26	1,540.25	4.92	27.36	99.87	163.16	8,563.10	8,570.20	8,537.93	32.27	265.568	
1,500.00	1,499.04	1,640.26	1,640.25	5.28	29.16	99.90	163.04	8,563.10	8,571.09	8,536.66	34.43	248.933	
1,600.00	1,598.91	1,739.92	1,739.91	5.64	30.95	99.94	162.96	8,563.10	8,572.00	8,535.41	36.59	234.293	
1,700.00	1,698.77	1,839.83	1,839.81	6.00	32.75	99.97	163.27	8,563.10	8,572.90	8,534.16	38.75	221.252	
1,800.00	1,798.63	1,940.03	1,940.01	6.36	34.55	100.00	163.08	8,563.10	8,573.81	8,532.90	40.91	209.561	
1,900.00	1,898.49	2,039.52	2,039.49	6.72	36.37	100.04	162.96	8,563.10	8,574.72	8,531.63	43.09	198.995	
2,000.00	1,998.36	2,139.38	2,139.36	7.09	38.20	100.07	162.96	8,563.10	8,575.63	8,530.35	45.28	189.374	
2,100.00	2,098.22	2,239.32	2,239.29	7.45	40.03	100.11	163.15	8,563.10	8,576.55	8,529.07	47.48	180.637	
2,200.00	2,198.08	2,339.28	2,339.25	7.81	41.87	100.14	163.01	8,563.10	8,577.47	8,527.80	49.68	172.671	
2,300.00	2,297.95	2,438.99	2,438.95	8.17	43.76	100.18	162.96	8,563.10	8,578.40	8,526.47	51.93	165.207	
2,400.00	2,397.81	2,538.85	2,538.81	8.53	45.67	100.21	162.96	8,563.10	8,579.32	8,525.12	54.20	158.295	
2,500.00	2,497.67	2,639.00	2,638.95	8.90	47.58	100.24	163.34	8,563.10	8,580.26	8,523.78	56.48	151.924	
2,600.00	2,597.54	2,738.61	2,738.54	9.26	49.51	100.28	162.96	8,563.10	8,581.19	8,522.43	58.76	146.038	
2,700.00	2,697.40	2,838.47	2,838.40	9.62	51.47	100.31	162.96	8,563.10	8,582.12	8,521.03	61.09	140.487	
2,800.00	2,797.26	2,938.59	2,938.51	9.98	53.44	100.35	163.21	8,563.10	8,583.06	8,519.64	63.42	135.332	
2,900.00	2,897.13	3,038.23	3,038.13	10.35	55.44	100.38	162.96	8,563.10	8,584.00	8,518.22	65.78	130.494	
3,000.00	2,996.99	3,138.09	3,137.99	10.71	57.47	100.42	162.96	8,563.10	8,584.95	8,516.78	68.17	125.930	
3,100.00	3,096.85	3,238.16	3,238.05	11.07	59.50	100.45	163.48	8,563.10	8,585.90	8,515.33	70.57	121.667	
3,200.00	3,196.72	3,337.87	3,337.72	11.43	61.52	100.48	162.96	8,563.10	8,586.85	8,513.90	72.95	117.708	
3,300.00	3,296.58	3,437.73	3,437.58	11.80	63.52	100.52	162.96	8,563.10	8,587.80	8,512.49	75.31	114.032	
3,400.00	3,396.44	3,537.63	3,537.47	12.16	65.52	100.55	163.81	8,563.10	8,588.76	8,511.09	77.67	110.579	
3,500.00	3,496.31	3,637.60	3,637.43	12.52	67.52	100.58	163.48	8,563.10	8,589.72	8,509.69	80.03	107.327	
3,600.00	3,596.17	3,737.37	3,737.17	12.88	69.52	100.62	162.96	8,563.10	8,590.68	8,508.29	82.39	104.264	
3,700.00	3,696.03	3,837.23	3,837.03	13.25	71.52	100.66	162.96	8,563.10	8,591.65	8,506.89	84.76	101.360	
3,800.00	3,795.89	3,937.09	3,936.89	13.61	73.53	100.69	162.96	8,563.10	8,592.62	8,505.49	87.13	98.614	
3,900.00	3,895.76	4,036.97	4,036.76	13.97	75.54	100.72	163.68	8,563.10	8,593.59	8,504.09	89.50	96.013	
4,000.00	3,995.62	4,136.82	4,136.61	14.34	77.55	100.76	163.33	8,563.10	8,594.57	8,502.70	91.87	93.547	
4,100.00	4,095.48	4,236.74	4,236.48	14.70	79.60	100.79	162.96	8,563.10	8,595.55	8,501.26	94.29	91.160	
4,200.00	4,195.35	4,336.60	4,336.35	15.06	81.74	100.83	162.96	8,563.10	8,596.53	8,499.74	96.79	88.818	
4,300.00	4,295.21	4,436.47	4,436.21	15.42	83.87	100.86	162.96	8,563.10	8,597.52	8,498.23	99.29	86.594	
4,400.00	4,395.07	4,536.26	4,535.99	15.79	86.00	100.89	163.85	8,563.10	8,598.50	8,496.72	101.78	84.481	
4,500.00	4,494.94	4,636.02	4,635.74	16.15	88.14	100.93	163.32	8,563.10	8,599.49	8,495.22	104.28	82.469	
4,600.00	4,594.80	4,736.15	4,735.80	16.51	90.42	100.96	162.96	8,563.10	8,600.49	8,493.56	106.93	80.434	
4,700.00	4,694.66	4,836.01	4,835.66	16.87	92.83	101.00	162.96	8,563.10	8,601.49	8,491.79	109.70	78.413	
4,800.00	4,794.53	4,935.59	4,935.22	17.24	95.23	101.03	163.47	8,563.10	8,602.49	8,490.03	112.46	76.496	
4,900.00	4,894.39	5,035.87	5,035.39	17.60	97.76	101.07	162.96	8,563.10	8,603.49	8,488.14	115.35	74.587	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC												Offset Site Error:	0.00 usft	
Survey Program:		434-A027Ua_INC-ONLY				Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
5,000.00	4,994.25	5,135.73	5,135.25	17.96	100.43	101.10	162.96	8,563.10	8,604.50	8,486.12	118.38	72.687		
5,100.00	5,094.12	5,235.57	5,235.05	18.33	103.09	101.12	165.02	8,563.09	8,605.49	8,484.09	121.41	70.882		
5,200.00	5,193.98	5,335.02	5,334.48	18.69	105.75	101.16	164.60	8,563.09	8,606.51	8,482.08	124.43	69.170		
5,300.00	5,293.84	5,434.42	5,433.86	19.05	108.40	101.20	163.46	8,563.10	8,607.53	8,480.09	127.44	67.541		
5,336.91	5,330.71	5,472.47	5,471.71	19.19	109.43	101.22	162.96	8,563.10	8,607.91	8,479.31	128.60	66.934		
5,400.00	5,393.71	5,535.48	5,534.71	19.41	111.21	101.24	162.96	8,563.10	8,608.52	8,477.91	130.61	65.910		
5,500.00	5,493.62	5,635.39	5,634.62	19.77	114.03	101.27	162.96	8,563.10	8,609.35	8,475.56	133.79	64.350		
5,600.00	5,593.57	5,735.07	5,734.26	20.13	116.84	101.28	164.85	8,563.09	8,609.99	8,473.03	136.96	62.864		
5,700.00	5,693.53	5,834.46	5,833.63	20.49	119.64	101.31	164.12	8,563.09	8,610.49	8,470.37	140.12	61.449		
5,800.00	5,793.52	5,935.60	5,934.52	20.85	122.58	101.33	162.96	8,563.10	8,610.82	8,467.41	143.41	60.043		
5,900.00	5,893.52	6,035.59	6,034.52	21.20	125.79	101.33	162.96	8,563.10	8,610.97	8,463.98	146.99	58.583		
5,936.48	5,930.00	6,072.08	6,071.00	21.33	126.97	90.58	162.96	8,563.10	8,610.98	8,462.69	148.29	58.068		
5,962.85	5,956.37	6,098.38	6,097.27	21.43	127.82	90.57	164.68	8,563.09	8,610.96	8,461.73	149.23	57.702		
6,000.00	5,993.52	6,135.19	6,134.08	21.56	129.00	90.57	164.57	8,563.09	8,610.96	8,460.42	150.55	57.198		
6,100.00	6,093.52	6,234.33	6,233.18	21.91	132.19	90.57	163.54	8,563.10	8,610.97	8,456.88	154.09	55.882		
6,200.00	6,193.52	6,335.96	6,334.52	22.27	135.71	90.58	162.96	8,563.10	8,610.98	8,453.01	157.97	54.511		
6,300.00	6,293.52	6,435.96	6,434.52	22.62	139.29	90.58	162.96	8,563.10	8,610.98	8,449.08	161.90	53.187		
6,356.82	6,350.33	6,492.78	6,491.26	22.82	141.33	90.56	165.91	8,563.09	8,610.95	8,446.82	164.13	52.463		
6,358.48	6,352.00	6,494.43	6,492.91	22.83	141.38	90.56	165.91	8,563.09	8,610.95	8,446.75	164.20	52.442		
6,400.00	6,393.49	6,535.56	6,534.02	22.97	142.86	165.13	165.81	8,563.09	8,612.26	8,446.44	165.82	51.938 ES		
6,450.00	6,443.20	6,584.84	6,583.28	23.15	144.62	165.02	165.42	8,563.09	8,617.30	8,449.55	167.76	51.368		
6,500.00	6,492.36	6,633.55	6,631.97	23.33	146.36	164.84	164.76	8,563.09	8,626.11	8,456.43	169.67	50.839		
6,550.00	6,540.64	6,681.37	6,679.75	23.51	148.07	164.56	163.85	8,563.10	8,638.61	8,467.06	171.56	50.354		
6,600.00	6,587.77	6,730.83	6,728.77	23.69	149.83	164.18	162.96	8,563.10	8,654.75	8,481.26	173.49	49.888		
6,650.00	6,633.44	6,776.50	6,774.44	23.88	151.41	163.68	162.96	8,563.10	8,674.40	8,499.17	175.23	49.502		
6,700.00	6,677.37	6,820.44	6,818.37	24.07	152.94	163.06	162.96	8,563.10	8,697.46	8,520.55	176.91	49.162		
6,750.00	6,719.30	6,862.35	6,860.23	24.26	154.39	162.27	164.82	8,563.09	8,723.77	8,545.25	178.52	48.867		
6,800.00	6,758.97	6,901.16	6,899.03	24.46	155.73	161.30	164.68	8,563.09	8,753.21	8,573.20	180.01	48.627		
6,850.00	6,796.12	6,937.41	6,935.26	24.67	156.99	160.11	164.29	8,563.09	8,785.58	8,604.18	181.40	48.432		
6,900.00	6,830.54	6,970.88	6,968.71	24.88	158.15	158.63	163.72	8,563.10	8,820.69	8,638.00	182.68	48.284		
6,950.00	6,862.00	7,005.40	7,003.00	25.11	159.35	156.78	162.96	8,563.10	8,858.31	8,674.32	183.99	48.145		
7,000.00	6,890.33	7,033.72	7,031.33	25.34	160.31	154.42	162.96	8,563.10	8,898.21	8,713.15	185.06	48.082		
7,050.00	6,915.33	7,058.73	7,056.33	25.59	161.17	151.37	162.96	8,563.10	8,940.16	8,754.14	186.01	48.062 SF		
7,100.00	6,936.86	7,080.26	7,077.86	25.85	161.90	147.37	162.96	8,563.10	8,983.89	8,797.05	186.83	48.086		
7,150.00	6,954.79	7,098.18	7,095.79	26.12	162.51	141.97	162.96	8,563.10	9,029.13	8,841.61	187.52	48.151		
7,200.00	6,968.99	7,112.39	7,110.00	26.40	163.00	134.56	162.96	8,563.10	9,075.62	8,887.55	188.07	48.258		
7,250.00	6,979.40	7,122.79	7,120.40	26.69	163.35	124.28	162.96	8,563.10	9,123.05	8,934.58	188.48	48.404		
7,300.00	6,985.94	7,129.33	7,126.94	27.00	163.58	110.34	162.96	8,563.10	9,171.15	8,982.41	188.75	48.589		
7,350.00	6,988.56	7,131.96	7,129.56	27.31	163.67	93.10	162.96	8,563.10	9,219.62	9,030.74	188.88	48.812		
7,358.93	6,988.62	7,132.01	7,129.62	27.36	163.67	89.84	162.96	8,563.10	9,228.29	9,039.40	188.89	48.856		
7,400.00	6,988.59	7,131.99	7,129.59	27.63	163.67	89.84	162.96	8,563.10	9,268.18	9,079.26	188.92	49.059		
7,500.00	6,988.52	7,131.92	7,129.52	28.33	163.67	89.83	162.96	8,563.10	9,365.34	9,176.35	188.99	49.553		
7,600.00	6,988.45	7,131.85	7,129.45	29.10	163.66	89.83	162.96	8,563.10	9,462.56	9,273.49	189.08	50.047		
7,658.93	6,988.41	7,131.81	7,129.41	29.59	163.66	89.83	162.96	8,563.10	9,519.88	9,330.76	189.12	50.337		
7,700.00	6,988.38	7,131.78	7,129.38	29.94	163.66	89.82	162.96	8,563.10	9,559.91	9,370.75	189.16	50.539		
7,800.00	6,988.31	7,131.71	7,129.31	30.84	163.66	89.78	162.96	8,563.10	9,657.92	9,468.68	189.24	51.036		
7,900.00	6,988.24	7,131.63	7,129.24	31.79	163.66	89.71	162.96	8,563.10	9,756.59	9,567.28	189.30	51.539		
8,000.00	6,988.16	7,131.56	7,129.16	32.78	163.65	89.61	162.96	8,563.10	9,855.78	9,666.42	189.36	52.047		
8,100.00	6,988.09	7,131.48	7,129.09	33.82	163.65	89.41	162.96	8,563.10	9,955.37	9,765.96	189.41	52.561		
8,200.00	6,988.01	7,131.41	7,129.01	34.88	163.65	88.82	162.96	8,563.10	10,055.21	9,865.77	189.44	53.079		
8,300.00	6,987.94	7,131.33	7,128.94	35.98	163.65	69.72	162.96	8,563.10	10,155.19	9,965.73	189.46	53.601		
8,400.00	6,987.86	7,131.25	7,128.86	37.11	163.64	-88.63	162.96	8,563.10	10,255.17	10,065.70	189.47	54.126		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC											Offset Site Error: 0.00 usft				
Survey Program: 434-A027Ua_INC-ONLY				Reference Offset		Semi Major Axis		Highside		Offset Wellbore Centre		Rule Assigned: Distance		Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
8,416.35	6,987.85	7,131.24	7,128.85	37.29	163.64	-88.83	162.96	8,563.10	10,271.52	10,082.05	189.47	54.212			
8,500.00	6,987.78	7,131.18	7,128.78	38.25	163.64	-88.82	162.96	8,563.10	10,355.10	10,165.63	189.47	54.653			
8,600.00	6,987.70	7,131.10	7,128.70	39.43	163.64	-88.81	162.96	8,563.10	10,455.03	10,265.56	189.47	55.180			
8,700.00	6,987.62	7,131.02	7,128.62	40.64	163.63	-88.80	162.96	8,563.10	10,554.96	10,365.48	189.48	55.706			
8,800.00	6,987.55	7,130.94	7,128.55	41.88	163.63	-88.79	162.96	8,563.10	10,654.89	10,465.41	189.48	56.232			
8,900.00	6,987.47	7,130.86	7,128.47	43.14	163.63	-88.77	162.96	8,563.10	10,754.82	10,565.34	189.49	56.758			
9,000.00	6,987.39	7,130.78	7,128.39	44.42	163.63	-88.76	162.96	8,563.10	10,854.76	10,665.26	189.49	57.283			
9,100.00	6,987.31	7,130.71	7,128.31	45.72	163.62	-88.75	162.96	8,563.10	10,954.69	10,765.19	189.50	57.808			
9,200.00	6,987.23	7,130.63	7,128.23	47.04	163.62	-88.74	162.96	8,563.10	11,054.63	10,865.12	189.51	58.332			
9,300.00	6,987.15	7,130.55	7,128.15	48.38	163.62	-88.73	162.96	8,563.10	11,154.56	10,965.04	189.52	58.856			
9,400.00	6,987.08	7,130.47	7,128.08	49.73	163.62	-88.72	162.96	8,563.10	11,254.50	11,064.97	189.53	59.380			
9,500.00	6,987.00	7,130.39	7,128.00	51.10	163.61	-88.71	162.96	8,563.10	11,354.44	11,164.89	189.55	59.903			
9,600.00	6,986.92	7,130.31	7,127.92	52.48	163.61	-88.70	162.96	8,563.10	11,454.38	11,264.82	189.56	60.425			
9,700.00	6,986.84	7,130.24	7,127.84	53.87	163.61	-88.68	162.96	8,563.10	11,554.32	11,364.75	189.58	60.948			
9,800.00	6,986.76	7,130.16	7,127.76	55.28	163.61	-88.67	162.96	8,563.10	11,654.27	11,464.67	189.60	61.469			
9,900.00	6,986.68	7,130.08	7,127.68	56.69	163.60	-88.66	162.96	8,563.10	11,754.21	11,564.60	189.61	61.991			
10,000.00	6,986.61	7,130.00	7,127.61	58.12	163.60	-88.65	162.96	8,563.10	11,854.15	11,664.52	189.63	62.511			
10,100.00	6,986.53	7,129.92	7,127.53	59.55	163.60	-88.64	162.96	8,563.10	11,954.10	11,764.45	189.65	63.032			
10,200.00	6,986.45	7,129.84	7,127.45	61.00	163.59	-88.63	162.96	8,563.10	12,054.05	11,864.37	189.67	63.552			
10,300.00	6,986.37	7,129.77	7,127.37	62.45	163.59	-88.62	162.96	8,563.10	12,153.99	11,964.30	189.70	64.071			
10,400.00	6,986.29	7,129.69	7,127.29	63.90	163.59	-88.60	162.96	8,563.10	12,253.94	12,064.22	189.72	64.590			
10,500.00	6,986.21	7,129.61	7,127.21	65.37	163.59	-88.59	162.96	8,563.10	12,353.89	12,164.15	189.74	65.108			
10,600.00	6,986.14	7,129.53	7,127.14	66.84	163.58	-88.58	162.96	8,563.10	12,453.84	12,264.07	189.77	65.626			
10,700.00	6,986.06	7,129.45	7,127.06	68.32	163.58	-88.57	162.96	8,563.10	12,553.79	12,364.00	189.80	66.144			
10,800.00	6,985.98	7,129.37	7,126.98	69.80	163.58	-88.56	162.96	8,563.10	12,653.74	12,463.92	189.82	66.661			
10,900.00	6,985.90	7,129.30	7,126.90	71.29	163.58	-88.55	162.96	8,563.10	12,753.69	12,563.84	189.85	67.177			
11,000.00	6,985.82	7,129.22	7,126.82	72.78	163.57	-88.54	162.96	8,563.10	12,853.65	12,663.77	189.88	67.693			
11,100.00	6,985.75	7,129.14	7,126.75	74.28	163.57	-88.52	162.96	8,563.10	12,953.60	12,763.69	189.91	68.209			
11,200.00	6,985.67	7,129.06	7,126.67	75.78	163.57	-88.51	162.96	8,563.10	13,053.55	12,863.61	189.94	68.723			
11,300.00	6,985.59	7,128.98	7,126.59	77.29	163.57	-88.50	162.96	8,563.10	13,153.51	12,963.53	189.98	69.238			
11,400.00	6,985.51	7,128.90	7,126.51	78.80	163.56	-88.49	162.96	8,563.10	13,253.46	13,063.45	190.01	69.751			
11,500.00	6,985.43	7,128.83	7,126.43	80.31	163.56	-88.48	162.96	8,563.10	13,353.42	13,163.38	190.04	70.265			
11,600.00	6,985.35	7,128.75	7,126.35	81.83	163.56	-88.47	162.96	8,563.10	13,453.38	13,263.30	190.08	70.777			
11,700.00	6,985.28	7,128.67	7,126.28	83.35	163.55	-88.46	162.96	8,563.10	13,553.33	13,363.22	190.12	71.290			
11,800.00	6,985.20	7,128.59	7,126.20	84.87	163.55	-88.44	162.96	8,563.10	13,653.29	13,463.14	190.15	71.801			
11,900.00	6,985.12	7,128.51	7,126.12	86.40	163.55	-88.43	162.96	8,563.10	13,753.25	13,563.06	190.19	72.312			
12,000.00	6,985.04	7,128.44	7,126.04	87.93	163.55	-88.42	162.96	8,563.10	13,853.21	13,662.98	190.23	72.823			
12,100.00	6,984.96	7,128.36	7,125.96	89.46	163.54	-88.41	162.96	8,563.10	13,953.17	13,762.90	190.27	73.333			
12,200.00	6,984.88	7,128.28	7,125.88	90.99	163.54	-88.40	162.96	8,563.10	14,053.13	13,862.82	190.31	73.842			
12,300.00	6,984.81	7,128.20	7,125.81	92.53	163.54	-88.39	162.96	8,563.10	14,153.09	13,962.74	190.36	74.351			
12,400.00	6,984.73	7,128.12	7,125.73	94.07	163.54	-88.38	162.96	8,563.10	14,253.05	14,062.65	190.40	74.859			
12,500.00	6,984.65	7,128.04	7,125.65	95.61	163.53	-88.36	162.96	8,563.10	14,353.02	14,162.57	190.44	75.366			
12,600.00	6,984.57	7,127.97	7,125.57	97.15	163.53	-88.35	162.96	8,563.10	14,452.98	14,262.49	190.49	75.873			
12,700.00	6,984.49	7,127.89	7,125.49	98.70	163.53	-88.34	162.96	8,563.10	14,552.94	14,362.41	190.53	76.380			
12,800.00	6,984.41	7,127.81	7,125.41	100.25	163.53	-88.33	162.96	8,563.10	14,652.91	14,462.32	190.58	76.885			
12,900.00	6,984.34	7,127.73	7,125.34	101.80	163.52	-88.32	162.96	8,563.10	14,752.87	14,562.24	190.63	77.391			
13,000.00	6,984.26	7,127.65	7,125.26	103.35	163.52	-88.31	162.96	8,563.10	14,852.83	14,662.16	190.68	77.895			
13,100.00	6,984.18	7,127.57	7,125.18	104.90	163.52	-88.30	162.96	8,563.10	14,952.80	14,762.07	190.73	78.399			
13,200.00	6,984.10	7,127.50	7,125.10	106.45	163.51	-88.28	162.96	8,563.10	15,052.77	14,861.99	190.78	78.903			
13,300.00	6,984.02	7,127.42	7,125.02	108.01	163.51	-88.27	162.96	8,563.10	15,152.73	14,961.90	190.83	79.405			
13,400.00	6,983.94	7,127.34	7,124.94	109.56	163.51	-88.26	162.96	8,563.10	15,252.70	15,061.82	190.88	79.907			
13,500.00	6,983.87	7,127.26	7,124.87	111.12	163.51	-88.25	162.96	8,563.10	15,352.66	15,161.73	190.93	80.409			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		434-A027Ua_INC-ONLY					Rule Assigned:				Offset Well Error:	0.00 usft		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,600.00	6,983.79	7,127.18	7,124.79	112.68	163.50	-88.24	162.96	8,563.10	15,452.63	15,261.65	190.99	80.910		
13,700.00	6,983.71	7,127.10	7,124.71	114.24	163.50	-88.23	162.96	8,563.10	15,552.60	15,361.56	191.04	81.410		
13,800.00	6,983.63	7,127.03	7,124.63	115.80	163.50	-88.22	162.96	8,563.10	15,652.57	15,461.47	191.10	81.910		
13,900.00	6,983.55	7,126.95	7,124.55	117.37	163.50	-88.21	162.96	8,563.10	15,752.54	15,561.38	191.15	82.409		
14,000.00	6,983.47	7,126.87	7,124.47	118.93	163.49	-88.19	162.96	8,563.10	15,852.51	15,661.30	191.21	82.907		
14,100.00	6,983.40	7,126.79	7,124.40	120.50	163.49	-88.18	162.96	8,563.10	15,952.47	15,761.21	191.27	83.405		
14,200.00	6,983.32	7,126.71	7,124.32	122.06	163.49	-88.17	162.96	8,563.10	16,052.44	15,861.12	191.32	83.902		
14,300.00	6,983.24	7,126.63	7,124.24	123.63	163.48	-88.16	162.96	8,563.10	16,152.41	15,961.03	191.38	84.398		
14,400.00	6,983.16	7,126.56	7,124.16	125.20	163.48	-88.15	162.96	8,563.10	16,252.39	16,060.94	191.44	84.894		
14,500.00	6,983.08	7,126.48	7,124.08	126.77	163.48	-88.14	162.96	8,563.10	16,352.36	16,160.85	191.50	85.389		
14,600.00	6,983.00	7,126.40	7,124.00	128.33	163.48	-88.13	162.96	8,563.10	16,452.33	16,260.76	191.57	85.883		
14,700.00	6,982.93	7,126.32	7,123.93	129.91	163.47	-88.11	162.96	8,563.10	16,552.30	16,360.67	191.63	86.377		
14,800.00	6,982.85	7,126.24	7,123.85	131.48	163.47	-88.10	162.96	8,563.10	16,652.27	16,460.58	191.69	86.870		
14,900.00	6,982.77	7,126.16	7,123.77	133.05	163.47	-88.09	162.96	8,563.10	16,752.24	16,560.49	191.76	87.363		
15,000.00	6,982.69	7,126.09	7,123.69	134.62	163.47	-88.08	162.96	8,563.10	16,852.22	16,660.40	191.82	87.854		
15,100.00	6,982.61	7,126.01	7,123.61	136.20	163.46	-88.07	162.96	8,563.10	16,952.19	16,760.30	191.88	88.346		
15,200.00	6,982.54	7,125.93	7,123.54	137.77	163.46	-88.06	162.96	8,563.10	17,052.16	16,860.21	191.95	88.836		
15,300.00	6,982.46	7,125.85	7,123.46	139.35	163.46	-88.05	162.96	8,563.10	17,152.13	16,960.12	192.02	89.326		
15,400.00	6,982.38	7,125.77	7,123.38	140.92	163.46	-88.03	162.96	8,563.10	17,252.11	17,060.02	192.08	89.815		
15,500.00	6,982.30	7,125.70	7,123.30	142.50	163.45	-88.02	162.96	8,563.10	17,352.08	17,159.93	192.15	90.303		
15,600.00	6,982.22	7,125.62	7,123.22	144.07	163.45	-88.01	162.96	8,563.10	17,452.06	17,259.84	192.22	90.791		
15,700.00	6,982.14	7,125.54	7,123.14	145.65	163.45	-88.00	162.96	8,563.10	17,552.03	17,359.74	192.29	91.278		
15,800.00	6,982.07	7,125.46	7,123.07	147.23	163.44	-87.99	162.96	8,563.10	17,652.01	17,459.65	192.36	91.765		
15,900.00	6,981.99	7,125.38	7,122.99	148.81	163.44	-87.98	162.96	8,563.10	17,751.98	17,559.55	192.43	92.251		
16,000.00	6,981.91	7,125.30	7,122.91	150.39	163.44	-87.97	162.96	8,563.10	17,851.96	17,659.45	192.50	92.736		
16,100.00	6,981.83	7,125.23	7,122.83	151.97	163.44	-87.95	162.96	8,563.10	17,951.93	17,759.36	192.58	93.220		
16,200.00	6,981.75	7,125.15	7,122.75	153.55	163.43	-87.94	162.96	8,563.10	18,051.91	17,859.26	192.65	93.704		
16,300.00	6,981.67	7,125.07	7,122.67	155.13	163.43	-87.93	162.96	8,563.10	18,151.89	17,959.16	192.72	94.187		
16,400.00	6,981.60	7,124.99	7,122.60	156.71	163.43	-87.92	162.96	8,563.10	18,251.86	18,059.07	192.80	94.669		
16,500.00	6,981.52	7,124.91	7,122.52	158.29	163.43	-87.91	162.96	8,563.10	18,351.84	18,158.97	192.87	95.151		
16,600.00	6,981.44	7,124.83	7,122.44	159.88	163.42	-87.90	162.96	8,563.10	18,451.82	18,258.87	192.95	95.632		
16,700.00	6,981.36	7,124.76	7,122.36	161.46	163.42	-87.89	162.96	8,563.10	18,551.79	18,358.77	193.02	96.112		
16,800.00	6,981.28	7,124.68	7,122.28	163.04	163.42	-87.88	162.96	8,563.10	18,651.77	18,458.67	193.10	96.592		
16,900.00	6,981.20	7,124.60	7,122.20	164.62	163.42	-87.86	162.96	8,563.10	18,751.75	18,558.57	193.18	97.070		
17,000.00	6,981.13	7,124.52	7,122.13	166.21	163.41	-87.85	162.96	8,563.10	18,851.73	18,658.47	193.25	97.549		
17,100.00	6,981.05	7,124.44	7,122.05	167.79	163.41	-87.84	162.96	8,563.10	18,951.71	18,758.37	193.33	98.026		
17,200.00	6,980.97	7,124.36	7,121.97	169.38	163.41	-87.83	162.96	8,563.10	19,051.68	18,858.27	193.41	98.503		
17,300.00	6,980.89	7,124.29	7,121.89	170.96	163.40	-87.82	162.96	8,563.10	19,151.66	18,958.17	193.49	98.979		
17,400.00	6,980.81	7,124.21	7,121.81	172.55	163.40	-87.81	162.96	8,563.10	19,251.64	19,058.07	193.57	99.454		
17,500.00	6,980.73	7,124.13	7,121.73	174.13	163.40	-87.80	162.96	8,563.10	19,351.62	19,157.97	193.65	99.929		
17,600.00	6,980.66	7,124.05	7,121.66	175.72	163.40	-87.78	162.96	8,563.10	19,451.60	19,257.87	193.73	100.403		
17,700.00	6,980.58	7,123.97	7,121.58	177.31	163.39	-87.77	162.96	8,563.10	19,551.58	19,357.76	193.82	100.877		
17,800.00	6,980.50	7,123.89	7,121.50	178.89	163.39	-87.76	162.96	8,563.10	19,651.56	19,457.66	193.90	101.349		
17,900.00	6,980.42	7,123.82	7,121.42	180.48	163.39	-87.75	162.96	8,563.10	19,751.54	19,557.56	193.98	101.821		
18,000.00	6,980.34	7,123.74	7,121.34	182.07	163.39	-87.74	162.96	8,563.10	19,851.52	19,657.45	194.07	102.292		
18,100.00	6,980.26	7,123.66	7,121.26	183.66	163.38	-87.73	162.96	8,563.10	19,951.50	19,757.35	194.15	102.763		
18,200.00	6,980.19	7,123.58	7,121.19	185.24	163.38	-87.72	162.96	8,563.10	20,051.48	19,857.25	194.24	103.233		
18,300.00	6,980.11	7,123.50	7,121.11	186.83	163.38	-87.70	162.96	8,563.10	20,151.46	19,957.14	194.32	103.702		
18,400.00	6,980.03	7,123.42	7,121.03	188.42	163.38	-87.69	162.96	8,563.10	20,251.44	20,057.04	194.41	104.170		
18,500.00	6,979.95	7,123.35	7,120.95	190.01	163.37	-87.68	162.96	8,563.10	20,351.42	20,156.93	194.49	104.638		
18,600.00	6,979.87	7,123.27	7,120.87	191.60	163.37	-87.67	162.96	8,563.10	20,451.41	20,256.83	194.58	105.105		
18,700.00	6,979.79	7,123.19	7,120.79	193.19	163.37	-87.66	162.96	8,563.10	20,551.39	20,356.72	194.67	105.571		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		434-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
18,800.00	6,979.72	7,123.11	7,120.72	194.78	163.36	-87.65	162.96	8,563.10	20,651.37	20,456.61	194.76	106.037	
18,900.00	6,979.64	7,123.03	7,120.64	196.37	163.36	-87.64	162.96	8,563.10	20,751.35	20,556.51	194.84	106.502	
19,000.00	6,979.56	7,122.95	7,120.56	197.96	163.36	-87.62	162.96	8,563.10	20,851.33	20,656.40	194.93	106.966	
19,100.00	6,979.48	7,122.88	7,120.48	199.55	163.36	-87.61	162.96	8,563.10	20,951.32	20,756.29	195.02	107.430	
19,200.00	6,979.40	7,122.80	7,120.40	201.14	163.35	-87.60	162.96	8,563.10	21,051.30	20,856.18	195.11	107.892	
19,300.00	6,979.33	7,122.72	7,120.33	202.73	163.35	-87.59	162.96	8,563.10	21,151.28	20,956.08	195.20	108.355	
19,400.00	6,979.25	7,122.64	7,120.25	204.32	163.35	-87.58	162.96	8,563.10	21,251.26	21,055.97	195.30	108.816	
19,500.00	6,979.17	7,122.56	7,120.17	205.91	163.35	-87.57	162.96	8,563.10	21,351.25	21,155.86	195.39	109.277	
19,600.00	6,979.09	7,122.49	7,120.09	207.50	163.34	-87.56	162.96	8,563.10	21,451.23	21,255.75	195.48	109.737	
19,700.00	6,979.01	7,122.41	7,120.01	209.09	163.34	-87.54	162.96	8,563.10	21,551.21	21,355.64	195.57	110.196	
19,800.00	6,978.93	7,122.33	7,119.93	210.69	163.34	-87.53	162.96	8,563.10	21,651.20	21,455.53	195.66	110.655	
19,900.00	6,978.86	7,122.25	7,119.86	212.28	163.34	-87.52	162.96	8,563.10	21,751.18	21,555.42	195.76	111.113	
20,000.00	6,978.78	7,122.17	7,119.78	213.87	163.33	-87.51	162.96	8,563.10	21,851.16	21,655.31	195.85	111.570	
20,100.00	6,978.70	7,122.09	7,119.70	215.46	163.33	-87.50	162.96	8,563.10	21,951.15	21,755.20	195.95	112.026	
20,200.00	6,978.62	7,122.02	7,119.62	217.05	163.33	-87.49	162.96	8,563.10	22,051.13	21,855.09	196.04	112.482	
20,300.00	6,978.54	7,121.94	7,119.54	218.65	163.32	-87.48	162.96	8,563.10	22,151.11	21,954.98	196.14	112.937	
20,400.00	6,978.46	7,121.86	7,119.46	220.24	163.32	-87.47	162.96	8,563.10	22,251.10	22,054.87	196.23	113.392	
20,500.00	6,978.39	7,121.78	7,119.39	221.83	163.32	-87.45	162.96	8,563.10	22,351.08	22,154.75	196.33	113.845	
20,600.00	6,978.31	7,121.70	7,119.31	223.43	163.32	-87.44	162.96	8,563.10	22,451.07	22,254.64	196.43	114.298	
20,700.00	6,978.23	7,121.62	7,119.23	225.02	163.31	-87.43	162.96	8,563.10	22,551.05	22,354.53	196.52	114.751	
20,800.00	6,978.15	7,121.55	7,119.15	226.61	163.31	-87.42	162.96	8,563.10	22,651.04	22,454.42	196.62	115.202	
20,900.00	6,978.07	7,121.47	7,119.07	228.21	163.31	-87.41	162.96	8,563.10	22,751.02	22,554.30	196.72	115.653	
21,000.00	6,977.99	7,121.39	7,118.99	229.80	163.31	-87.40	162.96	8,563.10	22,851.01	22,654.19	196.82	116.103	
21,100.00	6,977.92	7,121.31	7,118.92	231.39	163.30	-87.39	162.96	8,563.10	22,950.99	22,754.08	196.91	116.553	
21,200.00	6,977.84	7,121.23	7,118.84	232.99	163.30	-87.37	162.96	8,563.10	23,050.98	22,853.96	197.01	117.002	
21,300.00	6,977.76	7,121.15	7,118.76	234.58	163.30	-87.36	162.96	8,563.10	23,150.96	22,953.85	197.11	117.450	
21,400.00	6,977.68	7,121.08	7,118.68	236.18	163.30	-87.35	162.96	8,563.10	23,250.95	23,053.74	197.21	117.897	
21,500.00	6,977.60	7,121.00	7,118.60	237.77	163.29	-87.34	162.96	8,563.10	23,350.93	23,153.62	197.31	118.344	
21,600.00	6,977.52	7,120.92	7,118.52	239.37	163.29	-87.33	162.96	8,563.10	23,450.92	23,253.51	197.41	118.790	
21,700.00	6,977.45	7,120.84	7,118.45	240.96	163.29	-87.32	162.96	8,563.10	23,550.91	23,353.39	197.52	119.235	
21,800.00	6,977.37	7,120.76	7,118.37	242.56	163.28	-87.31	162.96	8,563.10	23,650.89	23,453.28	197.62	119.680	
21,900.00	6,977.29	7,120.68	7,118.29	244.15	163.28	-87.29	162.96	8,563.10	23,750.88	23,553.16	197.72	120.124	
22,000.00	6,977.21	7,120.61	7,118.21	245.75	163.28	-87.28	162.96	8,563.10	23,850.87	23,653.04	197.82	120.567	
22,100.00	6,977.13	7,120.53	7,118.13	247.34	163.28	-87.27	162.96	8,563.10	23,950.85	23,752.93	197.92	121.010	
22,200.00	6,977.05	7,120.45	7,118.05	248.94	163.27	-87.26	162.96	8,563.10	24,050.84	23,852.81	198.03	121.452	
22,269.73	6,977.00	7,120.39	7,118.00	250.05	163.27	-87.25	162.96	8,563.10	24,120.55	23,922.45	198.10	121.760	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		323-MWD OWSG Rev5					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	2,505.50	2,357.61	0.00	14.82	-70.64	1,347.63	-3,835.89	4,680.39					
100.00	100.00	2,548.02	2,394.54	0.25	15.22	-70.59	1,343.92	-3,815.14	4,631.29	4,615.19	16.10	287.646		
200.00	200.00	2,648.59	2,482.07	0.61	16.16	-70.49	1,334.69	-3,766.48	4,582.48	4,565.74	16.74	273.740		
300.00	300.00	2,824.82	2,634.65	0.97	17.80	-70.30	1,317.50	-3,680.00	4,533.01	4,515.20	17.82	254.412		
400.00	400.00	2,935.45	2,729.71	1.33	18.89	-70.20	1,304.98	-3,624.83	4,482.15	4,463.54	18.62	240.765		
500.00	500.00	3,144.80	2,907.86	1.68	21.01	-70.00	1,280.58	-3,517.64	4,430.03	4,410.06	19.97	221.794		
600.00	600.00	3,240.23	2,988.13	2.04	22.01	-69.87	1,270.53	-3,467.02	4,376.40	4,355.64	20.77	210.728		
700.00	700.00	3,319.89	3,055.16	2.40	22.84	-69.78	1,261.55	-3,424.92	4,322.75	4,301.26	21.49	201.148		
800.00	799.98	3,389.00	3,113.39	2.76	23.56	-60.07	1,253.61	-3,388.57	4,268.54	4,246.36	22.18	192.456		
849.89	849.82	3,425.68	3,144.36	2.94	23.94	-60.63	1,249.31	-3,369.38	4,241.04	4,218.50	22.54	188.128		
900.00	899.86	3,459.42	3,172.88	3.12	24.29	-60.62	1,245.18	-3,351.85	4,213.32	4,190.43	22.89	184.093		
1,000.00	999.73	3,483.00	3,192.85	3.48	24.54	-60.62	1,242.18	-3,339.67	4,158.53	4,135.17	23.36	178.027		
1,100.00	1,099.59	3,538.49	3,240.15	3.84	25.09	-60.62	1,235.13	-3,311.53	4,104.43	4,080.42	24.01	170.929		
1,200.00	1,199.45	3,574.00	3,270.73	4.20	25.45	-60.62	1,230.71	-3,294.01	4,051.51	4,026.94	24.57	164.898		
1,300.00	1,299.32	3,604.18	3,296.91	4.56	25.73	-60.62	1,227.03	-3,279.46	3,999.69	3,974.56	25.13	159.160		
1,400.00	1,399.18	3,635.94	3,324.67	4.92	26.02	-60.62	1,223.27	-3,264.50	3,949.03	3,923.33	25.70	153.633		
1,500.00	1,499.04	3,667.00	3,352.02	5.28	26.31	-60.62	1,219.70	-3,250.22	3,899.58	3,873.30	26.28	148.394		
1,600.00	1,598.91	3,667.00	3,352.02	5.64	26.31	-60.62	1,219.70	-3,250.22	3,851.74	3,825.07	26.67	144.431		
1,700.00	1,698.77	3,721.55	3,400.63	6.00	26.77	-60.62	1,213.90	-3,226.15	3,804.66	3,777.24	27.42	138.735		
1,800.00	1,798.63	3,760.00	3,435.35	6.36	27.09	-60.62	1,210.27	-3,210.04	3,759.39	3,731.32	28.07	133.912		
1,900.00	1,898.49	3,786.48	3,459.43	6.72	27.29	-60.62	1,207.93	-3,199.28	3,715.42	3,686.79	28.62	129.801		
2,000.00	1,998.36	3,853.00	3,520.27	7.09	27.79	-60.61	1,202.32	-3,172.99	3,672.78	3,643.37	29.42	124.856		
2,100.00	2,098.22	3,853.00	3,520.27	7.45	27.79	-60.61	1,202.32	-3,172.99	3,631.16	3,601.35	29.81	121.830		
2,200.00	2,198.08	3,903.26	3,566.68	7.81	28.14	-60.61	1,198.13	-3,154.15	3,590.87	3,560.40	30.48	117.830		
2,300.00	2,297.95	3,944.00	3,604.64	8.17	28.42	-60.62	1,194.60	-3,139.80	3,552.20	3,521.11	31.09	114.254		
2,400.00	2,397.81	3,944.00	3,604.64	8.53	28.42	-60.62	1,194.60	-3,139.80	3,515.30	3,483.84	31.46	111.724		
2,500.00	2,497.67	3,993.81	3,651.53	8.90	28.71	-60.64	1,190.32	-3,123.54	3,479.69	3,447.50	32.19	108.090		
2,600.00	2,597.54	4,038.00	3,693.58	9.26	28.96	-60.66	1,186.70	-3,110.48	3,446.22	3,413.34	32.88	104.818		
2,700.00	2,697.40	4,038.00	3,693.58	9.62	28.96	-60.66	1,186.70	-3,110.48	3,414.39	3,381.16	33.23	102.759		
2,800.00	2,797.26	4,072.88	3,727.08	9.98	29.12	-60.67	1,184.17	-3,101.11	3,384.51	3,350.64	33.87	99.927		
2,900.00	2,897.13	4,130.00	3,782.51	10.35	29.38	-60.69	1,181.18	-3,087.67	3,357.32	3,322.61	34.71	96.735		
3,000.00	2,996.99	4,130.00	3,782.51	10.71	29.38	-60.69	1,181.18	-3,087.67	3,331.00	3,295.98	35.02	95.117		
3,100.00	3,096.85	4,130.00	3,782.51	11.07	29.38	-60.69	1,181.18	-3,087.67	3,307.49	3,272.18	35.31	93.667		
3,200.00	3,196.72	4,176.41	3,827.98	11.43	29.54	-60.71	1,179.56	-3,078.51	3,285.69	3,249.67	36.02	91.224		
3,300.00	3,296.58	4,222.00	3,872.94	11.80	29.69	-60.72	1,178.41	-3,071.06	3,266.36	3,229.65	36.71	88.976		
3,400.00	3,396.44	4,222.00	3,872.94	12.16	29.69	-60.72	1,178.41	-3,071.06	3,248.86	3,211.91	36.95	87.922		
3,500.00	3,496.31	4,270.72	3,921.22	12.52	29.79	-60.74	1,177.47	-3,064.57	3,233.35	3,195.84	37.51	86.194		
3,600.00	3,596.17	4,295.00	3,945.34	12.88	29.85	-60.75	1,177.04	-3,061.82	3,219.89	3,182.00	37.89	84.983		
3,700.00	3,696.03	4,377.78	4,027.71	13.25	30.08	-60.80	1,175.51	-3,053.70	3,207.54	3,168.65	38.88	82.492		
3,800.00	3,795.89	4,440.12	4,089.81	13.61	30.26	-60.84	1,174.19	-3,048.52	3,196.44	3,156.77	39.67	80.573		
3,900.00	3,895.76	4,502.58	4,152.10	13.97	30.44	-60.89	1,172.73	-3,044.14	3,186.49	3,146.04	40.45	78.771		
4,000.00	3,995.62	4,565.13	4,214.53	14.34	30.63	-60.95	1,171.12	-3,040.56	3,177.71	3,136.48	41.23	77.079		
4,100.00	4,095.48	4,696.00	4,345.25	14.70	31.03	-61.10	1,167.32	-3,035.69	3,171.25	3,128.60	42.65	74.353		
4,200.00	4,195.35	4,696.00	4,345.25	15.06	31.03	-61.10	1,167.32	-3,035.69	3,163.64	3,120.84	42.81	73.906		
4,300.00	4,295.21	4,775.58	4,424.77	15.42	31.52	-61.19	1,164.98	-3,033.91	3,158.04	3,114.37	43.67	72.311		
4,400.00	4,395.07	4,862.95	4,512.10	15.79	32.07	-61.29	1,162.78	-3,032.17	3,152.85	3,108.24	44.61	70.673		
4,500.00	4,494.94	4,950.39	4,599.51	16.15	32.61	-61.39	1,160.95	-3,030.67	3,148.06	3,102.51	45.55	69.107		
4,600.00	4,594.80	5,037.90	4,686.99	16.51	33.15	-61.48	1,159.50	-3,029.41	3,143.67	3,097.17	46.50	67.612		
4,700.00	4,694.66	5,125.46	4,774.54	16.87	33.69	-61.57	1,158.42	-3,028.37	3,139.67	3,092.23	47.44	66.182		
4,800.00	4,794.53	5,213.09	4,862.16	17.24	34.23	-61.65	1,157.73	-3,027.58	3,136.08	3,087.69	48.39	64.815		
4,900.00	4,894.39	5,300.76	4,949.83	17.60	34.78	-61.73	1,157.42	-3,027.01	3,132.87	3,083.54	49.33	63.506		
5,000.00	4,994.25	5,388.48	5,037.55	17.96	35.32	-61.80	1,157.48	-3,026.69	3,130.07	3,079.79	50.28	62.253		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		323-MWD OWSG Rev5					Rule Assigned:			Offset Well Error:			0.00 usft	
Reference	Offset	Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance			Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,100.00	5,094.12	5,476.25	5,125.32	18.33	35.86	-61.86	1,157.93	-3,026.60	3,127.65	3,076.42	51.23	61.053		
5,200.00	5,193.98	5,564.05	5,213.12	18.69	36.41	-61.92	1,158.77	-3,026.75	3,125.63	3,073.45	52.18	59.904		
5,300.00	5,293.84	5,660.00	5,309.05	19.05	37.00	-61.98	1,160.11	-3,027.18	3,124.01	3,070.80	53.20	58.719		
5,336.91	5,330.71	5,688.46	5,337.51	19.19	37.18	-62.00	1,160.56	-3,027.35	3,123.47	3,069.97	53.50	58.382		
5,400.00	5,393.71	5,753.32	5,402.37	19.41	37.60	-62.04	1,161.48	-3,027.74	3,122.64	3,068.49	54.15	57.666		
5,500.00	5,493.62	5,856.14	5,505.18	19.77	38.26	-62.08	1,162.63	-3,028.38	3,121.57	3,066.39	55.18	56.572		
5,600.00	5,593.57	5,958.97	5,608.00	20.13	38.92	-62.13	1,163.40	-3,029.04	3,120.83	3,064.62	56.21	55.526		
5,700.00	5,693.53	6,061.79	5,710.82	20.49	39.58	-62.16	1,163.78	-3,029.72	3,120.40	3,063.17	57.23	54.524		
5,784.39	5,777.91	6,148.57	5,797.59	20.79	40.14	-62.19	1,163.81	-3,030.31	3,120.29	3,062.19	58.09	53.711		
5,800.00	5,793.52	6,164.62	5,813.64	20.85	40.24	-62.19	1,163.78	-3,030.42	3,120.29	3,062.04	58.25	53.564		
5,900.00	5,893.52	6,267.45	5,916.47	21.20	40.90	-62.22	1,163.40	-3,031.14	3,120.50	3,061.22	59.27	52.645		
5,936.48	5,930.00	6,304.96	5,953.98	21.33	41.14	-72.98	1,163.17	-3,031.41	3,120.65	3,061.01	59.65	52.319		
6,000.00	5,993.52	6,370.27	6,019.29	21.56	41.56	-72.99	1,162.64	-3,031.88	3,120.94	3,060.65	60.29	51.761		
6,100.00	6,093.52	6,473.09	6,122.10	21.91	42.22	-73.02	1,161.49	-3,032.64	3,121.32	3,060.01	61.31	50.907		
6,200.00	6,193.52	6,576.22	6,225.21	22.27	42.99	-73.05	1,159.98	-3,033.41	3,121.61	3,059.14	62.46	49.974		
6,300.00	6,293.52	6,680.21	6,329.19	22.62	44.06	-73.08	1,158.38	-3,034.08	3,121.78	3,057.81	63.96	48.805		
6,358.48	6,352.00	6,741.03	6,390.00	22.83	44.68	-73.10	1,157.48	-3,034.40	3,121.82	3,056.98	64.84	48.147		
6,400.00	6,393.49	6,784.18	6,433.14	22.97	45.13	1.49	1,156.85	-3,034.59	3,120.47	3,055.01	65.46	47.671		
6,450.00	6,443.20	6,835.88	6,484.83	23.15	45.66	1.50	1,156.11	-3,034.79	3,115.23	3,049.03	66.20	47.059		
6,500.00	6,492.36	6,886.98	6,535.93	23.33	46.19	1.51	1,155.39	-3,034.95	3,106.08	3,039.15	66.93	46.408		
6,550.00	6,540.64	6,937.16	6,586.11	23.51	46.71	1.53	1,154.69	-3,035.06	3,093.07	3,025.42	67.65	45.723		
6,600.00	6,587.77	6,986.11	6,635.06	23.69	47.22	1.57	1,154.02	-3,035.14	3,076.29	3,007.94	68.35	45.010		
6,650.00	6,633.44	7,033.52	6,682.46	23.88	47.71	1.63	1,153.39	-3,035.19	3,055.84	2,986.82	69.02	44.274		
6,700.00	6,677.37	7,079.28	6,728.22	24.07	48.02	1.70	1,152.80	-3,035.19	3,031.85	2,962.34	69.51	43.618		
6,750.00	6,719.30	7,123.19	6,772.12	24.26	48.09	1.80	1,152.31	-3,035.15	3,004.46	2,934.72	69.74	43.079		
6,800.00	6,758.97	7,164.67	6,813.60	24.46	48.15	1.92	1,151.94	-3,035.05	2,973.86	2,903.89	69.96	42.507		
6,850.00	6,796.12	7,203.45	6,852.38	24.67	48.21	2.08	1,151.66	-3,034.90	2,940.22	2,870.06	70.16	41.905		
6,900.00	6,830.54	7,239.29	6,888.22	24.88	48.27	2.29	1,151.48	-3,034.73	2,903.77	2,833.42	70.35	41.277		
6,950.00	6,862.00	7,271.98	6,920.91	25.11	48.32	2.56	1,151.36	-3,034.54	2,864.74	2,794.22	70.51	40.627		
7,000.00	6,890.33	7,301.32	6,950.25	25.34	48.36	2.92	1,151.30	-3,034.33	2,823.36	2,752.70	70.66	39.958		
7,050.00	6,915.33	7,327.13	6,976.05	25.59	48.40	3.41	1,151.29	-3,034.13	2,779.90	2,709.12	70.78	39.274		
7,100.00	6,936.86	7,349.25	6,998.17	25.85	48.44	4.11	1,151.30	-3,033.95	2,734.64	2,663.75	70.89	38.577		
7,150.00	6,954.79	7,367.55	7,016.48	26.12	48.46	5.16	1,151.33	-3,033.78	2,687.84	2,616.87	70.97	37.872		
7,200.00	6,968.99	7,381.94	7,030.87	26.40	48.49	6.92	1,151.36	-3,033.64	2,639.82	2,568.78	71.04	37.162		
7,250.00	6,979.40	7,392.34	7,041.26	26.69	48.50	10.37	1,151.39	-3,033.54	2,590.86	2,519.78	71.08	36.449		
7,300.00	6,985.94	7,398.68	7,047.60	27.00	48.51	19.93	1,151.41	-3,033.47	2,541.27	2,470.16	71.11	35.738		
7,350.00	6,988.56	7,400.94	7,049.86	27.31	48.52	81.88	1,151.42	-3,033.45	2,491.35	2,420.23	71.12	35.030		
7,358.93	6,988.62	7,400.91	7,049.83	27.36	48.52	107.42	1,151.42	-3,033.45	2,482.43	2,411.30	71.12	34.904		
7,400.00	6,988.59	7,400.49	7,049.41	27.63	48.51	107.14	1,151.42	-3,033.45	2,441.37	2,370.25	71.12	34.326		
7,500.00	6,988.52	7,399.47	7,048.39	28.33	48.51	106.44	1,151.41	-3,033.46	2,341.43	2,270.30	71.13	32.919		
7,600.00	6,988.45	7,398.45	7,047.38	29.10	48.51	105.73	1,151.41	-3,033.47	2,241.49	2,170.36	71.13	31.512		
7,658.93	6,988.41	7,397.85	7,046.78	29.59	48.51	105.32	1,151.41	-3,033.48	2,182.60	2,111.47	71.13	30.683		
7,700.00	6,988.38	7,397.44	7,046.36	29.94	48.51	100.81	1,151.41	-3,033.48	2,141.57	2,070.43	71.14	30.105		
7,800.00	6,988.31	7,396.41	7,045.33	30.84	48.51	96.17	1,151.40	-3,033.49	2,041.82	1,970.68	71.14	28.702		
7,900.00	6,988.24	7,395.36	7,044.28	31.79	48.51	94.24	1,151.40	-3,033.50	1,942.41	1,871.27	71.14	27.304		
8,000.00	6,988.16	7,394.30	7,043.22	32.78	48.50	93.17	1,151.40	-3,033.52	1,843.55	1,772.40	71.14	25.913		
8,100.00	6,988.09	7,393.22	7,042.15	33.82	48.50	92.49	1,151.39	-3,033.53	1,745.44	1,674.28	71.16	24.530		
8,200.00	6,988.01	7,392.14	7,041.06	34.88	48.50	92.02	1,151.39	-3,033.54	1,648.35	1,577.16	71.19	23.155		
8,300.00	6,987.94	7,391.04	7,039.96	35.98	48.50	91.67	1,151.39	-3,033.55	1,552.60	1,481.35	71.25	21.789		
8,400.00	6,987.86	7,389.94	7,038.86	37.11	48.50	91.40	1,151.38	-3,033.56	1,458.59	1,387.20	71.39	20.432		
8,416.35	6,987.85	7,389.76	7,038.68	37.29	48.50	91.36	1,151.38	-3,033.56	1,443.41	1,372.00	71.42	20.212		
8,500.00	6,987.78	7,388.83	7,037.76	38.25	48.50	91.26	1,151.38	-3,033.57	1,366.30	1,294.69	71.61	19.079		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		323-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,600.00	6,987.70	7,387.74	7,036.66	39.43	48.49	91.14	1,151.38	-3,033.58	1,275.20	1,203.23	71.97	17.719	
8,700.00	6,987.62	7,386.65	7,035.57	40.64	48.49	91.03	1,151.37	-3,033.59	1,185.53	1,113.04	72.49	16.354	
8,800.00	6,987.55	7,385.56	7,034.49	41.88	48.49	90.91	1,151.37	-3,033.60	1,097.64	1,024.40	73.24	14.987	
8,900.00	6,987.47	7,384.49	7,033.41	43.14	48.49	90.80	1,151.37	-3,033.61	1,012.01	937.71	74.29	13.622	
9,000.00	6,987.39	7,383.42	7,032.34	44.42	48.49	90.69	1,151.36	-3,033.63	929.25	853.50	75.75	12.268	
9,100.00	6,987.31	7,382.35	7,031.28	45.72	48.49	90.58	1,151.36	-3,033.64	850.20	772.49	77.71	10.941	
9,200.00	6,987.23	7,381.30	7,030.22	47.04	48.48	90.47	1,151.36	-3,033.65	775.99	695.70	80.30	9.664	
9,300.00	6,987.15	7,380.25	7,029.17	48.38	48.48	90.36	1,151.36	-3,033.66	708.16	624.57	83.59	8.472	
9,400.00	6,987.08	7,379.20	7,028.13	49.73	48.48	90.25	1,151.35	-3,033.67	648.71	561.12	87.59	7.406	
9,500.00	6,987.00	7,378.16	7,027.09	51.10	48.48	90.14	1,151.35	-3,033.68	600.13	507.99	92.13	6.514	
9,600.00	6,986.92	7,377.13	7,026.06	52.48	48.48	90.03	1,151.35	-3,033.69	565.22	468.45	96.77	5.841	
9,700.00	6,986.84	7,376.11	7,025.03	53.87	48.48	89.92	1,151.35	-3,033.70	546.62	445.79	100.83	5.421	
9,753.40	6,986.80	7,375.56	7,024.49	54.62	48.48	89.86	1,151.34	-3,033.70	544.01	441.49	102.52	5.306 CC, ES	
9,800.00	6,986.76	7,375.09	7,024.01	55.28	48.48	89.81	1,151.34	-3,033.71	546.00	442.37	103.63	5.269 SF	
9,900.00	6,986.68	7,374.08	7,023.00	56.69	48.47	89.71	1,151.34	-3,033.72	563.41	458.58	104.83	5.375	
10,000.00	6,986.61	7,373.07	7,022.00	58.12	48.47	89.60	1,151.34	-3,033.73	597.28	492.72	104.57	5.712	
10,100.00	6,986.53	7,372.07	7,021.00	59.55	48.47	89.49	1,151.34	-3,033.74	645.03	541.73	103.30	6.244	
10,200.00	6,986.45	7,371.08	7,020.00	61.00	48.47	89.39	1,151.33	-3,033.75	703.83	602.33	101.50	6.934	
10,300.00	6,986.37	7,370.09	7,019.01	62.45	48.47	89.29	1,151.33	-3,033.75	771.16	671.63	99.53	7.748	
10,400.00	6,986.29	7,369.10	7,018.03	63.90	48.47	89.18	1,151.33	-3,033.76	844.98	747.38	97.60	8.658	
10,500.00	6,986.21	7,368.13	7,017.05	65.37	48.46	89.08	1,151.33	-3,033.77	923.74	827.93	95.81	9.641	
10,600.00	6,986.14	7,367.16	7,016.08	66.84	48.46	88.98	1,151.33	-3,033.78	1,006.28	912.08	94.20	10.683	
10,700.00	6,986.06	7,366.19	7,015.12	68.32	48.46	88.88	1,151.32	-3,033.79	1,091.74	998.97	92.77	11.769	
10,800.00	6,985.98	7,365.23	7,014.16	69.80	48.46	88.77	1,151.32	-3,033.80	1,179.49	1,087.98	91.51	12.890	
10,900.00	6,985.90	7,364.28	7,013.20	71.29	48.46	88.67	1,151.32	-3,033.81	1,269.05	1,178.65	90.40	14.038	
11,000.00	6,985.82	7,363.33	7,012.26	72.78	48.46	88.57	1,151.32	-3,033.82	1,360.07	1,270.64	89.43	15.209	
11,100.00	6,985.75	7,362.39	7,011.31	74.28	48.46	88.47	1,151.32	-3,033.83	1,452.27	1,363.70	88.57	16.397	
11,200.00	6,985.67	7,361.45	7,010.38	75.78	48.45	88.38	1,151.32	-3,033.84	1,545.44	1,457.62	87.81	17.599	
11,300.00	6,985.59	7,360.52	7,009.44	77.29	48.45	88.28	1,151.31	-3,033.84	1,639.41	1,552.27	87.14	18.813	
11,400.00	6,985.51	7,359.59	7,008.52	78.80	48.45	88.18	1,151.31	-3,033.85	1,734.06	1,647.51	86.55	20.036	
11,500.00	6,985.43	7,358.67	7,007.60	80.31	48.45	88.08	1,151.31	-3,033.86	1,829.27	1,743.25	86.02	21.266	
11,600.00	6,985.35	7,357.75	7,006.68	81.83	48.45	87.99	1,151.31	-3,033.87	1,924.97	1,839.43	85.54	22.503	
11,700.00	6,985.28	7,356.84	7,005.77	83.35	48.45	87.89	1,151.31	-3,033.88	2,021.09	1,935.97	85.12	23.744	
11,800.00	6,985.20	7,355.94	7,004.86	84.87	48.45	87.80	1,151.31	-3,033.89	2,117.57	2,032.83	84.74	24.990	
11,900.00	6,985.12	7,355.04	7,003.96	86.40	48.44	87.70	1,151.31	-3,033.89	2,214.35	2,129.96	84.39	26.238	
12,000.00	6,985.04	7,354.14	7,003.07	87.93	48.44	87.61	1,151.30	-3,033.90	2,311.42	2,227.33	84.08	27.490	
12,100.00	6,984.96	7,353.25	7,002.18	89.46	48.44	87.51	1,151.30	-3,033.91	2,408.72	2,324.92	83.80	28.743	
12,200.00	6,984.88	7,352.37	7,001.29	90.99	48.44	87.42	1,151.30	-3,033.92	2,506.23	2,422.68	83.55	29.998	
12,300.00	6,984.81	7,351.49	7,000.41	92.53	48.44	87.33	1,151.30	-3,033.93	2,603.93	2,520.62	83.31	31.254	
12,400.00	6,984.73	7,350.61	6,999.54	94.07	48.44	87.24	1,151.30	-3,033.93	2,701.80	2,618.70	83.10	32.511	
12,500.00	6,984.65	7,349.74	6,998.67	95.61	48.44	87.14	1,151.30	-3,033.94	2,799.82	2,716.91	82.91	33.769	
12,600.00	6,984.57	7,348.88	6,997.80	97.15	48.43	87.05	1,151.30	-3,033.95	2,897.98	2,815.24	82.74	35.026	
12,700.00	6,984.49	7,348.02	6,996.94	98.70	48.43	86.96	1,151.30	-3,033.96	2,996.25	2,913.68	82.58	36.284	
12,800.00	6,984.41	7,347.16	6,996.09	100.25	48.43	86.87	1,151.30	-3,033.96	3,094.64	3,012.21	82.43	37.541	
12,900.00	6,984.34	7,346.31	6,995.24	101.80	48.43	86.78	1,151.30	-3,033.97	3,193.13	3,110.83	82.30	38.798	
13,000.00	6,984.26	7,345.46	6,994.39	103.35	48.43	86.70	1,151.29	-3,033.98	3,291.71	3,209.52	82.18	40.055	
13,100.00	6,984.18	7,344.62	6,993.55	104.90	48.43	86.61	1,151.29	-3,033.99	3,390.37	3,308.29	82.07	41.310	
13,200.00	6,984.10	7,343.78	6,992.71	106.45	48.43	86.52	1,151.29	-3,033.99	3,489.10	3,407.13	81.97	42.565	
13,300.00	6,984.02	7,342.95	6,991.88	108.01	48.43	86.43	1,151.29	-3,034.00	3,587.91	3,506.03	81.88	43.819	
13,400.00	6,983.94	7,342.12	6,991.05	109.56	48.42	86.34	1,151.29	-3,034.01	3,686.78	3,604.98	81.80	45.072	
13,500.00	6,983.87	7,341.30	6,990.23	111.12	48.42	86.26	1,151.29	-3,034.02	3,785.71	3,703.99	81.72	46.323	
13,600.00	6,983.79	7,340.48	6,989.41	112.68	48.42	86.17	1,151.29	-3,034.02	3,884.69	3,803.04	81.66	47.573	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		323-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,700.00	6,983.71	7,339.67	6,988.59	114.24	48.42	86.09	1,151.29	-3,034.03	3,983.73	3,902.13	81.60	48.822	
13,800.00	6,983.63	7,338.86	6,987.78	115.80	48.42	86.00	1,151.29	-3,034.04	4,082.81	4,001.27	81.54	50.070	
13,900.00	6,983.55	7,338.05	6,986.98	117.37	48.42	85.92	1,151.29	-3,034.04	4,181.94	4,100.44	81.49	51.316	
14,000.00	6,983.47	7,337.25	6,986.18	118.93	48.42	85.83	1,151.29	-3,034.05	4,281.10	4,199.65	81.45	52.560	
14,100.00	6,983.40	7,336.45	6,985.38	120.50	48.42	85.75	1,151.29	-3,034.06	4,380.31	4,298.89	81.41	53.803	
14,200.00	6,983.32	7,335.66	6,984.59	122.06	48.41	85.67	1,151.29	-3,034.06	4,479.55	4,398.16	81.38	55.044	
14,300.00	6,983.24	7,334.87	6,983.80	123.63	48.41	85.58	1,151.29	-3,034.07	4,578.82	4,497.46	81.35	56.283	
14,400.00	6,983.16	7,334.09	6,983.01	125.20	48.41	85.50	1,151.29	-3,034.08	4,678.12	4,596.79	81.33	57.521	
14,500.00	6,983.08	7,333.31	6,982.23	126.77	48.41	85.42	1,151.29	-3,034.08	4,777.45	4,696.14	81.31	58.756	
14,600.00	6,983.00	7,332.53	6,981.46	128.33	48.41	85.34	1,151.29	-3,034.09	4,876.81	4,795.52	81.29	59.990	
14,700.00	6,982.93	7,331.76	6,980.69	129.91	48.41	85.26	1,151.29	-3,034.10	4,976.19	4,894.91	81.28	61.222	
14,800.00	6,982.85	7,330.99	6,979.92	131.48	48.41	85.18	1,151.29	-3,034.10	5,075.60	4,994.33	81.27	62.451	
14,900.00	6,982.77	7,330.23	6,979.15	133.05	48.41	85.10	1,151.29	-3,034.11	5,175.03	5,093.77	81.27	63.679	
15,000.00	6,982.69	7,329.47	6,978.39	134.62	48.41	85.02	1,151.29	-3,034.12	5,274.49	5,193.22	81.27	64.904	
15,100.00	6,982.61	7,328.71	6,977.64	136.20	48.40	84.94	1,151.29	-3,034.12	5,373.96	5,292.69	81.27	66.128	
15,200.00	6,982.54	7,327.96	6,976.89	137.77	48.40	84.86	1,151.29	-3,034.13	5,473.45	5,392.18	81.27	67.349	
15,300.00	6,982.46	7,327.21	6,976.14	139.35	48.40	84.78	1,151.29	-3,034.13	5,572.96	5,491.68	81.28	68.568	
15,400.00	6,982.38	7,326.47	6,975.39	140.92	48.40	84.71	1,151.29	-3,034.14	5,672.49	5,591.20	81.29	69.785	
15,500.00	6,982.30	7,325.73	6,974.65	142.50	48.40	84.63	1,151.29	-3,034.15	5,772.03	5,690.73	81.30	70.999	
15,600.00	6,982.22	7,324.99	6,973.92	144.07	48.40	84.55	1,151.29	-3,034.15	5,871.59	5,790.28	81.31	72.212	
15,700.00	6,982.14	7,324.26	6,973.18	145.65	48.40	84.48	1,151.29	-3,034.16	5,971.16	5,889.84	81.33	73.422	
15,800.00	6,982.07	7,323.53	6,972.46	147.23	48.40	84.40	1,151.29	-3,034.16	6,070.75	5,989.40	81.35	74.629	
15,900.00	6,981.99	7,322.80	6,971.73	148.81	48.39	84.32	1,151.29	-3,034.17	6,170.35	6,088.98	81.37	75.834	
16,000.00	6,981.91	7,322.08	6,971.01	150.39	48.39	84.25	1,151.29	-3,034.18	6,269.96	6,188.57	81.39	77.037	
16,100.00	6,981.83	7,321.36	6,970.29	151.97	48.39	84.17	1,151.29	-3,034.18	6,369.59	6,288.17	81.41	78.238	
16,200.00	6,981.75	7,320.65	6,969.58	153.55	48.39	84.10	1,151.29	-3,034.19	6,469.22	6,387.78	81.44	79.435	
16,300.00	6,981.67	7,319.94	6,968.87	155.13	48.39	84.02	1,151.29	-3,034.19	6,568.87	6,487.40	81.47	80.631	
16,400.00	6,981.60	7,319.23	6,968.16	156.71	48.39	83.95	1,151.29	-3,034.20	6,668.53	6,587.03	81.50	81.824	
16,500.00	6,981.52	7,318.53	6,967.46	158.29	48.39	83.88	1,151.29	-3,034.20	6,768.20	6,686.67	81.53	83.014	
16,600.00	6,981.44	7,317.83	6,966.76	159.88	48.39	83.80	1,151.29	-3,034.21	6,867.88	6,786.31	81.56	84.202	
16,700.00	6,981.36	7,317.13	6,966.06	161.46	48.39	83.73	1,151.29	-3,034.21	6,967.56	6,885.96	81.60	85.388	
16,800.00	6,981.28	7,316.44	6,965.37	163.04	48.39	83.66	1,151.29	-3,034.22	7,067.26	6,985.62	81.64	86.570	
16,900.00	6,981.20	7,315.75	6,964.68	164.62	48.38	83.59	1,151.29	-3,034.23	7,166.96	7,085.29	81.67	87.750	
17,000.00	6,981.13	7,315.06	6,963.99	166.21	48.38	83.52	1,151.29	-3,034.23	7,266.67	7,184.96	81.71	88.928	
17,100.00	6,981.05	7,314.38	6,963.31	167.79	48.38	83.45	1,151.29	-3,034.24	7,366.39	7,284.64	81.76	90.103	
17,200.00	6,980.97	7,313.70	6,962.63	169.38	48.38	83.38	1,151.29	-3,034.24	7,466.12	7,384.32	81.80	91.275	
17,300.00	6,980.89	7,313.02	6,961.95	170.96	48.38	83.31	1,151.29	-3,034.25	7,565.85	7,484.01	81.84	92.445	
17,400.00	6,980.81	7,312.35	6,961.28	172.55	48.38	83.24	1,151.29	-3,034.25	7,665.60	7,583.71	81.89	93.612	
17,500.00	6,980.73	7,311.68	6,960.61	174.13	48.38	83.17	1,151.29	-3,034.26	7,765.34	7,683.41	81.93	94.776	
17,600.00	6,980.66	7,311.02	6,959.94	175.72	48.38	83.10	1,151.29	-3,034.26	7,865.10	7,783.12	81.98	95.937	
17,700.00	6,980.58	7,310.35	6,959.28	177.31	48.38	83.03	1,151.29	-3,034.27	7,964.86	7,882.83	82.03	97.096	
17,800.00	6,980.50	7,309.69	6,958.62	178.89	48.37	82.96	1,151.29	-3,034.27	8,064.62	7,982.54	82.08	98.252	
17,900.00	6,980.42	7,309.04	6,957.97	180.48	48.37	82.89	1,151.30	-3,034.28	8,164.39	8,082.26	82.13	99.405	
18,000.00	6,980.34	7,308.38	6,957.31	182.07	48.37	82.82	1,151.30	-3,034.28	8,264.17	8,181.99	82.19	100.555	
18,100.00	6,980.26	7,307.73	6,956.66	183.66	48.37	82.76	1,151.30	-3,034.29	8,363.95	8,281.72	82.24	101.703	
18,200.00	6,980.19	7,307.09	6,956.02	185.24	48.37	82.69	1,151.30	-3,034.29	8,463.74	8,381.45	82.29	102.848	
18,300.00	6,980.11	7,306.44	6,955.37	186.83	48.37	82.62	1,151.30	-3,034.30	8,563.53	8,481.18	82.35	103.990	
18,400.00	6,980.03	7,305.80	6,954.73	188.42	48.37	82.56	1,151.30	-3,034.30	8,663.33	8,580.92	82.41	105.129	
18,500.00	6,979.95	7,305.17	6,954.09	190.01	48.37	82.49	1,151.30	-3,034.31	8,763.13	8,680.67	82.46	106.266	
18,600.00	6,979.87	7,304.53	6,953.46	191.60	48.37	82.42	1,151.30	-3,034.31	8,862.94	8,780.41	82.52	107.399	
18,700.00	6,979.79	7,303.90	6,952.83	193.19	48.37	82.36	1,151.30	-3,034.32	8,962.75	8,880.17	82.58	108.530	
18,800.00	6,979.72	7,303.27	6,952.20	194.78	48.36	82.29	1,151.30	-3,034.32	9,062.56	8,979.92	82.64	109.658	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		323-MWD OWSG Rev5						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Minimum Separation (usft)	Separation Factor	
18,900.00	6,979.64	7,302.65	6,951.57	196.37	48.36	82.23	1,151.30	-3,034.32	9,162.38	9,079.68	82.71	110.783		
19,000.00	6,979.56	7,302.02	6,950.95	197.96	48.36	82.17	1,151.30	-3,034.33	9,262.20	9,179.43	82.77	111.905		
19,100.00	6,979.48	7,301.40	6,950.33	199.55	48.36	82.10	1,151.30	-3,034.33	9,362.03	9,279.20	82.83	113.024		
19,200.00	6,979.40	7,300.79	6,949.72	201.14	48.36	82.04	1,151.30	-3,034.34	9,461.86	9,378.96	82.90	114.140		
19,300.00	6,979.33	7,300.17	6,949.10	202.73	48.36	81.97	1,151.31	-3,034.34	9,561.69	9,478.73	82.96	115.253		
19,400.00	6,979.25	7,299.56	6,948.49	204.32	48.36	81.91	1,151.31	-3,034.35	9,661.53	9,578.50	83.03	116.364		
19,500.00	6,979.17	7,298.95	6,947.88	205.91	48.36	81.85	1,151.31	-3,034.35	9,761.37	9,678.27	83.10	117.471		
19,600.00	6,979.09	7,298.35	6,947.28	207.50	48.36	81.79	1,151.31	-3,034.36	9,861.21	9,778.05	83.16	118.576		
19,700.00	6,979.01	7,297.75	6,946.68	209.09	48.36	81.72	1,151.31	-3,034.36	9,961.06	9,877.83	83.23	119.678		
19,800.00	6,978.93	7,297.15	6,946.08	210.69	48.36	81.66	1,151.31	-3,034.37	10,060.91	9,977.60	83.30	120.777		
19,900.00	6,978.86	7,296.55	6,945.48	212.28	48.35	81.60	1,151.31	-3,034.37	10,160.76	10,077.39	83.37	121.872		
20,000.00	6,978.78	7,295.96	6,944.88	213.87	48.35	81.54	1,151.31	-3,034.37	10,260.61	10,177.17	83.44	122.965		
20,100.00	6,978.70	7,295.37	6,944.29	215.46	48.35	81.48	1,151.31	-3,034.38	10,360.47	10,276.96	83.52	124.055		
20,200.00	6,978.62	7,294.78	6,943.71	217.05	48.35	81.42	1,151.31	-3,034.38	10,460.33	10,376.74	83.59	125.142		
20,300.00	6,978.54	7,294.19	6,943.12	218.65	48.35	81.36	1,151.31	-3,034.39	10,560.19	10,476.53	83.66	126.226		
20,400.00	6,978.46	7,293.61	6,942.54	220.24	48.35	81.30	1,151.31	-3,034.39	10,660.06	10,576.32	83.74	127.307		
20,500.00	6,978.39	7,293.03	6,941.96	221.83	48.35	81.24	1,151.32	-3,034.39	10,759.93	10,676.12	83.81	128.385		
20,600.00	6,978.31	7,292.45	6,941.38	223.43	48.35	81.18	1,151.32	-3,034.40	10,859.80	10,775.91	83.89	129.460		
20,700.00	6,978.23	7,291.87	6,940.80	225.02	48.35	81.12	1,151.32	-3,034.40	10,959.67	10,875.71	83.96	130.532		
20,800.00	6,978.15	7,291.30	6,940.23	226.61	48.35	81.06	1,151.32	-3,034.41	11,059.55	10,975.51	84.04	131.601		
20,900.00	6,978.07	7,290.73	6,939.66	228.21	48.35	81.00	1,151.32	-3,034.41	11,159.42	11,075.31	84.12	132.668		
21,000.00	6,977.99	7,290.16	6,939.09	229.80	48.34	80.94	1,151.32	-3,034.41	11,259.30	11,175.11	84.19	133.731		
21,100.00	6,977.92	7,289.60	6,938.53	231.39	48.34	80.89	1,151.32	-3,034.42	11,359.18	11,274.91	84.27	134.791		
21,200.00	6,977.84	7,289.04	6,937.97	232.99	48.34	80.83	1,151.32	-3,034.42	11,459.07	11,374.71	84.35	135.848		
21,300.00	6,977.76	7,288.48	6,937.41	234.58	48.34	80.77	1,151.32	-3,034.43	11,558.95	11,474.52	84.43	136.902		
21,400.00	6,977.68	7,287.92	6,936.85	236.18	48.34	80.71	1,151.33	-3,034.43	11,658.84	11,574.33	84.51	137.953		
21,500.00	6,977.60	7,287.37	6,936.29	237.77	48.34	80.66	1,151.33	-3,034.43	11,758.73	11,674.13	84.59	139.002		
21,600.00	6,977.52	7,286.81	6,935.74	239.37	48.34	80.60	1,151.33	-3,034.44	11,858.62	11,773.94	84.68	140.047		
21,700.00	6,977.45	7,286.26	6,935.19	240.96	48.34	80.54	1,151.33	-3,034.44	11,958.51	11,873.75	84.76	141.089		
21,800.00	6,977.37	7,285.72	6,934.64	242.56	48.34	80.49	1,151.33	-3,034.45	12,058.41	11,973.56	84.84	142.128		
21,900.00	6,977.29	7,285.17	6,934.10	244.15	48.34	80.43	1,151.33	-3,034.45	12,158.30	12,073.38	84.93	143.164		
22,000.00	6,977.21	7,284.63	6,933.56	245.75	48.34	80.38	1,151.33	-3,034.45	12,258.20	12,173.19	85.01	144.198		
22,100.00	6,977.13	7,284.09	6,933.02	247.34	48.34	80.32	1,151.33	-3,034.46	12,358.10	12,273.00	85.09	145.228		
22,200.00	6,977.05	7,283.55	6,932.48	248.94	48.33	80.27	1,151.33	-3,034.46	12,458.00	12,372.82	85.18	146.255		
22,269.73	6,977.00	7,283.18	6,932.11	250.05	48.33	80.23	1,151.33	-3,034.46	12,527.66	12,442.42	85.24	146.969		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041C - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 388-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-171.82	-69.17	-9.94	75.66				
100.00	100.00	71.07	71.07	0.25	0.08	-171.84	-69.14	-9.92	69.85	69.52	0.33	211.023	
200.00	200.00	171.16	171.16	0.61	0.19	-171.91	-68.99	-9.81	69.69	68.88	0.80	86.894	
300.00	300.00	271.25	271.25	0.97	0.30	-172.04	-68.72	-9.61	69.39	68.11	1.27	54.510	
400.00	400.00	371.35	371.35	1.33	0.42	-172.23	-68.32	-9.32	68.95	67.21	1.74	39.540	
500.00	500.00	473.12	473.10	1.68	0.63	-172.63	-66.96	-8.66	67.55	65.24	2.31	29.212	
600.00	600.00	575.92	575.73	2.04	0.88	-174.46	-61.88	-6.00	62.35	59.44	2.91	21.449	
700.00	700.00	679.64	678.66	2.40	1.16	-179.75	-50.70	-0.22	51.27	47.76	3.51	14.592	
800.00	799.98	781.12	777.63	2.76	1.51	173.15	-31.06	10.10	35.03	30.85	4.18	8.384	
849.89	849.82	830.03	824.57	2.94	1.74	153.82	-18.86	16.43	28.72	24.10	4.62	6.218	
886.20	886.08	865.19	858.08	3.07	1.92	134.82	-9.46	21.39	27.14	22.16	4.98	5.447 CC, ES	
900.00	899.86	878.49	870.70	3.12	1.99	127.04	-5.73	23.33	27.39	22.29	5.11	5.364 SF	
1,000.00	999.73	971.94	957.81	3.48	2.57	82.59	24.30	38.76	44.79	39.18	5.61	7.983	
1,100.00	1,099.59	1,062.23	1,040.10	3.84	3.22	65.25	57.20	56.03	77.94	71.91	6.03	12.919	
1,200.00	1,199.45	1,147.47	1,115.84	4.20	3.92	58.18	91.35	75.00	118.65	112.15	6.50	18.246	
1,300.00	1,299.32	1,229.39	1,186.78	4.56	4.67	54.56	126.83	95.47	164.52	157.52	7.01	23.485	
1,400.00	1,399.18	1,302.57	1,247.99	4.92	5.40	52.26	161.72	115.17	215.49	208.05	7.44	28.982	
1,500.00	1,499.04	1,367.76	1,299.73	5.28	6.13	50.45	196.63	133.95	272.57	264.77	7.80	34.959	
1,600.00	1,598.91	1,432.69	1,348.82	5.64	6.91	48.82	234.50	153.22	334.36	326.14	8.22	40.685	
1,700.00	1,698.77	1,501.00	1,398.85	6.00	7.77	47.61	275.69	174.82	399.07	390.34	8.73	45.733	
1,800.00	1,798.63	1,571.89	1,450.09	6.36	8.66	46.63	319.15	197.41	464.90	455.61	9.29	50.036	
1,900.00	1,898.49	1,645.29	1,502.88	6.72	9.56	45.80	364.56	220.65	531.19	521.28	9.90	53.644	
2,000.00	1,998.36	1,714.56	1,552.50	7.09	10.41	45.17	407.62	242.58	597.80	587.32	10.47	57.094	
2,100.00	2,098.22	1,784.93	1,602.57	7.45	11.31	44.73	451.33	265.71	665.05	653.98	11.07	60.094	
2,200.00	2,198.08	1,867.14	1,661.14	7.81	12.31	44.37	502.10	293.09	732.26	720.45	11.81	62.006	
2,300.00	2,297.95	1,957.00	1,726.09	8.17	13.39	44.13	556.38	323.24	798.45	785.82	12.63	63.197	
2,400.00	2,397.81	2,026.34	1,776.68	8.53	14.25	44.04	597.52	346.82	863.93	850.70	13.23	65.314	
2,500.00	2,497.67	2,096.00	1,827.11	8.90	15.14	43.90	639.52	370.18	929.98	916.15	13.83	67.236	
2,600.00	2,597.54	2,162.17	1,874.65	9.26	15.99	43.74	680.01	392.04	996.56	982.16	14.40	69.191	
2,700.00	2,697.40	2,249.24	1,936.97	9.62	17.07	43.45	734.19	419.63	1,063.39	1,048.18	15.20	69.940	
2,800.00	2,797.26	2,328.97	1,994.71	9.98	18.04	43.27	782.89	445.17	1,129.32	1,113.40	15.92	70.934	
2,900.00	2,897.13	2,398.39	2,044.97	10.35	18.90	43.11	825.44	467.12	1,195.24	1,178.71	16.53	72.302	
3,000.00	2,996.99	2,493.59	2,114.27	10.71	20.05	42.97	883.04	497.84	1,260.83	1,243.43	17.41	72.432	
3,100.00	3,096.85	2,575.86	2,174.89	11.07	21.03	42.88	932.02	524.19	1,325.41	1,307.26	18.14	73.051	
3,200.00	3,196.72	2,645.61	2,226.25	11.43	21.89	42.81	973.53	546.63	1,390.06	1,371.30	18.76	74.103	
3,300.00	3,296.58	2,847.38	2,378.68	11.80	24.26	42.81	1,088.30	611.94	1,454.03	1,433.43	20.61	70.561	
3,400.00	3,396.44	3,043.14	2,537.66	12.16	26.28	42.75	1,188.64	666.38	1,509.25	1,487.05	22.20	67.975	
3,500.00	3,496.31	3,211.09	2,680.15	12.52	27.86	42.61	1,268.08	706.19	1,558.57	1,535.11	23.46	66.443	
3,600.00	3,596.17	3,380.85	3,404.32	12.88	32.25	42.95	1,480.72	818.79	1,589.52	1,563.76	25.76	61.703	
3,700.00	3,696.03	4,166.30	3,589.33	13.25	32.53	43.10	1,492.11	823.14	1,591.19	1,565.10	26.09	60.995	
3,800.00	3,795.89	4,266.30	3,689.19	13.61	32.67	43.15	1,497.36	823.97	1,592.26	1,565.63	26.62	59.806	
3,900.00	3,895.76	4,366.31	3,789.07	13.97	32.81	43.20	1,502.62	824.80	1,593.32	1,566.15	27.18	58.628	
4,000.00	3,995.62	4,466.32	3,888.94	14.34	32.96	43.26	1,507.87	825.63	1,594.39	1,566.66	27.73	57.499	
4,100.00	4,095.48	4,566.34	3,988.81	14.70	33.11	43.31	1,513.12	826.46	1,595.45	1,567.17	28.28	56.417	
4,200.00	4,195.35	4,666.35	4,088.68	15.06	33.25	43.36	1,518.37	827.29	1,596.52	1,567.69	28.83	55.377	
4,300.00	4,295.21	4,766.36	4,188.55	15.42	33.40	43.41	1,523.61	828.12	1,597.58	1,568.20	29.38	54.379	
4,400.00	4,395.07	4,866.37	4,288.42	15.79	33.55	43.47	1,528.86	828.95	1,598.65	1,568.72	29.93	53.419	
4,500.00	4,494.94	4,966.39	4,388.29	16.15	33.69	43.52	1,534.10	829.77	1,599.71	1,569.24	30.47	52.495	
4,600.00	4,594.80	5,066.40	4,488.16	16.51	33.84	43.57	1,539.34	830.60	1,600.77	1,569.75	31.02	51.605	
4,700.00	4,694.66	5,166.41	4,588.04	16.87	33.99	43.62	1,544.58	831.43	1,601.83	1,570.27	31.57	50.747	
4,800.00	4,794.53	5,266.42	4,687.91	17.24	34.14	43.67	1,549.82	832.25	1,602.90	1,570.79	32.11	49.919	
4,900.00	4,894.39	5,366.44	4,787.78	17.60	34.28	43.73	1,555.05	833.08	1,603.96	1,571.30	32.65	49.120	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 388-APC_ISCWSA REV 2 MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,994.25	5,466.45	4,887.65	17.96	34.43	43.78	1,560.28	833.91	1,605.02	1,571.82	33.20	48.349	
5,100.00	5,094.12	5,566.46	4,987.52	18.33	34.58	43.83	1,565.52	834.73	1,606.08	1,572.34	33.74	47.603	
5,200.00	5,193.98	5,666.47	5,087.40	18.69	34.73	43.88	1,570.74	835.56	1,607.14	1,572.86	34.28	46.882	
5,300.00	5,293.84	5,766.49	5,187.27	19.05	34.87	43.94	1,575.97	836.38	1,608.20	1,573.38	34.82	46.184	
5,336.91	5,330.71	5,803.40	5,224.14	19.19	34.93	43.95	1,577.90	836.69	1,608.59	1,573.57	35.02	45.932	
5,400.00	5,393.71	5,866.50	5,287.14	19.41	35.02	43.99	1,581.20	837.21	1,609.38	1,574.02	35.36	45.513	
5,500.00	5,493.62	5,966.51	5,387.01	19.77	35.17	44.02	1,586.42	838.03	1,611.15	1,575.25	35.90	44.883	
5,600.00	5,593.57	6,066.51	5,486.87	20.13	35.32	44.03	1,591.64	838.86	1,613.54	1,577.11	36.43	44.294	
5,700.00	5,693.53	6,166.49	5,586.71	20.49	35.47	44.03	1,596.86	839.68	1,616.56	1,579.61	36.96	43.743	
5,800.00	5,793.52	6,266.45	5,686.53	20.85	35.61	44.00	1,602.07	840.50	1,620.21	1,582.73	37.48	43.230	
5,900.00	5,893.52	6,366.37	5,786.31	21.20	35.76	43.96	1,607.28	841.32	1,624.48	1,586.48	38.00	42.752	
5,936.48	5,930.00	6,402.82	5,822.71	21.33	35.82	33.19	1,609.18	841.62	1,626.19	1,588.01	38.19	42.586	
6,000.00	5,993.52	6,466.26	5,886.07	21.56	35.91	33.14	1,612.49	842.15	1,629.25	1,590.74	38.51	42.303	
6,100.00	6,093.52	6,566.15	5,985.82	21.91	36.06	33.06	1,617.70	842.97	1,634.07	1,595.04	39.03	41.868	
6,200.00	6,193.52	6,666.04	6,085.57	22.27	36.21	32.99	1,622.90	843.79	1,638.88	1,599.34	39.54	41.445	
6,300.00	6,293.52	6,765.93	6,185.32	22.62	36.36	32.91	1,628.10	844.61	1,643.70	1,603.64	40.06	41.033	
6,358.48	6,352.00	6,824.35	6,243.66	22.83	36.44	32.87	1,631.14	845.09	1,646.52	1,606.16	40.36	40.797	
6,400.00	6,393.49	6,865.80	6,285.05	22.97	36.50	107.28	1,633.30	845.43	1,648.92	1,608.35	40.58	40.638	
6,450.00	6,443.20	6,915.49	6,334.67	23.15	36.58	107.07	1,635.88	845.84	1,652.89	1,612.04	40.85	40.462	
6,500.00	6,492.36	6,964.65	6,383.76	23.33	36.65	106.89	1,638.44	846.24	1,658.02	1,616.88	41.14	40.299	
6,550.00	6,540.64	7,012.96	6,432.00	23.51	36.72	106.72	1,640.95	846.64	1,664.34	1,622.89	41.45	40.151	
6,600.00	6,587.77	7,060.13	6,479.11	23.69	36.79	106.55	1,643.41	847.03	1,671.88	1,630.10	41.78	40.016	
6,650.00	6,633.44	7,105.87	6,524.78	23.88	36.86	106.36	1,645.79	847.40	1,680.69	1,638.56	42.13	39.895	
6,700.00	6,677.37	7,149.90	6,568.75	24.07	36.93	106.14	1,648.08	847.76	1,690.82	1,648.32	42.50	39.786	
6,750.00	6,719.30	7,191.94	6,610.74	24.26	36.99	105.85	1,650.26	848.11	1,702.32	1,659.43	42.89	39.690	
6,800.00	6,758.97	7,231.74	6,650.48	24.46	37.05	105.47	1,652.33	848.44	1,715.27	1,671.96	43.31	39.605	
6,850.00	6,796.12	7,269.05	6,687.74	24.67	37.10	104.97	1,654.27	848.74	1,729.69	1,685.94	43.76	39.531	
6,900.00	6,830.54	7,303.65	6,722.29	24.88	37.16	104.33	1,656.07	849.03	1,745.65	1,701.42	44.23	39.470	
6,950.00	6,862.00	7,335.31	6,753.91	25.11	37.20	103.51	1,657.71	849.28	1,763.16	1,718.44	44.73	39.421	
7,000.00	6,890.33	7,363.84	6,782.40	25.34	37.25	102.48	1,659.19	849.52	1,782.24	1,736.99	45.25	39.386	
7,050.00	6,915.33	7,389.07	6,807.60	25.59	37.28	101.22	1,660.50	849.73	1,802.87	1,757.08	45.80	39.367	
7,100.00	6,936.86	7,410.85	6,829.34	25.85	37.32	99.71	1,661.63	849.90	1,825.02	1,778.66	46.36	39.366	
7,150.00	6,954.79	7,429.03	6,847.49	26.12	37.34	97.91	1,662.58	850.05	1,848.61	1,801.67	46.94	39.384	
7,200.00	6,968.99	7,443.50	6,861.95	26.40	37.36	95.82	1,663.33	850.17	1,873.57	1,826.04	47.53	39.423	
7,250.00	6,979.40	7,454.18	6,872.62	26.69	37.38	93.43	1,663.89	850.26	1,899.76	1,851.65	48.11	39.484	
7,300.00	6,985.94	7,461.00	6,879.43	27.00	37.39	90.74	1,664.24	850.32	1,927.05	1,878.35	48.70	39.570	
7,350.00	6,988.56	7,463.92	6,882.34	27.31	37.39	87.77	1,664.39	850.34	1,955.26	1,905.99	49.28	39.679	
7,358.93	6,988.62	7,464.03	6,882.45	27.36	37.39	87.21	1,664.40	850.34	1,960.38	1,911.01	49.38	39.701	
7,400.00	6,988.59	7,464.24	6,882.66	27.63	37.40	87.22	1,664.41	850.34	1,984.28	1,934.43	49.84	39.809	
7,500.00	6,988.52	7,464.76	6,883.18	28.33	37.40	87.24	1,664.43	850.35	2,044.74	1,993.76	50.98	40.112	
7,600.00	6,988.45	7,465.28	6,883.70	29.10	37.40	87.26	1,664.46	850.35	2,108.21	2,056.13	52.08	40.478	
7,658.93	6,988.41	7,465.59	6,884.01	29.59	37.40	87.27	1,664.48	850.35	2,146.92	2,094.20	52.72	40.724	
7,700.00	6,988.38	7,465.79	6,884.20	29.94	37.40	87.24	1,664.49	850.35	2,174.65	2,121.50	53.15	40.915	
7,800.00	6,988.31	7,466.14	6,884.55	30.84	37.40	87.15	1,664.51	850.36	2,245.60	2,191.45	54.15	41.470	
7,900.00	6,988.24	7,466.30	6,884.72	31.79	37.40	87.04	1,664.51	850.36	2,320.99	2,265.92	55.07	42.148	
8,000.00	6,988.16	7,466.29	6,884.70	32.78	37.40	86.90	1,664.51	850.36	2,400.31	2,344.41	55.90	42.942	
8,100.00	6,988.09	7,466.08	6,884.50	33.82	37.40	86.72	1,664.50	850.36	2,483.10	2,426.46	56.64	43.839	
8,200.00	6,988.01	7,465.70	6,884.12	34.88	37.40	86.51	1,664.48	850.35	2,568.92	2,511.62	57.30	44.832	
8,300.00	6,987.94	7,465.13	6,883.55	35.98	37.40	86.24	1,664.45	850.35	2,657.38	2,599.50	57.88	45.909	
8,400.00	6,987.86	7,464.37	6,882.79	37.11	37.40	85.90	1,664.41	850.34	2,748.13	2,689.74	58.39	47.064	
8,416.35	6,987.85	7,464.23	6,882.65	37.29	37.40	85.84	1,664.41	850.34	2,763.16	2,704.69	58.47	47.259	
8,500.00	6,987.78	7,463.50	6,881.92	38.25	37.39	85.80	1,664.37	850.34	2,840.38	2,781.54	58.84	48.272	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		388-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,600.00	6,987.70	7,462.62	6,881.05	39.43	37.39	85.75	1,664.32	850.33	2,933.16	2,873.89	59.26	49.494		
8,700.00	6,987.62	7,461.75	6,880.17	40.64	37.39	85.70	1,664.28	850.32	3,026.40	2,966.74	59.66	50.729		
8,800.00	6,987.55	7,460.87	6,879.30	41.88	37.39	85.66	1,664.23	850.31	3,120.05	3,060.02	60.03	51.974		
8,900.00	6,987.47	7,460.00	6,878.42	43.14	37.39	85.61	1,664.19	850.31	3,214.09	3,153.71	60.38	53.230		
9,000.00	6,987.39	7,459.12	6,877.55	44.42	37.39	85.56	1,664.14	850.30	3,308.48	3,247.76	60.71	54.494		
9,100.00	6,987.31	7,458.25	6,876.68	45.72	37.39	85.52	1,664.10	850.29	3,403.19	3,342.16	61.03	55.766		
9,200.00	6,987.23	7,457.37	6,875.80	47.04	37.38	85.47	1,664.05	850.29	3,498.19	3,436.87	61.32	57.046		
9,300.00	6,987.15	7,456.50	6,874.93	48.38	37.38	85.43	1,664.01	850.28	3,593.46	3,531.86	61.60	58.332		
9,400.00	6,987.08	7,455.62	6,874.05	49.73	37.38	85.38	1,663.96	850.27	3,688.99	3,627.11	61.87	59.624		
9,500.00	6,987.00	7,454.75	6,873.18	51.10	37.38	85.33	1,663.91	850.26	3,784.74	3,722.61	62.13	60.921		
9,600.00	6,986.92	7,453.87	6,872.31	52.48	37.38	85.29	1,663.87	850.26	3,880.71	3,818.34	62.37	62.222		
9,700.00	6,986.84	7,453.00	6,871.43	53.87	37.38	85.24	1,663.82	850.25	3,976.87	3,914.27	62.60	63.528		
9,800.00	6,986.76	7,452.12	6,870.56	55.28	37.38	85.19	1,663.78	850.24	4,073.23	4,010.40	62.82	64.838		
9,900.00	6,986.68	7,451.25	6,869.68	56.69	37.38	85.15	1,663.73	850.24	4,169.75	4,106.72	63.03	66.151		
10,000.00	6,986.61	7,450.37	6,868.81	58.12	37.37	85.10	1,663.69	850.23	4,266.43	4,203.20	63.24	67.467		
10,100.00	6,986.53	7,449.49	6,867.93	59.55	37.37	85.05	1,663.64	850.22	4,363.26	4,299.83	63.43	68.786		
10,200.00	6,986.45	7,448.62	6,867.06	61.00	37.37	85.01	1,663.60	850.21	4,460.24	4,396.62	63.62	70.107		
10,300.00	6,986.37	7,447.74	6,866.19	62.45	37.37	84.96	1,663.55	850.21	4,557.34	4,493.54	63.80	71.430		
10,400.00	6,986.29	7,446.87	6,865.31	63.90	37.37	84.91	1,663.51	850.20	4,654.56	4,590.59	63.98	72.755		
10,500.00	6,986.21	7,445.99	6,864.44	65.37	37.37	84.87	1,663.46	850.19	4,751.90	4,687.76	64.14	74.082		
10,600.00	6,986.14	7,445.12	6,863.56	66.84	37.37	84.82	1,663.41	850.18	4,849.35	4,785.05	64.31	75.410		
10,700.00	6,986.06	7,444.24	6,862.69	68.32	37.37	84.77	1,663.37	850.18	4,946.90	4,882.44	64.46	76.738		
10,800.00	6,985.98	7,443.37	6,861.82	69.80	37.36	84.73	1,663.32	850.17	5,044.55	4,979.93	64.62	78.068		
10,900.00	6,985.90	7,442.49	6,860.94	71.29	37.36	84.68	1,663.28	850.16	5,142.28	5,077.52	64.77	79.399		
11,000.00	6,985.82	7,441.62	6,860.07	72.78	37.36	84.63	1,663.23	850.16	5,240.11	5,175.20	64.91	80.729		
11,100.00	6,985.75	7,440.74	6,859.19	74.28	37.36	84.59	1,663.19	850.15	5,338.01	5,272.96	65.05	82.061		
11,200.00	6,985.67	7,439.87	6,858.32	75.78	37.36	84.54	1,663.14	850.14	5,435.99	5,370.80	65.19	83.392		
11,300.00	6,985.59	7,438.99	6,857.44	77.29	37.36	84.49	1,663.10	850.13	5,534.04	5,468.72	65.32	84.724		
11,400.00	6,985.51	7,438.11	6,856.57	78.80	37.36	84.45	1,663.05	850.13	5,632.16	5,566.71	65.45	86.055		
11,500.00	6,985.43	7,437.24	6,855.70	80.31	37.35	84.40	1,663.01	850.12	5,730.34	5,664.76	65.57	87.386		
11,600.00	6,985.35	7,436.36	6,854.82	81.83	37.35	84.36	1,662.96	850.11	5,828.58	5,762.89	65.70	88.717		
11,700.00	6,985.28	7,435.49	6,853.95	83.35	37.35	84.31	1,662.91	850.11	5,926.89	5,861.07	65.82	90.047		
11,800.00	6,985.20	7,434.61	6,853.07	84.87	37.35	84.26	1,662.87	850.10	6,025.25	5,959.31	65.94	91.377		
11,900.00	6,985.12	7,433.74	6,852.20	86.40	37.35	84.22	1,662.82	850.09	6,123.66	6,057.61	66.05	92.706		
12,000.00	6,985.04	7,432.86	6,851.33	87.93	37.35	84.17	1,662.78	850.08	6,222.12	6,155.96	66.17	94.034		
12,100.00	6,984.96	7,431.99	6,850.45	89.46	37.35	84.12	1,662.73	850.08	6,320.64	6,254.35	66.28	95.362		
12,200.00	6,984.88	7,431.11	6,849.58	90.99	37.35	84.08	1,662.69	850.07	6,419.19	6,352.80	66.39	96.688		
12,300.00	6,984.81	7,430.24	6,848.70	92.53	37.34	84.03	1,662.64	850.06	6,517.79	6,451.29	66.50	98.013		
12,400.00	6,984.73	7,429.36	6,847.83	94.07	37.34	83.98	1,662.60	850.06	6,616.44	6,549.83	66.61	99.337		
12,500.00	6,984.65	7,428.48	6,846.95	95.61	37.34	83.94	1,662.55	850.05	6,715.12	6,648.41	66.71	100.660		
12,600.00	6,984.57	7,427.61	6,846.08	97.15	37.34	83.89	1,662.51	850.04	6,813.84	6,747.03	66.81	101.982		
12,700.00	6,984.49	7,426.73	6,845.21	98.70	37.34	83.84	1,662.46	850.03	6,912.60	6,845.68	66.92	103.302		
12,800.00	6,984.41	7,425.86	6,844.33	100.25	37.34	83.80	1,662.41	850.03	7,011.39	6,944.37	67.02	104.621		
12,900.00	6,984.34	7,424.98	6,843.46	101.80	37.34	83.75	1,662.37	850.02	7,110.22	7,043.10	67.12	105.938		
13,000.00	6,984.26	7,424.11	6,842.58	103.35	37.34	83.71	1,662.32	850.01	7,209.08	7,141.86	67.22	107.254		
13,100.00	6,984.18	7,423.23	6,841.71	104.90	37.33	83.66	1,662.28	850.01	7,307.97	7,240.65	67.31	108.568		
13,200.00	6,984.10	7,422.36	6,840.83	106.45	37.33	83.61	1,662.23	850.00	7,406.89	7,339.48	67.41	109.880		
13,300.00	6,984.02	7,421.48	6,839.96	108.01	37.33	83.57	1,662.19	849.99	7,505.83	7,438.33	67.50	111.191		
13,400.00	6,983.94	7,420.60	6,839.09	109.56	37.33	83.52	1,662.14	849.98	7,604.81	7,537.21	67.60	112.499		
13,500.00	6,983.87	7,419.73	6,838.21	111.12	37.33	83.47	1,662.10	849.98	7,703.81	7,636.12	67.69	113.806		
13,600.00	6,983.79	7,418.85	6,837.34	112.68	37.33	83.43	1,662.05	849.97	7,802.84	7,735.05	67.79	115.111		
13,700.00	6,983.71	7,417.98	6,836.46	114.24	37.33	83.38	1,662.00	849.96	7,901.89	7,834.01	67.88	116.414		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041C - OH - OH-SVY												Offset Site Error: 0.00 usft	
Survey Program:		388-APC_ISCWSA REV 2 MWD						Rule Assigned:				Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,800.00	6,983.63	7,417.10	6,835.59	115.80	37.32	83.33	1,661.96	849.96	8,000.97	7,933.00	67.97	117.715	
13,900.00	6,983.55	7,416.23	6,834.71	117.37	37.32	83.29	1,661.91	849.95	8,100.06	8,032.00	68.06	119.014	
14,000.00	6,983.47	7,415.35	6,833.84	118.93	37.32	83.24	1,661.87	849.94	8,199.18	8,131.03	68.15	120.311	
14,100.00	6,983.40	7,414.48	6,832.96	120.50	37.32	83.19	1,661.82	849.93	8,298.32	8,230.08	68.24	121.605	
14,200.00	6,983.32	7,413.60	6,832.09	122.06	37.32	83.15	1,661.78	849.93	8,397.48	8,329.16	68.33	122.898	
14,300.00	6,983.24	7,412.72	6,831.22	123.63	37.32	83.10	1,661.73	849.92	8,496.66	8,428.25	68.42	124.188	
14,400.00	6,983.16	7,411.85	6,830.34	125.20	37.32	83.06	1,661.69	849.91	8,595.86	8,527.36	68.51	125.476	
14,500.00	6,983.08	7,410.97	6,829.47	126.77	37.32	83.01	1,661.64	849.91	8,695.08	8,626.49	68.59	126.761	
14,600.00	6,983.00	7,410.10	6,828.59	128.33	37.31	82.96	1,661.60	849.90	8,794.32	8,725.63	68.68	128.044	
14,700.00	6,982.93	7,409.22	6,827.72	129.91	37.31	82.92	1,661.55	849.89	8,893.57	8,824.80	68.77	129.325	
14,800.00	6,982.85	7,408.35	6,826.84	131.48	37.31	82.87	1,661.50	849.88	8,992.84	8,923.98	68.86	130.603	
14,900.00	6,982.77	7,407.47	6,825.97	133.05	37.31	82.82	1,661.46	849.88	9,092.12	9,023.18	68.94	131.879	
15,000.00	6,982.69	7,406.60	6,825.10	134.62	37.31	82.78	1,661.41	849.87	9,191.42	9,122.39	69.03	133.152	
15,100.00	6,982.61	7,405.72	6,824.22	136.20	37.31	82.73	1,661.37	849.86	9,290.74	9,221.62	69.12	134.423	
15,200.00	6,982.54	7,404.84	6,823.35	137.77	37.31	82.68	1,661.32	849.85	9,390.07	9,320.87	69.20	135.691	
15,300.00	6,982.46	7,403.97	6,822.47	139.35	37.31	82.64	1,661.28	849.85	9,489.41	9,420.12	69.29	136.957	
15,400.00	6,982.38	7,403.09	6,821.60	140.92	37.30	82.59	1,661.23	849.84	9,588.77	9,519.39	69.37	138.220	
15,500.00	6,982.30	7,402.22	6,820.72	142.50	37.30	82.55	1,661.19	849.83	9,688.14	9,618.68	69.46	139.480	
15,600.00	6,982.22	7,401.34	6,819.85	144.07	37.30	82.50	1,661.14	849.83	9,787.52	9,717.98	69.54	140.738	
15,700.00	6,982.14	7,400.47	6,818.97	145.65	37.30	82.45	1,661.10	849.82	9,886.92	9,817.29	69.63	141.993	
15,800.00	6,982.07	7,399.59	6,818.10	147.23	37.30	82.41	1,661.05	849.81	9,986.32	9,916.61	69.71	143.245	
15,900.00	6,981.99	7,398.71	6,817.23	148.81	37.30	82.36	1,661.00	849.80	10,085.74	10,015.94	69.80	144.495	
16,000.00	6,981.91	7,397.84	6,816.35	150.39	37.30	82.31	1,660.96	849.80	10,185.17	10,115.29	69.89	145.741	
16,100.00	6,981.83	7,396.96	6,815.48	151.97	37.29	82.27	1,660.91	849.79	10,284.61	10,214.64	69.97	146.985	
16,200.00	6,981.75	7,396.09	6,814.60	153.55	37.29	82.22	1,660.87	849.78	10,384.07	10,314.01	70.06	148.226	
16,300.00	6,981.67	7,395.21	6,813.73	155.13	37.29	82.18	1,660.82	849.78	10,483.53	10,413.39	70.14	149.464	
16,400.00	6,981.60	7,394.34	6,812.85	156.71	37.29	82.13	1,660.78	849.77	10,583.00	10,512.78	70.23	150.700	
16,500.00	6,981.52	7,393.46	6,811.98	158.29	37.29	82.08	1,660.73	849.76	10,682.48	10,612.17	70.31	151.932	
16,600.00	6,981.44	7,392.59	6,811.10	159.88	37.29	82.04	1,660.69	849.75	10,781.97	10,711.58	70.40	153.162	
16,700.00	6,981.36	7,391.71	6,810.23	161.46	37.29	81.99	1,660.64	849.75	10,881.48	10,810.99	70.48	154.388	
16,800.00	6,981.28	7,390.83	6,809.36	163.04	37.29	81.94	1,660.60	849.74	10,980.99	10,910.42	70.57	155.612	
16,900.00	6,981.20	7,389.96	6,808.48	164.62	37.28	81.90	1,660.55	849.73	11,080.50	11,009.85	70.65	156.832	
17,000.00	6,981.13	7,389.08	6,807.61	166.21	37.28	81.85	1,660.50	849.73	11,180.03	11,109.29	70.74	158.050	
17,100.00	6,981.05	7,388.21	6,806.73	167.79	37.28	81.81	1,660.46	849.72	11,279.57	11,208.74	70.82	159.264	
17,200.00	6,980.97	7,387.33	6,805.86	169.38	37.28	81.76	1,660.41	849.71	11,379.11	11,308.20	70.91	160.476	
17,300.00	6,980.89	7,386.46	6,804.98	170.96	37.28	81.71	1,660.37	849.70	11,478.66	11,407.67	70.99	161.685	
17,400.00	6,980.81	7,385.58	6,804.11	172.55	37.28	81.67	1,660.32	849.70	11,578.22	11,507.14	71.08	162.890	
17,500.00	6,980.73	7,384.70	6,803.23	174.13	37.28	81.62	1,660.28	849.69	11,677.79	11,606.62	71.17	164.092	
17,600.00	6,980.66	7,383.83	6,802.36	175.72	37.28	81.57	1,660.23	849.68	11,777.36	11,706.11	71.25	165.292	
17,700.00	6,980.58	7,382.95	6,801.48	177.31	37.27	81.53	1,660.19	849.68	11,876.94	11,805.60	71.34	166.488	
17,800.00	6,980.50	7,382.08	6,800.61	178.89	37.27	81.48	1,660.14	849.67	11,976.53	11,905.11	71.42	167.681	
17,900.00	6,980.42	7,381.20	6,799.74	180.48	37.27	81.44	1,660.09	849.66	12,076.12	12,004.61	71.51	168.871	
18,000.00	6,980.34	7,380.33	6,798.86	182.07	37.27	81.39	1,660.05	849.65	12,175.73	12,104.13	71.60	170.058	
18,100.00	6,980.26	7,379.45	6,797.99	183.66	37.27	81.34	1,660.00	849.65	12,275.33	12,203.65	71.68	171.241	
18,200.00	6,980.19	7,378.57	6,797.11	185.24	37.27	81.30	1,659.96	849.64	12,374.95	12,303.18	71.77	172.422	
18,300.00	6,980.11	7,377.70	6,796.24	186.83	37.27	81.25	1,659.91	849.63	12,474.57	12,402.71	71.86	173.599	
18,400.00	6,980.03	7,376.82	6,795.36	188.42	37.26	81.21	1,659.87	849.63	12,574.19	12,502.25	71.95	174.773	
18,500.00	6,979.95	7,375.95	6,794.49	190.01	37.26	81.16	1,659.82	849.62	12,673.83	12,601.79	72.03	175.944	
18,600.00	6,979.87	7,375.07	6,793.61	191.60	37.26	81.11	1,659.78	849.61	12,773.46	12,701.34	72.12	177.112	
18,700.00	6,979.79	7,374.19	6,792.74	193.19	37.26	81.07	1,659.73	849.60	12,873.11	12,800.90	72.21	178.276	
18,800.00	6,979.72	7,373.32	6,791.86	194.78	37.26	81.02	1,659.69	849.60	12,972.75	12,900.46	72.30	179.437	
18,900.00	6,979.64	7,372.44	6,790.99	196.37	37.26	80.97	1,659.64	849.59	13,072.41	13,000.02	72.39	180.595	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		388-APC_ISCWSA REV 2 MWD					Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
19,000.00	6,979.56	7,371.57	6,790.12	197.96	37.26	80.93	1,659.59	849.58	13,172.07	13,099.59	72.47	181.750		
19,100.00	6,979.48	7,370.69	6,789.24	199.55	37.26	80.88	1,659.55	849.57	13,271.73	13,199.17	72.56	182.902		
19,200.00	6,979.40	7,369.82	6,788.37	201.14	37.25	80.84	1,659.50	849.57	13,371.40	13,298.75	72.65	184.050		
19,300.00	6,979.33	7,368.94	6,787.49	202.73	37.25	80.79	1,659.46	849.56	13,471.07	13,398.33	72.74	185.195		
19,400.00	6,979.25	7,368.06	6,786.62	204.32	37.25	80.74	1,659.41	849.55	13,570.75	13,497.92	72.83	186.336		
19,500.00	6,979.17	7,367.19	6,785.74	205.91	37.25	80.70	1,659.37	849.55	13,670.44	13,597.52	72.92	187.475		
19,600.00	6,979.09	7,366.31	6,784.87	207.50	37.25	80.65	1,659.32	849.54	13,770.12	13,697.11	73.01	188.610		
19,700.00	6,979.01	7,365.44	6,783.99	209.09	37.25	80.61	1,659.28	849.53	13,869.82	13,796.72	73.10	189.742		
19,800.00	6,978.93	7,364.56	6,783.12	210.69	37.25	80.56	1,659.23	849.52	13,969.51	13,896.32	73.19	190.870		
19,900.00	6,978.86	7,363.68	6,782.24	212.28	37.25	80.51	1,659.18	849.52	14,069.21	13,995.93	73.28	191.995		
20,000.00	6,978.78	7,362.81	6,781.37	213.87	37.24	80.47	1,659.14	849.51	14,168.92	14,095.55	73.37	193.117		
20,100.00	6,978.70	7,361.93	6,780.49	215.46	37.24	80.42	1,659.09	849.50	14,268.63	14,195.17	73.46	194.236		
20,200.00	6,978.62	7,361.06	6,779.62	217.05	37.24	80.38	1,659.05	849.50	14,368.34	14,294.79	73.55	195.351		
20,300.00	6,978.54	7,360.18	6,778.75	218.65	37.24	80.33	1,659.00	849.49	14,468.06	14,394.41	73.64	196.463		
20,400.00	6,978.46	7,359.31	6,777.87	220.24	37.24	80.28	1,658.96	849.48	14,567.78	14,494.04	73.73	197.571		
20,500.00	6,978.39	7,358.43	6,777.00	221.83	37.24	80.24	1,658.91	849.47	14,667.50	14,593.68	73.83	198.677		
20,600.00	6,978.31	7,357.55	6,776.12	223.43	37.24	80.19	1,658.87	849.47	14,767.23	14,693.31	73.92	199.779		
20,700.00	6,978.23	7,356.68	6,775.25	225.02	37.23	80.15	1,658.82	849.46	14,866.96	14,792.95	74.01	200.877		
20,800.00	6,978.15	7,355.80	6,774.37	226.61	37.23	80.10	1,658.78	849.45	14,966.70	14,892.59	74.10	201.972		
20,900.00	6,978.07	7,354.93	6,773.50	228.21	37.23	80.05	1,658.73	849.45	15,066.44	14,992.24	74.20	203.064		
21,000.00	6,977.99	7,354.05	6,772.62	229.80	37.23	80.01	1,658.68	849.44	15,166.18	15,091.89	74.29	204.153		
21,100.00	6,977.92	7,353.17	6,771.75	231.39	37.23	79.96	1,658.64	849.43	15,265.92	15,191.54	74.38	205.238		
21,200.00	6,977.84	7,352.30	6,770.87	232.99	37.23	79.92	1,658.59	849.42	15,365.67	15,291.20	74.48	206.320		
21,300.00	6,977.76	7,351.42	6,770.00	234.58	37.23	79.87	1,658.55	849.42	15,465.42	15,390.86	74.57	207.398		
21,400.00	6,977.68	7,350.55	6,769.12	236.18	37.23	79.83	1,658.50	849.41	15,565.18	15,490.52	74.66	208.473		
21,500.00	6,977.60	7,349.67	6,768.25	237.77	37.22	79.78	1,658.46	849.40	15,664.94	15,590.18	74.76	209.545		
21,600.00	6,977.52	7,348.79	6,767.37	239.37	37.22	79.73	1,658.41	849.40	15,764.70	15,689.85	74.85	210.613		
21,700.00	6,977.45	7,347.92	6,766.50	240.96	37.22	79.69	1,658.37	849.39	15,864.46	15,789.52	74.95	211.678		
21,800.00	6,977.37	7,347.04	6,765.62	242.56	37.22	79.64	1,658.32	849.38	15,964.23	15,889.19	75.04	212.740		
21,900.00	6,977.29	7,346.17	6,764.75	244.15	37.22	79.60	1,658.27	849.37	16,064.00	15,988.86	75.14	213.799		
22,000.00	6,977.21	7,345.29	6,763.87	245.75	37.22	79.55	1,658.23	849.37	16,163.77	16,088.54	75.23	214.854		
22,100.00	6,977.13	7,344.41	6,763.00	247.34	37.22	79.50	1,658.18	849.36	16,263.55	16,188.22	75.33	215.905		
22,200.00	6,977.05	7,343.54	6,762.13	248.94	37.22	79.46	1,658.14	849.35	16,363.33	16,287.90	75.42	216.954		
22,269.73	6,977.00	7,342.93	6,761.52	250.05	37.21	79.43	1,658.11	849.35	16,432.90	16,357.41	75.49	217.683		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #053 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 300-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-155.80	-323.29	-145.29	354.61				
100.00	100.00	89.00	89.00	0.25	1.58	-155.80	-323.29	-145.29	354.44	352.61	1.83	193.907	
200.00	200.00	189.00	189.00	0.61	3.35	-155.80	-323.29	-145.29	354.44	350.48	3.96	89.551	
300.00	300.00	289.00	289.00	0.97	5.12	-155.80	-323.29	-145.29	354.44	348.35	6.09	58.219	
400.00	400.00	389.00	389.00	1.33	6.92	-155.80	-323.29	-145.29	354.44	346.19	8.25	42.988	
500.00	500.00	489.00	489.00	1.68	8.72	-155.80	-323.29	-145.29	354.44	344.03	10.41	34.063	
562.54	562.54	551.54	551.54	1.91	9.85	-155.78	-323.02	-145.29	354.19	342.43	11.76	30.127 CC	
600.00	600.00	588.90	588.89	2.04	10.52	-155.78	-323.03	-145.29	354.20	341.63	12.56	28.192	
700.00	700.00	688.62	688.62	2.40	12.32	-155.79	-323.10	-145.29	354.26	339.55	14.72	24.069	
800.00	799.98	788.32	788.31	2.76	14.11	-145.19	-323.26	-145.29	355.84	338.97	16.87	21.088 ES	
849.89	849.82	838.84	838.82	2.94	15.09	-145.37	-323.29	-145.29	357.66	339.63	18.03	19.840	
900.00	899.86	888.88	888.86	3.12	16.08	-145.61	-323.29	-145.29	359.82	340.62	19.20	18.744	
1,000.00	999.73	988.74	988.73	3.48	18.05	-146.07	-323.29	-145.29	364.15	342.62	21.53	16.913	
1,100.00	1,099.59	1,088.04	1,088.03	3.84	20.02	-146.50	-322.91	-145.29	368.15	344.29	23.85	15.434	
1,200.00	1,199.45	1,187.18	1,187.16	4.20	21.98	-146.96	-323.18	-145.29	372.77	346.60	26.17	14.242	
1,300.00	1,299.32	1,288.38	1,288.32	4.56	24.17	-147.40	-323.29	-145.29	377.27	348.54	28.73	13.132	
1,400.00	1,399.18	1,386.17	1,386.09	4.92	26.37	-147.79	-322.87	-145.29	381.30	350.01	31.29	12.187	
1,500.00	1,499.04	1,488.17	1,488.04	5.28	28.77	-148.24	-323.29	-145.29	386.13	352.08	34.05	11.340	
1,600.00	1,598.91	1,588.03	1,587.91	5.64	31.23	-148.64	-323.29	-145.29	390.59	353.72	36.87	10.594	
1,700.00	1,698.77	1,686.11	1,685.97	6.00	33.65	-148.98	-322.27	-145.29	394.11	354.47	39.65	9.941	
1,800.00	1,798.63	1,783.38	1,783.21	6.36	36.05	-149.39	-323.09	-145.29	399.39	356.99	42.40	9.420	
1,900.00	1,898.49	1,887.77	1,887.49	6.72	38.61	-149.80	-323.29	-145.29	404.07	358.75	45.33	8.914	
2,000.00	1,998.36	1,987.63	1,987.36	7.09	41.07	-150.17	-323.29	-145.29	408.60	360.46	48.14	8.487	
2,100.00	2,098.22	2,087.16	2,086.85	7.45	43.51	-150.43	-321.23	-145.29	411.19	360.25	50.95	8.071	
2,200.00	2,198.08	2,184.90	2,184.58	7.81	45.91	-150.80	-321.58	-145.29	416.10	362.39	53.71	7.747	
2,300.00	2,297.95	2,282.60	2,282.26	8.17	48.31	-151.17	-322.48	-145.29	421.54	365.07	56.46	7.466	
2,400.00	2,397.81	2,387.27	2,386.81	8.53	50.86	-151.56	-323.29	-145.29	426.88	367.51	59.37	7.190	
2,500.00	2,497.67	2,487.13	2,486.67	8.90	53.25	-151.89	-323.29	-145.29	431.49	369.37	62.13	6.946	
2,600.00	2,597.54	2,586.27	2,585.80	9.26	55.62	-152.17	-322.18	-145.29	435.05	370.19	64.86	6.708	
2,700.00	2,697.40	2,684.01	2,683.53	9.62	57.96	-152.50	-322.60	-145.29	440.09	372.54	67.56	6.515	
2,800.00	2,797.26	2,786.85	2,786.26	9.98	60.42	-152.84	-323.29	-145.29	445.40	375.01	70.38	6.328	
2,900.00	2,897.13	2,886.71	2,886.13	10.35	62.82	-153.15	-323.29	-145.29	450.06	376.91	73.14	6.153	
3,000.00	2,996.99	2,986.57	2,985.99	10.71	65.22	-153.45	-323.29	-145.29	454.73	378.83	75.90	5.991	
3,100.00	3,096.85	3,085.81	3,085.20	11.07	67.61	-153.67	-321.41	-145.29	457.60	378.95	78.65	5.818	
3,200.00	3,196.72	3,183.75	3,183.13	11.43	69.96	-153.97	-321.76	-145.29	462.64	381.29	81.36	5.687	
3,300.00	3,296.58	3,281.66	3,281.02	11.80	72.31	-154.27	-322.55	-145.29	468.12	384.06	84.06	5.569	
3,400.00	3,396.44	3,386.19	3,385.44	12.16	74.67	-154.58	-323.29	-145.29	473.54	386.75	86.79	5.456	
3,500.00	3,496.31	3,486.06	3,485.31	12.52	76.70	-154.85	-323.29	-145.29	478.27	389.08	89.19	5.363	
3,600.00	3,596.17	3,585.92	3,585.17	12.88	78.73	-155.11	-323.29	-145.29	483.01	391.43	91.58	5.274	
3,700.00	3,696.03	3,683.84	3,683.07	13.25	80.73	-155.33	-322.16	-145.29	486.66	392.73	93.93	5.181	
3,800.00	3,795.89	3,781.63	3,780.85	13.61	82.72	-155.60	-322.78	-145.29	492.03	395.76	96.27	5.111	
3,900.00	3,895.76	3,885.57	3,884.76	13.97	84.74	-155.87	-323.29	-145.29	497.29	398.63	98.66	5.040	
4,000.00	3,995.62	3,985.43	3,984.62	14.34	86.59	-156.11	-323.29	-145.29	502.07	401.19	100.88	4.977	
4,100.00	4,095.48	4,085.23	4,084.41	14.70	88.45	-156.34	-322.77	-145.29	506.34	403.25	103.09	4.912	
4,200.00	4,195.35	4,184.21	4,183.39	15.06	90.29	-156.58	-322.87	-145.29	511.24	405.95	105.29	4.856	
4,300.00	4,295.21	4,283.17	4,282.35	15.42	92.12	-156.81	-323.15	-145.29	516.31	408.83	107.49	4.804	
4,400.00	4,395.07	4,384.91	4,384.07	15.79	93.91	-157.04	-323.29	-145.29	521.27	411.64	109.63	4.755	
4,500.00	4,494.94	4,484.78	4,483.94	16.15	95.60	-157.27	-323.29	-145.29	526.09	414.40	111.69	4.710	
4,600.00	4,594.80	4,584.51	4,583.67	16.51	97.29	-157.47	-322.46	-145.29	530.10	416.37	113.74	4.661	
4,700.00	4,694.66	4,683.06	4,682.21	16.87	98.96	-157.68	-322.61	-145.29	535.08	419.32	115.76	4.622	
4,800.00	4,794.53	4,781.58	4,780.73	17.24	100.63	-157.90	-323.01	-145.29	540.32	422.53	117.79	4.587	
4,900.00	4,894.39	4,884.24	4,883.39	17.60	102.61	-158.12	-323.29	-145.29	545.45	425.32	120.13	4.540	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #053 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		300-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,000.00	4,994.25	4,984.11	4,983.25	17.96	104.73	-158.32	-323.29	-145.29	550.30	427.69	122.62	4.488		
5,100.00	5,094.12	5,083.97	5,083.12	18.33	106.86	-158.52	-323.29	-145.29	555.17	430.07	125.10	4.438		
5,200.00	5,193.98	5,183.83	5,182.98	18.69	108.98	-158.71	-323.29	-145.29	560.04	432.45	127.59	4.389		
5,300.00	5,293.84	5,283.70	5,282.84	19.05	111.11	-158.91	-323.29	-145.29	564.92	434.84	130.07	4.343		
5,336.91	5,330.71	5,320.56	5,319.71	19.19	111.89	-158.98	-323.29	-145.29	566.72	435.73	130.99	4.326		
5,400.00	5,393.71	5,383.60	5,382.71	19.41	113.23	-159.10	-323.29	-145.29	569.64	437.08	132.56	4.297		
5,500.00	5,493.62	5,483.50	5,482.62	19.77	115.36	-159.25	-323.29	-145.29	573.60	438.56	135.04	4.248		
5,600.00	5,593.57	5,583.41	5,582.52	20.13	117.48	-159.36	-322.30	-145.29	575.78	438.25	137.53	4.187		
5,700.00	5,693.53	5,681.26	5,680.37	20.49	119.57	-159.45	-322.49	-145.29	578.31	438.34	139.97	4.132		
5,800.00	5,793.52	5,779.13	5,778.23	20.85	121.65	-159.52	-323.04	-145.29	580.39	437.99	142.40	4.076		
5,900.00	5,893.52	5,883.47	5,882.52	21.20	123.87	-159.55	-323.29	-145.29	581.33	436.34	144.99	4.010		
5,936.48	5,930.00	5,919.95	5,919.00	21.33	124.65	-170.31	-323.29	-145.29	581.39	435.49	145.89	3.985		
6,000.00	5,993.52	5,983.47	5,982.52	21.56	126.00	-170.31	-323.29	-145.29	581.39	433.91	147.47	3.942		
6,083.52	6,077.04	6,066.95	6,065.99	21.85	127.77	-170.29	-322.18	-145.29	580.29	430.74	149.55	3.880		
6,100.00	6,093.52	6,083.12	6,082.15	21.91	128.12	-170.29	-322.19	-145.29	580.29	430.35	149.95	3.870		
6,200.00	6,193.52	6,181.21	6,180.25	22.27	130.21	-170.30	-322.41	-145.29	580.52	428.13	152.39	3.809		
6,300.00	6,293.52	6,279.32	6,278.34	22.62	132.29	-170.31	-322.97	-145.29	581.08	426.25	154.83	3.753		
6,358.48	6,352.00	6,342.03	6,341.00	22.83	133.65	-170.31	-323.29	-145.29	581.39	424.99	156.40	3.717		
6,400.00	6,393.49	6,383.52	6,382.49	22.97	134.57	-95.83	-323.29	-145.29	581.52	424.06	157.46	3.693		
6,450.00	6,443.20	6,433.23	6,432.20	23.15	135.67	-96.29	-323.29	-145.29	582.08	423.33	158.74	3.667		
6,500.00	6,492.36	6,482.38	6,481.36	23.33	136.75	-97.07	-323.29	-145.29	583.15	423.15	160.01	3.645		
6,550.00	6,540.64	6,530.67	6,529.64	23.51	137.82	-98.12	-323.29	-145.29	584.92	423.67	161.26	3.627		
6,600.00	6,587.77	6,577.79	6,576.77	23.69	138.87	-99.40	-323.29	-145.29	587.62	425.14	162.48	3.617		
6,650.00	6,633.44	6,622.94	6,621.90	23.88	139.87	-100.81	-322.11	-145.29	590.34	426.68	163.66	3.607 SF		
6,700.00	6,677.37	6,666.07	6,665.02	24.07	140.82	-102.28	-322.18	-145.29	595.84	431.05	164.79	3.616		
6,750.00	6,719.30	6,707.20	6,706.16	24.26	141.73	-103.73	-322.29	-145.29	603.25	437.37	165.88	3.637		
6,800.00	6,758.97	6,746.09	6,745.04	24.46	142.59	-105.07	-322.46	-145.29	612.90	445.98	166.91	3.672		
6,850.00	6,796.12	6,782.50	6,781.45	24.67	143.40	-106.22	-322.65	-145.29	625.06	457.17	167.88	3.723		
6,900.00	6,830.54	6,816.19	6,815.14	24.88	144.14	-107.09	-322.87	-145.29	639.97	471.18	168.79	3.791		
6,950.00	6,862.00	6,846.97	6,845.92	25.11	144.83	-107.60	-323.10	-145.29	657.80	488.17	169.62	3.878		
7,000.00	6,890.33	6,880.46	6,879.33	25.34	145.58	-108.12	-323.29	-145.29	678.55	508.02	170.53	3.979		
7,050.00	6,915.33	6,905.47	6,904.33	25.59	146.15	-107.77	-323.29	-145.29	702.15	530.91	171.24	4.100		
7,100.00	6,936.86	6,927.00	6,925.86	25.85	146.65	-106.83	-323.29	-145.29	728.66	556.81	171.85	4.240		
7,150.00	6,954.79	6,944.92	6,943.79	26.12	147.06	-105.23	-323.29	-145.29	757.94	585.58	172.36	4.397		
7,200.00	6,968.99	6,959.13	6,957.99	26.40	147.39	-102.90	-323.29	-145.29	789.75	616.98	172.77	4.571		
7,250.00	6,979.40	6,969.53	6,968.40	26.69	147.63	-99.76	-323.29	-145.29	823.82	650.74	173.07	4.760		
7,300.00	6,985.94	6,976.07	6,974.94	27.00	147.78	-95.76	-323.29	-145.29	859.80	686.53	173.27	4.962		
7,350.00	6,988.56	6,978.70	6,977.56	27.31	147.84	-90.91	-323.29	-145.29	897.36	724.00	173.36	5.176		
7,358.93	6,988.62	6,978.76	6,977.62	27.36	147.84	-89.95	-323.29	-145.29	904.20	730.83	173.37	5.215		
7,400.00	6,988.59	6,978.73	6,977.59	27.63	147.84	-89.95	-323.29	-145.29	936.14	762.75	173.39	5.399		
7,500.00	6,988.52	6,978.66	6,977.52	28.33	147.84	-89.94	-323.29	-145.29	1,016.64	843.21	173.43	5.862		
7,600.00	6,988.45	6,978.59	6,977.45	29.10	147.83	-89.94	-323.29	-145.29	1,100.34	926.88	173.47	6.343		
7,658.93	6,988.41	6,978.55	6,977.41	29.59	147.83	-89.93	-323.29	-145.29	1,150.89	977.40	173.48	6.634		
7,700.00	6,988.38	6,978.52	6,977.38	29.94	147.83	-89.93	-323.29	-145.29	1,186.43	1,012.93	173.50	6.838		
7,800.00	6,988.31	6,978.45	6,977.31	30.84	147.83	-89.93	-323.29	-145.29	1,273.19	1,099.67	173.52	7.337		
7,900.00	6,988.24	6,978.37	6,977.24	31.79	147.83	-89.93	-323.29	-145.29	1,360.16	1,186.61	173.55	7.837		
8,000.00	6,988.16	6,978.30	6,977.16	32.78	147.83	-89.92	-323.29	-145.29	1,447.19	1,273.62	173.57	8.338		
8,100.00	6,988.09	6,978.22	6,977.09	33.82	147.83	-89.92	-323.29	-145.29	1,534.18	1,360.58	173.59	8.838		
8,200.00	6,988.01	6,978.15	6,977.01	34.88	147.82	-89.92	-323.29	-145.29	1,621.04	1,447.42	173.61	9.337		
8,300.00	6,987.94	6,978.07	6,976.94	35.98	147.82	-89.92	-323.29	-145.29	1,707.68	1,534.05	173.63	9.835		
8,400.00	6,987.86	6,977.99	6,976.86	37.11	147.82	-89.92	-323.29	-145.29	1,794.05	1,620.40	173.65	10.331		
8,416.35	6,987.85	6,977.98	6,976.85	37.29	147.82	-89.92	-323.29	-145.29	1,808.15	1,634.49	173.66	10.412		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #053 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		300-A027Ua_INC-ONLY				Rule Assigned:				Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,500.00	6,987.78	6,977.92	6,976.78	38.25	147.82	-89.92	-323.29	-145.29	1,880.69	1,707.02	173.67	10.829		
8,600.00	6,987.70	6,977.84	6,976.70	39.43	147.82	-89.91	-323.29	-145.29	1,968.58	1,794.88	173.69	11.334		
8,700.00	6,987.62	6,977.76	6,976.62	40.64	147.82	-89.91	-323.29	-145.29	2,057.57	1,883.85	173.72	11.844		
8,800.00	6,987.55	6,977.68	6,976.55	41.88	147.81	-89.91	-323.29	-145.29	2,147.53	1,973.79	173.74	12.361		
8,900.00	6,987.47	6,977.60	6,976.47	43.14	147.81	-89.90	-323.29	-145.29	2,238.34	2,064.58	173.76	12.882		
9,000.00	6,987.39	6,977.52	6,976.39	44.42	147.81	-89.90	-323.29	-145.29	2,329.91	2,156.12	173.78	13.407		
9,100.00	6,987.31	6,977.45	6,976.31	45.72	147.81	-89.89	-323.29	-145.29	2,422.14	2,248.33	173.80	13.936		
9,200.00	6,987.23	6,977.37	6,976.23	47.04	147.81	-89.89	-323.29	-145.29	2,514.96	2,341.14	173.83	14.468		
9,300.00	6,987.15	6,977.29	6,976.15	48.38	147.80	-89.88	-323.29	-145.29	2,608.32	2,434.47	173.85	15.003		
9,400.00	6,987.08	6,977.21	6,976.08	49.73	147.80	-89.88	-323.29	-145.29	2,702.15	2,528.28	173.87	15.541		
9,500.00	6,987.00	6,977.13	6,976.00	51.10	147.80	-89.87	-323.29	-145.29	2,796.41	2,622.51	173.90	16.081		
9,600.00	6,986.92	6,977.05	6,975.92	52.48	147.80	-89.87	-323.29	-145.29	2,891.06	2,717.13	173.93	16.622		
9,700.00	6,986.84	6,976.98	6,975.84	53.87	147.80	-89.86	-323.29	-145.29	2,986.05	2,812.10	173.95	17.166		
9,800.00	6,986.76	6,976.90	6,975.76	55.28	147.80	-89.86	-323.29	-145.29	3,081.36	2,907.38	173.98	17.711		
9,900.00	6,986.68	6,976.82	6,975.68	56.69	147.79	-89.85	-323.29	-145.29	3,176.96	3,002.96	174.01	18.258		
10,000.00	6,986.61	6,976.74	6,975.61	58.12	147.79	-89.85	-323.29	-145.29	3,272.82	3,098.79	174.04	18.805		
10,100.00	6,986.53	6,976.66	6,975.53	59.55	147.79	-89.84	-323.29	-145.29	3,368.93	3,194.86	174.07	19.354		
10,200.00	6,986.45	6,976.59	6,975.45	61.00	147.79	-89.84	-323.29	-145.29	3,465.25	3,291.16	174.10	19.904		
10,300.00	6,986.37	6,976.51	6,975.37	62.45	147.79	-89.83	-323.29	-145.29	3,561.78	3,387.65	174.13	20.455		
10,400.00	6,986.29	6,976.43	6,975.29	63.90	147.78	-89.83	-323.29	-145.29	3,658.49	3,484.33	174.16	21.007		
10,500.00	6,986.21	6,976.35	6,975.21	65.37	147.78	-89.82	-323.29	-145.29	3,755.37	3,581.18	174.19	21.559		
10,600.00	6,986.14	6,976.27	6,975.14	66.84	147.78	-89.82	-323.29	-145.29	3,852.42	3,678.19	174.23	22.112		
10,700.00	6,986.06	6,976.19	6,975.06	68.32	147.78	-89.81	-323.29	-145.29	3,949.61	3,775.35	174.26	22.665		
10,800.00	6,985.98	6,976.12	6,974.98	69.80	147.78	-89.81	-323.29	-145.29	4,046.94	3,872.64	174.29	23.219		
10,900.00	6,985.90	6,976.04	6,974.90	71.29	147.78	-89.80	-323.29	-145.29	4,144.39	3,970.06	174.33	23.773		
11,000.00	6,985.82	6,975.96	6,974.82	72.78	147.77	-89.80	-323.29	-145.29	4,241.97	4,067.60	174.37	24.328		
11,100.00	6,985.75	6,975.88	6,974.75	74.28	147.77	-89.79	-323.29	-145.29	4,339.65	4,165.25	174.41	24.883		
11,200.00	6,985.67	6,975.80	6,974.67	75.78	147.77	-89.79	-323.29	-145.29	4,437.44	4,263.00	174.44	25.438		
11,300.00	6,985.59	6,975.72	6,974.59	77.29	147.77	-89.78	-323.29	-145.29	4,535.32	4,360.84	174.48	25.993		
11,400.00	6,985.51	6,975.65	6,974.51	78.80	147.77	-89.78	-323.29	-145.29	4,633.30	4,458.78	174.52	26.548		
11,500.00	6,985.43	6,975.57	6,974.43	80.31	147.76	-89.77	-323.29	-145.29	4,731.36	4,556.79	174.57	27.104		
11,600.00	6,985.35	6,975.49	6,974.35	81.83	147.76	-89.77	-323.29	-145.29	4,829.50	4,654.89	174.61	27.659		
11,700.00	6,985.28	6,975.41	6,974.28	83.35	147.76	-89.76	-323.29	-145.29	4,927.71	4,753.06	174.65	28.215		
11,800.00	6,985.20	6,975.33	6,974.20	84.87	147.76	-89.76	-323.29	-145.29	5,026.00	4,851.30	174.69	28.770		
11,900.00	6,985.12	6,975.25	6,974.12	86.40	147.76	-89.75	-323.29	-145.29	5,124.35	4,949.61	174.74	29.326		
12,000.00	6,985.04	6,975.18	6,974.04	87.93	147.76	-89.75	-323.29	-145.29	5,222.76	5,047.98	174.78	29.881		
12,100.00	6,984.96	6,975.10	6,973.96	89.46	147.75	-89.74	-323.29	-145.29	5,321.23	5,146.40	174.83	30.437		
12,200.00	6,984.88	6,975.02	6,973.88	90.99	147.75	-89.74	-323.29	-145.29	5,419.76	5,244.88	174.88	30.992		
12,300.00	6,984.81	6,974.94	6,973.81	92.53	147.75	-89.73	-323.29	-145.29	5,518.34	5,343.42	174.92	31.547		
12,400.00	6,984.73	6,974.86	6,973.73	94.07	147.75	-89.73	-323.29	-145.29	5,616.97	5,442.00	174.97	32.102		
12,500.00	6,984.65	6,974.78	6,973.65	95.61	147.75	-89.72	-323.29	-145.29	5,715.65	5,540.63	175.02	32.657		
12,600.00	6,984.57	6,974.71	6,973.57	97.15	147.74	-89.72	-323.29	-145.29	5,814.38	5,639.30	175.07	33.212		
12,700.00	6,984.49	6,974.63	6,973.49	98.70	147.74	-89.71	-323.29	-145.29	5,913.14	5,738.02	175.12	33.766		
12,800.00	6,984.41	6,974.55	6,973.41	100.25	147.74	-89.71	-323.29	-145.29	6,011.95	5,836.78	175.17	34.320		
12,900.00	6,984.34	6,974.47	6,973.34	101.80	147.74	-89.70	-323.29	-145.29	6,110.80	5,935.57	175.22	34.874		
13,000.00	6,984.26	6,974.39	6,973.26	103.35	147.74	-89.70	-323.29	-145.29	6,209.68	6,034.40	175.28	35.428		
13,100.00	6,984.18	6,974.31	6,973.18	104.90	147.74	-89.69	-323.29	-145.29	6,308.60	6,133.27	175.33	35.981		
13,200.00	6,984.10	6,974.24	6,973.10	106.45	147.73	-89.69	-323.29	-145.29	6,407.55	6,232.16	175.39	36.534		
13,300.00	6,984.02	6,974.16	6,973.02	108.01	147.73	-89.69	-323.29	-145.29	6,506.54	6,331.09	175.44	37.087		
13,400.00	6,983.94	6,974.08	6,972.94	109.56	147.73	-89.68	-323.29	-145.29	6,605.55	6,430.05	175.50	37.639		
13,500.00	6,983.87	6,974.00	6,972.87	111.12	147.73	-89.68	-323.29	-145.29	6,704.59	6,529.04	175.55	38.191		
13,600.00	6,983.79	6,973.92	6,972.79	112.68	147.73	-89.67	-323.29	-145.29	6,803.67	6,628.05	175.61	38.743		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #053 - OH - OH-INC													Offset Site Error:	0.00 usft	
Survey Program:		300-A027Ua_INC-ONLY					Offset		Semi Major Axis		Rule Assigned:		Warning	Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
13,700.00	6,983.71	6,973.84	6,972.71	114.24	147.73	-89.67	-323.29	-145.29	6,902.77	6,727.10	175.67	39.294			
13,800.00	6,983.63	6,973.77	6,972.63	115.80	147.72	-89.66	-323.29	-145.29	7,001.89	6,826.16	175.73	39.845			
13,900.00	6,983.55	6,973.69	6,972.55	117.37	147.72	-89.66	-323.29	-145.29	7,101.04	6,925.25	175.79	40.395			
14,000.00	6,983.47	6,973.61	6,972.47	118.93	147.72	-89.65	-323.29	-145.29	7,200.21	7,024.36	175.85	40.945			
14,100.00	6,983.40	6,973.53	6,972.40	120.50	147.72	-89.65	-323.29	-145.29	7,299.41	7,123.50	175.91	41.495			
14,200.00	6,983.32	6,973.45	6,972.32	122.06	147.72	-89.64	-323.29	-145.29	7,398.62	7,222.65	175.97	42.044			
14,300.00	6,983.24	6,973.38	6,972.24	123.63	147.71	-89.64	-323.29	-145.29	7,497.86	7,321.83	176.03	42.593			
14,400.00	6,983.16	6,973.30	6,972.16	125.20	147.71	-89.63	-323.29	-145.29	7,597.12	7,421.02	176.10	43.142			
14,500.00	6,983.08	6,973.22	6,972.08	126.77	147.71	-89.63	-323.29	-145.29	7,696.39	7,520.23	176.16	43.689			
14,600.00	6,983.00	6,973.14	6,972.00	128.33	147.71	-89.62	-323.29	-145.29	7,795.69	7,619.46	176.23	44.237			
14,700.00	6,982.93	6,973.06	6,971.93	129.91	147.71	-89.62	-323.29	-145.29	7,895.00	7,718.71	176.29	44.784			
14,800.00	6,982.85	6,972.98	6,971.85	131.48	147.71	-89.61	-323.29	-145.29	7,994.33	7,817.98	176.36	45.330			
14,900.00	6,982.77	6,972.91	6,971.77	133.05	147.70	-89.61	-323.29	-145.29	8,093.68	7,917.26	176.42	45.876			
15,000.00	6,982.69	6,972.83	6,971.69	134.62	147.70	-89.60	-323.29	-145.29	8,193.04	8,016.55	176.49	46.422			
15,100.00	6,982.61	6,972.75	6,971.61	136.20	147.70	-89.60	-323.29	-145.29	8,292.42	8,115.86	176.56	46.967			
15,200.00	6,982.54	6,972.67	6,971.54	137.77	147.70	-89.59	-323.29	-145.29	8,391.81	8,215.19	176.63	47.511			
15,300.00	6,982.46	6,972.59	6,971.46	139.35	147.70	-89.59	-323.29	-145.29	8,491.22	8,314.52	176.70	48.055			
15,400.00	6,982.38	6,972.51	6,971.38	140.92	147.69	-89.58	-323.29	-145.29	8,590.64	8,413.87	176.77	48.599			
15,500.00	6,982.30	6,972.44	6,971.30	142.50	147.69	-89.58	-323.29	-145.29	8,690.08	8,513.24	176.84	49.142			
15,600.00	6,982.22	6,972.36	6,971.22	144.07	147.69	-89.57	-323.29	-145.29	8,789.52	8,612.61	176.91	49.684			
15,700.00	6,982.14	6,972.28	6,971.14	145.65	147.69	-89.57	-323.29	-145.29	8,888.98	8,712.00	176.98	50.226			
15,800.00	6,982.07	6,972.20	6,971.07	147.23	147.69	-89.56	-323.29	-145.29	8,988.45	8,811.40	177.05	50.767			
15,900.00	6,981.99	6,972.12	6,970.99	148.81	147.69	-89.56	-323.29	-145.29	9,087.94	8,910.81	177.13	51.308			
16,000.00	6,981.91	6,972.04	6,970.91	150.39	147.68	-89.55	-323.29	-145.29	9,187.43	9,010.23	177.20	51.848			
16,100.00	6,981.83	6,971.97	6,970.83	151.97	147.68	-89.55	-323.29	-145.29	9,286.93	9,109.66	177.27	52.387			
16,200.00	6,981.75	6,971.89	6,970.75	153.55	147.68	-89.54	-323.29	-145.29	9,386.45	9,209.10	177.35	52.926			
16,300.00	6,981.67	6,971.81	6,970.67	155.13	147.68	-89.54	-323.29	-145.29	9,485.98	9,308.55	177.42	53.465			
16,400.00	6,981.60	6,971.73	6,970.60	156.71	147.68	-89.53	-323.29	-145.29	9,585.51	9,408.01	177.50	54.003			
16,500.00	6,981.52	6,971.65	6,970.52	158.29	147.67	-89.53	-323.29	-145.29	9,685.06	9,507.48	177.58	54.540			
16,600.00	6,981.44	6,971.57	6,970.44	159.88	147.67	-89.52	-323.29	-145.29	9,784.61	9,606.96	177.65	55.076			
16,700.00	6,981.36	6,971.50	6,970.36	161.46	147.67	-89.52	-323.29	-145.29	9,884.17	9,706.44	177.73	55.613			
16,800.00	6,981.28	6,971.42	6,970.28	163.04	147.67	-89.51	-323.29	-145.29	9,983.75	9,805.93	177.81	56.148			
16,900.00	6,981.20	6,971.34	6,970.20	164.62	147.67	-89.51	-323.29	-145.29	10,083.33	9,905.44	177.89	56.683			
17,000.00	6,981.13	6,971.26	6,970.13	166.21	147.67	-89.50	-323.29	-145.29	10,182.92	10,004.95	177.97	57.217			
17,100.00	6,981.05	6,971.18	6,970.05	167.79	147.66	-89.50	-323.29	-145.29	10,282.51	10,104.46	178.05	57.751			
17,200.00	6,980.97	6,971.10	6,969.97	169.38	147.66	-89.49	-323.29	-145.29	10,382.12	10,203.99	178.13	58.284			
17,300.00	6,980.89	6,971.03	6,969.89	170.96	147.66	-89.49	-323.29	-145.29	10,481.73	10,303.52	178.21	58.816			
17,400.00	6,980.81	6,970.95	6,969.81	172.55	147.66	-89.48	-323.29	-145.29	10,581.35	10,403.05	178.29	59.348			
17,500.00	6,980.73	6,970.87	6,969.73	174.13	147.66	-89.48	-323.29	-145.29	10,680.97	10,502.60	178.38	59.879			
17,600.00	6,980.66	6,970.79	6,969.66	175.72	147.65	-89.48	-323.29	-145.29	10,780.61	10,602.15	178.46	60.409			
17,700.00	6,980.58	6,970.71	6,969.58	177.31	147.65	-89.47	-323.29	-145.29	10,880.25	10,701.71	178.54	60.939			
17,800.00	6,980.50	6,970.63	6,969.50	178.89	147.65	-89.47	-323.29	-145.29	10,979.90	10,801.27	178.63	61.468			
17,900.00	6,980.42	6,970.56	6,969.42	180.48	147.65	-89.46	-323.29	-145.29	11,079.55	10,900.84	178.71	61.997			
18,000.00	6,980.34	6,970.48	6,969.34	182.07	147.65	-89.46	-323.29	-145.29	11,179.21	11,000.41	178.80	62.525			
18,100.00	6,980.26	6,970.40	6,969.26	183.66	147.65	-89.45	-323.29	-145.29	11,278.87	11,099.99	178.88	63.052			
18,200.00	6,980.19	6,970.32	6,969.19	185.24	147.64	-89.45	-323.29	-145.29	11,378.54	11,199.58	178.97	63.578			
18,300.00	6,980.11	6,970.24	6,969.11	186.83	147.64	-89.44	-323.29	-145.29	11,478.22	11,299.17	179.06	64.104			
18,400.00	6,980.03	6,970.17	6,969.03	188.42	147.64	-89.44	-323.29	-145.29	11,577.90	11,398.76	179.14	64.630			
18,500.00	6,979.95	6,970.09	6,968.95	190.01	147.64	-89.43	-323.29	-145.29	11,677.59	11,498.36	179.23	65.154			
18,600.00	6,979.87	6,970.01	6,968.87	191.60	147.64	-89.43	-323.29	-145.29	11,777.28	11,597.97	179.32	65.678			
18,700.00	6,979.79	6,969.93	6,968.79	193.19	147.63	-89.42	-323.29	-145.29	11,876.98	11,697.58	179.41	66.201			
18,800.00	6,979.72	6,969.85	6,968.72	194.78	147.63	-89.42	-323.29	-145.29	11,976.69	11,797.19	179.50	66.724			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #053 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		300-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,900.00	6,979.64	6,969.77	6,968.64	196.37	147.63	-89.41	-323.29	-145.29	12,076.39	11,896.81	179.59	67.246		
19,000.00	6,979.56	6,969.70	6,968.56	197.96	147.63	-89.41	-323.29	-145.29	12,176.11	11,996.43	179.68	67.767		
19,100.00	6,979.48	6,969.62	6,968.48	199.55	147.63	-89.40	-323.29	-145.29	12,275.82	12,096.06	179.77	68.288		
19,200.00	6,979.40	6,969.54	6,968.40	201.14	147.63	-89.40	-323.29	-145.29	12,375.55	12,195.69	179.86	68.807		
19,300.00	6,979.33	6,969.46	6,968.33	202.73	147.62	-89.39	-323.29	-145.29	12,475.27	12,295.32	179.95	69.327		
19,400.00	6,979.25	6,969.38	6,968.25	204.32	147.62	-89.39	-323.29	-145.29	12,575.00	12,394.96	180.04	69.845		
19,500.00	6,979.17	6,969.30	6,968.17	205.91	147.62	-89.38	-323.29	-145.29	12,674.74	12,494.61	180.13	70.363		
19,600.00	6,979.09	6,969.23	6,968.09	207.50	147.62	-89.38	-323.29	-145.29	12,774.48	12,594.25	180.23	70.880		
19,700.00	6,979.01	6,969.15	6,968.01	209.09	147.62	-89.37	-323.29	-145.29	12,874.22	12,693.90	180.32	71.396		
19,800.00	6,978.93	6,969.07	6,967.93	210.69	147.62	-89.37	-323.29	-145.29	12,973.97	12,793.56	180.41	71.912		
19,900.00	6,978.86	6,968.99	6,967.86	212.28	147.61	-89.36	-323.29	-145.29	13,073.72	12,893.21	180.51	72.427		
20,000.00	6,978.78	6,968.91	6,967.78	213.87	147.61	-89.36	-323.29	-145.29	13,173.48	12,992.87	180.60	72.942		
20,100.00	6,978.70	6,968.83	6,967.70	215.46	147.61	-89.35	-323.29	-145.29	13,273.24	13,092.54	180.70	73.455		
20,200.00	6,978.62	6,968.76	6,967.62	217.05	147.61	-89.35	-323.29	-145.29	13,373.00	13,192.20	180.79	73.968		
20,300.00	6,978.54	6,968.68	6,967.54	218.65	147.61	-89.34	-323.29	-145.29	13,472.76	13,291.87	180.89	74.480		
20,400.00	6,978.46	6,968.60	6,967.46	220.24	147.60	-89.34	-323.29	-145.29	13,572.53	13,391.55	180.99	74.992		
20,500.00	6,978.39	6,968.52	6,967.39	221.83	147.60	-89.33	-323.29	-145.29	13,672.31	13,491.22	181.08	75.503		
20,600.00	6,978.31	6,968.44	6,967.31	223.43	147.60	-89.33	-323.29	-145.29	13,772.08	13,590.90	181.18	76.013		
20,700.00	6,978.23	6,968.36	6,967.23	225.02	147.60	-89.32	-323.29	-145.29	13,871.86	13,690.58	181.28	76.522		
20,800.00	6,978.15	6,968.29	6,967.15	226.61	147.60	-89.32	-323.29	-145.29	13,971.64	13,790.27	181.38	77.031		
20,900.00	6,978.07	6,968.21	6,967.07	228.21	147.60	-89.31	-323.29	-145.29	14,071.43	13,889.95	181.47	77.539		
21,000.00	6,977.99	6,968.13	6,966.99	229.80	147.59	-89.31	-323.29	-145.29	14,171.22	13,989.64	181.57	78.047		
21,100.00	6,977.92	6,968.05	6,966.92	231.39	147.59	-89.30	-323.29	-145.29	14,271.01	14,089.34	181.67	78.553		
21,200.00	6,977.84	6,967.97	6,966.84	232.99	147.59	-89.30	-323.29	-145.29	14,370.80	14,189.03	181.77	79.059		
21,300.00	6,977.76	6,967.89	6,966.76	234.58	147.59	-89.29	-323.29	-145.29	14,470.60	14,288.73	181.87	79.564		
21,400.00	6,977.68	6,967.82	6,966.68	236.18	147.59	-89.29	-323.29	-145.29	14,570.40	14,388.43	181.97	80.069		
21,500.00	6,977.60	6,967.74	6,966.60	237.77	147.58	-89.28	-323.29	-145.29	14,670.20	14,488.13	182.07	80.573		
21,600.00	6,977.52	6,967.66	6,966.52	239.37	147.58	-89.28	-323.29	-145.29	14,770.01	14,587.83	182.18	81.076		
21,700.00	6,977.45	6,967.58	6,966.45	240.96	147.58	-89.27	-323.29	-145.29	14,869.82	14,687.54	182.28	81.578		
21,800.00	6,977.37	6,967.50	6,966.37	242.56	147.58	-89.27	-323.29	-145.29	14,969.63	14,787.25	182.38	82.080		
21,900.00	6,977.29	6,967.42	6,966.29	244.15	147.58	-89.27	-323.29	-145.29	15,069.44	14,886.96	182.48	82.580		
22,000.00	6,977.21	6,967.35	6,966.21	245.75	147.58	-89.26	-323.29	-145.29	15,169.26	14,986.67	182.58	83.081		
22,100.00	6,977.13	6,967.27	6,966.13	247.34	147.57	-89.26	-323.29	-145.29	15,269.07	15,086.39	182.69	83.580		
22,200.00	6,977.05	6,967.19	6,966.05	248.94	147.57	-89.25	-323.29	-145.29	15,368.89	15,186.10	182.79	84.079		
22,269.73	6,977.00	6,967.14	6,966.00	250.05	147.57	-89.25	-323.29	-145.29	15,438.49	15,255.63	182.86	84.426		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #072C - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 320-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	48.96	48.96	0.00	0.06	-68.78	2,468.72	-6,359.28	6,821.68				
100.00	100.00	1,250.93	1,234.21	0.25	3.55	-69.80	2,323.85	-6,317.26	6,815.68	6,812.02	3.66	1,864.633	
200.00	200.00	1,314.79	1,296.10	0.61	3.84	-69.91	2,308.86	-6,312.54	6,800.31	6,796.14	4.17	1,632.141	
300.00	300.00	1,434.05	1,411.56	0.97	4.42	-70.11	2,280.26	-6,303.93	6,785.02	6,780.02	5.00	1,357.680	
400.00	400.00	1,542.39	1,516.31	1.33	4.97	-70.30	2,253.74	-6,296.00	6,769.51	6,763.70	5.81	1,165.014	
500.00	500.00	1,594.00	1,566.21	1.68	5.21	-70.40	2,241.11	-6,292.28	6,754.24	6,747.87	6.37	1,060.268	
600.00	600.00	1,658.00	1,628.34	2.04	5.48	-70.50	2,226.43	-6,287.89	6,739.77	6,732.81	6.96	968.813	
700.00	700.00	1,698.35	1,667.66	2.40	5.65	-70.56	2,217.73	-6,285.26	6,726.03	6,718.57	7.46	901.670	
800.00	799.98	1,796.37	1,763.17	2.76	6.08	-60.23	2,196.63	-6,279.03	6,711.81	6,703.61	8.19	819.068	
849.89	849.82	1,864.97	1,829.99	2.94	6.39	-60.49	2,181.77	-6,274.59	6,704.02	6,695.37	8.65	774.935	
900.00	899.86	1,937.14	1,900.14	3.12	6.73	-60.64	2,165.47	-6,269.76	6,695.72	6,686.59	9.13	733.336	
1,000.00	999.73	2,125.13	2,082.32	3.48	7.65	-61.05	2,120.88	-6,257.08	6,679.09	6,668.81	10.29	649.164	
1,100.00	1,099.59	2,225.00	2,178.91	3.84	8.14	-61.27	2,096.68	-6,249.40	6,661.27	6,650.19	11.08	601.279	
1,200.00	1,199.45	2,316.78	2,267.58	4.20	8.60	-61.47	2,074.00	-6,242.57	6,643.61	6,631.77	11.84	561.010	
1,300.00	1,299.32	2,394.47	2,342.80	4.56	8.96	-61.64	2,055.49	-6,236.65	6,626.17	6,613.66	12.52	529.287	
1,400.00	1,399.18	2,476.00	2,421.79	4.92	9.33	-61.82	2,036.21	-6,230.65	6,609.11	6,595.90	13.22	500.106	
1,500.00	1,499.04	2,555.85	2,499.12	5.28	9.72	-61.99	2,017.17	-6,224.92	6,592.26	6,578.33	13.93	473.361	
1,600.00	1,598.91	2,601.00	2,542.96	5.64	9.93	-62.09	2,006.83	-6,221.77	6,576.01	6,561.52	14.48	454.042	
1,700.00	1,698.77	2,699.27	2,638.53	6.00	10.37	-62.30	1,984.95	-6,215.18	6,560.26	6,545.02	15.23	430.632	
1,800.00	1,798.63	2,778.75	2,715.85	6.36	10.72	-62.46	1,967.34	-6,209.79	6,544.56	6,528.64	15.92	411.183	
1,900.00	1,898.49	2,903.38	2,837.06	6.72	11.28	-62.73	1,939.57	-6,201.27	6,528.83	6,512.05	16.79	388.928	
2,000.00	1,998.36	3,044.99	2,974.51	7.09	11.97	-63.04	1,907.05	-6,191.19	6,512.73	6,494.97	17.76	366.795	
2,100.00	2,098.22	3,122.10	3,049.32	7.45	12.32	-63.21	1,889.24	-6,185.55	6,496.52	6,478.07	18.44	352.254	
2,200.00	2,198.08	3,166.00	3,091.96	7.81	12.51	-63.30	1,879.29	-6,182.44	6,480.85	6,461.85	18.99	341.212	
2,300.00	2,297.95	3,229.00	3,153.32	8.17	12.78	-63.44	1,865.62	-6,178.33	6,465.96	6,446.35	19.61	329.699	
2,400.00	2,397.81	3,256.18	3,179.89	8.53	12.89	-63.49	1,860.11	-6,176.72	6,451.99	6,431.90	20.09	321.154	
2,500.00	2,497.67	3,291.00	3,214.03	8.90	13.02	-63.56	1,853.53	-6,174.81	6,439.02	6,418.43	20.59	312.669	
2,600.00	2,597.54	3,354.00	3,275.97	9.26	13.25	-63.67	1,842.53	-6,171.49	6,426.78	6,405.60	21.18	303.479	
2,700.00	2,697.40	3,417.00	3,338.06	9.62	13.47	-63.78	1,832.30	-6,168.33	6,415.14	6,393.39	21.75	294.928	
2,800.00	2,797.26	3,444.70	3,365.40	9.98	13.56	-63.82	1,828.08	-6,167.12	6,404.41	6,382.20	22.21	288.302	
2,900.00	2,897.13	3,480.00	3,400.32	10.35	13.67	-63.88	1,823.04	-6,165.91	6,394.79	6,372.09	22.70	281.736	
3,000.00	2,996.99	3,560.21	3,479.74	10.71	13.92	-64.00	1,812.06	-6,163.54	6,385.90	6,362.59	23.31	273.999	
3,100.00	3,096.85	3,646.07	3,564.90	11.07	14.17	-64.12	1,801.48	-6,160.72	6,377.14	6,353.22	23.91	266.701	
3,200.00	3,196.72	3,699.61	3,618.11	11.43	14.31	-64.19	1,795.83	-6,158.90	6,368.82	6,344.40	24.42	260.839	
3,300.00	3,296.58	3,732.00	3,650.34	11.80	14.39	-64.23	1,792.81	-6,157.96	6,361.40	6,336.53	24.87	255.813	
3,400.00	3,396.44	3,794.00	3,712.15	12.16	14.52	-64.29	1,788.22	-6,156.57	6,354.95	6,329.59	25.37	250.513	
3,500.00	3,496.31	3,825.00	3,743.10	12.52	14.58	-64.32	1,786.54	-6,156.03	6,349.37	6,323.57	25.80	246.147	
3,600.00	3,596.17	3,894.44	3,812.47	12.88	14.70	-64.37	1,783.41	-6,155.07	6,344.55	6,318.27	26.29	241.373	
3,700.00	3,696.03	3,992.13	3,910.06	13.25	14.88	-64.45	1,779.14	-6,153.80	6,339.91	6,313.08	26.83	236.302	
3,800.00	3,795.89	4,089.54	4,007.37	13.61	15.05	-64.52	1,774.93	-6,152.55	6,335.30	6,307.93	27.37	231.433	
3,900.00	3,895.76	4,186.97	4,104.70	13.97	15.22	-64.60	1,770.79	-6,151.32	6,330.74	6,302.82	27.92	226.756	
4,000.00	3,995.62	4,284.41	4,202.05	14.34	15.39	-64.67	1,766.70	-6,150.11	6,326.23	6,297.77	28.46	222.261	
4,100.00	4,095.48	4,381.86	4,299.41	14.70	15.57	-64.75	1,762.68	-6,148.91	6,321.76	6,292.75	29.01	217.936	
4,200.00	4,195.35	4,479.32	4,396.78	15.06	15.74	-64.82	1,758.71	-6,147.73	6,317.33	6,287.78	29.55	213.772	
4,300.00	4,295.21	4,576.80	4,494.17	15.42	15.91	-64.90	1,754.80	-6,146.57	6,312.95	6,282.85	30.10	209.762	
4,400.00	4,395.07	4,674.28	4,591.58	15.79	16.09	-64.97	1,750.96	-6,145.43	6,308.61	6,277.97	30.64	205.895	
4,500.00	4,494.94	4,771.78	4,688.99	16.15	16.26	-65.04	1,747.17	-6,144.30	6,304.32	6,273.13	31.18	202.165	
4,600.00	4,594.80	4,869.29	4,786.42	16.51	16.43	-65.11	1,743.44	-6,143.20	6,300.06	6,268.34	31.73	198.565	
4,700.00	4,694.66	4,966.81	4,883.87	16.87	16.61	-65.19	1,739.77	-6,142.10	6,295.85	6,263.58	32.27	195.088	
4,800.00	4,794.53	5,064.34	4,981.33	17.24	16.78	-65.26	1,736.16	-6,141.03	6,291.69	6,258.87	32.82	191.728	
4,900.00	4,894.39	5,161.89	5,078.80	17.60	16.95	-65.33	1,732.60	-6,139.98	6,287.57	6,254.21	33.36	188.480	
5,000.00	4,994.25	5,259.44	5,176.29	17.96	17.13	-65.40	1,729.11	-6,138.94	6,283.49	6,249.58	33.90	185.337	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #072C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		320-APC_ISCWSA REV 2 MWD						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
5,100.00	5,094.12	5,357.01	5,273.79	18.33	17.30	-65.47	1,725.68	-6,137.92	6,279.45	6,245.00	34.45	182.295	
5,200.00	5,193.98	5,454.59	5,371.30	18.69	17.48	-65.54	1,722.31	-6,136.92	6,275.45	6,240.46	34.99	179.348	
5,300.00	5,293.84	5,552.17	5,468.83	19.05	17.65	-65.61	1,718.99	-6,135.93	6,271.50	6,235.96	35.53	176.494	
5,336.91	5,330.71	5,588.20	5,504.83	19.19	17.71	-65.64	1,717.78	-6,135.57	6,270.05	6,234.31	35.73	175.463	
5,400.00	5,393.71	5,649.79	5,566.38	19.41	17.82	-65.67	1,715.74	-6,134.97	6,267.66	6,231.58	36.08	173.731	
5,500.00	5,493.62	5,747.47	5,664.01	19.77	18.00	-65.71	1,712.54	-6,134.02	6,264.19	6,227.57	36.62	171.067	
5,600.00	5,593.57	5,845.23	5,761.72	20.13	18.17	-65.75	1,709.40	-6,133.08	6,261.12	6,223.96	37.16	168.499	
5,700.00	5,693.53	5,943.05	5,859.48	20.49	18.35	-65.79	1,706.32	-6,132.17	6,258.45	6,220.75	37.70	166.024	
5,800.00	5,793.52	6,040.92	5,957.30	20.85	18.52	-65.81	1,703.30	-6,131.27	6,256.17	6,217.94	38.23	163.636	
5,900.00	5,893.52	6,138.84	6,055.17	21.20	18.70	-65.84	1,700.33	-6,130.39	6,254.28	6,215.52	38.77	161.332	
5,936.48	5,930.00	6,174.57	6,090.88	21.33	18.76	-76.60	1,699.27	-6,130.07	6,253.69	6,214.73	38.96	160.511	
6,000.00	5,993.52	6,236.78	6,153.06	21.56	18.87	-76.61	1,697.43	-6,129.53	6,252.72	6,213.42	39.30	159.104	
6,100.00	6,093.52	6,334.73	6,250.97	21.91	19.05	-76.64	1,694.59	-6,128.68	6,251.20	6,211.37	39.83	156.938	
6,200.00	6,193.52	6,432.68	6,348.88	22.27	19.22	-76.66	1,691.80	-6,127.85	6,249.73	6,209.36	40.36	154.830	
6,300.00	6,293.52	6,530.63	6,446.79	22.62	19.40	-76.68	1,689.08	-6,127.05	6,248.28	6,207.38	40.90	152.778	
6,358.48	6,352.00	6,587.92	6,504.06	22.83	19.50	-76.69	1,687.51	-6,126.58	6,247.45	6,206.24	41.21	151.602	
6,400.00	6,393.49	6,628.55	6,544.66	22.97	19.57	-2.11	1,686.42	-6,126.25	6,245.52	6,204.09	41.43	150.752	
6,450.00	6,443.20	6,677.17	6,593.27	23.15	19.66	-2.14	1,685.12	-6,125.87	6,239.62	6,197.93	41.69	149.661	
6,500.00	6,492.36	6,725.20	6,641.28	23.33	19.74	-2.19	1,683.85	-6,125.49	6,229.85	6,187.90	41.95	148.498	
6,550.00	6,540.64	6,772.32	6,688.38	23.51	19.83	-2.25	1,682.62	-6,125.13	6,216.28	6,174.07	42.21	147.275	
6,600.00	6,587.77	6,818.26	6,734.31	23.69	19.91	-2.34	1,681.43	-6,124.77	6,198.99	6,156.53	42.46	146.002	
6,650.00	6,633.44	6,862.73	6,778.76	23.88	19.99	-2.44	1,680.30	-6,124.44	6,178.08	6,135.38	42.70	144.689	
6,700.00	6,677.37	6,905.46	6,821.47	24.07	20.07	-2.57	1,679.22	-6,124.11	6,153.68	6,110.75	42.93	143.345	
6,750.00	6,719.30	6,946.18	6,862.18	24.26	20.14	-2.73	1,678.20	-6,123.81	6,125.95	6,082.80	43.15	141.980	
6,800.00	6,758.97	6,984.65	6,900.64	24.46	20.21	-2.93	1,677.24	-6,123.53	6,095.04	6,051.69	43.35	140.600	
6,850.00	6,796.12	7,020.63	6,936.61	24.67	20.27	-3.18	1,676.36	-6,123.27	6,061.16	6,017.62	43.54	139.213	
6,900.00	6,830.54	7,053.90	6,969.86	24.88	20.33	-3.49	1,675.55	-6,123.03	6,024.51	5,980.80	43.71	137.826	
6,950.00	6,862.00	7,084.25	7,000.20	25.11	20.39	-3.89	1,674.82	-6,122.81	5,985.31	5,941.44	43.87	136.445	
7,000.00	6,890.33	7,111.49	7,027.44	25.34	20.44	-4.42	1,674.17	-6,122.62	5,943.81	5,899.80	44.00	135.077	
7,050.00	6,915.33	7,135.46	7,051.40	25.59	20.48	-5.13	1,673.60	-6,122.45	5,900.26	5,856.13	44.12	133.726	
7,100.00	6,936.86	7,156.00	7,071.93	25.85	20.52	-6.13	1,673.11	-6,122.30	5,854.92	5,810.70	44.22	132.397	
7,150.00	6,954.79	7,172.99	7,088.92	26.12	20.55	-7.64	1,672.72	-6,122.18	5,808.09	5,763.78	44.30	131.095	
7,200.00	6,968.99	7,186.33	7,102.25	26.40	20.57	-10.14	1,672.40	-6,122.09	5,760.03	5,715.67	44.37	129.821	
7,250.00	6,979.40	7,195.92	7,111.84	26.69	20.59	-15.04	1,672.18	-6,122.02	5,711.06	5,666.65	44.42	128.580	
7,300.00	6,985.94	7,201.71	7,117.63	27.00	20.60	-28.19	1,672.04	-6,121.98	5,661.48	5,617.03	44.45	127.372	
7,350.00	6,988.56	7,203.66	7,119.58	27.31	20.60	-88.18	1,672.00	-6,121.97	5,611.58	5,567.11	44.47	126.199	
7,358.93	6,988.62	7,203.61	7,119.53	27.36	20.60	-106.31	1,672.00	-6,121.97	5,602.66	5,558.19	44.47	125.993	
7,400.00	6,988.59	7,203.06	7,118.98	27.63	20.60	-106.19	1,672.01	-6,121.97	5,561.63	5,517.15	44.48	125.050	
7,500.00	6,988.52	7,201.73	7,117.65	28.33	20.60	-105.90	1,672.04	-6,121.98	5,461.73	5,417.24	44.49	122.753	
7,600.00	6,988.45	7,200.40	7,116.32	29.10	20.59	-105.61	1,672.07	-6,121.99	5,361.84	5,317.33	44.51	120.454	
7,658.93	6,988.41	7,199.61	7,115.53	29.59	20.59	-105.44	1,672.09	-6,122.00	5,302.98	5,258.45	44.53	119.098	
7,700.00	6,988.38	7,199.07	7,114.99	29.94	20.59	-111.75	1,672.11	-6,122.00	5,261.94	5,217.40	44.53	118.154	
7,800.00	6,988.31	7,197.80	7,113.72	30.84	20.59	166.45	1,672.14	-6,122.01	5,161.96	5,117.41	44.55	115.874	
7,900.00	6,988.24	7,196.60	7,112.52	31.79	20.59	108.24	1,672.16	-6,122.02	5,062.00	5,017.44	44.55	113.620	
8,000.00	6,988.16	7,195.48	7,111.40	32.78	20.59	99.68	1,672.19	-6,122.03	4,962.17	4,917.62	44.55	111.395	
8,100.00	6,988.09	7,194.42	7,110.35	33.82	20.58	96.54	1,672.21	-6,122.03	4,862.61	4,818.08	44.53	109.201	
8,200.00	6,988.01	7,193.45	7,109.37	34.88	20.58	94.93	1,672.24	-6,122.04	4,763.47	4,718.97	44.50	107.036	
8,300.00	6,987.94	7,192.55	7,108.47	35.98	20.58	93.96	1,672.26	-6,122.05	4,664.89	4,620.42	44.47	104.898	
8,400.00	6,987.86	7,191.72	7,107.65	37.11	20.58	93.31	1,672.28	-6,122.05	4,567.04	4,522.60	44.43	102.783	
8,416.35	6,987.85	7,191.60	7,107.52	37.29	20.58	93.22	1,672.28	-6,122.05	4,551.12	4,506.69	44.43	102.440	
8,500.00	6,987.78	7,190.95	7,106.88	38.25	20.58	93.18	1,672.30	-6,122.06	4,469.78	4,425.38	44.40	100.671	
8,600.00	6,987.70	7,190.18	7,106.11	39.43	20.58	93.14	1,672.31	-6,122.06	4,372.66	4,328.28	44.38	98.534	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #072C - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program:		320-APC_ISCWSA REV 2 MWD										Rule Assigned:		Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)		
8,700.00	6,987.62	7,189.41	7,105.34	40.64	20.58	93.10	1,672.33	-6,122.07	4,275.67	4,231.30	44.37	96.373			
8,800.00	6,987.55	7,188.64	7,104.56	41.88	20.57	93.06	1,672.35	-6,122.07	4,178.82	4,134.45	44.37	94.187			
8,900.00	6,987.47	7,187.87	7,103.79	43.14	20.57	93.02	1,672.37	-6,122.08	4,082.13	4,037.74	44.38	91.974			
9,000.00	6,987.39	7,187.10	7,103.02	44.42	20.57	92.97	1,672.39	-6,122.09	3,985.59	3,941.18	44.42	89.732			
9,100.00	6,987.31	7,186.32	7,102.25	45.72	20.57	92.93	1,672.40	-6,122.09	3,889.23	3,844.77	44.47	87.460			
9,200.00	6,987.23	7,185.55	7,101.48	47.04	20.57	92.89	1,672.42	-6,122.10	3,793.07	3,748.52	44.54	85.156			
9,300.00	6,987.15	7,184.78	7,100.70	48.38	20.57	92.85	1,672.44	-6,122.10	3,697.10	3,652.46	44.64	82.818			
9,400.00	6,987.08	7,184.01	7,099.93	49.73	20.57	92.81	1,672.46	-6,122.11	3,601.35	3,556.58	44.77	80.446			
9,500.00	6,987.00	7,183.23	7,099.16	51.10	20.56	92.76	1,672.48	-6,122.11	3,505.84	3,460.92	44.92	78.039			
9,600.00	6,986.92	7,182.46	7,098.39	52.48	20.56	92.72	1,672.49	-6,122.12	3,410.59	3,365.47	45.12	75.594			
9,700.00	6,986.84	7,181.68	7,097.61	53.87	20.56	92.68	1,672.51	-6,122.12	3,315.62	3,270.27	45.35	73.112			
9,800.00	6,986.76	7,180.91	7,096.84	55.28	20.56	92.64	1,672.53	-6,122.13	3,220.95	3,175.32	45.63	70.593			
9,900.00	6,986.68	7,180.14	7,096.06	56.69	20.56	92.60	1,672.55	-6,122.13	3,126.61	3,080.66	45.95	68.037			
10,000.00	6,986.61	7,179.36	7,095.29	58.12	20.56	92.55	1,672.57	-6,122.14	3,032.64	2,986.30	46.34	65.445			
10,100.00	6,986.53	7,178.59	7,094.51	59.55	20.56	92.51	1,672.58	-6,122.14	2,939.06	2,892.27	46.79	62.820			
10,200.00	6,986.45	7,177.81	7,093.74	61.00	20.55	92.47	1,672.60	-6,122.15	2,845.92	2,798.62	47.30	60.163			
10,300.00	6,986.37	7,177.04	7,092.96	62.45	20.55	92.43	1,672.62	-6,122.16	2,753.26	2,705.36	47.90	57.479			
10,400.00	6,986.29	7,176.26	7,092.19	63.90	20.55	92.39	1,672.64	-6,122.16	2,661.13	2,612.55	48.58	54.773			
10,500.00	6,986.21	7,175.48	7,091.41	65.37	20.55	92.34	1,672.66	-6,122.17	2,569.59	2,520.23	49.37	52.051			
10,600.00	6,986.14	7,174.71	7,090.64	66.84	20.55	92.30	1,672.68	-6,122.17	2,478.71	2,428.45	50.26	49.320			
10,700.00	6,986.06	7,173.93	7,089.86	68.32	20.55	92.26	1,672.69	-6,122.18	2,388.55	2,337.28	51.27	46.590			
10,800.00	6,985.98	7,173.15	7,089.08	69.80	20.55	92.22	1,672.71	-6,122.18	2,299.21	2,246.80	52.41	43.869			
10,900.00	6,985.90	7,172.38	7,088.31	71.29	20.54	92.17	1,672.73	-6,122.19	2,210.78	2,157.08	53.70	41.169			
11,000.00	6,985.82	7,171.60	7,087.53	72.78	20.54	92.13	1,672.75	-6,122.19	2,123.37	2,068.22	55.15	38.502			
11,100.00	6,985.75	7,170.82	7,086.75	74.28	20.54	92.09	1,672.77	-6,122.20	2,037.13	1,980.35	56.78	35.879			
11,200.00	6,985.67	7,170.04	7,085.97	75.78	20.54	92.05	1,672.78	-6,122.20	1,952.19	1,893.59	58.60	33.315			
11,300.00	6,985.59	7,169.26	7,085.19	77.29	20.54	92.00	1,672.80	-6,122.21	1,868.75	1,808.12	60.63	30.823			
11,400.00	6,985.51	7,168.48	7,084.42	78.80	20.54	91.96	1,672.82	-6,122.22	1,787.01	1,724.12	62.89	28.416			
11,500.00	6,985.43	7,167.71	7,083.64	80.31	20.54	91.92	1,672.84	-6,122.22	1,707.21	1,641.82	65.39	26.106			
11,600.00	6,985.35	7,166.93	7,082.86	81.83	20.53	91.88	1,672.86	-6,122.23	1,629.64	1,561.48	68.16	23.908			
11,700.00	6,985.28	7,166.15	7,082.08	83.35	20.53	91.83	1,672.88	-6,122.23	1,554.64	1,483.43	71.21	21.832			
11,800.00	6,985.20	7,165.37	7,081.30	84.87	20.53	91.79	1,672.89	-6,122.24	1,482.59	1,408.04	74.54	19.889			
11,900.00	6,985.12	7,164.59	7,080.52	86.40	20.53	91.75	1,672.91	-6,122.24	1,413.94	1,335.77	78.17	18.088			
12,000.00	6,985.04	7,163.81	7,079.74	87.93	20.53	91.71	1,672.93	-6,122.25	1,349.22	1,267.15	82.08	16.439			
12,100.00	6,984.96	7,163.02	7,078.96	89.46	20.53	91.66	1,672.95	-6,122.25	1,289.02	1,202.77	86.24	14.946			
12,200.00	6,984.88	7,162.24	7,078.18	90.99	20.53	91.62	1,672.97	-6,122.26	1,233.99	1,143.36	90.62	13.617			
12,300.00	6,984.81	7,161.46	7,077.39	92.53	20.53	91.58	1,672.99	-6,122.26	1,184.86	1,089.71	95.15	12.453			
12,400.00	6,984.73	7,160.68	7,076.61	94.07	20.52	91.54	1,673.00	-6,122.27	1,142.39	1,042.67	99.71	11.457			
12,500.00	6,984.65	7,159.90	7,075.83	95.61	20.52	91.49	1,673.02	-6,122.28	1,107.34	1,003.15	104.19	10.628			
12,600.00	6,984.57	7,159.12	7,075.05	97.15	20.52	91.45	1,673.04	-6,122.28	1,080.44	972.03	108.42	9.966			
12,700.00	6,984.49	7,158.33	7,074.27	98.70	20.52	91.41	1,673.06	-6,122.29	1,062.32	950.09	112.23	9.466			
12,800.00	6,984.41	7,157.55	7,073.48	100.25	20.52	91.37	1,673.08	-6,122.29	1,053.41	937.95	115.45	9.124			
12,844.00	6,984.38	7,157.21	7,073.14	100.93	20.52	91.35	1,673.09	-6,122.29	1,052.48	935.83	116.65	9.022 CC, ES			
12,900.00	6,984.34	7,156.77	7,072.70	101.80	20.52	91.32	1,673.10	-6,122.30	1,053.96	935.99	117.97	8.934			
13,000.00	6,984.26	7,155.98	7,071.92	103.35	20.52	91.28	1,673.12	-6,122.30	1,063.94	944.26	119.68	8.890 SF			
13,100.00	6,984.18	7,155.20	7,071.13	104.90	20.51	91.24	1,673.13	-6,122.31	1,083.11	962.52	120.59	8.982			
13,200.00	6,984.10	7,154.42	7,070.35	106.45	20.51	91.20	1,673.15	-6,122.31	1,110.98	990.25	120.73	9.202			
13,300.00	6,984.02	7,153.63	7,069.57	108.01	20.51	91.15	1,673.17	-6,122.32	1,146.92	1,026.72	120.20	9.542			
13,400.00	6,983.94	7,152.85	7,068.78	109.56	20.51	91.11	1,673.19	-6,122.32	1,190.20	1,071.07	119.12	9.991			
13,500.00	6,983.87	7,152.06	7,068.00	111.12	20.51	91.07	1,673.21	-6,122.33	1,240.05	1,122.41	117.63	10.542			
13,600.00	6,983.79	7,151.28	7,067.21	112.68	20.51	91.03	1,673.23	-6,122.34	1,295.71	1,179.86	115.84	11.185			
13,700.00	6,983.71	7,150.49	7,066.43	114.24	20.51	90.98	1,673.24	-6,122.34	1,356.47	1,242.60	113.87	11.913			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #072C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 320-APC_ISCWSA REV 2 MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,800.00	6,983.63	7,149.70	7,065.64	115.80	20.50	90.94	1,673.26	-6,122.35	1,421.67	1,309.88	111.79	12.718	
13,900.00	6,983.55	7,148.92	7,064.85	117.37	20.50	90.90	1,673.28	-6,122.35	1,490.73	1,381.06	109.67	13.593	
14,000.00	6,983.47	7,148.13	7,064.07	118.93	20.50	90.85	1,673.30	-6,122.36	1,563.15	1,455.58	107.56	14.532	
14,100.00	6,983.40	7,147.34	7,063.28	120.50	20.50	90.81	1,673.32	-6,122.36	1,638.46	1,532.96	105.51	15.530	
14,200.00	6,983.32	7,146.56	7,062.50	122.06	20.50	90.77	1,673.34	-6,122.37	1,716.30	1,612.79	103.52	16.580	
14,300.00	6,983.24	7,145.77	7,061.71	123.63	20.50	90.73	1,673.36	-6,122.37	1,796.34	1,694.73	101.61	17.678	
14,400.00	6,983.16	7,144.98	7,060.92	125.20	20.50	90.68	1,673.37	-6,122.38	1,878.29	1,778.49	99.80	18.820	
14,500.00	6,983.08	7,144.19	7,060.13	126.77	20.49	90.64	1,673.39	-6,122.39	1,961.91	1,863.83	98.08	20.002	
14,600.00	6,983.00	7,143.41	7,059.34	128.33	20.49	90.60	1,673.41	-6,122.39	2,047.01	1,950.54	96.46	21.220	
14,700.00	6,982.93	7,142.62	7,058.56	129.91	20.49	90.55	1,673.43	-6,122.40	2,133.39	2,038.46	94.94	22.472	
14,800.00	6,982.85	7,141.83	7,057.77	131.48	20.49	90.51	1,673.45	-6,122.40	2,220.92	2,127.42	93.50	23.753	
14,900.00	6,982.77	7,141.04	7,056.98	133.05	20.49	90.47	1,673.47	-6,122.41	2,309.46	2,217.31	92.15	25.062	
15,000.00	6,982.69	7,140.25	7,056.19	134.62	20.49	90.43	1,673.49	-6,122.41	2,398.91	2,308.02	90.88	26.396	
15,100.00	6,982.61	7,139.46	7,055.40	136.20	20.49	90.38	1,673.51	-6,122.42	2,489.15	2,399.46	89.69	27.752	
15,200.00	6,982.54	7,138.67	7,054.61	137.77	20.48	90.34	1,673.52	-6,122.42	2,580.12	2,491.54	88.57	29.130	
15,300.00	6,982.46	7,137.88	7,053.82	139.35	20.48	90.30	1,673.54	-6,122.43	2,671.73	2,584.20	87.52	30.526	
15,400.00	6,982.38	7,137.09	7,053.03	140.92	20.48	90.25	1,673.56	-6,122.44	2,763.92	2,677.38	86.53	31.940	
15,500.00	6,982.30	7,136.30	7,052.24	142.50	20.48	90.21	1,673.58	-6,122.44	2,856.64	2,771.03	85.61	33.370	
15,600.00	6,982.22	7,135.51	7,051.45	144.07	20.48	90.17	1,673.60	-6,122.45	2,949.83	2,865.10	84.73	34.813	
15,700.00	6,982.14	7,134.72	7,050.66	145.65	20.48	90.12	1,673.62	-6,122.45	3,043.45	2,959.54	83.91	36.270	
15,800.00	6,982.07	7,133.92	7,049.87	147.23	20.48	90.08	1,673.64	-6,122.46	3,137.47	3,054.34	83.14	37.739	
15,900.00	6,981.99	7,133.13	7,049.07	148.81	20.47	90.04	1,673.66	-6,122.46	3,231.85	3,149.44	82.40	39.219	
16,000.00	6,981.91	7,132.34	7,048.28	150.39	20.47	89.99	1,673.67	-6,122.47	3,326.55	3,244.84	81.72	40.709	
16,100.00	6,981.83	7,131.55	7,047.49	151.97	20.47	89.95	1,673.69	-6,122.47	3,421.56	3,340.49	81.07	42.208	
16,200.00	6,981.75	7,130.75	7,046.70	153.55	20.47	89.91	1,673.71	-6,122.48	3,516.84	3,436.39	80.45	43.714	
16,300.00	6,981.67	7,129.96	7,045.90	155.13	20.47	89.87	1,673.73	-6,122.49	3,612.38	3,532.51	79.87	45.228	
16,400.00	6,981.60	7,129.17	7,045.11	156.71	20.47	89.82	1,673.75	-6,122.49	3,708.15	3,628.83	79.32	46.749	
16,500.00	6,981.52	7,128.37	7,044.32	158.29	20.47	89.78	1,673.77	-6,122.50	3,804.14	3,725.34	78.80	48.275	
16,600.00	6,981.44	7,127.58	7,043.52	159.88	20.46	89.74	1,673.79	-6,122.50	3,900.33	3,822.03	78.31	49.807	
16,700.00	6,981.36	7,126.78	7,042.73	161.46	20.46	89.69	1,673.81	-6,122.51	3,996.71	3,918.87	77.84	51.344	
16,800.00	6,981.28	7,125.99	7,041.93	163.04	20.46	89.65	1,673.82	-6,122.51	4,093.27	4,015.86	77.40	52.884	
16,900.00	6,981.20	7,125.19	7,041.14	164.62	20.46	89.61	1,673.84	-6,122.52	4,189.98	4,113.00	76.98	54.429	
17,000.00	6,981.13	7,124.40	7,040.34	166.21	20.46	89.56	1,673.86	-6,122.52	4,286.84	4,210.26	76.58	55.976	
17,100.00	6,981.05	7,123.60	7,039.55	167.79	20.46	89.52	1,673.88	-6,122.53	4,383.85	4,307.64	76.21	57.526	
17,200.00	6,980.97	7,122.81	7,038.75	169.38	20.46	89.48	1,673.90	-6,122.54	4,480.98	4,405.14	75.85	59.079	
17,300.00	6,980.89	7,122.01	7,037.95	170.96	20.45	89.43	1,673.92	-6,122.54	4,578.24	4,502.74	75.51	60.634	
17,400.00	6,980.81	7,121.21	7,037.16	172.55	20.45	89.39	1,673.94	-6,122.55	4,675.62	4,600.44	75.18	62.190	
17,500.00	6,980.73	7,120.42	7,036.36	174.13	20.45	89.35	1,673.96	-6,122.55	4,773.10	4,698.23	74.88	63.748	
17,600.00	6,980.66	7,119.62	7,035.56	175.72	20.45	89.30	1,673.98	-6,122.56	4,870.69	4,796.11	74.58	65.306	
17,700.00	6,980.58	7,118.82	7,034.77	177.31	20.45	89.26	1,674.00	-6,122.56	4,968.37	4,894.07	74.30	66.865	
17,800.00	6,980.50	7,118.02	7,033.97	178.89	20.45	89.22	1,674.01	-6,122.57	5,066.14	4,992.10	74.04	68.425	
17,900.00	6,980.42	7,117.23	7,033.17	180.48	20.45	89.17	1,674.03	-6,122.58	5,164.00	5,090.21	73.79	69.985	
18,000.00	6,980.34	7,116.43	7,032.37	182.07	20.44	89.13	1,674.05	-6,122.58	5,261.94	5,188.39	73.55	71.545	
18,100.00	6,980.26	7,115.63	7,031.57	183.66	20.44	89.09	1,674.07	-6,122.59	5,359.95	5,286.63	73.32	73.104	
18,200.00	6,980.19	7,114.83	7,030.78	185.24	20.44	89.04	1,674.09	-6,122.59	5,458.04	5,384.93	73.10	74.663	
18,300.00	6,980.11	7,114.03	7,029.98	186.83	20.44	89.00	1,674.11	-6,122.60	5,556.19	5,483.29	72.90	76.221	
18,400.00	6,980.03	7,113.23	7,029.18	188.42	20.44	88.96	1,674.13	-6,122.60	5,654.41	5,581.71	72.70	77.778	
18,500.00	6,979.95	7,112.43	7,028.38	190.01	20.44	88.91	1,674.15	-6,122.61	5,752.69	5,680.17	72.51	79.334	
18,600.00	6,979.87	7,111.63	7,027.58	191.60	20.44	88.87	1,674.17	-6,122.61	5,851.02	5,778.69	72.33	80.889	
18,700.00	6,979.79	7,110.83	7,026.78	193.19	20.43	88.83	1,674.19	-6,122.62	5,949.42	5,877.25	72.16	82.442	
18,800.00	6,979.72	7,110.03	7,025.98	194.78	20.43	88.78	1,674.20	-6,122.63	6,047.86	5,975.86	72.00	83.994	
18,900.00	6,979.64	7,109.23	7,025.18	196.37	20.43	88.74	1,674.22	-6,122.63	6,146.36	6,074.51	71.85	85.544	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #072C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		320-APC_ISCWSA REV 2 MWD					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Minimum Separation (usft)	Separation Factor	
19,000.00	6,979.56	7,108.42	7,024.37	197.96	20.43	88.69	1,674.24	-6,122.64	6,244.90	6,173.20	71.70	87.092		
19,100.00	6,979.48	7,107.62	7,023.57	199.55	20.43	88.65	1,674.26	-6,122.64	6,343.49	6,271.92	71.57	88.638		
19,200.00	6,979.40	7,106.82	7,022.77	201.14	20.43	88.61	1,674.28	-6,122.65	6,442.12	6,370.69	71.43	90.182		
19,300.00	6,979.33	7,106.02	7,021.97	202.73	20.43	88.56	1,674.30	-6,122.65	6,540.80	6,469.49	71.31	91.723		
19,400.00	6,979.25	7,105.22	7,021.17	204.32	20.42	88.52	1,674.32	-6,122.66	6,639.51	6,568.32	71.19	93.262		
19,500.00	6,979.17	7,104.41	7,020.36	205.91	20.42	88.48	1,674.34	-6,122.67	6,738.26	6,667.18	71.08	94.799		
19,600.00	6,979.09	7,103.61	7,019.56	207.50	20.42	88.43	1,674.36	-6,122.67	6,837.05	6,766.08	70.97	96.333		
19,700.00	6,979.01	7,102.81	7,018.76	209.09	20.42	88.39	1,674.38	-6,122.68	6,935.87	6,865.00	70.87	97.864		
19,800.00	6,978.93	7,102.00	7,017.95	210.69	20.42	88.35	1,674.40	-6,122.68	7,034.73	6,963.95	70.78	99.393		
19,900.00	6,978.86	7,101.20	7,017.15	212.28	20.42	88.30	1,674.42	-6,122.69	7,133.61	7,062.93	70.69	100.918		
20,000.00	6,978.78	7,100.39	7,016.34	213.87	20.42	88.26	1,674.43	-6,122.69	7,232.53	7,161.93	70.60	102.441		
20,100.00	6,978.70	7,099.59	7,015.54	215.46	20.41	88.21	1,674.45	-6,122.70	7,331.48	7,260.96	70.52	103.961		
20,200.00	6,978.62	7,098.78	7,014.73	217.05	20.41	88.17	1,674.47	-6,122.71	7,430.45	7,360.01	70.45	105.477		
20,300.00	6,978.54	7,097.98	7,013.93	218.65	20.41	88.13	1,674.49	-6,122.71	7,529.45	7,459.08	70.38	106.990		
20,400.00	6,978.46	7,097.17	7,013.12	220.24	20.41	88.08	1,674.51	-6,122.72	7,628.48	7,558.17	70.31	108.500		
20,500.00	6,978.39	7,096.36	7,012.32	221.83	20.41	88.04	1,674.53	-6,122.72	7,727.53	7,657.29	70.25	110.007		
20,600.00	6,978.31	7,095.56	7,011.51	223.43	20.41	88.00	1,674.55	-6,122.73	7,826.61	7,756.42	70.19	111.510		
20,700.00	6,978.23	7,094.75	7,010.70	225.02	20.41	87.95	1,674.57	-6,122.73	7,925.71	7,855.58	70.13	113.010		
20,800.00	6,978.15	7,093.94	7,009.90	226.61	20.40	87.91	1,674.59	-6,122.74	8,024.83	7,954.75	70.08	114.506		
20,900.00	6,978.07	7,093.14	7,009.09	228.21	20.40	87.86	1,674.61	-6,122.75	8,123.98	8,053.94	70.04	115.998		
21,000.00	6,977.99	7,092.33	7,008.28	229.80	20.40	87.82	1,674.63	-6,122.75	8,223.14	8,153.15	69.99	117.487		
21,100.00	6,977.92	7,091.52	7,007.48	231.39	20.40	87.78	1,674.65	-6,122.76	8,322.33	8,252.37	69.95	118.972		
21,200.00	6,977.84	7,090.71	7,006.67	232.99	20.40	87.73	1,674.67	-6,122.76	8,421.53	8,351.61	69.91	120.454		
21,300.00	6,977.76	7,089.90	7,005.86	234.58	20.40	87.69	1,674.69	-6,122.77	8,520.75	8,450.87	69.88	121.932		
21,400.00	6,977.68	7,089.10	7,005.05	236.18	20.40	87.65	1,674.71	-6,122.77	8,619.99	8,550.14	69.85	123.406		
21,500.00	6,977.60	7,088.29	7,004.24	237.77	20.39	87.60	1,674.72	-6,122.78	8,719.25	8,649.42	69.82	124.876		
21,600.00	6,977.52	7,087.48	7,003.43	239.37	20.39	87.56	1,674.74	-6,122.79	8,818.52	8,748.72	69.80	126.342		
21,700.00	6,977.45	7,086.67	7,002.62	240.96	20.39	87.51	1,674.76	-6,122.79	8,917.81	8,848.03	69.78	127.804		
21,800.00	6,977.37	7,085.86	7,001.81	242.56	20.39	87.47	1,674.78	-6,122.80	9,017.12	8,947.36	69.76	129.262		
21,900.00	6,977.29	7,085.05	7,001.00	244.15	20.39	87.43	1,674.80	-6,122.80	9,116.44	9,046.70	69.74	130.716		
22,000.00	6,977.21	7,084.24	7,000.19	245.75	20.39	87.38	1,674.82	-6,122.81	9,215.77	9,146.05	69.73	132.166		
22,100.00	6,977.13	7,083.42	6,999.38	247.34	20.39	87.34	1,674.84	-6,122.82	9,315.12	9,245.41	69.72	133.612		
22,200.00	6,977.05	7,082.61	6,998.57	248.94	20.38	87.29	1,674.86	-6,122.82	9,414.49	9,344.78	69.71	135.054		
22,269.73	6,977.00	7,082.05	6,998.00	250.05	20.38	87.26	1,674.87	-6,122.83	9,483.78	9,414.07	69.70	136.057		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #080A - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 95-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-117.34	-896.58	-1,734.00	1,954.34				
100.00	100.00	6.00	6.00	0.25	0.13	-117.34	-896.58	-1,734.00	1,952.08	1,951.70	0.38	5,153.084	
200.00	200.00	106.00	106.00	0.61	2.24	-117.34	-896.58	-1,734.00	1,952.08	1,949.23	2.85	685.547	
281.72	281.72	187.71	187.70	0.90	3.84	-117.33	-896.18	-1,734.00	1,951.89	1,947.15	4.75	411.329	
300.00	300.00	204.56	204.55	0.97	4.17	-117.33	-896.19	-1,734.00	1,951.90	1,946.76	5.14	379.607	
400.00	400.00	306.02	306.00	1.33	6.15	-117.34	-896.58	-1,734.00	1,952.08	1,944.60	7.48	261.099	
500.00	500.00	406.02	406.00	1.68	8.05	-117.34	-896.58	-1,734.00	1,952.08	1,942.34	9.73	200.537	
600.00	600.00	506.02	506.00	2.04	9.95	-117.34	-896.58	-1,734.00	1,952.08	1,940.09	11.99	162.780	
641.05	641.05	546.90	546.88	2.19	10.73	-117.33	-896.02	-1,734.00	1,951.82	1,938.91	12.92	151.119 CC	
700.00	700.00	604.97	604.95	2.40	11.83	-117.33	-896.06	-1,734.00	1,951.84	1,937.61	14.23	137.163	
800.00	799.98	703.45	703.42	2.76	13.70	-106.62	-896.26	-1,734.00	1,952.43	1,935.97	16.46	118.628	
849.89	849.82	752.53	752.51	2.94	14.63	-106.67	-896.42	-1,734.00	1,953.13	1,935.56	17.57	111.167	
900.00	899.86	805.92	805.86	3.12	15.67	-106.75	-896.58	-1,734.00	1,953.95	1,935.16	18.79	103.976	
1,000.00	999.73	905.78	905.73	3.48	17.79	-106.90	-896.58	-1,734.00	1,955.47	1,934.21	21.26	91.971	
1,100.00	1,099.59	1,005.64	1,005.59	3.84	19.90	-107.04	-896.58	-1,734.00	1,957.00	1,933.27	23.73	82.463	
1,200.00	1,199.45	1,104.53	1,104.48	4.20	21.99	-107.16	-895.72	-1,734.00	1,958.14	1,931.96	26.18	74.789	
1,300.00	1,299.32	1,202.21	1,202.15	4.56	24.05	-107.31	-895.94	-1,734.00	1,959.80	1,931.19	28.61	68.507	
1,400.00	1,399.18	1,299.86	1,299.80	4.92	26.11	-107.47	-896.39	-1,734.00	1,961.58	1,930.55	31.03	63.212	
1,500.00	1,499.04	1,405.18	1,405.04	5.28	28.47	-107.62	-896.58	-1,734.00	1,963.24	1,929.49	33.75	58.174	
1,600.00	1,598.91	1,505.04	1,504.91	5.64	30.75	-107.77	-896.58	-1,734.00	1,964.83	1,928.44	36.39	53.993	
1,700.00	1,698.77	1,603.86	1,603.70	6.00	33.01	-107.88	-895.24	-1,734.00	1,965.79	1,926.78	39.01	50.393	
1,800.00	1,798.63	1,699.75	1,699.59	6.36	35.20	-108.03	-895.55	-1,734.00	1,967.56	1,926.00	41.56	47.341	
1,900.00	1,898.49	1,795.61	1,795.44	6.72	37.39	-108.18	-896.26	-1,734.00	1,969.55	1,925.43	44.11	44.648	
2,000.00	1,998.36	1,904.61	1,904.36	7.09	39.89	-108.35	-896.58	-1,734.00	1,971.32	1,924.35	46.98	41.964	
2,100.00	2,098.22	2,004.47	2,004.22	7.45	42.19	-108.49	-896.58	-1,734.00	1,972.98	1,923.34	49.63	39.750	
2,200.00	2,198.08	2,102.84	2,102.57	7.81	44.45	-108.60	-895.29	-1,734.00	1,974.01	1,921.75	52.26	37.774	
2,300.00	2,297.95	2,198.52	2,198.24	8.17	46.65	-108.75	-895.64	-1,734.00	1,975.87	1,921.05	54.82	36.043	
2,400.00	2,397.81	2,294.16	2,293.87	8.53	48.85	-108.90	-896.41	-1,734.00	1,977.96	1,920.58	57.38	34.471	
2,500.00	2,497.67	2,404.04	2,403.67	8.90	51.46	-109.07	-896.58	-1,734.00	1,979.72	1,919.36	60.36	32.798	
2,600.00	2,597.54	2,503.91	2,503.54	9.26	53.86	-109.21	-896.58	-1,734.00	1,981.44	1,918.32	63.12	31.394	
2,700.00	2,697.40	2,601.93	2,601.54	9.62	56.20	-109.32	-895.26	-1,734.00	1,982.50	1,916.68	65.83	30.117	
2,800.00	2,797.26	2,697.63	2,697.24	9.98	58.50	-109.46	-895.64	-1,734.00	1,984.44	1,915.96	68.48	28.978	
2,900.00	2,897.13	2,793.30	2,792.89	10.35	60.79	-109.62	-896.41	-1,734.00	1,986.60	1,915.47	71.13	27.928	
3,000.00	2,996.99	2,903.50	2,902.99	10.71	63.53	-109.78	-896.58	-1,734.00	1,988.43	1,914.19	74.23	26.786	
3,100.00	3,096.85	3,003.37	3,002.85	11.07	66.02	-109.92	-896.58	-1,734.00	1,990.20	1,913.11	77.09	25.816	
3,200.00	3,196.72	3,102.74	3,102.21	11.43	68.50	-110.01	-894.73	-1,734.00	1,991.05	1,911.11	79.94	24.908	
3,300.00	3,296.58	3,198.13	3,197.58	11.80	70.89	-110.15	-894.98	-1,734.00	1,992.98	1,910.30	82.68	24.105	
3,400.00	3,396.44	3,293.48	3,292.92	12.16	73.27	-110.31	-895.66	-1,734.00	1,995.16	1,909.73	85.42	23.356	
3,500.00	3,496.31	3,403.01	3,402.31	12.52	75.88	-110.48	-896.58	-1,734.00	1,997.44	1,909.04	88.40	22.596	
3,600.00	3,596.17	3,502.88	3,502.17	12.88	77.91	-110.62	-896.58	-1,734.00	1,999.27	1,908.48	90.79	22.020	
3,700.00	3,696.03	3,602.74	3,602.03	13.25	79.94	-110.76	-896.58	-1,734.00	2,001.12	1,907.94	93.18	21.475	
3,800.00	3,795.89	3,702.60	3,701.89	13.61	81.97	-110.90	-896.58	-1,734.00	2,002.99	1,907.41	95.58	20.957	
3,900.00	3,895.76	3,802.47	3,801.76	13.97	84.00	-111.04	-896.58	-1,734.00	2,004.86	1,906.89	97.97	20.464	
4,000.00	3,995.62	3,902.33	3,901.62	14.34	86.03	-111.18	-896.58	-1,734.00	2,006.75	1,906.38	100.36	19.995	
4,100.00	4,095.48	4,002.19	4,001.48	14.70	88.06	-111.32	-896.58	-1,734.00	2,008.64	1,905.89	102.76	19.548	
4,200.00	4,195.35	4,102.05	4,101.35	15.06	90.09	-111.46	-896.58	-1,734.00	2,010.55	1,905.40	105.15	19.121	
4,300.00	4,295.21	4,201.92	4,201.21	15.42	92.12	-111.60	-896.58	-1,734.00	2,012.48	1,904.93	107.54	18.713	
4,400.00	4,395.07	4,301.78	4,301.07	15.79	94.15	-111.73	-896.58	-1,734.00	2,014.41	1,904.47	109.94	18.323	
4,500.00	4,494.94	4,401.64	4,400.94	16.15	96.19	-111.87	-896.58	-1,734.00	2,016.35	1,904.02	112.33	17.950	
4,600.00	4,594.80	4,501.51	4,500.80	16.51	98.22	-112.01	-896.58	-1,734.00	2,018.31	1,903.59	114.72	17.593	
4,700.00	4,694.66	4,601.37	4,600.66	16.87	100.25	-112.15	-896.58	-1,734.00	2,020.28	1,903.16	117.12	17.250	
4,800.00	4,794.53	4,701.23	4,700.53	17.24	102.28	-112.28	-896.58	-1,734.00	2,022.26	1,902.75	119.51	16.921	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 34 - (O) Rosa Unit #080A - OH - OH-INC											Offset Site Error:		0.00 usft				
Survey Program:		95-A027Ua_INC-ONLY							Rule Assigned:							Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)								
4,900.00	4,894.39	4,786.00	4,785.10	17.60	104.00	-112.40	-896.58	-1,734.00	2,024.31	1,902.72	121.59	16.649 ES, SF							
5,000.00	4,994.25	4,786.00	4,785.10	17.96	104.00	-112.40	-896.58	-1,734.00	2,029.52	1,907.77	121.75	16.669							
5,100.00	5,094.12	4,786.00	4,785.10	18.33	104.00	-112.40	-896.58	-1,734.00	2,039.63	1,917.99	121.64	16.768							
5,200.00	5,193.98	4,786.00	4,785.10	18.69	104.00	-112.40	-896.58	-1,734.00	2,054.56	1,933.31	121.25	16.944							
5,300.00	5,293.84	4,786.00	4,785.10	19.05	104.00	-112.40	-896.58	-1,734.00	2,074.22	1,953.60	120.61	17.197							
5,336.91	5,330.71	4,786.00	4,785.10	19.19	104.00	-112.40	-896.58	-1,734.00	2,082.64	1,962.32	120.31	17.310							
5,400.00	5,393.71	4,786.00	4,785.10	19.41	104.00	-112.48	-896.58	-1,734.00	2,098.39	1,978.66	119.73	17.525							
5,500.00	5,493.62	4,786.00	4,785.10	19.77	104.00	-112.61	-896.58	-1,734.00	2,126.70	2,008.06	118.64	17.925							
5,600.00	5,593.57	4,786.00	4,785.10	20.13	104.00	-112.77	-896.58	-1,734.00	2,158.96	2,041.60	117.36	18.397							
5,700.00	5,693.53	4,786.00	4,785.10	20.49	104.00	-112.95	-896.58	-1,734.00	2,194.99	2,079.09	115.90	18.938							
5,800.00	5,793.52	4,786.00	4,785.10	20.85	104.00	-113.15	-896.58	-1,734.00	2,234.61	2,120.30	114.31	19.549							
5,900.00	5,893.52	4,786.00	4,785.10	21.20	104.00	-113.36	-896.58	-1,734.00	2,277.63	2,165.03	112.60	20.227							
5,936.48	5,930.00	4,786.00	4,785.10	21.33	104.00	-124.20	-896.58	-1,734.00	2,294.13	2,182.18	111.95	20.492							
6,000.00	5,993.52	4,786.00	4,785.10	21.56	104.00	-124.20	-896.58	-1,734.00	2,323.91	2,213.11	110.80	20.974							
6,100.00	6,093.52	4,786.00	4,785.10	21.91	104.00	-124.20	-896.58	-1,734.00	2,373.49	2,264.56	108.93	21.789							
6,200.00	6,193.52	4,786.00	4,785.10	22.27	104.00	-124.20	-896.58	-1,734.00	2,426.18	2,319.15	107.02	22.670							
6,300.00	6,293.52	4,786.00	4,785.10	22.62	104.00	-124.20	-896.58	-1,734.00	2,481.78	2,376.69	105.09	23.616							
6,358.48	6,352.00	4,786.00	4,785.10	22.83	104.00	-124.20	-896.58	-1,734.00	2,515.57	2,411.62	103.95	24.200							
6,400.00	6,393.49	4,786.00	4,785.10	22.97	104.00	-47.64	-896.58	-1,734.00	2,539.38	2,436.25	103.13	24.624							
6,450.00	6,443.20	4,786.00	4,785.10	23.15	104.00	-45.51	-896.58	-1,734.00	2,566.66	2,464.56	102.10	25.138							
6,500.00	6,492.36	4,786.00	4,785.10	23.33	104.00	-43.63	-896.58	-1,734.00	2,592.31	2,491.26	101.05	25.654							
6,550.00	6,540.64	4,786.00	4,785.10	23.51	104.00	-41.96	-896.58	-1,734.00	2,616.22	2,516.25	99.97	26.170							
6,600.00	6,587.77	4,786.00	4,785.10	23.69	104.00	-40.50	-896.58	-1,734.00	2,638.29	2,539.42	98.87	26.683							
6,650.00	6,633.44	4,786.00	4,785.10	23.88	104.00	-39.23	-896.58	-1,734.00	2,658.44	2,560.67	97.77	27.192							
6,700.00	6,677.37	4,786.00	4,785.10	24.07	104.00	-38.14	-896.58	-1,734.00	2,676.57	2,579.92	96.65	27.693							
6,750.00	6,719.30	4,786.00	4,785.10	24.26	104.00	-37.20	-896.58	-1,734.00	2,692.63	2,597.10	95.54	28.184							
6,800.00	6,758.97	4,786.00	4,785.10	24.46	104.00	-36.42	-896.58	-1,734.00	2,706.56	2,612.13	94.43	28.662							
6,850.00	6,796.12	4,786.00	4,785.10	24.67	104.00	-35.78	-896.58	-1,734.00	2,718.29	2,624.95	93.34	29.122							
6,900.00	6,830.54	4,786.00	4,785.10	24.88	104.00	-35.28	-896.58	-1,734.00	2,727.79	2,635.51	92.28	29.561							
6,950.00	6,862.00	4,786.00	4,785.10	25.11	104.00	-34.90	-896.58	-1,734.00	2,735.01	2,643.77	91.25	29.974							
7,000.00	6,890.33	4,786.00	4,785.10	25.34	104.00	-34.64	-896.58	-1,734.00	2,739.95	2,649.69	90.26	30.357							
7,050.00	6,915.33	4,786.00	4,785.10	25.59	104.00	-34.51	-896.58	-1,734.00	2,742.57	2,653.24	89.32	30.704							
7,100.00	6,936.86	4,786.00	4,785.10	25.85	104.00	-34.49	-896.58	-1,734.00	2,742.86	2,654.41	88.45	31.010							
7,150.00	6,954.79	4,786.00	4,785.10	26.12	104.00	-34.60	-896.58	-1,734.00	2,740.84	2,653.18	87.65	31.270							
7,200.00	6,968.99	4,786.00	4,785.10	26.40	104.00	-34.82	-896.58	-1,734.00	2,736.49	2,649.56	86.93	31.478							
7,250.00	6,979.40	4,786.00	4,785.10	26.69	104.00	-35.17	-896.58	-1,734.00	2,729.84	2,643.54	86.30	31.630							
7,300.00	6,985.94	4,786.00	4,785.10	27.00	104.00	-35.64	-896.58	-1,734.00	2,720.92	2,635.15	85.77	31.722							
7,350.00	6,988.56	4,786.00	4,785.10	27.31	104.00	-36.25	-896.58	-1,734.00	2,709.76	2,624.41	85.35	31.749							
7,358.93	6,988.62	4,786.00	4,785.10	27.36	104.00	-36.37	-896.58	-1,734.00	2,707.53	2,622.24	85.29	31.746							
7,400.00	6,988.59	4,786.00	4,785.10	27.63	104.00	-36.37	-896.58	-1,734.00	2,697.42	2,612.41	85.01	31.731							
7,500.00	6,988.52	4,786.00	4,785.10	28.33	104.00	-36.37	-896.58	-1,734.00	2,675.27	2,590.81	84.46	31.676							
7,600.00	6,988.45	4,786.00	4,785.10	29.10	104.00	-36.37	-896.58	-1,734.00	2,656.71	2,572.62	84.09	31.594							
7,658.93	6,988.41	4,786.00	4,785.10	29.59	104.00	-36.37	-896.58	-1,734.00	2,647.48	2,563.52	83.96	31.532							
7,700.00	6,988.38	4,786.00	4,785.10	29.94	104.00	-36.27	-896.58	-1,734.00	2,641.63	2,557.72	83.90	31.484							
7,800.00	6,988.31	4,786.00	4,785.10	30.84	104.00	-36.06	-896.58	-1,734.00	2,628.57	2,544.73	83.84	31.354							
7,900.00	6,988.24	4,786.00	4,785.10	31.79	104.00	-35.88	-896.58	-1,734.00	2,617.22	2,533.35	83.86	31.208							
8,000.00	6,988.16	4,786.00	4,785.10	32.78	104.00	-35.72	-896.58	-1,734.00	2,607.61	2,523.62	83.99	31.048							
8,100.00	6,988.09	4,786.00	4,785.10	33.82	104.00	-35.60	-896.58	-1,734.00	2,599.77	2,515.57	84.20	30.875							
8,200.00	6,988.01	4,786.00	4,785.10	34.88	104.00	-35.50	-896.58	-1,734.00	2,593.74	2,509.23	84.51	30.692							
8,300.00	6,987.94	4,786.00	4,785.10	35.98	104.00	-35.43	-896.58	-1,734.00	2,589.52	2,504.62	84.90	30.500							
8,400.00	6,987.86	4,786.00	4,785.10	37.11	104.00	-35.40	-896.58	-1,734.00	2,587.14	2,501.77	85.38	30.303							
8,416.35	6,987.85	4,786.00	4,785.10	37.29	104.00	-35.39	-896.58	-1,734.00	2,586.93	2,501.47	85.46	30.270							

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #080A - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		95-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,446.38	6,987.82	4,786.00	4,785.10	37.64	104.00	-35.39	-896.58	-1,734.00	2,586.75	2,501.12	85.63	30.208	
8,500.00	6,987.78	4,786.00	4,785.10	38.25	104.00	-35.39	-896.58	-1,734.00	2,587.31	2,501.34	85.97	30.095	
8,600.00	6,987.70	4,786.00	4,785.10	39.43	104.00	-35.39	-896.58	-1,734.00	2,591.31	2,504.56	86.75	29.871	
8,700.00	6,987.62	4,786.00	4,785.10	40.64	104.00	-35.39	-896.58	-1,734.00	2,599.16	2,511.45	87.70	29.636	
8,800.00	6,987.55	4,786.00	4,785.10	41.88	104.00	-35.39	-896.58	-1,734.00	2,610.81	2,521.99	88.82	29.395	
8,900.00	6,987.47	4,786.00	4,785.10	43.14	104.00	-35.39	-896.58	-1,734.00	2,626.23	2,536.15	90.08	29.156	
9,000.00	6,987.39	4,786.00	4,785.10	44.42	104.00	-35.39	-896.58	-1,734.00	2,645.33	2,553.88	91.46	28.924	
9,100.00	6,987.31	4,786.00	4,785.10	45.72	104.00	-35.39	-896.58	-1,734.00	2,668.06	2,575.12	92.94	28.708	
9,200.00	6,987.23	4,786.00	4,785.10	47.04	104.00	-35.39	-896.58	-1,734.00	2,694.30	2,599.80	94.50	28.511	
9,300.00	6,987.15	4,786.00	4,785.10	48.38	104.00	-35.39	-896.58	-1,734.00	2,723.96	2,627.84	96.12	28.340	
9,400.00	6,987.08	4,786.00	4,785.10	49.73	104.00	-35.39	-896.58	-1,734.00	2,756.94	2,659.16	97.78	28.196	
9,500.00	6,987.00	4,786.00	4,785.10	51.10	104.00	-35.39	-896.58	-1,734.00	2,793.10	2,693.65	99.45	28.084	
9,600.00	6,986.92	4,786.00	4,785.10	52.48	104.00	-35.39	-896.58	-1,734.00	2,832.34	2,731.20	101.14	28.005	
9,700.00	6,986.84	4,786.00	4,785.10	53.87	104.00	-35.39	-896.58	-1,734.00	2,874.52	2,771.72	102.81	27.960	
9,800.00	6,986.76	4,786.00	4,785.10	55.28	104.00	-35.39	-896.58	-1,734.00	2,919.52	2,815.07	104.45	27.950	
9,900.00	6,986.68	4,786.00	4,785.10	56.69	104.00	-35.39	-896.58	-1,734.00	2,967.21	2,861.14	106.07	27.975	
10,000.00	6,986.61	4,786.00	4,785.10	58.12	104.00	-35.39	-896.58	-1,734.00	3,017.46	2,909.82	107.64	28.033	
10,100.00	6,986.53	4,786.00	4,785.10	59.55	104.00	-35.39	-896.58	-1,734.00	3,070.14	2,960.98	109.17	28.124	
10,200.00	6,986.45	4,786.00	4,785.10	61.00	104.00	-35.39	-896.58	-1,734.00	3,125.14	3,014.50	110.64	28.247	
10,300.00	6,986.37	4,786.00	4,785.10	62.45	104.00	-35.39	-896.58	-1,734.00	3,182.33	3,070.28	112.05	28.400	
10,400.00	6,986.29	4,786.00	4,785.10	63.90	104.00	-35.39	-896.58	-1,734.00	3,241.60	3,128.18	113.41	28.582	
10,500.00	6,986.21	4,786.00	4,785.10	65.37	104.00	-35.39	-896.58	-1,734.00	3,302.83	3,188.12	114.71	28.792	
10,600.00	6,986.14	4,786.00	4,785.10	66.84	104.00	-35.39	-896.58	-1,734.00	3,365.92	3,249.96	115.95	29.028	
10,700.00	6,986.06	4,786.00	4,785.10	68.32	104.00	-35.39	-896.58	-1,734.00	3,430.76	3,313.63	117.14	29.289	
10,800.00	6,985.98	4,786.00	4,785.10	69.80	104.00	-35.39	-896.58	-1,734.00	3,497.26	3,379.00	118.26	29.572	
10,900.00	6,985.90	4,786.00	4,785.10	71.29	104.00	-35.39	-896.58	-1,734.00	3,565.33	3,446.00	119.33	29.878	
11,000.00	6,985.82	4,786.00	4,785.10	72.78	104.00	-35.39	-896.58	-1,734.00	3,634.87	3,514.53	120.35	30.204	
11,100.00	6,985.75	4,786.00	4,785.10	74.28	104.00	-35.39	-896.58	-1,734.00	3,705.81	3,584.50	121.31	30.549	
11,200.00	6,985.67	4,786.00	4,785.10	75.78	104.00	-35.39	-896.58	-1,734.00	3,778.06	3,655.84	122.22	30.912	
11,300.00	6,985.59	4,786.00	4,785.10	77.29	104.00	-35.39	-896.58	-1,734.00	3,851.56	3,728.47	123.09	31.292	
11,400.00	6,985.51	4,786.00	4,785.10	78.80	104.00	-35.39	-896.58	-1,734.00	3,926.22	3,802.32	123.90	31.687	
11,500.00	6,985.43	4,786.00	4,785.10	80.31	104.00	-35.39	-896.58	-1,734.00	4,001.99	3,877.31	124.68	32.098	
11,600.00	6,985.35	4,786.00	4,785.10	81.83	104.00	-35.39	-896.58	-1,734.00	4,078.81	3,953.39	125.42	32.522	
11,700.00	6,985.28	4,786.00	4,785.10	83.35	104.00	-35.39	-896.58	-1,734.00	4,156.61	4,030.50	126.11	32.959	
11,800.00	6,985.20	4,786.00	4,785.10	84.87	104.00	-35.39	-896.58	-1,734.00	4,235.34	4,108.57	126.77	33.409	
11,900.00	6,985.12	4,786.00	4,785.10	86.40	104.00	-35.39	-896.58	-1,734.00	4,314.96	4,187.56	127.40	33.870	
12,000.00	6,985.04	4,786.00	4,785.10	87.93	104.00	-35.39	-896.58	-1,734.00	4,395.40	4,267.41	127.99	34.341	
12,100.00	6,984.96	4,786.00	4,785.10	89.46	104.00	-35.39	-896.58	-1,734.00	4,476.64	4,348.08	128.55	34.823	
12,200.00	6,984.88	4,786.00	4,785.10	90.99	104.00	-35.39	-896.58	-1,734.00	4,558.62	4,429.53	129.09	35.314	
12,300.00	6,984.81	4,786.00	4,785.10	92.53	104.00	-35.39	-896.58	-1,734.00	4,641.31	4,511.71	129.59	35.814	
12,400.00	6,984.73	4,786.00	4,785.10	94.07	104.00	-35.39	-896.58	-1,734.00	4,724.67	4,594.59	130.08	36.322	
12,500.00	6,984.65	4,786.00	4,785.10	95.61	104.00	-35.39	-896.58	-1,734.00	4,808.66	4,678.12	130.53	36.838	
12,600.00	6,984.57	4,786.00	4,785.10	97.15	104.00	-35.39	-896.58	-1,734.00	4,893.25	4,762.28	130.97	37.362	
12,700.00	6,984.49	4,786.00	4,785.10	98.70	104.00	-35.39	-896.58	-1,734.00	4,978.42	4,847.03	131.39	37.892	
12,800.00	6,984.41	4,786.00	4,785.10	100.25	104.00	-35.39	-896.58	-1,734.00	5,064.13	4,932.35	131.78	38.428	
12,900.00	6,984.34	4,786.00	4,785.10	101.80	104.00	-35.39	-896.58	-1,734.00	5,150.35	5,018.19	132.16	38.971	
13,000.00	6,984.26	4,786.00	4,785.10	103.35	104.00	-35.39	-896.58	-1,734.00	5,237.06	5,104.54	132.52	39.520	
13,100.00	6,984.18	4,786.00	4,785.10	104.90	104.00	-35.39	-896.58	-1,734.00	5,324.24	5,191.38	132.86	40.074	
13,200.00	6,984.10	4,786.00	4,785.10	106.45	104.00	-35.39	-896.58	-1,734.00	5,411.86	5,278.67	133.19	40.633	
13,300.00	6,984.02	4,786.00	4,785.10	108.01	104.00	-35.39	-896.58	-1,734.00	5,499.91	5,366.40	133.50	41.197	
13,400.00	6,983.94	4,786.00	4,785.10	109.56	104.00	-35.39	-896.58	-1,734.00	5,588.36	5,454.55	133.80	41.765	
13,500.00	6,983.87	4,786.00	4,785.10	111.12	104.00	-35.39	-896.58	-1,734.00	5,677.19	5,543.09	134.09	42.338	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #080A - OH - OH-INC												Offset Site Error:	0.00 usft		
Survey Program:		95-A027Ua_INC-ONLY				Rule Assigned:								Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)		
13,600.00	6,983.79	4,786.00	4,785.10	112.68	104.00	-35.39	-896.58	-1,734.00	5,766.38	5,632.01	134.37	42.914			
13,700.00	6,983.71	4,786.00	4,785.10	114.24	104.00	-35.39	-896.58	-1,734.00	5,855.93	5,721.29	134.64	43.495			
13,800.00	6,983.63	4,786.00	4,785.10	115.80	104.00	-35.39	-896.58	-1,734.00	5,945.81	5,810.92	134.89	44.079			
13,900.00	6,983.55	4,786.00	4,785.10	117.37	104.00	-35.39	-896.58	-1,734.00	6,036.00	5,900.87	135.14	44.666			
14,000.00	6,983.47	4,786.00	4,785.10	118.93	104.00	-35.39	-896.58	-1,734.00	6,126.51	5,991.13	135.37	45.256			
14,100.00	6,983.40	4,786.00	4,785.10	120.50	104.00	-35.39	-896.58	-1,734.00	6,217.30	6,081.70	135.60	45.850			
14,200.00	6,983.32	4,786.00	4,785.10	122.06	104.00	-35.39	-896.58	-1,734.00	6,308.37	6,172.55	135.82	46.446			
14,300.00	6,983.24	4,786.00	4,785.10	123.63	104.00	-35.39	-896.58	-1,734.00	6,399.71	6,263.67	136.03	47.045			
14,400.00	6,983.16	4,786.00	4,785.10	125.20	104.00	-35.39	-896.58	-1,734.00	6,491.30	6,355.06	136.24	47.647			
14,500.00	6,983.08	4,786.00	4,785.10	126.77	104.00	-35.39	-896.58	-1,734.00	6,583.14	6,446.70	136.44	48.250			
14,600.00	6,983.00	4,786.00	4,785.10	128.33	104.00	-35.39	-896.58	-1,734.00	6,675.21	6,538.58	136.63	48.856			
14,700.00	6,982.93	4,786.00	4,785.10	129.91	104.00	-35.39	-896.58	-1,734.00	6,767.51	6,630.69	136.82	49.465			
14,800.00	6,982.85	4,786.00	4,785.10	131.48	104.00	-35.39	-896.58	-1,734.00	6,860.02	6,723.02	137.00	50.075			
14,900.00	6,982.77	4,786.00	4,785.10	133.05	104.00	-35.39	-896.58	-1,734.00	6,952.74	6,815.57	137.17	50.687			
15,000.00	6,982.69	4,786.00	4,785.10	134.62	104.00	-35.39	-896.58	-1,734.00	7,045.66	6,908.32	137.34	51.300			
15,100.00	6,982.61	4,786.00	4,785.10	136.20	104.00	-35.39	-896.58	-1,734.00	7,138.77	7,001.26	137.51	51.916			
15,200.00	6,982.54	4,786.00	4,785.10	137.77	104.00	-35.39	-896.58	-1,734.00	7,232.07	7,094.40	137.67	52.532			
15,300.00	6,982.46	4,786.00	4,785.10	139.35	104.00	-35.39	-896.58	-1,734.00	7,325.54	7,187.71	137.83	53.151			
15,400.00	6,982.38	4,786.00	4,785.10	140.92	104.00	-35.39	-896.58	-1,734.00	7,419.18	7,281.20	137.98	53.770			
15,500.00	6,982.30	4,786.00	4,785.10	142.50	104.00	-35.39	-896.58	-1,734.00	7,512.99	7,374.86	138.13	54.391			
15,600.00	6,982.22	4,786.00	4,785.10	144.07	104.00	-35.39	-896.58	-1,734.00	7,606.95	7,468.67	138.28	55.013			
15,700.00	6,982.14	4,786.00	4,785.10	145.65	104.00	-35.39	-896.58	-1,734.00	7,701.07	7,562.65	138.42	55.636			
15,800.00	6,982.07	4,786.00	4,785.10	147.23	104.00	-35.39	-896.58	-1,734.00	7,795.33	7,656.77	138.56	56.260			
15,900.00	6,981.99	4,786.00	4,785.10	148.81	104.00	-35.39	-896.58	-1,734.00	7,889.73	7,751.04	138.70	56.885			
16,000.00	6,981.91	4,786.00	4,785.10	150.39	104.00	-35.39	-896.58	-1,734.00	7,984.27	7,845.44	138.83	57.511			
16,100.00	6,981.83	4,786.00	4,785.10	151.97	104.00	-35.39	-896.58	-1,734.00	8,078.94	7,939.98	138.96	58.138			
16,200.00	6,981.75	4,786.00	4,785.10	153.55	104.00	-35.39	-896.58	-1,734.00	8,173.74	8,034.65	139.09	58.765			
16,300.00	6,981.67	4,786.00	4,785.10	155.13	104.00	-35.39	-896.58	-1,734.00	8,268.66	8,129.44	139.22	59.393			
16,400.00	6,981.60	4,786.00	4,785.10	156.71	104.00	-35.39	-896.58	-1,734.00	8,363.70	8,224.36	139.34	60.022			
16,500.00	6,981.52	4,786.00	4,785.10	158.29	104.00	-35.39	-896.58	-1,734.00	8,458.85	8,319.39	139.47	60.651			
16,600.00	6,981.44	4,786.00	4,785.10	159.88	104.00	-35.39	-896.58	-1,734.00	8,554.12	8,414.53	139.59	61.281			
16,700.00	6,981.36	4,786.00	4,785.10	161.46	104.00	-35.39	-896.58	-1,734.00	8,649.49	8,509.78	139.71	61.912			
16,800.00	6,981.28	4,786.00	4,785.10	163.04	104.00	-35.39	-896.58	-1,734.00	8,744.96	8,605.14	139.82	62.542			
16,900.00	6,981.20	4,786.00	4,785.10	164.62	104.00	-35.39	-896.58	-1,734.00	8,840.54	8,700.60	139.94	63.173			
17,000.00	6,981.13	4,786.00	4,785.10	166.21	104.00	-35.39	-896.58	-1,734.00	8,936.21	8,796.15	140.06	63.805			
17,100.00	6,981.05	4,786.00	4,785.10	167.79	104.00	-35.39	-896.58	-1,734.00	9,031.97	8,891.81	140.17	64.437			
17,200.00	6,980.97	4,786.00	4,785.10	169.38	104.00	-35.39	-896.58	-1,734.00	9,127.83	8,987.55	140.28	65.068			
17,300.00	6,980.89	4,786.00	4,785.10	170.96	104.00	-35.39	-896.58	-1,734.00	9,223.77	9,083.38	140.39	65.701			
17,400.00	6,980.81	4,786.00	4,785.10	172.55	104.00	-35.39	-896.58	-1,734.00	9,319.80	9,179.30	140.50	66.333			
17,500.00	6,980.73	4,786.00	4,785.10	174.13	104.00	-35.39	-896.58	-1,734.00	9,415.92	9,275.31	140.61	66.965			
17,600.00	6,980.66	4,786.00	4,785.10	175.72	104.00	-35.39	-896.58	-1,734.00	9,512.11	9,371.39	140.72	67.598			
17,700.00	6,980.58	4,786.00	4,785.10	177.31	104.00	-35.39	-896.58	-1,734.00	9,608.38	9,467.56	140.82	68.230			
17,800.00	6,980.50	4,786.00	4,785.10	178.89	104.00	-35.39	-896.58	-1,734.00	9,704.72	9,563.80	140.93	68.863			
17,900.00	6,980.42	4,786.00	4,785.10	180.48	104.00	-35.39	-896.58	-1,734.00	9,801.14	9,660.11	141.03	69.496			
18,000.00	6,980.34	4,786.00	4,785.10	182.07	104.00	-35.39	-896.58	-1,734.00	9,897.63	9,756.49	141.14	70.128			
18,100.00	6,980.26	4,786.00	4,785.10	183.66	104.00	-35.39	-896.58	-1,734.00	9,994.19	9,852.95	141.24	70.761			
18,200.00	6,980.19	4,786.00	4,785.10	185.24	104.00	-35.39	-896.58	-1,734.00	10,090.82	9,949.47	141.34	71.393			
18,300.00	6,980.11	4,786.00	4,785.10	186.83	104.00	-35.39	-896.58	-1,734.00	10,187.51	10,046.06	141.44	72.025			
18,400.00	6,980.03	4,786.00	4,785.10	188.42	104.00	-35.39	-896.58	-1,734.00	10,284.26	10,142.72	141.54	72.657			
18,500.00	6,979.95	4,786.00	4,785.10	190.01	104.00	-35.39	-896.58	-1,734.00	10,381.08	10,239.43	141.65	73.289			
18,600.00	6,979.87	4,786.00	4,785.10	191.60	104.00	-35.39	-896.58	-1,734.00	10,477.95	10,336.21	141.75	73.921			
18,700.00	6,979.79	4,786.00	4,785.10	193.19	104.00	-35.39	-896.58	-1,734.00	10,574.88	10,433.04	141.85	74.552			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #080A - OH - OH-INC												Offset Site Error: 0.00 usft	
Survey Program:		95-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,800.00	6,979.72	4,786.00	4,785.10	194.78	104.00	-35.39	-896.58	-1,734.00	10,671.87	10,529.93	141.94	75.183	
18,900.00	6,979.64	4,786.00	4,785.10	196.37	104.00	-35.39	-896.58	-1,734.00	10,768.92	10,626.88	142.04	75.814	
19,000.00	6,979.56	4,786.00	4,785.10	197.96	104.00	-35.39	-896.58	-1,734.00	10,866.02	10,723.88	142.14	76.445	
19,100.00	6,979.48	4,786.00	4,785.10	199.55	104.00	-35.39	-896.58	-1,734.00	10,963.17	10,820.93	142.24	77.075	
19,200.00	6,979.40	4,786.00	4,785.10	201.14	104.00	-35.39	-896.58	-1,734.00	11,060.37	10,918.03	142.34	77.705	
19,300.00	6,979.33	4,786.00	4,785.10	202.73	104.00	-35.39	-896.58	-1,734.00	11,157.62	11,015.19	142.43	78.335	
19,400.00	6,979.25	4,786.00	4,785.10	204.32	104.00	-35.39	-896.58	-1,734.00	11,254.92	11,112.39	142.53	78.964	
19,500.00	6,979.17	4,786.00	4,785.10	205.91	104.00	-35.39	-896.58	-1,734.00	11,352.27	11,209.64	142.63	79.593	
19,600.00	6,979.09	4,786.00	4,785.10	207.50	104.00	-35.39	-896.58	-1,734.00	11,449.66	11,306.93	142.73	80.221	
19,700.00	6,979.01	4,786.00	4,785.10	209.09	104.00	-35.39	-896.58	-1,734.00	11,547.10	11,404.27	142.82	80.849	
19,800.00	6,978.93	4,786.00	4,785.10	210.69	104.00	-35.39	-896.58	-1,734.00	11,644.58	11,501.66	142.92	81.477	
19,900.00	6,978.86	4,786.00	4,785.10	212.28	104.00	-35.39	-896.58	-1,734.00	11,742.10	11,599.08	143.02	82.104	
20,000.00	6,978.78	4,786.00	4,785.10	213.87	104.00	-35.39	-896.58	-1,734.00	11,839.66	11,696.55	143.11	82.730	
20,100.00	6,978.70	4,786.00	4,785.10	215.46	104.00	-35.39	-896.58	-1,734.00	11,937.27	11,794.06	143.21	83.357	
20,200.00	6,978.62	4,786.00	4,785.10	217.05	104.00	-35.39	-896.58	-1,734.00	12,034.91	11,891.61	143.30	83.982	
20,300.00	6,978.54	4,786.00	4,785.10	218.65	104.00	-35.39	-896.58	-1,734.00	12,132.59	11,989.19	143.40	84.607	
20,400.00	6,978.46	4,786.00	4,785.10	220.24	104.00	-35.39	-896.58	-1,734.00	12,230.31	12,086.82	143.49	85.232	
20,500.00	6,978.39	4,786.00	4,785.10	221.83	104.00	-35.39	-896.58	-1,734.00	12,328.07	12,184.48	143.59	85.856	
20,600.00	6,978.31	4,786.00	4,785.10	223.43	104.00	-35.39	-896.58	-1,734.00	12,425.86	12,282.17	143.69	86.479	
20,700.00	6,978.23	4,786.00	4,785.10	225.02	104.00	-35.39	-896.58	-1,734.00	12,523.69	12,379.90	143.78	87.102	
20,800.00	6,978.15	4,786.00	4,785.10	226.61	104.00	-35.39	-896.58	-1,734.00	12,621.55	12,477.67	143.88	87.724	
20,900.00	6,978.07	4,786.00	4,785.10	228.21	104.00	-35.39	-896.58	-1,734.00	12,719.44	12,575.47	143.97	88.346	
21,000.00	6,977.99	4,786.00	4,785.10	229.80	104.00	-35.39	-896.58	-1,734.00	12,817.37	12,673.30	144.07	88.967	
21,100.00	6,977.92	4,786.00	4,785.10	231.39	104.00	-35.39	-896.58	-1,734.00	12,915.32	12,771.16	144.17	89.587	
21,200.00	6,977.84	4,786.00	4,785.10	232.99	104.00	-35.39	-896.58	-1,734.00	13,013.31	12,869.05	144.26	90.207	
21,300.00	6,977.76	4,786.00	4,785.10	234.58	104.00	-35.39	-896.58	-1,734.00	13,111.33	12,966.98	144.36	90.826	
21,400.00	6,977.68	4,786.00	4,785.10	236.18	104.00	-35.39	-896.58	-1,734.00	13,209.38	13,064.93	144.45	91.444	
21,500.00	6,977.60	4,786.00	4,785.10	237.77	104.00	-35.39	-896.58	-1,734.00	13,307.46	13,162.91	144.55	92.062	
21,600.00	6,977.52	4,786.00	4,785.10	239.37	104.00	-35.39	-896.58	-1,734.00	13,405.57	13,260.92	144.64	92.679	
21,700.00	6,977.45	4,786.00	4,785.10	240.96	104.00	-35.39	-896.58	-1,734.00	13,503.70	13,358.96	144.74	93.296	
21,800.00	6,977.37	4,786.00	4,785.10	242.56	104.00	-35.39	-896.58	-1,734.00	13,601.86	13,457.03	144.84	93.911	
21,900.00	6,977.29	4,786.00	4,785.10	244.15	104.00	-35.39	-896.58	-1,734.00	13,700.05	13,555.12	144.93	94.526	
22,000.00	6,977.21	4,786.00	4,785.10	245.75	104.00	-35.39	-896.58	-1,734.00	13,798.27	13,653.24	145.03	95.141	
22,100.00	6,977.13	4,786.00	4,785.10	247.34	104.00	-35.39	-896.58	-1,734.00	13,896.51	13,751.38	145.13	95.754	
22,200.00	6,977.05	4,786.00	4,785.10	248.94	104.00	-35.39	-896.58	-1,734.00	13,994.77	13,849.55	145.22	96.367	
22,269.73	6,977.00	4,786.00	4,785.10	250.05	104.00	-35.39	-896.58	-1,734.00	14,063.30	13,918.01	145.29	96.794	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #107 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 165-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	52.84	2,912.11	3,842.77	4,825.09				
100.00	100.00	0.00	0.00	0.25	0.00	52.84	2,912.11	3,842.77	4,822.29	4,822.04	0.25	N/A	
200.00	200.00	15.00	15.00	0.61	0.28	52.84	2,912.11	3,842.77	4,821.54	4,820.66	0.89	5,436.614	
300.00	300.00	115.00	115.00	0.97	2.13	52.84	2,912.11	3,842.77	4,821.54	4,818.45	3.09	1,558.476	
400.00	400.00	215.00	215.00	1.33	4.10	52.84	2,912.11	3,842.77	4,821.54	4,816.12	5.43	888.637	
500.00	500.00	318.48	318.48	1.68	6.27	52.84	2,912.35	3,842.77	4,821.69	4,813.73	7.96	606.054	
600.00	600.00	415.04	415.00	2.04	8.31	52.84	2,912.11	3,842.77	4,821.54	4,811.19	10.35	465.814	
700.00	700.00	515.04	515.00	2.40	10.52	52.84	2,912.11	3,842.77	4,821.54	4,808.62	12.92	373.200	
800.00	799.98	615.02	614.98	2.76	12.73	63.63	2,912.11	3,842.77	4,820.77	4,805.28	15.49	311.273	
849.89	849.82	664.87	664.82	2.94	13.83	63.67	2,912.11	3,842.77	4,819.80	4,803.03	16.77	287.445	
900.00	899.86	714.90	714.86	3.12	14.94	63.70	2,912.11	3,842.77	4,818.64	4,800.58	18.05	266.913	
1,000.00	999.73	815.97	815.89	3.48	17.17	63.73	2,914.71	3,842.77	4,817.88	4,797.24	20.65	233.361	
1,100.00	1,099.59	926.41	926.32	3.84	19.61	63.80	2,914.46	3,842.77	4,815.44	4,791.99	23.45	205.386	
1,200.00	1,199.45	1,036.82	1,036.71	4.20	22.05	63.86	2,913.81	3,842.77	4,812.77	4,786.53	26.25	183.373	
1,300.00	1,299.32	1,147.19	1,147.07	4.56	24.49	63.94	2,912.76	3,842.77	4,809.90	4,780.85	29.05	165.600	
1,400.00	1,399.18	1,214.38	1,214.18	4.92	25.94	63.98	2,912.11	3,842.77	4,807.10	4,776.24	30.86	155.782	
1,500.00	1,499.04	1,314.24	1,314.04	5.28	27.90	64.04	2,912.11	3,842.77	4,804.80	4,771.63	33.17	144.838	
1,600.00	1,598.91	1,414.11	1,413.91	5.64	29.85	64.09	2,912.11	3,842.77	4,802.51	4,767.02	35.49	135.322	
1,700.00	1,698.77	1,517.49	1,517.28	6.00	31.87	64.14	2,912.95	3,842.77	4,800.73	4,762.85	37.87	126.753	
1,800.00	1,798.63	1,624.90	1,624.69	6.36	33.98	64.20	2,912.68	3,842.77	4,798.30	4,757.96	40.34	118.951	
1,900.00	1,898.49	1,732.29	1,732.08	6.72	36.08	64.27	2,912.12	3,842.77	4,795.71	4,752.91	42.80	112.045	
2,000.00	1,998.36	1,813.60	1,813.36	7.09	37.81	64.32	2,912.11	3,842.77	4,793.40	4,748.51	44.89	106.778	
2,100.00	2,098.22	1,913.47	1,913.22	7.45	39.93	64.37	2,912.11	3,842.77	4,791.13	4,743.75	47.38	101.127	
2,200.00	2,198.08	2,013.33	2,013.08	7.81	42.05	64.43	2,912.11	3,842.77	4,788.87	4,739.00	49.86	96.039	
2,300.00	2,297.95	2,117.41	2,117.16	8.17	44.27	64.48	2,913.08	3,842.77	4,787.19	4,734.75	52.44	91.289	
2,400.00	2,397.81	2,223.57	2,223.31	8.53	46.53	64.54	2,912.80	3,842.77	4,784.78	4,729.72	55.06	86.901	
2,500.00	2,497.67	2,329.71	2,329.44	8.90	48.79	64.61	2,912.29	3,842.77	4,782.25	4,724.57	57.68	82.910	
2,600.00	2,597.54	2,412.88	2,412.54	9.26	50.51	64.65	2,912.11	3,842.77	4,779.87	4,720.10	59.77	79.974	
2,700.00	2,697.40	2,512.74	2,512.40	9.62	52.55	64.71	2,912.11	3,842.77	4,777.63	4,715.46	62.17	76.847	
2,800.00	2,797.26	2,612.61	2,612.26	9.98	54.59	64.77	2,912.11	3,842.77	4,775.39	4,710.82	64.57	73.953	
2,900.00	2,897.13	2,718.09	2,717.72	10.35	56.75	64.81	2,913.71	3,842.77	4,774.11	4,707.01	67.09	71.158	
3,000.00	2,996.99	2,829.14	2,828.77	10.71	59.02	64.88	2,913.27	3,842.77	4,771.65	4,701.92	69.72	68.437	
3,100.00	3,096.85	2,940.17	2,939.78	11.07	61.29	64.95	2,912.38	3,842.77	4,768.96	4,696.60	72.35	65.912	
3,200.00	3,196.72	3,012.13	3,011.72	11.43	62.69	65.00	2,912.11	3,842.77	4,766.50	4,692.39	74.12	64.311	
3,300.00	3,296.58	3,112.00	3,111.58	11.80	64.57	65.05	2,912.11	3,842.77	4,764.29	4,687.93	76.36	62.391	
3,400.00	3,396.44	3,211.86	3,211.44	12.16	66.45	65.11	2,912.11	3,842.77	4,762.09	4,683.48	78.61	60.580	
3,500.00	3,496.31	3,311.72	3,311.31	12.52	68.34	65.17	2,912.11	3,842.77	4,759.88	4,679.03	80.85	58.869	
3,600.00	3,596.17	3,411.59	3,411.17	12.88	70.22	65.22	2,912.11	3,842.77	4,757.69	4,674.59	83.10	57.252	
3,700.00	3,696.03	3,511.45	3,511.03	13.25	72.11	65.28	2,912.11	3,842.77	4,755.50	4,670.15	85.35	55.719	
3,800.00	3,795.89	3,611.31	3,610.89	13.61	73.99	65.34	2,912.11	3,842.77	4,753.31	4,665.71	87.59	54.265	
3,900.00	3,895.76	3,711.18	3,710.76	13.97	75.87	65.39	2,912.11	3,842.77	4,751.13	4,661.29	89.84	52.884	
4,000.00	3,995.62	3,811.25	3,810.83	14.34	77.76	65.43	2,913.92	3,842.77	4,750.00	4,657.91	92.09	51.579	
4,100.00	4,095.48	3,912.58	3,912.15	14.70	79.67	65.49	2,913.89	3,842.77	4,747.80	4,653.44	94.37	50.313	
4,200.00	4,195.35	4,013.90	4,013.47	15.06	81.58	65.55	2,913.80	3,842.77	4,745.58	4,648.94	96.64	49.106	
4,300.00	4,295.21	4,115.22	4,114.79	15.42	83.50	65.61	2,913.65	3,842.77	4,743.34	4,644.42	98.91	47.955	
4,400.00	4,395.07	4,216.53	4,216.10	15.79	85.41	65.67	2,913.46	3,842.77	4,741.07	4,639.88	101.19	46.855	
4,500.00	4,494.94	4,317.84	4,317.40	16.15	87.32	65.73	2,913.21	3,842.77	4,738.77	4,635.31	103.46	45.803	
4,600.00	4,594.80	4,419.14	4,418.70	16.51	89.23	65.79	2,912.90	3,842.77	4,736.45	4,630.71	105.73	44.796	
4,700.00	4,694.66	4,520.43	4,520.00	16.87	91.14	65.86	2,912.54	3,842.77	4,734.10	4,626.09	108.01	43.831	
4,800.00	4,794.53	4,621.72	4,621.29	17.24	93.05	65.92	2,912.13	3,842.77	4,731.73	4,621.45	110.28	42.906	
4,900.00	4,894.39	4,709.91	4,709.39	17.60	94.78	65.97	2,912.11	3,842.77	4,729.57	4,617.19	112.38	42.087	
5,000.00	4,994.25	4,809.77	4,809.25	17.96	96.75	66.03	2,912.11	3,842.77	4,727.44	4,612.73	114.70	41.214	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #107 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		165-A027Ua_INC-ONLY				Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,094.12	4,909.63	4,909.12	18.33	98.72	66.09	2,912.11	3,842.77	4,725.31	4,608.28	117.03	40.376	
5,200.00	5,193.98	5,009.50	5,008.98	18.69	100.68	66.14	2,912.11	3,842.77	4,723.19	4,603.83	119.36	39.570	
5,300.00	5,293.84	5,109.36	5,108.84	19.05	102.65	66.20	2,912.11	3,842.77	4,721.08	4,599.39	121.69	38.796	
5,336.91	5,330.71	5,146.22	5,145.71	19.19	103.37	66.22	2,912.11	3,842.77	4,720.30	4,597.75	122.55	38.517	
5,400.00	5,393.71	5,210.53	5,210.00	19.41	104.64	66.24	2,913.88	3,842.77	4,720.04	4,595.99	124.04	38.051	
5,500.00	5,493.62	5,313.76	5,313.23	19.77	106.67	66.28	2,913.76	3,842.77	4,718.27	4,591.83	126.44	37.317	
5,600.00	5,593.57	5,417.03	5,416.49	20.13	108.70	66.31	2,913.52	3,842.77	4,716.78	4,587.95	128.83	36.613	
5,700.00	5,693.53	5,520.32	5,519.78	20.49	110.74	66.34	2,913.15	3,842.77	4,715.57	4,584.35	131.22	35.936	
5,800.00	5,793.52	5,623.63	5,623.09	20.85	112.77	66.36	2,912.65	3,842.77	4,714.64	4,581.03	133.61	35.286	
5,900.00	5,893.52	5,726.95	5,726.40	21.20	114.81	66.37	2,912.02	3,842.77	4,714.00	4,578.00	136.00	34.662	
5,904.85	5,898.37	5,731.97	5,731.42	21.22	114.90	66.37	2,911.99	3,842.77	4,713.97	4,577.86	136.12	34.632	CC
5,936.48	5,930.00	5,745.61	5,745.00	21.33	115.20	55.61	2,912.11	3,842.77	4,713.99	4,577.47	136.52	34.529	
6,000.00	5,993.52	5,809.13	5,808.52	21.56	116.50	55.61	2,912.11	3,842.77	4,713.99	4,575.94	138.05	34.148	
6,100.00	6,093.52	5,909.13	5,908.52	21.91	118.54	55.61	2,912.11	3,842.77	4,713.99	4,573.54	140.44	33.565	
6,200.00	6,193.52	6,009.13	6,008.52	22.27	120.58	55.61	2,912.11	3,842.77	4,713.99	4,571.15	142.84	33.001	
6,300.00	6,293.52	6,109.13	6,108.52	22.62	122.63	55.61	2,912.11	3,842.77	4,713.99	4,568.75	145.24	32.456	
6,358.48	6,352.00	6,167.61	6,167.00	22.83	123.82	55.61	2,912.11	3,842.77	4,713.99	4,567.34	146.65	32.145	
6,400.00	6,393.49	6,209.10	6,208.49	22.97	124.67	130.17	2,912.11	3,842.77	4,714.86	4,567.22	147.64	31.935	ES
6,450.00	6,443.20	6,258.81	6,258.20	23.15	125.69	129.98	2,912.11	3,842.77	4,718.23	4,569.40	148.83	31.701	
6,500.00	6,492.36	6,307.97	6,307.36	23.33	126.69	129.66	2,912.11	3,842.77	4,724.12	4,574.10	150.02	31.490	
6,550.00	6,540.64	6,356.25	6,355.64	23.51	127.68	129.18	2,912.11	3,842.77	4,732.50	4,581.31	151.19	31.302	
6,600.00	6,587.77	6,403.38	6,402.77	23.69	128.64	128.56	2,912.11	3,842.77	4,743.34	4,591.00	152.34	31.137	
6,650.00	6,633.44	6,449.05	6,448.44	23.88	129.58	127.77	2,912.11	3,842.77	4,756.60	4,603.14	153.45	30.997	
6,700.00	6,677.37	6,492.98	6,492.37	24.07	130.47	126.80	2,912.11	3,842.77	4,772.22	4,617.68	154.54	30.881	
6,750.00	6,719.30	6,534.91	6,534.30	24.26	131.33	125.64	2,912.11	3,842.77	4,790.13	4,634.55	155.58	30.789	
6,800.00	6,758.97	6,574.58	6,573.97	24.46	132.14	124.28	2,912.11	3,842.77	4,810.25	4,653.68	156.57	30.722	
6,850.00	6,796.12	6,611.73	6,611.12	24.67	132.90	122.69	2,912.11	3,842.77	4,832.50	4,674.98	157.52	30.679	
6,900.00	6,830.54	6,646.15	6,645.54	24.88	133.61	120.85	2,912.11	3,842.77	4,856.76	4,698.35	158.40	30.661	SF
6,950.00	6,862.00	6,677.62	6,677.00	25.11	134.25	118.75	2,912.11	3,842.77	4,882.91	4,723.68	159.23	30.666	
7,000.00	6,890.33	6,705.94	6,705.33	25.34	134.83	116.35	2,912.11	3,842.77	4,910.84	4,750.84	159.99	30.694	
7,050.00	6,915.33	6,730.94	6,730.33	25.59	135.34	113.65	2,912.11	3,842.77	4,940.38	4,779.69	160.69	30.745	
7,100.00	6,936.86	6,752.47	6,751.86	25.85	135.78	110.62	2,912.11	3,842.77	4,971.39	4,810.07	161.31	30.818	
7,150.00	6,954.79	6,770.40	6,769.79	26.12	136.14	107.25	2,912.11	3,842.77	5,003.68	4,841.82	161.86	30.913	
7,200.00	6,968.99	6,784.61	6,783.99	26.40	136.44	103.56	2,912.11	3,842.77	5,037.09	4,874.75	162.34	31.029	
7,250.00	6,979.40	6,795.01	6,794.40	26.69	136.65	99.55	2,912.11	3,842.77	5,071.41	4,908.68	162.73	31.164	
7,300.00	6,985.94	6,801.55	6,800.94	27.00	136.78	95.27	2,912.11	3,842.77	5,106.44	4,943.39	163.05	31.319	
7,350.00	6,988.56	6,804.18	6,803.56	27.31	136.84	90.78	2,912.11	3,842.77	5,141.96	4,978.68	163.28	31.492	
7,358.93	6,988.62	6,804.23	6,803.62	27.36	136.84	89.96	2,912.11	3,842.77	5,148.34	4,985.03	163.31	31.524	
7,400.00	6,988.59	6,804.20	6,803.59	27.63	136.84	89.96	2,912.11	3,842.77	5,177.78	5,014.32	163.46	31.676	
7,500.00	6,988.52	6,804.13	6,803.52	28.33	136.83	89.96	2,912.11	3,842.77	5,250.12	5,086.28	163.84	32.044	
7,600.00	6,988.45	6,804.06	6,803.45	29.10	136.83	89.96	2,912.11	3,842.77	5,323.36	5,159.12	164.24	32.413	
7,658.93	6,988.41	6,804.02	6,803.41	29.59	136.83	89.96	2,912.11	3,842.77	5,366.92	5,202.44	164.48	32.630	
7,700.00	6,988.38	6,803.99	6,803.38	29.94	136.83	89.95	2,912.11	3,842.77	5,397.64	5,232.99	164.65	32.782	
7,800.00	6,988.31	6,803.92	6,803.31	30.84	136.83	89.95	2,912.11	3,842.77	5,474.61	5,309.54	165.07	33.166	
7,900.00	6,988.24	6,803.85	6,803.24	31.79	136.83	89.94	2,912.11	3,842.77	5,554.44	5,388.97	165.48	33.567	
8,000.00	6,988.16	6,803.78	6,803.16	32.78	136.83	89.93	2,912.11	3,842.77	5,636.93	5,471.06	165.87	33.984	
8,100.00	6,988.09	6,803.70	6,803.09	33.82	136.83	89.93	2,912.11	3,842.77	5,721.85	5,555.60	166.25	34.418	
8,200.00	6,988.01	6,803.63	6,803.01	34.88	136.82	89.92	2,912.11	3,842.77	5,809.00	5,642.40	166.60	34.867	
8,300.00	6,987.94	6,803.55	6,802.94	35.98	136.82	89.91	2,912.11	3,842.77	5,898.18	5,731.24	166.94	35.332	
8,400.00	6,987.86	6,803.47	6,802.86	37.11	136.82	89.90	2,912.11	3,842.77	5,989.19	5,821.95	167.24	35.811	
8,416.35	6,987.85	6,803.46	6,802.85	37.29	136.82	89.89	2,912.11	3,842.77	6,004.24	5,836.94	167.29	35.891	
8,500.00	6,987.78	6,803.39	6,802.78	38.25	136.82	89.89	2,912.11	3,842.77	6,081.39	5,913.85	167.53	36.300	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #107 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 165-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,600.00	6,987.70	6,803.31	6,802.70	39.43	136.82	89.89	2,912.11	3,842.77	6,173.84	6,006.03	167.82	36.789	
8,700.00	6,987.62	6,803.24	6,802.62	40.64	136.82	89.89	2,912.11	3,842.77	6,266.53	6,098.43	168.10	37.279	
8,800.00	6,987.55	6,803.16	6,802.55	41.88	136.81	89.89	2,912.11	3,842.77	6,359.44	6,191.06	168.37	37.770	
8,900.00	6,987.47	6,803.08	6,802.47	43.14	136.81	89.88	2,912.11	3,842.77	6,452.56	6,283.91	168.65	38.261	
9,000.00	6,987.39	6,803.00	6,802.39	44.42	136.81	89.88	2,912.11	3,842.77	6,545.88	6,376.97	168.91	38.753	
9,100.00	6,987.31	6,802.92	6,802.31	45.72	136.81	89.88	2,912.11	3,842.77	6,639.40	6,470.22	169.18	39.245	
9,200.00	6,987.23	6,802.84	6,802.23	47.04	136.81	89.88	2,912.11	3,842.77	6,733.10	6,563.66	169.44	39.737	
9,300.00	6,987.15	6,802.77	6,802.15	48.38	136.81	89.88	2,912.11	3,842.77	6,826.98	6,657.29	169.70	40.230	
9,400.00	6,987.08	6,802.69	6,802.08	49.73	136.81	89.87	2,912.11	3,842.77	6,921.04	6,751.09	169.95	40.724	
9,500.00	6,987.00	6,802.61	6,802.00	51.10	136.80	89.87	2,912.11	3,842.77	7,015.26	6,845.06	170.20	41.218	
9,600.00	6,986.92	6,802.53	6,801.92	52.48	136.80	89.87	2,912.11	3,842.77	7,109.63	6,939.19	170.44	41.712	
9,700.00	6,986.84	6,802.45	6,801.84	53.87	136.80	89.87	2,912.11	3,842.77	7,204.16	7,033.48	170.69	42.207	
9,800.00	6,986.76	6,802.37	6,801.76	55.28	136.80	89.87	2,912.11	3,842.77	7,298.83	7,127.91	170.92	42.703	
9,900.00	6,986.68	6,802.30	6,801.68	56.69	136.80	89.87	2,912.11	3,842.77	7,393.65	7,222.49	171.16	43.198	
10,000.00	6,986.61	6,802.22	6,801.61	58.12	136.80	89.86	2,912.11	3,842.77	7,488.60	7,317.21	171.39	43.694	
10,100.00	6,986.53	6,802.14	6,801.53	59.55	136.79	89.86	2,912.11	3,842.77	7,583.68	7,412.06	171.61	44.191	
10,200.00	6,986.45	6,802.06	6,801.45	61.00	136.79	89.86	2,912.11	3,842.77	7,678.88	7,507.05	171.83	44.688	
10,300.00	6,986.37	6,801.98	6,801.37	62.45	136.79	89.86	2,912.11	3,842.77	7,774.21	7,602.15	172.05	45.185	
10,400.00	6,986.29	6,801.91	6,801.29	63.90	136.79	89.86	2,912.11	3,842.77	7,869.65	7,697.38	172.27	45.682	
10,500.00	6,986.21	6,801.83	6,801.21	65.37	136.79	89.85	2,912.11	3,842.77	7,965.20	7,792.72	172.48	46.180	
10,600.00	6,986.14	6,801.75	6,801.14	66.84	136.79	89.85	2,912.11	3,842.77	8,060.86	7,888.17	172.69	46.678	
10,700.00	6,986.06	6,801.67	6,801.06	68.32	136.78	89.85	2,912.11	3,842.77	8,156.62	7,983.73	172.90	47.176	
10,800.00	6,985.98	6,801.59	6,800.98	69.80	136.78	89.85	2,912.11	3,842.77	8,252.49	8,079.39	173.10	47.675	
10,900.00	6,985.90	6,801.51	6,800.90	71.29	136.78	89.85	2,912.11	3,842.77	8,348.45	8,175.15	173.30	48.174	
11,000.00	6,985.82	6,801.44	6,800.82	72.78	136.78	89.84	2,912.11	3,842.77	8,444.50	8,271.01	173.50	48.673	
11,100.00	6,985.75	6,801.36	6,800.75	74.28	136.78	89.84	2,912.11	3,842.77	8,540.65	8,366.96	173.69	49.172	
11,200.00	6,985.67	6,801.28	6,800.67	75.78	136.78	89.84	2,912.11	3,842.77	8,636.88	8,463.00	173.88	49.672	
11,300.00	6,985.59	6,801.20	6,800.59	77.29	136.77	89.84	2,912.11	3,842.77	8,733.20	8,559.13	174.07	50.171	
11,400.00	6,985.51	6,801.12	6,800.51	78.80	136.77	89.84	2,912.11	3,842.77	8,829.60	8,655.35	174.25	50.671	
11,500.00	6,985.43	6,801.04	6,800.43	80.31	136.77	89.83	2,912.11	3,842.77	8,926.08	8,751.64	174.44	51.171	
11,600.00	6,985.35	6,800.97	6,800.35	81.83	136.77	89.83	2,912.11	3,842.77	9,022.64	8,848.02	174.62	51.671	
11,700.00	6,985.28	6,800.89	6,800.28	83.35	136.77	89.83	2,912.11	3,842.77	9,119.27	8,944.47	174.79	52.171	
11,800.00	6,985.20	6,800.81	6,800.20	84.87	136.77	89.83	2,912.11	3,842.77	9,215.97	9,041.00	174.97	52.672	
11,900.00	6,985.12	6,800.73	6,800.12	86.40	136.77	89.83	2,912.11	3,842.77	9,312.74	9,137.60	175.14	53.172	
12,000.00	6,985.04	6,800.65	6,800.04	87.93	136.76	89.82	2,912.11	3,842.77	9,409.58	9,234.27	175.31	53.673	
12,100.00	6,984.96	6,800.57	6,799.96	89.46	136.76	89.82	2,912.11	3,842.77	9,506.48	9,331.00	175.48	54.173	
12,200.00	6,984.88	6,800.50	6,799.88	90.99	136.76	89.82	2,912.11	3,842.77	9,603.45	9,427.80	175.65	54.674	
12,300.00	6,984.81	6,800.42	6,799.81	92.53	136.76	89.82	2,912.11	3,842.77	9,700.48	9,524.67	175.81	55.175	
12,400.00	6,984.73	6,800.34	6,799.73	94.07	136.76	89.82	2,912.11	3,842.77	9,797.57	9,621.60	175.98	55.676	
12,500.00	6,984.65	6,800.26	6,799.65	95.61	136.76	89.82	2,912.11	3,842.77	9,894.72	9,718.58	176.14	56.177	
12,600.00	6,984.57	6,800.18	6,799.57	97.15	136.75	89.81	2,912.11	3,842.77	9,991.92	9,815.63	176.29	56.677	
12,700.00	6,984.49	6,800.10	6,799.49	98.70	136.75	89.81	2,912.11	3,842.77	10,089.18	9,912.73	176.45	57.178	
12,800.00	6,984.41	6,800.03	6,799.41	100.25	136.75	89.81	2,912.11	3,842.77	10,186.49	10,009.89	176.61	57.679	
12,900.00	6,984.34	6,799.95	6,799.34	101.80	136.75	89.81	2,912.11	3,842.77	10,283.86	10,107.10	176.76	58.180	
13,000.00	6,984.26	6,799.87	6,799.26	103.35	136.75	89.81	2,912.11	3,842.77	10,381.27	10,204.36	176.91	58.681	
13,100.00	6,984.18	6,799.79	6,799.18	104.90	136.75	89.80	2,912.11	3,842.77	10,478.73	10,301.67	177.06	59.182	
13,200.00	6,984.10	6,799.71	6,799.10	106.45	136.74	89.80	2,912.11	3,842.77	10,576.24	10,399.03	177.21	59.682	
13,300.00	6,984.02	6,799.63	6,799.02	108.01	136.74	89.80	2,912.11	3,842.77	10,673.80	10,496.44	177.36	60.183	
13,400.00	6,983.94	6,799.56	6,798.94	109.56	136.74	89.80	2,912.11	3,842.77	10,771.40	10,593.90	177.50	60.684	
13,500.00	6,983.87	6,799.48	6,798.87	111.12	136.74	89.80	2,912.11	3,842.77	10,869.04	10,691.40	177.64	61.184	
13,600.00	6,983.79	6,799.40	6,798.79	112.68	136.74	89.79	2,912.11	3,842.77	10,966.73	10,788.94	177.79	61.685	
13,700.00	6,983.71	6,799.32	6,798.71	114.24	136.74	89.79	2,912.11	3,842.77	11,064.45	10,886.53	177.93	62.185	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #107 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		165-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,800.00	6,983.63	6,799.24	6,798.63	115.80	136.73	89.79	2,912.11	3,842.77	11,162.22	10,984.15	178.07	62.686	
13,900.00	6,983.55	6,799.16	6,798.55	117.37	136.73	89.79	2,912.11	3,842.77	11,260.03	11,081.82	178.20	63.186	
14,000.00	6,983.47	6,799.09	6,798.47	118.93	136.73	89.79	2,912.11	3,842.77	11,357.87	11,179.53	178.34	63.686	
14,100.00	6,983.40	6,799.01	6,798.40	120.50	136.73	89.78	2,912.11	3,842.77	11,455.76	11,277.28	178.48	64.186	
14,200.00	6,983.32	6,798.93	6,798.32	122.06	136.73	89.78	2,912.11	3,842.77	11,553.67	11,375.06	178.61	64.686	
14,300.00	6,983.24	6,798.85	6,798.24	123.63	136.73	89.78	2,912.11	3,842.77	11,651.63	11,472.88	178.75	65.185	
14,400.00	6,983.16	6,798.77	6,798.16	125.20	136.72	89.78	2,912.11	3,842.77	11,749.62	11,570.74	178.88	65.685	
14,500.00	6,983.08	6,798.70	6,798.08	126.77	136.72	89.78	2,912.11	3,842.77	11,847.64	11,668.63	179.01	66.184	
14,600.00	6,983.00	6,798.62	6,798.00	128.33	136.72	89.77	2,912.11	3,842.77	11,945.69	11,766.56	179.14	66.684	
14,700.00	6,982.93	6,798.54	6,797.93	129.91	136.72	89.77	2,912.11	3,842.77	12,043.78	11,864.51	179.27	67.183	
14,800.00	6,982.85	6,798.46	6,797.85	131.48	136.72	89.77	2,912.11	3,842.77	12,141.90	11,962.50	179.40	67.682	
14,900.00	6,982.77	6,798.38	6,797.77	133.05	136.72	89.77	2,912.11	3,842.77	12,240.05	12,060.52	179.52	68.181	
15,000.00	6,982.69	6,798.30	6,797.69	134.62	136.72	89.77	2,912.11	3,842.77	12,338.23	12,158.58	179.65	68.679	
15,100.00	6,982.61	6,798.23	6,797.61	136.20	136.71	89.77	2,912.11	3,842.77	12,436.43	12,256.66	179.78	69.177	
15,200.00	6,982.54	6,798.15	6,797.54	137.77	136.71	89.76	2,912.11	3,842.77	12,534.67	12,354.77	179.90	69.676	
15,300.00	6,982.46	6,798.07	6,797.46	139.35	136.71	89.76	2,912.11	3,842.77	12,632.93	12,452.91	180.02	70.174	
15,400.00	6,982.38	6,797.99	6,797.38	140.92	136.71	89.76	2,912.11	3,842.77	12,731.22	12,551.08	180.15	70.671	
15,500.00	6,982.30	6,797.91	6,797.30	142.50	136.71	89.76	2,912.11	3,842.77	12,829.54	12,649.27	180.27	71.169	
15,600.00	6,982.22	6,797.83	6,797.22	144.07	136.71	89.76	2,912.11	3,842.77	12,927.88	12,747.49	180.39	71.666	
15,700.00	6,982.14	6,797.76	6,797.14	145.65	136.70	89.75	2,912.11	3,842.77	13,026.25	12,845.74	180.51	72.163	
15,800.00	6,982.07	6,797.68	6,797.07	147.23	136.70	89.75	2,912.11	3,842.77	13,124.64	12,944.01	180.63	72.660	
15,900.00	6,981.99	6,797.60	6,796.99	148.81	136.70	89.75	2,912.11	3,842.77	13,223.06	13,042.31	180.75	73.157	
16,000.00	6,981.91	6,797.52	6,796.91	150.39	136.70	89.75	2,912.11	3,842.77	13,321.50	13,140.63	180.87	73.653	
16,100.00	6,981.83	6,797.44	6,796.83	151.97	136.70	89.75	2,912.11	3,842.77	13,419.96	13,238.98	180.99	74.149	
16,200.00	6,981.75	6,797.36	6,796.75	153.55	136.70	89.74	2,912.11	3,842.77	13,518.45	13,337.35	181.10	74.645	
16,300.00	6,981.67	6,797.29	6,796.67	155.13	136.69	89.74	2,912.11	3,842.77	13,616.96	13,435.74	181.22	75.141	
16,400.00	6,981.60	6,797.21	6,796.60	156.71	136.69	89.74	2,912.11	3,842.77	13,715.49	13,534.15	181.34	75.636	
16,500.00	6,981.52	6,797.13	6,796.52	158.29	136.69	89.74	2,912.11	3,842.77	13,814.04	13,632.59	181.45	76.131	
16,600.00	6,981.44	6,797.05	6,796.44	159.88	136.69	89.74	2,912.11	3,842.77	13,912.61	13,731.04	181.57	76.626	
16,700.00	6,981.36	6,796.97	6,796.36	161.46	136.69	89.73	2,912.11	3,842.77	14,011.20	13,829.52	181.68	77.120	
16,800.00	6,981.28	6,796.89	6,796.28	163.04	136.69	89.73	2,912.11	3,842.77	14,109.81	13,928.02	181.79	77.615	
16,900.00	6,981.20	6,796.82	6,796.20	164.62	136.68	89.73	2,912.11	3,842.77	14,208.44	14,026.54	181.91	78.108	
17,000.00	6,981.13	6,796.74	6,796.13	166.21	136.68	89.73	2,912.11	3,842.77	14,307.09	14,125.07	182.02	78.602	
17,100.00	6,981.05	6,796.66	6,796.05	167.79	136.68	89.73	2,912.11	3,842.77	14,405.76	14,223.63	182.13	79.095	
17,200.00	6,980.97	6,796.58	6,795.97	169.38	136.68	89.72	2,912.11	3,842.77	14,504.45	14,322.21	182.24	79.588	
17,300.00	6,980.89	6,796.50	6,795.89	170.96	136.68	89.72	2,912.11	3,842.77	14,603.15	14,420.80	182.35	80.081	
17,400.00	6,980.81	6,796.42	6,795.81	172.55	136.68	89.72	2,912.11	3,842.77	14,701.88	14,519.41	182.47	80.574	
17,500.00	6,980.73	6,796.35	6,795.73	174.13	136.68	89.72	2,912.11	3,842.77	14,800.61	14,618.04	182.58	81.066	
17,600.00	6,980.66	6,796.27	6,795.66	175.72	136.67	89.72	2,912.11	3,842.77	14,899.37	14,716.68	182.69	81.557	
17,700.00	6,980.58	6,796.19	6,795.58	177.31	136.67	89.72	2,912.11	3,842.77	14,998.14	14,815.35	182.80	82.049	
17,800.00	6,980.50	6,796.11	6,795.50	178.89	136.67	89.71	2,912.11	3,842.77	15,096.93	14,914.03	182.90	82.540	
17,900.00	6,980.42	6,796.03	6,795.42	180.48	136.67	89.71	2,912.11	3,842.77	15,195.74	15,012.72	183.01	83.031	
18,000.00	6,980.34	6,795.95	6,795.34	182.07	136.67	89.71	2,912.11	3,842.77	15,294.56	15,111.43	183.12	83.521	
18,100.00	6,980.26	6,795.88	6,795.26	183.66	136.67	89.71	2,912.11	3,842.77	15,393.39	15,210.16	183.23	84.011	
18,200.00	6,980.19	6,795.80	6,795.19	185.24	136.66	89.71	2,912.11	3,842.77	15,492.24	15,308.90	183.34	84.501	
18,300.00	6,980.11	6,795.72	6,795.11	186.83	136.66	89.70	2,912.11	3,842.77	15,591.11	15,407.66	183.45	84.990	
18,400.00	6,980.03	6,795.64	6,795.03	188.42	136.66	89.70	2,912.11	3,842.77	15,689.99	15,506.43	183.55	85.479	
18,500.00	6,979.95	6,795.56	6,794.95	190.01	136.66	89.70	2,912.11	3,842.77	15,788.88	15,605.22	183.66	85.968	
18,600.00	6,979.87	6,795.49	6,794.87	191.60	136.66	89.70	2,912.11	3,842.77	15,887.79	15,704.02	183.77	86.456	
18,700.00	6,979.79	6,795.41	6,794.79	193.19	136.66	89.70	2,912.11	3,842.77	15,986.71	15,802.84	183.87	86.944	
18,800.00	6,979.72	6,795.33	6,794.72	194.78	136.65	89.69	2,912.11	3,842.77	16,085.64	15,901.66	183.98	87.432	
18,900.00	6,979.64	6,795.25	6,794.64	196.37	136.65	89.69	2,912.11	3,842.77	16,184.59	16,000.50	184.09	87.919	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #107 - OH - OH-INC											Offset Site Error: 0.00 usft
Survey Program: 165-A027Ua_INC-ONLY											Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
19,000.00	6,979.56	6,795.17	6,794.56	197.96	136.65	89.69	2,912.11	3,842.77	16,283.55	16,099.36	88.406
19,100.00	6,979.48	6,795.09	6,794.48	199.55	136.65	89.69	2,912.11	3,842.77	16,382.52	16,198.23	88.892
19,200.00	6,979.40	6,795.02	6,794.40	201.14	136.65	89.69	2,912.11	3,842.77	16,481.51	16,297.11	89.378
19,300.00	6,979.33	6,794.94	6,794.33	202.73	136.65	89.68	2,912.11	3,842.77	16,580.51	16,396.00	89.864
19,400.00	6,979.25	6,794.86	6,794.25	204.32	136.64	89.68	2,912.11	3,842.77	16,679.52	16,494.90	90.349
19,500.00	6,979.17	6,794.78	6,794.17	205.91	136.64	89.68	2,912.11	3,842.77	16,778.54	16,593.82	90.834
19,600.00	6,979.09	6,794.70	6,794.09	207.50	136.64	89.68	2,912.11	3,842.77	16,877.57	16,692.75	91.319
19,700.00	6,979.01	6,794.62	6,794.01	209.09	136.64	89.68	2,912.11	3,842.77	16,976.61	16,791.69	91.803
19,800.00	6,978.93	6,794.55	6,793.93	210.69	136.64	89.68	2,912.11	3,842.77	17,075.67	16,890.64	92.287
19,900.00	6,978.86	6,794.47	6,793.86	212.28	136.64	89.67	2,912.11	3,842.77	17,174.73	16,989.60	92.770
20,000.00	6,978.78	6,794.39	6,793.78	213.87	136.64	89.67	2,912.11	3,842.77	17,273.81	17,088.57	93.253
20,100.00	6,978.70	6,794.31	6,793.70	215.46	136.63	89.67	2,912.11	3,842.77	17,372.90	17,187.56	93.735
20,200.00	6,978.62	6,794.23	6,793.62	217.05	136.63	89.67	2,912.11	3,842.77	17,472.00	17,286.55	94.217
20,300.00	6,978.54	6,794.15	6,793.54	218.65	136.63	89.67	2,912.11	3,842.77	17,571.10	17,385.56	94.699
20,400.00	6,978.46	6,794.08	6,793.46	220.24	136.63	89.66	2,912.11	3,842.77	17,670.22	17,484.57	95.180
20,500.00	6,978.39	6,794.00	6,793.39	221.83	136.63	89.66	2,912.11	3,842.77	17,769.35	17,583.60	95.661
20,600.00	6,978.31	6,793.92	6,793.31	223.43	136.63	89.66	2,912.11	3,842.77	17,868.49	17,682.63	96.142
20,700.00	6,978.23	6,793.84	6,793.23	225.02	136.62	89.66	2,912.11	3,842.77	17,967.64	17,781.68	96.622
20,800.00	6,978.15	6,793.76	6,793.15	226.61	136.62	89.66	2,912.11	3,842.77	18,066.79	17,880.73	97.101
20,900.00	6,978.07	6,793.68	6,793.07	228.21	136.62	89.65	2,912.11	3,842.77	18,165.96	17,979.79	97.580
21,000.00	6,977.99	6,793.61	6,792.99	229.80	136.62	89.65	2,912.11	3,842.77	18,265.13	18,078.87	98.059
21,100.00	6,977.92	6,793.53	6,792.92	231.39	136.62	89.65	2,912.11	3,842.77	18,364.32	18,177.95	98.537
21,200.00	6,977.84	6,793.45	6,792.84	232.99	136.62	89.65	2,912.11	3,842.77	18,463.51	18,277.04	99.015
21,300.00	6,977.76	6,793.37	6,792.76	234.58	136.61	89.65	2,912.11	3,842.77	18,562.71	18,376.14	99.493
21,400.00	6,977.68	6,793.29	6,792.68	236.18	136.61	89.64	2,912.11	3,842.77	18,661.92	18,475.25	99.970
21,500.00	6,977.60	6,793.21	6,792.60	237.77	136.61	89.64	2,912.11	3,842.77	18,761.14	18,574.36	100.446
21,600.00	6,977.52	6,793.14	6,792.52	239.37	136.61	89.64	2,912.11	3,842.77	18,860.37	18,673.49	100.922
21,700.00	6,977.45	6,793.06	6,792.45	240.96	136.61	89.64	2,912.11	3,842.77	18,959.60	18,772.62	101.398
21,800.00	6,977.37	6,792.98	6,792.37	242.56	136.61	89.64	2,912.11	3,842.77	19,058.84	18,871.76	101.873
21,900.00	6,977.29	6,792.90	6,792.29	244.15	136.60	89.63	2,912.11	3,842.77	19,158.09	18,970.91	102.348
22,000.00	6,977.21	6,792.82	6,792.21	245.75	136.60	89.63	2,912.11	3,842.77	19,257.35	19,070.06	102.822
22,100.00	6,977.13	6,792.75	6,792.13	247.34	136.60	89.63	2,912.11	3,842.77	19,356.62	19,169.23	103.296
22,200.00	6,977.05	6,792.67	6,792.05	248.94	136.60	89.63	2,912.11	3,842.77	19,455.89	19,268.40	103.769
22,269.73	6,977.00	6,792.61	6,792.00	250.05	136.60	89.63	2,912.11	3,842.77	19,525.12	19,337.55	104.099

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY														Offset Site Error:	0.00 usft
Survey Program: 107-MWD OWSG Rev5														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-102.37	-1,097.55	-5,003.65	5,123.63						
100.00	100.00	0.00	0.00	0.25	0.00	-102.37	-1,097.55	-5,003.65	5,122.61	5,122.36	0.25	N/A			
134.01	134.01	32.01	32.01	0.37	0.20	-102.37	-1,097.55	-5,003.65	5,122.61	5,122.04	0.57	8,981.930			
200.00	200.00	98.00	98.00	0.61	0.61	-102.37	-1,097.55	-5,003.65	5,122.61	5,121.40	1.21	4,221.464			
268.01	268.01	166.01	166.01	0.85	1.17	-102.37	-1,097.36	-5,003.65	5,122.57	5,120.58	1.99	2,570.706			
300.00	300.00	194.53	194.52	0.97	1.40	-102.37	-1,097.40	-5,003.65	5,122.58	5,120.24	2.34	2,189.770			
400.00	400.00	298.01	298.00	1.33	2.23	-102.37	-1,097.55	-5,003.65	5,122.61	5,119.11	3.50	1,464.132			
417.53	417.53	315.53	315.53	1.39	2.37	-102.37	-1,097.45	-5,003.65	5,122.59	5,118.90	3.69	1,386.603			
500.00	500.00	395.88	395.87	1.68	3.00	-102.37	-1,097.53	-5,003.65	5,122.61	5,118.01	4.60	1,113.925			
600.00	600.00	498.02	498.00	2.04	4.74	-102.37	-1,097.55	-5,003.65	5,122.61	5,115.93	6.69	766.091			
700.00	700.00	598.02	598.00	2.40	6.55	-102.37	-1,097.55	-5,003.65	5,122.61	5,113.77	8.84	579.386			
763.48	763.47	661.39	661.37	2.63	7.70	-91.62	-1,096.73	-5,003.65	5,122.45	5,112.25	10.21	501.861			
800.00	799.98	696.89	696.87	2.76	8.34	-91.63	-1,096.74	-5,003.65	5,122.49	5,111.51	10.98	466.731			
849.89	849.82	745.35	745.32	2.94	9.21	-91.65	-1,096.82	-5,003.65	5,122.57	5,110.54	12.02	426.029			
900.00	899.86	793.99	793.97	3.12	10.09	-91.68	-1,096.97	-5,003.65	5,122.68	5,109.60	13.08	391.732			
1,000.00	999.73	891.05	891.03	3.48	11.85	-91.74	-1,097.43	-5,003.65	5,122.94	5,107.76	15.18	337.499			
1,100.00	1,099.59	997.65	997.59	3.84	13.28	-91.80	-1,097.55	-5,003.65	5,123.12	5,106.17	16.95	302.277			
1,200.00	1,199.45	1,097.51	1,097.45	4.20	14.51	-91.86	-1,097.55	-5,003.65	5,123.29	5,104.76	18.53	276.529			
1,300.00	1,299.32	1,194.50	1,194.44	4.56	15.72	-91.91	-1,096.98	-5,003.65	5,123.34	5,103.27	20.07	255.259			
1,400.00	1,399.18	1,290.88	1,290.81	4.92	16.91	-91.97	-1,097.38	-5,003.65	5,123.60	5,102.00	21.61	237.115			
1,500.00	1,499.04	1,397.13	1,397.04	5.28	17.68	-92.04	-1,097.55	-5,003.65	5,123.82	5,101.11	22.71	225.581			
1,600.00	1,598.91	1,496.31	1,496.22	5.64	18.22	-92.09	-1,097.22	-5,003.65	5,123.94	5,100.35	23.58	217.255			
1,700.00	1,698.77	1,593.07	1,592.99	6.00	18.74	-92.15	-1,097.40	-5,003.65	5,124.17	5,099.73	24.44	209.632			
1,800.00	1,798.63	1,696.72	1,696.63	6.36	19.41	-92.21	-1,097.55	-5,003.65	5,124.40	5,098.96	25.45	201.358			
1,900.00	1,898.49	1,796.58	1,796.49	6.72	20.12	-92.27	-1,097.55	-5,003.65	5,124.61	5,098.12	26.49	193.431			
2,000.00	1,998.36	1,895.92	1,895.83	7.09	20.82	-92.33	-1,097.32	-5,003.65	5,124.77	5,097.23	27.53	186.126			
2,100.00	2,098.22	1,994.64	1,994.55	7.45	21.52	-92.39	-1,097.41	-5,003.65	5,125.00	5,096.43	28.57	179.382			
2,200.00	2,198.08	2,096.19	2,096.08	7.81	22.15	-92.45	-1,097.55	-5,003.65	5,125.26	5,095.73	29.53	173.559			
2,300.00	2,297.95	2,196.02	2,195.91	8.17	22.50	-92.50	-1,097.14	-5,003.65	5,125.39	5,095.18	30.21	169.665			
2,400.00	2,397.81	2,290.10	2,289.99	8.53	22.84	-92.56	-1,097.37	-5,003.65	5,125.68	5,094.81	30.87	166.044			
2,500.00	2,497.67	2,395.81	2,395.67	8.90	23.24	-92.62	-1,097.55	-5,003.65	5,125.95	5,094.37	31.58	162.314			
2,600.00	2,597.54	2,495.58	2,495.43	9.26	23.62	-92.67	-1,096.79	-5,003.65	5,126.02	5,093.74	32.28	158.812			
2,700.00	2,697.40	2,589.77	2,589.62	9.62	23.98	-92.73	-1,097.03	-5,003.65	5,126.32	5,093.37	32.96	155.553			
2,800.00	2,797.26	2,695.45	2,695.26	9.98	24.63	-92.80	-1,097.55	-5,003.65	5,126.69	5,092.77	33.93	151.106			
2,900.00	2,897.13	2,795.32	2,795.13	10.35	25.88	-92.85	-1,097.55	-5,003.65	5,126.95	5,091.43	35.52	144.336			
3,000.00	2,996.99	2,895.18	2,894.99	10.71	27.13	-92.91	-1,097.55	-5,003.65	5,127.22	5,090.10	37.11	138.147			
3,100.00	3,096.85	2,995.04	2,994.85	11.07	28.38	-92.97	-1,097.55	-5,003.65	5,127.48	5,088.78	38.71	132.467			
3,124.98	3,121.80	3,019.27	3,019.07	11.16	28.68	-92.97	-1,096.12	-5,003.65	5,127.21	5,088.11	39.10	131.142			
3,200.00	3,196.72	3,091.86	3,091.65	11.43	29.59	-93.01	-1,096.23	-5,003.65	5,127.44	5,087.18	40.26	127.348			
3,300.00	3,296.58	3,188.59	3,188.38	11.80	30.80	-93.07	-1,096.60	-5,003.65	5,127.81	5,085.99	41.82	122.622			
3,400.00	3,396.44	3,285.30	3,285.08	12.16	32.01	-93.14	-1,097.21	-5,003.65	5,128.25	5,084.88	43.37	118.237			
3,500.00	3,496.31	3,394.55	3,394.31	12.52	34.71	-93.20	-1,097.55	-5,003.65	5,128.61	5,082.18	46.44	110.443			
3,600.00	3,596.17	3,494.42	3,494.17	12.88	37.93	-93.26	-1,097.55	-5,003.65	5,128.91	5,078.88	50.03	102.511			
3,700.00	3,696.03	3,594.28	3,594.03	13.25	41.16	-93.32	-1,097.55	-5,003.65	5,129.21	5,075.58	53.63	95.643			
3,800.00	3,795.89	3,694.14	3,693.89	13.61	44.38	-93.38	-1,097.55	-5,003.65	5,129.51	5,072.29	57.22	89.639			
3,900.00	3,895.76	3,794.01	3,793.76	13.97	47.60	-93.44	-1,097.55	-5,003.65	5,129.83	5,069.01	60.82	84.344			
3,983.07	3,978.71	3,876.96	3,876.71	14.27	50.28	-93.47	-1,096.35	-5,003.65	5,129.79	5,065.99	63.81	80.395			
4,000.00	3,995.62	3,893.70	3,893.45	14.34	50.82	-93.48	-1,096.35	-5,003.65	5,129.85	5,065.44	64.41	79.643			
4,100.00	4,095.48	3,992.57	3,992.32	14.70	54.01	-93.54	-1,096.40	-5,003.65	5,130.18	5,062.21	67.97	75.472			
4,200.00	4,195.35	4,091.44	4,091.18	15.06	57.20	-93.60	-1,096.53	-5,003.65	5,130.54	5,059.00	71.54	71.718			
4,300.00	4,295.21	4,190.30	4,190.04	15.42	60.39	-93.66	-1,096.74	-5,003.65	5,130.92	5,055.82	75.10	68.320			
4,400.00	4,395.07	4,289.15	4,288.89	15.79	63.58	-93.72	-1,097.02	-5,003.65	5,131.33	5,052.67	78.66	65.231			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		107-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
4,500.00	4,494.94	4,387.99	4,387.73	16.15	66.77	-93.78	-1,097.39	-5,003.65	5,131.77	5,049.54	82.23	62.410	
4,600.00	4,594.80	4,493.15	4,492.80	16.51	68.45	-93.84	-1,097.55	-5,003.65	5,132.15	5,047.89	84.26	60.907	
4,700.00	4,694.66	4,593.01	4,592.66	16.87	69.09	-93.90	-1,097.55	-5,003.65	5,132.51	5,047.27	85.24	60.211	
4,800.00	4,794.53	4,689.12	4,688.76	17.24	69.71	-93.95	-1,096.78	-5,003.65	5,132.67	5,046.47	86.20	59.545	
4,900.00	4,894.39	4,783.51	4,783.15	17.60	70.32	-94.01	-1,097.25	-5,003.65	5,133.16	5,046.02	87.14	58.904	
5,000.00	4,994.25	4,892.63	4,892.25	17.96	71.74	-94.08	-1,097.55	-5,003.65	5,133.60	5,044.69	88.91	57.740	
5,100.00	5,094.12	4,992.50	4,992.12	18.33	73.38	-94.14	-1,097.55	-5,003.65	5,133.98	5,043.07	90.90	56.478	
5,200.00	5,193.98	5,092.36	5,091.98	18.69	75.03	-94.19	-1,097.55	-5,003.65	5,134.36	5,041.46	92.89	55.271	
5,300.00	5,293.84	5,192.22	5,191.84	19.05	76.67	-94.25	-1,097.55	-5,003.65	5,134.74	5,039.86	94.89	54.114	
5,336.91	5,330.71	5,229.09	5,228.71	19.19	77.28	-94.27	-1,097.55	-5,003.65	5,134.89	5,039.26	95.62	53.700	
5,400.00	5,393.71	5,292.10	5,291.71	19.41	78.31	-94.31	-1,097.55	-5,003.65	5,135.12	5,038.24	96.88	53.005	
5,500.00	5,493.62	5,392.01	5,391.62	19.77	79.96	-94.36	-1,097.55	-5,003.65	5,135.44	5,036.57	98.87	51.941	
5,529.33	5,522.93	5,421.03	5,420.64	19.88	80.44	-94.36	-1,096.30	-5,003.65	5,135.20	5,035.75	99.45	51.636	
5,600.00	5,593.57	5,490.95	5,490.56	20.13	81.59	-94.38	-1,096.34	-5,003.65	5,135.38	5,034.54	100.84	50.924	
5,700.00	5,693.53	5,589.90	5,589.51	20.49	83.22	-94.41	-1,096.45	-5,003.65	5,135.60	5,032.79	102.82	49.949	
5,800.00	5,793.52	5,688.88	5,688.49	20.85	84.84	-94.43	-1,096.64	-5,003.65	5,135.78	5,030.99	104.79	49.011	
5,900.00	5,893.52	5,787.86	5,787.47	21.20	86.47	-94.45	-1,096.90	-5,003.65	5,135.91	5,029.15	106.76	48.107	
5,936.48	5,930.00	5,823.97	5,823.58	21.33	87.07	-105.20	-1,097.01	-5,003.65	5,135.94	5,028.46	107.48	47.786	
6,000.00	5,993.52	5,886.85	5,886.46	21.56	88.10	-105.20	-1,097.23	-5,003.65	5,136.00	5,027.27	108.73	47.237	
6,100.00	6,093.52	5,991.97	5,991.52	21.91	90.86	-105.21	-1,097.55	-5,003.65	5,136.08	5,024.24	111.84	45.925	
6,200.00	6,193.52	6,091.97	6,091.52	22.27	96.33	-105.21	-1,097.55	-5,003.65	5,136.08	5,018.41	117.67	43.648	
6,300.00	6,293.52	6,191.97	6,191.52	22.62	101.80	-105.21	-1,097.55	-5,003.65	5,136.08	5,012.58	123.50	41.587	
6,358.48	6,352.00	6,250.45	6,250.00	22.83	105.00	-105.21	-1,097.55	-5,003.65	5,136.08	5,009.16	126.91	40.469	
6,400.00	6,393.49	6,291.94	6,291.49	22.97	107.27	-30.67	-1,097.55	-5,003.65	5,134.91	5,005.58	129.33	39.703	
6,450.00	6,443.20	6,341.65	6,341.20	23.15	109.99	-30.91	-1,097.55	-5,003.65	5,130.43	4,998.19	132.23	38.798	
6,500.00	6,492.36	6,390.81	6,390.36	23.33	112.68	-31.33	-1,097.55	-5,003.65	5,122.60	4,987.50	135.11	37.915	
6,550.00	6,540.64	6,439.09	6,438.64	23.51	115.32	-31.94	-1,097.55	-5,003.65	5,111.49	4,973.56	137.93	37.058	
6,600.00	6,587.77	6,486.22	6,485.77	23.69	117.90	-32.76	-1,097.55	-5,003.65	5,097.17	4,956.48	140.69	36.230	
6,650.00	6,633.44	6,531.89	6,531.44	23.88	120.40	-33.80	-1,097.55	-5,003.65	5,079.74	4,936.37	143.37	35.431	
6,700.00	6,677.37	6,575.82	6,575.37	24.07	122.80	-35.09	-1,097.55	-5,003.65	5,059.32	4,913.37	145.95	34.665	
6,750.00	6,719.30	6,617.75	6,617.30	24.26	125.09	-36.65	-1,097.55	-5,003.65	5,036.04	4,887.62	148.42	33.932	
6,800.00	6,758.97	6,657.42	6,656.97	24.46	127.26	-38.51	-1,097.55	-5,003.65	5,010.07	4,859.31	150.75	33.233	
6,850.00	6,796.12	6,694.57	6,694.12	24.67	129.29	-40.72	-1,097.55	-5,003.65	4,981.57	4,828.62	152.95	32.569	
6,900.00	6,830.54	6,728.99	6,728.54	24.88	131.18	-43.33	-1,097.55	-5,003.65	4,950.76	4,795.76	155.00	31.941	
6,950.00	6,862.00	6,760.46	6,760.00	25.11	132.90	-46.37	-1,097.55	-5,003.65	4,917.82	4,760.94	156.88	31.348	
7,000.00	6,890.33	6,788.78	6,788.33	25.34	134.45	-49.91	-1,097.55	-5,003.65	4,882.99	4,724.40	158.58	30.792	
7,050.00	6,915.33	6,813.78	6,813.33	25.59	135.82	-53.99	-1,097.55	-5,003.65	4,846.49	4,686.39	160.10	30.271	
7,100.00	6,936.86	6,835.31	6,834.86	25.85	136.99	-58.64	-1,097.55	-5,003.65	4,808.57	4,647.14	161.43	29.787	
7,150.00	6,954.79	6,853.24	6,852.79	26.12	137.97	-63.87	-1,097.55	-5,003.65	4,769.48	4,606.91	162.56	29.339	
7,200.00	6,968.99	6,867.45	6,866.99	26.40	138.75	-69.63	-1,097.55	-5,003.65	4,729.47	4,565.98	163.49	28.927	
7,250.00	6,979.40	6,877.85	6,877.40	26.69	139.32	-75.84	-1,097.55	-5,003.65	4,688.81	4,524.59	164.22	28.553	
7,300.00	6,985.94	6,884.39	6,883.94	27.00	139.68	-82.32	-1,097.55	-5,003.65	4,647.76	4,483.03	164.73	28.214	
7,350.00	6,988.56	6,887.01	6,886.56	27.31	139.82	-88.89	-1,097.55	-5,003.65	4,606.58	4,441.55	165.03	27.913	
7,358.93	6,988.62	6,887.07	6,886.62	27.36	139.82	-90.06	-1,097.55	-5,003.65	4,599.23	4,434.17	165.06	27.863	
7,400.00	6,988.59	6,887.04	6,886.59	27.63	139.82	-90.06	-1,097.55	-5,003.65	4,565.50	4,400.31	165.20	27.637	
7,500.00	6,988.52	6,886.97	6,886.52	28.33	139.82	-90.06	-1,097.55	-5,003.65	4,483.90	4,318.34	165.56	27.083	
7,600.00	6,988.45	6,886.90	6,886.45	29.10	139.82	-90.05	-1,097.55	-5,003.65	4,403.06	4,237.08	165.97	26.529	
7,658.93	6,988.41	6,886.86	6,886.41	29.59	139.81	-90.05	-1,097.55	-5,003.65	4,355.79	4,189.55	166.24	26.202	
7,700.00	6,988.38	6,886.83	6,886.38	29.94	139.81	-90.05	-1,097.55	-5,003.65	4,322.84	4,156.40	166.44	25.973	
7,800.00	6,988.31	6,886.76	6,886.31	30.84	139.81	-90.06	-1,097.55	-5,003.65	4,241.72	4,074.78	166.94	25.409	
7,900.00	6,988.24	6,886.69	6,886.24	31.79	139.80	-90.06	-1,097.55	-5,003.65	4,159.38	3,991.91	167.47	24.837	
8,000.00	6,988.16	6,886.62	6,886.16	32.78	139.80	-90.07	-1,097.55	-5,003.65	4,075.84	3,907.81	168.02	24.258	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		107-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
8,100.00	6,988.09	6,886.54	6,886.09	33.82	139.80	-90.07	-1,097.55	-5,003.65	3,991.13	3,822.53	168.60	23.672		
8,200.00	6,988.01	6,886.46	6,886.01	34.88	139.79	-90.08	-1,097.55	-5,003.65	3,905.27	3,736.08	169.19	23.082		
8,300.00	6,987.94	6,886.39	6,885.94	35.98	139.79	-90.08	-1,097.55	-5,003.65	3,818.31	3,648.52	169.80	22.488		
8,400.00	6,987.86	6,886.31	6,885.86	37.11	139.78	-90.09	-1,097.55	-5,003.65	3,730.28	3,559.87	170.41	21.890		
8,416.35	6,987.85	6,886.30	6,885.85	37.29	139.78	-90.09	-1,097.55	-5,003.65	3,715.78	3,545.27	170.51	21.792		
8,500.00	6,987.78	6,886.23	6,885.78	38.25	139.78	-90.08	-1,097.55	-5,003.65	3,641.77	3,470.72	171.05	21.291		
8,600.00	6,987.70	6,886.15	6,885.70	39.43	139.77	-90.08	-1,097.55	-5,003.65	3,553.84	3,382.11	171.73	20.694		
8,700.00	6,987.62	6,886.07	6,885.62	40.64	139.77	-90.08	-1,097.55	-5,003.65	3,466.56	3,294.10	172.46	20.100		
8,800.00	6,987.55	6,886.00	6,885.55	41.88	139.77	-90.08	-1,097.55	-5,003.65	3,380.00	3,206.74	173.25	19.509		
8,900.00	6,987.47	6,885.92	6,885.47	43.14	139.76	-90.07	-1,097.55	-5,003.65	3,294.19	3,120.09	174.10	18.921		
9,000.00	6,987.39	6,885.84	6,885.39	44.42	139.76	-90.07	-1,097.55	-5,003.65	3,209.20	3,034.19	175.02	18.336		
9,100.00	6,987.31	6,885.76	6,885.31	45.72	139.75	-90.07	-1,097.55	-5,003.65	3,125.11	2,949.11	176.00	17.757		
9,200.00	6,987.23	6,885.68	6,885.23	47.04	139.75	-90.07	-1,097.55	-5,003.65	3,041.97	2,864.93	177.05	17.182		
9,300.00	6,987.15	6,885.61	6,885.15	48.38	139.74	-90.06	-1,097.55	-5,003.65	2,959.88	2,781.71	178.17	16.613		
9,400.00	6,987.08	6,885.53	6,885.08	49.73	139.74	-90.06	-1,097.55	-5,003.65	2,878.93	2,699.56	179.37	16.050		
9,500.00	6,987.00	6,885.45	6,885.00	51.10	139.74	-90.06	-1,097.55	-5,003.65	2,799.20	2,618.55	180.65	15.495		
9,600.00	6,986.92	6,885.37	6,884.92	52.48	139.73	-90.06	-1,097.55	-5,003.65	2,720.82	2,538.79	182.02	14.948		
9,700.00	6,986.84	6,885.29	6,884.84	53.87	139.73	-90.05	-1,097.55	-5,003.65	2,643.89	2,460.41	183.48	14.410		
9,800.00	6,986.76	6,885.21	6,884.76	55.28	139.72	-90.05	-1,097.55	-5,003.65	2,568.55	2,383.53	185.02	13.882		
9,900.00	6,986.68	6,885.14	6,884.68	56.69	139.72	-90.05	-1,097.55	-5,003.65	2,494.95	2,308.28	186.66	13.366		
10,000.00	6,986.61	6,885.06	6,884.61	58.12	139.71	-90.04	-1,097.55	-5,003.65	2,423.24	2,234.84	188.40	12.862		
10,100.00	6,986.53	6,884.98	6,884.53	59.55	139.71	-90.04	-1,097.55	-5,003.65	2,353.59	2,163.37	190.22	12.373		
10,200.00	6,986.45	6,884.90	6,884.45	61.00	139.71	-90.04	-1,097.55	-5,003.65	2,286.20	2,094.05	192.14	11.898		
10,300.00	6,986.37	6,884.82	6,884.37	62.45	139.70	-90.04	-1,097.55	-5,003.65	2,221.26	2,027.11	194.15	11.441		
10,400.00	6,986.29	6,884.74	6,884.29	63.90	139.70	-90.03	-1,097.55	-5,003.65	2,159.01	1,962.76	196.24	11.002		
10,500.00	6,986.21	6,884.67	6,884.21	65.37	139.69	-90.03	-1,097.55	-5,003.65	2,099.67	1,901.26	198.41	10.582		
10,600.00	6,986.14	6,884.59	6,884.14	66.84	139.69	-90.03	-1,097.55	-5,003.65	2,043.51	1,842.86	200.64	10.185		
10,700.00	6,986.06	6,884.51	6,884.06	68.32	139.68	-90.03	-1,097.55	-5,003.65	1,990.79	1,787.86	202.93	9.810		
10,800.00	6,985.98	6,884.43	6,883.98	69.80	139.68	-90.02	-1,097.55	-5,003.65	1,941.79	1,736.55	205.24	9.461		
10,900.00	6,985.90	6,884.35	6,883.90	71.29	139.68	-90.02	-1,097.55	-5,003.65	1,896.80	1,689.24	207.56	9.139		
11,000.00	6,985.82	6,884.27	6,883.82	72.78	139.67	-90.02	-1,097.55	-5,003.65	1,856.11	1,646.25	209.86	8.845		
11,100.00	6,985.75	6,884.20	6,883.75	74.28	139.67	-90.02	-1,097.55	-5,003.65	1,820.02	1,607.91	212.11	8.581		
11,200.00	6,985.67	6,884.12	6,883.67	75.78	139.66	-90.01	-1,097.55	-5,003.65	1,788.79	1,574.51	214.28	8.348		
11,300.00	6,985.59	6,884.04	6,883.59	77.29	139.66	-90.01	-1,097.55	-5,003.65	1,762.69	1,546.36	216.33	8.148		
11,400.00	6,985.51	6,883.96	6,883.51	78.80	139.65	-90.01	-1,097.55	-5,003.65	1,741.95	1,523.72	218.22	7.982		
11,500.00	6,985.43	6,883.88	6,883.43	80.31	139.65	-90.01	-1,097.55	-5,003.65	1,726.76	1,506.82	219.93	7.851		
11,600.00	6,985.35	6,883.80	6,883.35	81.83	139.65	-90.00	-1,097.55	-5,003.65	1,717.26	1,495.84	221.42	7.756		
11,700.00	6,985.28	6,883.73	6,883.28	83.35	139.64	-90.00	-1,097.55	-5,003.65	1,713.56	1,490.89	222.68	7.695		
11,713.50	6,985.26	6,883.72	6,883.26	83.55	139.64	-90.00	-1,097.55	-5,003.65	1,713.51	1,490.69	222.82	7.690 CC, ES		
11,800.00	6,985.20	6,883.65	6,883.20	84.87	139.64	-90.00	-1,097.55	-5,003.65	1,715.70	1,492.03	223.67	7.671 SF		
11,900.00	6,985.12	6,883.57	6,883.12	86.40	139.63	-90.00	-1,097.55	-5,003.65	1,723.64	1,499.24	224.40	7.681		
12,000.00	6,985.04	6,883.49	6,883.04	87.93	139.63	-89.99	-1,097.55	-5,003.65	1,737.30	1,512.45	224.85	7.726		
12,100.00	6,984.96	6,883.41	6,882.96	89.46	139.62	-89.99	-1,097.55	-5,003.65	1,756.57	1,531.51	225.05	7.805		
12,200.00	6,984.88	6,883.33	6,882.88	90.99	139.62	-89.99	-1,097.55	-5,003.65	1,781.25	1,556.24	225.01	7.916		
12,300.00	6,984.81	6,883.26	6,882.81	92.53	139.62	-89.98	-1,097.55	-5,003.65	1,811.12	1,586.38	224.74	8.059		
12,400.00	6,984.73	6,883.18	6,882.73	94.07	139.61	-89.98	-1,097.55	-5,003.65	1,845.93	1,621.66	224.27	8.231		
12,500.00	6,984.65	6,883.10	6,882.65	95.61	139.61	-89.98	-1,097.55	-5,003.65	1,885.41	1,661.78	223.63	8.431		
12,600.00	6,984.57	6,883.02	6,882.57	97.15	139.60	-89.98	-1,097.55	-5,003.65	1,929.27	1,706.43	222.84	8.658		
12,700.00	6,984.49	6,882.94	6,882.49	98.70	139.60	-89.97	-1,097.55	-5,003.65	1,977.21	1,755.28	221.93	8.909		
12,800.00	6,984.41	6,882.86	6,882.41	100.25	139.59	-89.97	-1,097.55	-5,003.65	2,028.96	1,808.03	220.93	9.184		
12,900.00	6,984.34	6,882.79	6,882.34	101.80	139.59	-89.97	-1,097.55	-5,003.65	2,084.22	1,864.36	219.86	9.480		
13,000.00	6,984.26	6,882.71	6,882.26	103.35	139.59	-89.97	-1,097.55	-5,003.65	2,142.73	1,923.99	218.74	9.796		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		107-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
13,100.00	6,984.18	6,882.63	6,882.18	104.90	139.58	-89.96	-1,097.55	-5,003.65	2,204.23	1,986.63	217.59	10.130		
13,200.00	6,984.10	6,882.55	6,882.10	106.45	139.58	-89.96	-1,097.55	-5,003.65	2,268.46	2,052.04	216.42	10.482		
13,300.00	6,984.02	6,882.47	6,882.02	108.01	139.57	-89.96	-1,097.55	-5,003.65	2,335.21	2,119.96	215.25	10.849		
13,400.00	6,983.94	6,882.40	6,881.94	109.56	139.57	-89.96	-1,097.55	-5,003.65	2,404.27	2,190.19	214.09	11.230		
13,500.00	6,983.87	6,882.32	6,881.87	111.12	139.56	-89.95	-1,097.55	-5,003.65	2,475.45	2,262.51	212.94	11.625		
13,600.00	6,983.79	6,882.24	6,881.79	112.68	139.56	-89.95	-1,097.55	-5,003.65	2,548.56	2,336.75	211.81	12.033		
13,700.00	6,983.71	6,882.16	6,881.71	114.24	139.56	-89.95	-1,097.55	-5,003.65	2,623.44	2,412.74	210.70	12.451		
13,800.00	6,983.63	6,882.08	6,881.63	115.80	139.55	-89.95	-1,097.55	-5,003.65	2,699.96	2,490.33	209.63	12.880		
13,900.00	6,983.55	6,882.00	6,881.55	117.37	139.55	-89.94	-1,097.55	-5,003.65	2,777.96	2,569.37	208.59	13.318		
14,000.00	6,983.47	6,881.93	6,881.47	118.93	139.54	-89.94	-1,097.55	-5,003.65	2,857.34	2,649.76	207.58	13.765		
14,100.00	6,983.40	6,881.85	6,881.40	120.50	139.54	-89.94	-1,097.55	-5,003.65	2,937.97	2,731.36	206.61	14.220		
14,200.00	6,983.32	6,881.77	6,881.32	122.06	139.53	-89.93	-1,097.55	-5,003.65	3,019.77	2,814.09	205.67	14.682		
14,300.00	6,983.24	6,881.69	6,881.24	123.63	139.53	-89.93	-1,097.55	-5,003.65	3,102.63	2,897.86	204.77	15.152		
14,400.00	6,983.16	6,881.61	6,881.16	125.20	139.53	-89.93	-1,097.55	-5,003.65	3,186.47	2,982.57	203.91	15.627		
14,500.00	6,983.08	6,881.53	6,881.08	126.77	139.52	-89.93	-1,097.55	-5,003.65	3,271.22	3,068.15	203.07	16.108		
14,600.00	6,983.00	6,881.46	6,881.00	128.33	139.52	-89.92	-1,097.55	-5,003.65	3,356.82	3,154.54	202.28	16.595		
14,700.00	6,982.93	6,881.38	6,880.93	129.91	139.51	-89.92	-1,097.55	-5,003.65	3,443.19	3,241.67	201.51	17.087		
14,800.00	6,982.85	6,881.30	6,880.85	131.48	139.51	-89.92	-1,097.55	-5,003.65	3,530.27	3,329.49	200.78	17.583		
14,900.00	6,982.77	6,881.22	6,880.77	133.05	139.50	-89.92	-1,097.55	-5,003.65	3,618.03	3,417.95	200.08	18.083		
15,000.00	6,982.69	6,881.14	6,880.69	134.62	139.50	-89.91	-1,097.55	-5,003.65	3,706.41	3,507.00	199.41	18.587		
15,100.00	6,982.61	6,881.06	6,880.61	136.20	139.50	-89.91	-1,097.55	-5,003.65	3,795.36	3,596.59	198.77	19.094		
15,200.00	6,982.54	6,880.99	6,880.54	137.77	139.49	-89.91	-1,097.55	-5,003.65	3,884.85	3,686.70	198.15	19.605		
15,300.00	6,982.46	6,880.91	6,880.46	139.35	139.49	-89.91	-1,097.55	-5,003.65	3,974.84	3,777.28	197.57	20.119		
15,400.00	6,982.38	6,880.83	6,880.38	140.92	139.48	-89.90	-1,097.55	-5,003.65	4,065.30	3,868.30	197.00	20.636		
15,500.00	6,982.30	6,880.75	6,880.30	142.50	139.48	-89.90	-1,097.55	-5,003.65	4,156.20	3,959.73	196.46	21.155		
15,600.00	6,982.22	6,880.67	6,880.22	144.07	139.47	-89.90	-1,097.55	-5,003.65	4,247.50	4,051.56	195.95	21.677		
15,700.00	6,982.14	6,880.59	6,880.14	145.65	139.47	-89.90	-1,097.55	-5,003.65	4,339.19	4,143.74	195.45	22.201		
15,800.00	6,982.07	6,880.52	6,880.07	147.23	139.47	-89.89	-1,097.55	-5,003.65	4,431.24	4,236.26	194.98	22.726		
15,900.00	6,981.99	6,880.44	6,879.99	148.81	139.46	-89.89	-1,097.55	-5,003.65	4,523.63	4,329.10	194.53	23.254		
16,000.00	6,981.91	6,880.36	6,879.91	150.39	139.46	-89.89	-1,097.55	-5,003.65	4,616.33	4,422.23	194.10	23.784		
16,100.00	6,981.83	6,880.28	6,879.83	151.97	139.45	-89.89	-1,097.55	-5,003.65	4,709.33	4,515.65	193.68	24.315		
16,200.00	6,981.75	6,880.20	6,879.75	153.55	139.45	-89.88	-1,097.55	-5,003.65	4,802.62	4,609.33	193.28	24.847		
16,300.00	6,981.67	6,880.12	6,879.67	155.13	139.44	-89.88	-1,097.55	-5,003.65	4,896.17	4,703.26	192.90	25.381		
16,400.00	6,981.60	6,880.05	6,879.60	156.71	139.44	-89.88	-1,097.55	-5,003.65	4,989.96	4,797.42	192.54	25.916		
16,500.00	6,981.52	6,879.97	6,879.52	158.29	139.44	-89.87	-1,097.55	-5,003.65	5,084.00	4,891.81	192.19	26.453		
16,600.00	6,981.44	6,879.89	6,879.44	159.88	139.43	-89.87	-1,097.55	-5,003.65	5,178.26	4,986.40	191.86	26.990		
16,700.00	6,981.36	6,879.81	6,879.36	161.46	139.43	-89.87	-1,097.55	-5,003.65	5,272.73	5,081.19	191.54	27.528		
16,800.00	6,981.28	6,879.73	6,879.28	163.04	139.42	-89.87	-1,097.55	-5,003.65	5,367.40	5,176.17	191.23	28.068		
16,900.00	6,981.20	6,879.65	6,879.20	164.62	139.42	-89.86	-1,097.55	-5,003.65	5,462.26	5,271.32	190.94	28.608		
17,000.00	6,981.13	6,879.58	6,879.13	166.21	139.41	-89.86	-1,097.55	-5,003.65	5,557.30	5,366.65	190.65	29.148		
17,100.00	6,981.05	6,879.50	6,879.05	167.79	139.41	-89.86	-1,097.55	-5,003.65	5,652.51	5,462.13	190.39	29.690		
17,200.00	6,980.97	6,879.42	6,878.97	169.38	139.41	-89.86	-1,097.55	-5,003.65	5,747.89	5,557.76	190.13	30.232		
17,300.00	6,980.89	6,879.34	6,878.89	170.96	139.40	-89.85	-1,097.55	-5,003.65	5,843.42	5,653.54	189.88	30.774		
17,400.00	6,980.81	6,879.26	6,878.81	172.55	139.40	-89.85	-1,097.55	-5,003.65	5,939.09	5,749.45	189.64	31.317		
17,500.00	6,980.73	6,879.19	6,878.73	174.13	139.39	-89.85	-1,097.55	-5,003.65	6,034.91	5,845.49	189.41	31.861		
17,600.00	6,980.66	6,879.11	6,878.66	175.72	139.39	-89.85	-1,097.55	-5,003.65	6,130.86	5,941.66	189.20	32.405		
17,700.00	6,980.58	6,879.03	6,878.58	177.31	139.38	-89.84	-1,097.55	-5,003.65	6,226.94	6,037.95	188.99	32.949		
17,800.00	6,980.50	6,878.95	6,878.50	178.89	139.38	-89.84	-1,097.55	-5,003.65	6,323.14	6,134.35	188.79	33.493		
17,900.00	6,980.42	6,878.87	6,878.42	180.48	139.38	-89.84	-1,097.55	-5,003.65	6,419.45	6,230.85	188.60	34.038		
18,000.00	6,980.34	6,878.79	6,878.34	182.07	139.37	-89.84	-1,097.55	-5,003.65	6,515.88	6,327.46	188.41	34.583		
18,100.00	6,980.26	6,878.72	6,878.26	183.66	139.37	-89.83	-1,097.55	-5,003.65	6,612.41	6,424.17	188.24	35.128		
18,200.00	6,980.19	6,878.64	6,878.19	185.24	139.36	-89.83	-1,097.55	-5,003.65	6,709.04	6,520.97	188.07	35.673		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		107-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,300.00	6,980.11	6,878.56	6,878.11	186.83	139.36	-89.83	-1,097.55	-5,003.65	6,805.78	6,617.87	187.91	36.218		
18,400.00	6,980.03	6,878.48	6,878.03	188.42	139.35	-89.82	-1,097.55	-5,003.65	6,902.60	6,714.84	187.76	36.764		
18,500.00	6,979.95	6,878.40	6,877.95	190.01	139.35	-89.82	-1,097.55	-5,003.65	6,999.51	6,811.90	187.61	37.309		
18,600.00	6,979.87	6,878.32	6,877.87	191.60	139.35	-89.82	-1,097.55	-5,003.65	7,096.51	6,909.04	187.47	37.854		
18,700.00	6,979.79	6,878.25	6,877.79	193.19	139.34	-89.82	-1,097.55	-5,003.65	7,193.59	7,006.26	187.33	38.400		
18,800.00	6,979.72	6,878.17	6,877.72	194.78	139.34	-89.81	-1,097.55	-5,003.65	7,290.76	7,103.55	187.21	38.945		
18,900.00	6,979.64	6,878.09	6,877.64	196.37	139.33	-89.81	-1,097.55	-5,003.65	7,387.99	7,200.91	187.08	39.490		
19,000.00	6,979.56	6,878.01	6,877.56	197.96	139.33	-89.81	-1,097.55	-5,003.65	7,485.30	7,298.33	186.97	40.035		
19,100.00	6,979.48	6,877.93	6,877.48	199.55	139.32	-89.81	-1,097.55	-5,003.65	7,582.68	7,395.82	186.86	40.580		
19,200.00	6,979.40	6,877.85	6,877.40	201.14	139.32	-89.80	-1,097.55	-5,003.65	7,680.13	7,493.37	186.75	41.125		
19,300.00	6,979.33	6,877.78	6,877.33	202.73	139.32	-89.80	-1,097.55	-5,003.65	7,777.64	7,590.99	186.65	41.669		
19,400.00	6,979.25	6,877.70	6,877.25	204.32	139.31	-89.80	-1,097.55	-5,003.65	7,875.21	7,688.66	186.55	42.214		
19,500.00	6,979.17	6,877.62	6,877.17	205.91	139.31	-89.80	-1,097.55	-5,003.65	7,972.85	7,786.38	186.46	42.758		
19,600.00	6,979.09	6,877.54	6,877.09	207.50	139.30	-89.79	-1,097.55	-5,003.65	8,070.54	7,884.16	186.38	43.302		
19,700.00	6,979.01	6,877.46	6,877.01	209.09	139.30	-89.79	-1,097.55	-5,003.65	8,168.28	7,981.99	186.30	43.846		
19,800.00	6,978.93	6,877.38	6,876.93	210.69	139.29	-89.79	-1,097.55	-5,003.65	8,266.09	8,079.87	186.22	44.389		
19,900.00	6,978.86	6,877.31	6,876.86	212.28	139.29	-89.79	-1,097.55	-5,003.65	8,363.94	8,177.80	186.14	44.933		
20,000.00	6,978.78	6,877.23	6,876.78	213.87	139.29	-89.78	-1,097.55	-5,003.65	8,461.84	8,275.77	186.07	45.475		
20,100.00	6,978.70	6,877.15	6,876.70	215.46	139.28	-89.78	-1,097.55	-5,003.65	8,559.80	8,373.79	186.01	46.018		
20,200.00	6,978.62	6,877.07	6,876.62	217.05	139.28	-89.78	-1,097.55	-5,003.65	8,657.79	8,471.85	185.95	46.560		
20,300.00	6,978.54	6,876.99	6,876.54	218.65	139.27	-89.78	-1,097.55	-5,003.65	8,755.84	8,569.95	185.89	47.102		
20,400.00	6,978.46	6,876.91	6,876.46	220.24	139.27	-89.77	-1,097.55	-5,003.65	8,853.93	8,668.09	185.84	47.644		
20,500.00	6,978.39	6,876.84	6,876.39	221.83	139.26	-89.77	-1,097.55	-5,003.65	8,952.06	8,766.27	185.78	48.185		
20,600.00	6,978.31	6,876.76	6,876.31	223.43	139.26	-89.77	-1,097.55	-5,003.65	9,050.23	8,864.49	185.74	48.726		
20,700.00	6,978.23	6,876.68	6,876.23	225.02	139.26	-89.76	-1,097.55	-5,003.65	9,148.44	8,962.75	185.69	49.266		
20,800.00	6,978.15	6,876.60	6,876.15	226.61	139.25	-89.76	-1,097.55	-5,003.65	9,246.69	9,061.04	185.65	49.806		
20,900.00	6,978.07	6,876.52	6,876.07	228.21	139.25	-89.76	-1,097.55	-5,003.65	9,344.97	9,159.36	185.61	50.346		
21,000.00	6,977.99	6,876.45	6,875.99	229.80	139.24	-89.76	-1,097.55	-5,003.65	9,443.30	9,257.72	185.58	50.885		
21,100.00	6,977.92	6,876.37	6,875.92	231.39	139.24	-89.75	-1,097.55	-5,003.65	9,541.65	9,356.11	185.55	51.424		
21,200.00	6,977.84	6,876.29	6,875.84	232.99	139.23	-89.75	-1,097.55	-5,003.65	9,640.05	9,454.53	185.52	51.963		
21,300.00	6,977.76	6,876.21	6,875.76	234.58	139.23	-89.75	-1,097.55	-5,003.65	9,738.47	9,552.98	185.49	52.500		
21,400.00	6,977.68	6,876.13	6,875.68	236.18	139.23	-89.75	-1,097.55	-5,003.65	9,836.92	9,651.45	185.47	53.038		
21,500.00	6,977.60	6,876.05	6,875.60	237.77	139.22	-89.74	-1,097.55	-5,003.65	9,935.41	9,749.96	185.45	53.575		
21,600.00	6,977.52	6,875.98	6,875.52	239.37	139.22	-89.74	-1,097.55	-5,003.65	10,033.93	9,848.50	185.43	54.111		
21,700.00	6,977.45	6,875.90	6,875.45	240.96	139.21	-89.74	-1,097.55	-5,003.65	10,132.47	9,947.06	185.42	54.648		
21,800.00	6,977.37	6,875.82	6,875.37	242.56	139.21	-89.74	-1,097.55	-5,003.65	10,231.05	10,045.64	185.40	55.183		
21,900.00	6,977.29	6,875.74	6,875.29	244.15	139.20	-89.73	-1,097.55	-5,003.65	10,329.65	10,144.26	185.39	55.718		
22,000.00	6,977.21	6,875.66	6,875.21	245.75	139.20	-89.73	-1,097.55	-5,003.65	10,428.28	10,242.89	185.38	56.253		
22,100.00	6,977.13	6,875.58	6,875.13	247.34	139.20	-89.73	-1,097.55	-5,003.65	10,526.93	10,341.55	185.38	56.787		
22,200.00	6,977.05	6,875.51	6,875.05	248.94	139.19	-89.73	-1,097.55	-5,003.65	10,625.61	10,440.24	185.37	57.320		
22,269.73	6,977.00	6,875.45	6,875.00	250.05	139.19	-89.72	-1,097.55	-5,003.65	10,694.43	10,509.06	185.37	57.692		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 117-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Rule Assigned:		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-95.11	-709.39	-7,929.75	7,961.93				
100.00	100.00	9.00	9.00	0.25	0.18	-95.11	-709.39	-7,929.75	7,961.41	7,960.99	0.43	N/A	
200.00	200.00	109.00	109.00	0.61	2.15	-95.11	-709.39	-7,929.75	7,961.41	7,958.66	2.76	2,888.056	
300.00	300.00	209.00	209.00	0.97	4.61	-95.11	-709.39	-7,929.75	7,961.41	7,955.84	5.57	1,428.421	
400.00	400.00	309.00	309.00	1.33	7.11	-95.11	-709.39	-7,929.75	7,961.41	7,952.98	8.43	944.092	
435.82	435.82	344.00	343.99	1.45	7.98	-95.11	-708.78	-7,929.75	7,961.36	7,951.92	9.44	843.674	
500.00	500.00	406.68	406.67	1.68	9.55	-95.11	-708.92	-7,929.75	7,961.37	7,950.14	11.23	708.681	
600.00	600.00	509.15	509.00	2.04	12.15	-95.11	-709.39	-7,929.75	7,961.41	7,947.22	14.19	561.055	
700.00	700.00	609.15	609.00	2.40	15.22	-95.11	-709.39	-7,929.75	7,961.41	7,943.79	17.62	451.870	
800.00	799.98	700.28	700.09	2.76	18.02	-84.37	-708.69	-7,929.75	7,961.18	7,940.41	20.77	383.217	
849.89	849.82	759.14	758.82	2.94	19.76	-84.39	-709.39	-7,929.75	7,961.03	7,938.33	22.69	350.791	
900.00	899.86	809.18	808.86	3.12	21.08	-84.41	-709.39	-7,929.75	7,960.77	7,936.58	24.19	329.039	
1,000.00	999.73	905.39	905.05	3.48	23.62	-84.44	-708.39	-7,929.75	7,960.17	7,933.08	27.09	293.831	
1,100.00	1,099.59	1,009.00	1,008.59	3.84	26.30	-84.49	-709.39	-7,929.75	7,959.76	7,929.63	30.13	264.145	
1,200.00	1,199.45	1,108.87	1,108.45	4.20	28.60	-84.52	-709.39	-7,929.75	7,959.26	7,926.46	32.79	242.697	
1,300.00	1,299.32	1,208.73	1,208.32	4.56	30.90	-84.56	-709.39	-7,929.75	7,958.76	7,923.30	35.46	224.466	
1,400.00	1,399.18	1,306.50	1,306.07	4.92	33.15	-84.59	-708.13	-7,929.75	7,958.15	7,920.08	38.07	209.041	
1,500.00	1,499.04	1,403.20	1,402.76	5.28	35.38	-84.63	-708.61	-7,929.75	7,957.70	7,917.04	40.66	195.718	
1,600.00	1,598.91	1,508.44	1,507.91	5.64	37.79	-84.67	-709.39	-7,929.75	7,957.29	7,913.86	43.43	183.236	
1,700.00	1,698.77	1,608.30	1,607.77	6.00	39.99	-84.71	-709.39	-7,929.75	7,956.80	7,910.81	45.99	173.019	
1,800.00	1,798.63	1,708.16	1,707.63	6.36	42.19	-84.75	-709.39	-7,929.75	7,956.32	7,907.77	48.55	163.880	
1,900.00	1,898.49	1,805.79	1,805.24	6.72	44.34	-84.78	-708.13	-7,929.75	7,955.72	7,904.66	51.06	155.804	
2,000.00	1,998.36	1,902.40	1,901.84	7.09	46.47	-84.82	-708.62	-7,929.75	7,955.30	7,901.74	53.55	148.551	
2,100.00	2,098.22	2,007.85	2,007.22	7.45	48.75	-84.86	-709.39	-7,929.75	7,954.90	7,898.70	56.20	141.551	
2,200.00	2,198.08	2,107.71	2,107.08	7.81	50.75	-84.90	-709.39	-7,929.75	7,954.43	7,895.87	58.56	135.834	
2,300.00	2,297.95	2,207.58	2,206.95	8.17	52.75	-84.94	-709.39	-7,929.75	7,953.97	7,893.04	60.92	130.560	
2,400.00	2,397.81	2,304.90	2,304.25	8.53	54.70	-84.97	-708.52	-7,929.75	7,953.42	7,890.19	63.23	125.779	
2,500.00	2,497.67	2,401.84	2,401.20	8.90	56.64	-85.01	-709.01	-7,929.75	7,953.01	7,887.48	65.54	121.351	
2,600.00	2,597.54	2,507.22	2,506.54	9.26	58.76	-85.05	-709.39	-7,929.75	7,952.60	7,884.58	68.02	116.921	
2,700.00	2,697.40	2,607.08	2,606.40	9.62	60.77	-85.09	-709.39	-7,929.75	7,952.15	7,881.75	70.39	112.970	
2,800.00	2,797.26	2,706.91	2,706.22	9.98	62.78	-85.12	-708.56	-7,929.75	7,951.61	7,878.85	72.77	109.278	
2,900.00	2,897.13	2,804.71	2,804.02	10.35	64.75	-85.15	-708.69	-7,929.75	7,951.18	7,876.08	75.10	105.877	
3,000.00	2,996.99	2,902.50	2,901.80	10.71	66.73	-85.19	-709.06	-7,929.75	7,950.78	7,873.35	77.43	102.682	
3,100.00	3,096.85	3,006.60	3,005.85	11.07	68.78	-85.24	-709.39	-7,929.75	7,950.38	7,870.53	79.85	99.567	
3,200.00	3,196.72	3,106.46	3,105.72	11.43	70.71	-85.27	-709.39	-7,929.75	7,949.94	7,867.81	82.14	96.789	
3,300.00	3,296.58	3,206.32	3,205.58	11.80	72.63	-85.31	-709.39	-7,929.75	7,949.52	7,865.09	84.42	94.161	
3,400.00	3,396.44	3,304.48	3,303.73	12.16	74.52	-85.34	-708.23	-7,929.75	7,948.97	7,862.29	86.68	91.705	
3,500.00	3,496.31	3,401.78	3,401.02	12.52	76.40	-85.38	-708.58	-7,929.75	7,948.58	7,859.66	88.92	89.393	
3,600.00	3,596.17	3,499.06	3,498.29	12.88	78.27	-85.42	-709.21	-7,929.75	7,948.23	7,857.08	91.15	87.195	
3,700.00	3,696.03	3,605.82	3,605.03	13.25	80.50	-85.46	-709.39	-7,929.75	7,947.83	7,854.09	93.74	84.782	
3,800.00	3,795.89	3,703.59	3,702.79	13.61	82.58	-85.50	-709.21	-7,929.75	7,947.40	7,851.22	96.18	82.628	
3,900.00	3,895.76	3,805.59	3,804.76	13.97	85.43	-85.54	-709.39	-7,929.75	7,947.01	7,847.61	99.40	79.952	
4,000.00	3,995.62	3,905.45	3,904.62	14.34	88.93	-85.57	-709.39	-7,929.75	7,946.60	7,843.34	103.26	76.956	
4,100.00	4,095.48	4,005.31	4,004.46	14.70	92.43	-85.60	-707.76	-7,929.75	7,946.02	7,838.89	107.12	74.176	
4,200.00	4,195.35	4,100.77	4,099.90	15.06	95.78	-85.64	-708.00	-7,929.75	7,945.65	7,834.81	110.83	71.690	
4,300.00	4,295.21	4,196.19	4,195.31	15.42	99.12	-85.68	-708.72	-7,929.75	7,945.33	7,830.79	114.54	69.366	
4,400.00	4,395.07	4,305.52	4,304.07	15.79	103.63	-85.72	-709.39	-7,929.75	7,945.01	7,825.60	119.41	66.537	
4,500.00	4,494.94	4,405.73	4,403.94	16.15	108.48	-85.76	-709.39	-7,929.75	7,944.62	7,820.00	124.63	63.746	
4,600.00	4,594.80	4,505.85	4,503.80	16.51	113.33	-85.80	-709.39	-7,929.75	7,944.24	7,814.40	129.84	61.184	
4,700.00	4,694.66	4,605.95	4,603.66	16.87	118.15	-85.84	-709.39	-7,929.75	7,943.86	7,808.83	135.03	58.832	
4,800.00	4,794.53	4,706.18	4,703.53	17.24	123.16	-85.87	-709.39	-7,929.75	7,943.48	7,803.09	140.39	56.582	
4,900.00	4,894.39	4,806.31	4,803.39	17.60	128.19	-85.91	-709.39	-7,929.75	7,943.10	7,797.32	145.79	54.484	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		117-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,000.00	4,994.25	4,896.55	4,893.57	17.96	132.67	-85.94	-708.21	-7,929.75	7,942.60	7,791.98	150.62	52.731		
5,100.00	5,094.12	5,006.42	5,003.12	18.33	138.20	-85.99	-709.39	-7,929.75	7,942.36	7,785.84	156.52	50.743		
5,200.00	5,193.98	5,106.62	5,102.98	18.69	143.26	-86.02	-709.39	-7,929.75	7,942.00	7,780.06	161.94	49.042		
5,300.00	5,293.84	5,206.48	5,202.84	19.05	148.18	-86.06	-709.39	-7,929.75	7,941.64	7,774.41	167.23	47.491		
5,336.91	5,330.71	5,243.35	5,239.71	19.19	150.00	-86.08	-709.39	-7,929.75	7,941.50	7,772.33	169.18	46.942		
5,400.00	5,393.71	5,304.19	5,300.39	19.41	152.99	-86.07	-705.36	-7,929.74	7,940.81	7,768.41	172.40	46.060		
5,500.00	5,493.62	5,390.49	5,386.61	19.77	157.25	-86.10	-706.19	-7,929.75	7,940.64	7,763.62	177.02	44.858		
5,523.86	5,517.47	5,411.09	5,407.19	19.86	158.26	-86.11	-706.57	-7,929.75	7,940.63	7,762.51	178.12	44.581		
5,600.00	5,593.57	5,476.85	5,472.86	20.13	161.50	-86.14	-708.28	-7,929.75	7,940.70	7,759.07	181.63	43.719		
5,700.00	5,693.53	5,607.24	5,602.53	20.49	167.74	-86.17	-709.39	-7,929.75	7,940.61	7,752.38	188.23	42.186		
5,800.00	5,793.52	5,707.23	5,702.52	20.85	172.48	-86.18	-709.39	-7,929.75	7,940.50	7,747.18	193.32	41.074		
5,900.00	5,893.52	5,807.23	5,802.52	21.20	177.21	-86.18	-709.39	-7,929.75	7,940.45	7,742.04	198.41	40.020		
5,936.48	5,930.00	5,843.71	5,839.00	21.33	178.94	-96.94	-709.39	-7,929.75	7,940.45	7,740.18	200.27	39.649		
6,000.00	5,993.52	5,907.23	5,902.52	21.56	181.95	-96.94	-709.39	-7,929.75	7,940.45	7,736.95	203.50	39.019		
6,010.00	6,003.52	5,917.23	5,912.52	21.59	182.42	-96.94	-709.39	-7,929.75	7,940.45	7,736.44	204.01	38.922		
6,100.00	6,093.52	5,949.00	5,943.35	21.91	183.92	-96.94	-709.39	-7,929.75	7,940.67	7,734.84	205.83	38.579		
6,200.00	6,193.52	5,949.00	5,943.35	22.27	183.92	-96.94	-709.39	-7,929.75	7,942.04	7,735.89	206.15	38.526		
6,300.00	6,293.52	5,949.00	5,943.35	22.62	183.92	-96.94	-709.39	-7,929.75	7,944.67	7,738.24	206.43	38.485		
6,358.48	6,352.00	5,949.00	5,943.35	22.83	183.92	-96.94	-709.39	-7,929.75	7,946.80	7,740.21	206.59	38.467		
6,400.00	6,393.49	5,949.00	5,943.35	22.97	183.92	-22.32	-709.39	-7,929.75	7,947.31	7,740.62	206.69	38.450		
6,450.00	6,443.20	5,949.00	5,943.35	23.15	183.92	-22.40	-709.39	-7,929.75	7,944.90	7,738.09	206.80	38.417		
6,500.00	6,492.36	5,949.00	5,943.35	23.33	183.92	-22.60	-709.39	-7,929.75	7,939.18	7,732.27	206.91	38.370		
6,550.00	6,540.64	5,949.00	5,943.35	23.51	183.92	-22.92	-709.39	-7,929.75	7,930.19	7,723.17	207.01	38.307		
6,600.00	6,587.77	5,949.00	5,943.35	23.69	183.92	-23.37	-709.39	-7,929.75	7,917.96	7,710.85	207.11	38.231		
6,650.00	6,633.44	5,949.00	5,943.35	23.88	183.92	-23.95	-709.39	-7,929.75	7,902.56	7,695.37	207.19	38.141		
6,700.00	6,677.37	5,949.00	5,943.35	24.07	183.92	-24.69	-709.39	-7,929.75	7,884.07	7,676.80	207.27	38.038		
6,750.00	6,719.30	5,949.00	5,943.35	24.26	183.92	-25.60	-709.39	-7,929.75	7,862.57	7,655.23	207.34	37.921		
6,800.00	6,758.97	5,949.00	5,943.35	24.46	183.92	-26.71	-709.39	-7,929.75	7,838.18	7,630.78	207.40	37.793		
6,850.00	6,796.12	5,949.00	5,943.35	24.67	183.92	-28.05	-709.39	-7,929.75	7,811.02	7,603.57	207.45	37.652		
6,900.00	6,830.54	5,949.00	5,943.35	24.88	183.92	-29.66	-709.39	-7,929.75	7,781.24	7,573.73	207.50	37.499		
6,950.00	6,862.00	5,949.00	5,943.35	25.11	183.92	-31.60	-709.39	-7,929.75	7,748.97	7,541.42	207.55	37.336		
7,000.00	6,890.33	5,949.00	5,943.35	25.34	183.92	-33.93	-709.39	-7,929.75	7,714.40	7,506.81	207.59	37.161		
7,050.00	6,915.33	5,949.00	5,943.35	25.59	183.92	-36.74	-709.39	-7,929.75	7,677.70	7,470.07	207.63	36.977		
7,100.00	6,936.86	5,949.00	5,943.35	25.85	183.92	-40.15	-709.39	-7,929.75	7,639.08	7,431.41	207.67	36.784		
7,150.00	6,954.79	5,949.00	5,943.35	26.12	183.92	-44.28	-709.39	-7,929.75	7,598.75	7,391.03	207.72	36.582		
7,200.00	6,968.99	5,949.00	5,943.35	26.40	183.92	-49.29	-709.39	-7,929.75	7,556.92	7,349.15	207.77	36.372		
7,250.00	6,979.40	5,949.00	5,943.35	26.69	183.92	-55.33	-709.39	-7,929.75	7,513.83	7,306.01	207.82	36.156		
7,300.00	6,985.94	5,949.00	5,943.35	27.00	183.92	-62.54	-709.39	-7,929.75	7,469.74	7,261.86	207.88	35.933		
7,350.00	6,988.56	5,949.00	5,943.35	27.31	183.92	-70.92	-709.39	-7,929.75	7,424.89	7,216.94	207.95	35.706		
7,358.93	6,988.62	5,949.00	5,943.35	27.36	183.92	-72.53	-709.39	-7,929.75	7,416.82	7,208.86	207.96	35.665		
7,400.00	6,988.59	5,949.00	5,943.35	27.63	183.92	-72.53	-709.39	-7,929.75	7,379.69	7,171.67	208.02	35.476		
7,500.00	6,988.52	5,949.00	5,943.35	28.33	183.92	-72.53	-709.39	-7,929.75	7,289.47	7,081.29	208.19	35.014		
7,600.00	6,988.45	5,949.00	5,943.35	29.10	183.92	-72.53	-709.39	-7,929.75	7,199.52	6,991.14	208.38	34.550		
7,658.93	6,988.41	5,949.00	5,943.35	29.59	183.92	-72.53	-709.39	-7,929.75	7,146.63	6,938.13	208.50	34.276		
7,700.00	6,988.38	5,949.00	5,943.35	29.94	183.92	-72.02	-709.39	-7,929.75	7,109.70	6,901.11	208.59	34.085		
7,800.00	6,988.31	5,949.00	5,943.35	30.84	183.92	-70.64	-709.39	-7,929.75	7,018.97	6,810.16	208.81	33.614		
7,900.00	6,988.24	5,949.00	5,943.35	31.79	183.92	-69.05	-709.39	-7,929.75	6,927.13	6,718.10	209.03	33.139		
8,000.00	6,988.16	5,949.00	5,943.35	32.78	183.92	-67.18	-709.39	-7,929.75	6,834.26	6,625.01	209.25	32.661		
8,100.00	6,988.09	5,949.00	5,943.35	33.82	183.92	-64.98	-709.39	-7,929.75	6,740.42	6,530.96	209.46	32.180		
8,200.00	6,988.01	5,949.00	5,943.35	34.88	183.92	-62.36	-709.39	-7,929.75	6,645.69	6,436.03	209.66	31.698		
8,300.00	6,987.94	5,949.00	5,943.35	35.98	183.92	-59.21	-709.39	-7,929.75	6,550.16	6,340.32	209.84	31.215		
8,400.00	6,987.86	5,949.00	5,943.35	37.11	183.92	-55.37	-709.39	-7,929.75	6,453.90	6,243.89	210.01	30.732		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		117-A027Ua_INC-ONLY				Rule Assigned:			Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
8,416.35	6,987.85	5,949.00	5,943.35	37.29	183.92	-54.67	-709.39	-7,929.75	6,438.09	6,228.06	210.03	30.653		
8,500.00	6,987.78	5,949.00	5,943.35	38.25	183.92	-54.67	-709.39	-7,929.75	6,357.24	6,147.08	210.16	30.250		
8,600.00	6,987.70	5,949.00	5,943.35	39.43	183.92	-54.67	-709.39	-7,929.75	6,260.68	6,050.36	210.32	29.768		
8,700.00	6,987.62	5,949.00	5,943.35	40.64	183.92	-54.67	-709.39	-7,929.75	6,164.23	5,953.74	210.49	29.286		
8,800.00	6,987.55	5,949.00	5,943.35	41.88	183.92	-54.67	-709.39	-7,929.75	6,067.89	5,857.23	210.67	28.803		
8,900.00	6,987.47	5,949.00	5,943.35	43.14	183.92	-54.67	-709.39	-7,929.75	5,971.68	5,760.82	210.85	28.321		
9,000.00	6,987.39	5,949.00	5,943.35	44.42	183.92	-54.67	-709.39	-7,929.75	5,875.59	5,664.53	211.06	27.839		
9,100.00	6,987.31	5,949.00	5,943.35	45.72	183.92	-54.67	-709.39	-7,929.75	5,779.63	5,568.36	211.27	27.357		
9,200.00	6,987.23	5,949.00	5,943.35	47.04	183.92	-54.67	-709.39	-7,929.75	5,683.81	5,472.32	211.49	26.875		
9,300.00	6,987.15	5,949.00	5,943.35	48.38	183.92	-54.67	-709.39	-7,929.75	5,588.14	5,376.42	211.73	26.393		
9,400.00	6,987.08	5,949.00	5,943.35	49.73	183.92	-54.67	-709.39	-7,929.75	5,492.63	5,280.65	211.98	25.912		
9,500.00	6,987.00	5,949.00	5,943.35	51.10	183.92	-54.67	-709.39	-7,929.75	5,397.27	5,185.04	212.24	25.430		
9,600.00	6,986.92	5,949.00	5,943.35	52.48	183.92	-54.67	-709.39	-7,929.75	5,302.09	5,089.58	212.52	24.949		
9,700.00	6,986.84	5,949.00	5,943.35	53.87	183.92	-54.67	-709.39	-7,929.75	5,207.09	4,994.28	212.81	24.468		
9,800.00	6,986.76	5,949.00	5,943.35	55.28	183.92	-54.67	-709.39	-7,929.75	5,112.28	4,899.16	213.12	23.988		
9,900.00	6,986.68	5,949.00	5,943.35	56.69	183.92	-54.67	-709.39	-7,929.75	5,017.67	4,804.22	213.44	23.508		
10,000.00	6,986.61	5,949.00	5,943.35	58.12	183.92	-54.67	-709.39	-7,929.75	4,923.27	4,709.48	213.79	23.029		
10,100.00	6,986.53	5,949.00	5,943.35	59.55	183.92	-54.67	-709.39	-7,929.75	4,829.10	4,614.95	214.15	22.550		
10,200.00	6,986.45	5,949.00	5,943.35	61.00	183.92	-54.67	-709.39	-7,929.75	4,735.17	4,520.64	214.53	22.073		
10,300.00	6,986.37	5,949.00	5,943.35	62.45	183.92	-54.67	-709.39	-7,929.75	4,641.49	4,426.56	214.93	21.595		
10,400.00	6,986.29	5,949.00	5,943.35	63.90	183.92	-54.67	-709.39	-7,929.75	4,548.08	4,332.73	215.35	21.119		
10,500.00	6,986.21	5,949.00	5,943.35	65.37	183.92	-54.67	-709.39	-7,929.75	4,454.95	4,239.16	215.80	20.644		
10,600.00	6,986.14	5,949.00	5,943.35	66.84	183.92	-54.67	-709.39	-7,929.75	4,362.13	4,145.87	216.27	20.170		
10,700.00	6,986.06	5,949.00	5,943.35	68.32	183.92	-54.67	-709.39	-7,929.75	4,269.64	4,052.88	216.76	19.698		
10,800.00	6,985.98	5,949.00	5,943.35	69.80	183.92	-54.67	-709.39	-7,929.75	4,177.49	3,960.21	217.28	19.226		
10,900.00	6,985.90	5,949.00	5,943.35	71.29	183.92	-54.67	-709.39	-7,929.75	4,085.71	3,867.88	217.83	18.757		
11,000.00	6,985.82	5,949.00	5,943.35	72.78	183.92	-54.67	-709.39	-7,929.75	3,994.33	3,775.92	218.40	18.289		
11,100.00	6,985.75	5,949.00	5,943.35	74.28	183.92	-54.67	-709.39	-7,929.75	3,903.36	3,684.36	219.01	17.823		
11,200.00	6,985.67	5,949.00	5,943.35	75.78	183.92	-54.67	-709.39	-7,929.75	3,812.85	3,593.21	219.64	17.359		
11,300.00	6,985.59	5,949.00	5,943.35	77.29	183.92	-54.67	-709.39	-7,929.75	3,722.83	3,502.51	220.32	16.898		
11,400.00	6,985.51	5,949.00	5,943.35	78.80	183.92	-54.67	-709.39	-7,929.75	3,633.33	3,412.31	221.02	16.439		
11,500.00	6,985.43	5,949.00	5,943.35	80.31	183.92	-54.67	-709.39	-7,929.75	3,544.38	3,322.62	221.76	15.983		
11,600.00	6,985.35	5,949.00	5,943.35	81.83	183.92	-54.67	-709.39	-7,929.75	3,456.05	3,233.51	222.54	15.530		
11,700.00	6,985.28	5,949.00	5,943.35	83.35	183.92	-54.67	-709.39	-7,929.75	3,368.36	3,145.01	223.35	15.081		
11,800.00	6,985.20	5,949.00	5,943.35	84.87	183.92	-54.67	-709.39	-7,929.75	3,281.38	3,057.17	224.21	14.635		
11,900.00	6,985.12	5,949.00	5,943.35	86.40	183.92	-54.67	-709.39	-7,929.75	3,195.17	2,970.05	225.11	14.194		
12,000.00	6,985.04	5,949.00	5,943.35	87.93	183.92	-54.67	-709.39	-7,929.75	3,109.77	2,883.72	226.05	13.757		
12,100.00	6,984.96	5,949.00	5,943.35	89.46	183.92	-54.67	-709.39	-7,929.75	3,025.28	2,798.23	227.04	13.325		
12,200.00	6,984.88	5,949.00	5,943.35	90.99	183.92	-54.67	-709.39	-7,929.75	2,941.75	2,713.68	228.07	12.898		
12,300.00	6,984.81	5,949.00	5,943.35	92.53	183.92	-54.67	-709.39	-7,929.75	2,859.28	2,630.13	229.15	12.478		
12,400.00	6,984.73	5,949.00	5,943.35	94.07	183.92	-54.67	-709.39	-7,929.75	2,777.97	2,547.69	230.28	12.063		
12,500.00	6,984.65	5,949.00	5,943.35	95.61	183.92	-54.67	-709.39	-7,929.75	2,697.91	2,466.45	231.46	11.656		
12,600.00	6,984.57	5,949.00	5,943.35	97.15	183.92	-54.67	-709.39	-7,929.75	2,619.22	2,386.54	232.68	11.257		
12,700.00	6,984.49	5,949.00	5,943.35	98.70	183.92	-54.67	-709.39	-7,929.75	2,542.03	2,308.08	233.95	10.866		
12,800.00	6,984.41	5,949.00	5,943.35	100.25	183.92	-54.67	-709.39	-7,929.75	2,466.48	2,231.22	235.26	10.484		
12,900.00	6,984.34	5,949.00	5,943.35	101.80	183.92	-54.67	-709.39	-7,929.75	2,392.72	2,156.11	236.62	10.112		
13,000.00	6,984.26	5,949.00	5,943.35	103.35	183.92	-54.67	-709.39	-7,929.75	2,320.93	2,082.92	238.02	9.751		
13,100.00	6,984.18	5,949.00	5,943.35	104.90	183.92	-54.67	-709.39	-7,929.75	2,251.30	2,011.85	239.45	9.402		
13,200.00	6,984.10	5,949.00	5,943.35	106.45	183.92	-54.67	-709.39	-7,929.75	2,184.02	1,943.10	240.92	9.065		
13,300.00	6,984.02	5,949.00	5,943.35	108.01	183.92	-54.67	-709.39	-7,929.75	2,119.33	1,876.92	242.41	8.743		
13,400.00	6,983.94	5,949.00	5,943.35	109.56	183.92	-54.67	-709.39	-7,929.75	2,057.46	1,813.54	243.92	8.435		
13,500.00	6,983.87	5,949.00	5,943.35	111.12	183.92	-54.67	-709.39	-7,929.75	1,998.69	1,753.25	245.44	8.143		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 117-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,600.00	6,983.79	5,949.00	5,943.35	112.68	183.92	-54.67	-709.39	-7,929.75	1,943.29	1,696.33	246.96	7.869	
13,700.00	6,983.71	5,949.00	5,943.35	114.24	183.92	-54.67	-709.39	-7,929.75	1,891.55	1,643.08	248.47	7.613	
13,800.00	6,983.63	5,949.00	5,943.35	115.80	183.92	-54.67	-709.39	-7,929.75	1,843.79	1,593.84	249.96	7.376	
13,900.00	6,983.55	5,949.00	5,943.35	117.37	183.92	-54.67	-709.39	-7,929.75	1,800.33	1,548.91	251.41	7.161	
14,000.00	6,983.47	5,949.00	5,943.35	118.93	183.92	-54.67	-709.39	-7,929.75	1,761.47	1,508.64	252.83	6.967	
14,100.00	6,983.40	5,949.00	5,943.35	120.50	183.92	-54.67	-709.39	-7,929.75	1,727.54	1,473.34	254.19	6.796	
14,200.00	6,983.32	5,949.00	5,943.35	122.06	183.92	-54.67	-709.39	-7,929.75	1,698.82	1,443.32	255.50	6.649	
14,300.00	6,983.24	5,949.00	5,943.35	123.63	183.92	-54.67	-709.39	-7,929.75	1,675.59	1,418.85	256.74	6.527	
14,400.00	6,983.16	5,949.00	5,943.35	125.20	183.92	-54.67	-709.39	-7,929.75	1,658.07	1,400.18	257.90	6.429	
14,500.00	6,983.08	5,949.00	5,943.35	126.77	183.92	-54.67	-709.39	-7,929.75	1,646.45	1,387.48	258.97	6.358	
14,600.00	6,983.00	5,949.00	5,943.35	128.33	183.92	-54.67	-709.39	-7,929.75	1,640.86	1,380.90	259.96	6.312	
14,641.97	6,982.97	5,949.00	5,943.35	128.99	183.92	-54.67	-709.39	-7,929.75	1,640.32	1,379.98	260.34	6.301 CC, ES	
14,700.00	6,982.93	5,949.00	5,943.35	129.91	183.92	-54.67	-709.39	-7,929.75	1,641.35	1,380.50	260.85	6.292 SF	
14,800.00	6,982.85	5,949.00	5,943.35	131.48	183.92	-54.67	-709.39	-7,929.75	1,647.92	1,386.30	261.62	6.299	
14,900.00	6,982.77	5,949.00	5,943.35	133.05	183.92	-54.67	-709.39	-7,929.75	1,660.49	1,398.22	262.27	6.331	
15,000.00	6,982.69	5,949.00	5,943.35	134.62	183.92	-54.67	-709.39	-7,929.75	1,678.94	1,416.15	262.79	6.389	
15,100.00	6,982.61	5,949.00	5,943.35	136.20	183.92	-54.67	-709.39	-7,929.75	1,703.07	1,439.90	263.17	6.471	
15,200.00	6,982.54	5,949.00	5,943.35	137.77	183.92	-54.67	-709.39	-7,929.75	1,732.64	1,469.24	263.40	6.578	
15,300.00	6,982.46	5,949.00	5,943.35	139.35	183.92	-54.67	-709.39	-7,929.75	1,767.39	1,503.89	263.49	6.708	
15,400.00	6,982.38	5,949.00	5,943.35	140.92	183.92	-54.67	-709.39	-7,929.75	1,807.00	1,543.56	263.44	6.859	
15,500.00	6,982.30	5,949.00	5,943.35	142.50	183.92	-54.67	-709.39	-7,929.75	1,851.18	1,587.93	263.25	7.032	
15,600.00	6,982.22	5,949.00	5,943.35	144.07	183.92	-54.67	-709.39	-7,929.75	1,899.60	1,636.67	262.93	7.225	
15,700.00	6,982.14	5,949.00	5,943.35	145.65	183.92	-54.67	-709.39	-7,929.75	1,951.94	1,689.44	262.50	7.436	
15,800.00	6,982.07	5,949.00	5,943.35	147.23	183.92	-54.67	-709.39	-7,929.75	2,007.90	1,745.93	261.97	7.665	
15,900.00	6,981.99	5,949.00	5,943.35	148.81	183.92	-54.67	-709.39	-7,929.75	2,067.19	1,805.84	261.36	7.909	
16,000.00	6,981.91	5,949.00	5,943.35	150.39	183.92	-54.67	-709.39	-7,929.75	2,129.53	1,868.86	260.67	8.169	
16,100.00	6,981.83	5,949.00	5,943.35	151.97	183.92	-54.67	-709.39	-7,929.75	2,194.65	1,934.72	259.93	8.443	
16,200.00	6,981.75	5,949.00	5,943.35	153.55	183.92	-54.67	-709.39	-7,929.75	2,262.32	2,003.18	259.14	8.730	
16,300.00	6,981.67	5,949.00	5,943.35	155.13	183.92	-54.67	-709.39	-7,929.75	2,332.32	2,074.00	258.32	9.029	
16,400.00	6,981.60	5,949.00	5,943.35	156.71	183.92	-54.67	-709.39	-7,929.75	2,404.44	2,146.96	257.48	9.338	
16,500.00	6,981.52	5,949.00	5,943.35	158.29	183.92	-54.67	-709.39	-7,929.75	2,478.49	2,221.87	256.62	9.658	
16,600.00	6,981.44	5,949.00	5,943.35	159.88	183.92	-54.67	-709.39	-7,929.75	2,554.31	2,298.55	255.76	9.987	
16,700.00	6,981.36	5,949.00	5,943.35	161.46	183.92	-54.67	-709.39	-7,929.75	2,631.75	2,376.85	254.90	10.325	
16,800.00	6,981.28	5,949.00	5,943.35	163.04	183.92	-54.67	-709.39	-7,929.75	2,710.67	2,456.62	254.05	10.670	
16,900.00	6,981.20	5,949.00	5,943.35	164.62	183.92	-54.67	-709.39	-7,929.75	2,790.94	2,537.73	253.20	11.022	
17,000.00	6,981.13	5,949.00	5,943.35	166.21	183.92	-54.67	-709.39	-7,929.75	2,872.44	2,620.07	252.38	11.382	
17,100.00	6,981.05	5,949.00	5,943.35	167.79	183.92	-54.67	-709.39	-7,929.75	2,955.09	2,703.52	251.56	11.747	
17,200.00	6,980.97	5,949.00	5,943.35	169.38	183.92	-54.67	-709.39	-7,929.75	3,038.77	2,788.00	250.77	12.118	
17,300.00	6,980.89	5,949.00	5,943.35	170.96	183.92	-54.67	-709.39	-7,929.75	3,123.42	2,873.42	250.00	12.494	
17,400.00	6,980.81	5,949.00	5,943.35	172.55	183.92	-54.67	-709.39	-7,929.75	3,208.95	2,959.70	249.25	12.875	
17,500.00	6,980.73	5,949.00	5,943.35	174.13	183.92	-54.67	-709.39	-7,929.75	3,295.29	3,046.78	248.52	13.260	
17,600.00	6,980.66	5,949.00	5,943.35	175.72	183.92	-54.67	-709.39	-7,929.75	3,382.39	3,134.58	247.81	13.649	
17,700.00	6,980.58	5,949.00	5,943.35	177.31	183.92	-54.67	-709.39	-7,929.75	3,470.18	3,223.05	247.13	14.042	
17,800.00	6,980.50	5,949.00	5,943.35	178.89	183.92	-54.67	-709.39	-7,929.75	3,558.62	3,312.15	246.47	14.438	
17,900.00	6,980.42	5,949.00	5,943.35	180.48	183.92	-54.67	-709.39	-7,929.75	3,647.65	3,401.82	245.84	14.838	
18,000.00	6,980.34	5,949.00	5,943.35	182.07	183.92	-54.67	-709.39	-7,929.75	3,737.24	3,492.02	245.23	15.240	
18,100.00	6,980.26	5,949.00	5,943.35	183.66	183.92	-54.67	-709.39	-7,929.75	3,827.35	3,582.71	244.64	15.645	
18,200.00	6,980.19	5,949.00	5,943.35	185.24	183.92	-54.67	-709.39	-7,929.75	3,917.93	3,673.87	244.07	16.053	
18,300.00	6,980.11	5,949.00	5,943.35	186.83	183.92	-54.67	-709.39	-7,929.75	4,008.97	3,765.44	243.52	16.462	
18,400.00	6,980.03	5,949.00	5,943.35	188.42	183.92	-54.67	-709.39	-7,929.75	4,100.42	3,857.42	243.00	16.874	
18,500.00	6,979.95	5,949.00	5,943.35	190.01	183.92	-54.67	-709.39	-7,929.75	4,192.26	3,949.77	242.49	17.288	
18,600.00	6,979.87	5,949.00	5,943.35	191.60	183.92	-54.67	-709.39	-7,929.75	4,284.46	4,042.46	242.00	17.704	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149 - OH - OH-INC													Offset Site Error:	0.00 usft	
Survey Program: 117-A027Ua_INC-ONLY							Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)		
18,700.00	6,979.79	5,949.00	5,943.35	193.19	183.92	-54.67	-709.39	-7,929.75	4,377.01	4,135.47	241.54	18.121			
18,800.00	6,979.72	5,949.00	5,943.35	194.78	183.92	-54.67	-709.39	-7,929.75	4,469.88	4,228.79	241.09	18.540			
18,900.00	6,979.64	5,949.00	5,943.35	196.37	183.92	-54.67	-709.39	-7,929.75	4,563.05	4,322.39	240.66	18.961			
19,000.00	6,979.56	5,949.00	5,943.35	197.96	183.92	-54.67	-709.39	-7,929.75	4,656.51	4,416.26	240.25	19.382			
19,100.00	6,979.48	5,949.00	5,943.35	199.55	183.92	-54.67	-709.39	-7,929.75	4,750.23	4,510.38	239.85	19.805			
19,200.00	6,979.40	5,949.00	5,943.35	201.14	183.92	-54.67	-709.39	-7,929.75	4,844.20	4,604.73	239.47	20.229			
19,300.00	6,979.33	5,949.00	5,943.35	202.73	183.92	-54.67	-709.39	-7,929.75	4,938.41	4,699.30	239.10	20.654			
19,400.00	6,979.25	5,949.00	5,943.35	204.32	183.92	-54.67	-709.39	-7,929.75	5,032.84	4,794.08	238.75	21.080			
19,500.00	6,979.17	5,949.00	5,943.35	205.91	183.92	-54.67	-709.39	-7,929.75	5,127.48	4,889.06	238.42	21.506			
19,600.00	6,979.09	5,949.00	5,943.35	207.50	183.92	-54.67	-709.39	-7,929.75	5,222.32	4,984.23	238.10	21.934			
19,700.00	6,979.01	5,949.00	5,943.35	209.09	183.92	-54.67	-709.39	-7,929.75	5,317.36	5,079.57	237.79	22.362			
19,800.00	6,978.93	5,949.00	5,943.35	210.69	183.92	-54.67	-709.39	-7,929.75	5,412.57	5,175.08	237.49	22.791			
19,900.00	6,978.86	5,949.00	5,943.35	212.28	183.92	-54.67	-709.39	-7,929.75	5,507.95	5,270.74	237.21	23.220			
20,000.00	6,978.78	5,949.00	5,943.35	213.87	183.92	-54.67	-709.39	-7,929.75	5,603.49	5,366.56	236.93	23.650			
20,100.00	6,978.70	5,949.00	5,943.35	215.46	183.92	-54.67	-709.39	-7,929.75	5,699.18	5,462.51	236.67	24.080			
20,200.00	6,978.62	5,949.00	5,943.35	217.05	183.92	-54.67	-709.39	-7,929.75	5,795.02	5,558.60	236.42	24.511			
20,300.00	6,978.54	5,949.00	5,943.35	218.65	183.92	-54.67	-709.39	-7,929.75	5,891.00	5,654.82	236.18	24.942			
20,400.00	6,978.46	5,949.00	5,943.35	220.24	183.92	-54.67	-709.39	-7,929.75	5,987.11	5,751.16	235.96	25.374			
20,500.00	6,978.39	5,949.00	5,943.35	221.83	183.92	-54.67	-709.39	-7,929.75	6,083.35	5,847.61	235.74	25.806			
20,600.00	6,978.31	5,949.00	5,943.35	223.43	183.92	-54.67	-709.39	-7,929.75	6,179.70	5,944.18	235.53	26.238			
20,700.00	6,978.23	5,949.00	5,943.35	225.02	183.92	-54.67	-709.39	-7,929.75	6,276.17	6,040.84	235.33	26.670			
20,800.00	6,978.15	5,949.00	5,943.35	226.61	183.92	-54.67	-709.39	-7,929.75	6,372.75	6,137.61	235.13	27.103			
20,900.00	6,978.07	5,949.00	5,943.35	228.21	183.92	-54.67	-709.39	-7,929.75	6,469.43	6,234.48	234.95	27.535			
21,000.00	6,977.99	5,949.00	5,943.35	229.80	183.92	-54.67	-709.39	-7,929.75	6,566.21	6,331.44	234.78	27.968			
21,100.00	6,977.92	5,949.00	5,943.35	231.39	183.92	-54.67	-709.39	-7,929.75	6,663.09	6,428.48	234.61	28.401			
21,200.00	6,977.84	5,949.00	5,943.35	232.99	183.92	-54.67	-709.39	-7,929.75	6,760.06	6,525.61	234.45	28.834			
21,300.00	6,977.76	5,949.00	5,943.35	234.58	183.92	-54.67	-709.39	-7,929.75	6,857.11	6,622.81	234.30	29.267			
21,400.00	6,977.68	5,949.00	5,943.35	236.18	183.92	-54.67	-709.39	-7,929.75	6,954.25	6,720.10	234.15	29.700			
21,500.00	6,977.60	5,949.00	5,943.35	237.77	183.92	-54.67	-709.39	-7,929.75	7,051.47	6,817.45	234.01	30.133			
21,600.00	6,977.52	5,949.00	5,943.35	239.37	183.92	-54.67	-709.39	-7,929.75	7,148.76	6,914.88	233.88	30.566			
21,700.00	6,977.45	5,949.00	5,943.35	240.96	183.92	-54.67	-709.39	-7,929.75	7,246.13	7,012.37	233.76	30.999			
21,800.00	6,977.37	5,949.00	5,943.35	242.56	183.92	-54.67	-709.39	-7,929.75	7,343.57	7,109.93	233.64	31.431			
21,900.00	6,977.29	5,949.00	5,943.35	244.15	183.92	-54.67	-709.39	-7,929.75	7,441.07	7,207.55	233.53	31.864			
22,000.00	6,977.21	5,949.00	5,943.35	245.75	183.92	-54.67	-709.39	-7,929.75	7,538.65	7,305.23	233.42	32.297			
22,100.00	6,977.13	5,949.00	5,943.35	247.34	183.92	-54.67	-709.39	-7,929.75	7,636.28	7,402.97	233.32	32.729			
22,200.00	6,977.05	5,949.00	5,943.35	248.94	183.92	-54.67	-709.39	-7,929.75	7,733.98	7,500.76	233.22	33.162			
22,269.73	6,977.00	5,949.00	5,943.35	250.05	183.92	-54.67	-709.39	-7,929.75	7,802.13	7,568.97	233.16	33.463			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 245-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-96.57	-1,072.09	-9,309.08	9,371.07				
100.00	100.00	7.00	7.00	0.25	0.12	-96.57	-1,072.09	-9,309.08	9,370.61	9,370.23	0.38	N/A	
200.00	200.00	107.00	107.00	0.61	1.90	-96.57	-1,072.09	-9,309.08	9,370.61	9,368.10	2.51	3,740.419	
300.00	300.00	207.00	207.00	0.97	3.67	-96.57	-1,072.09	-9,309.08	9,370.61	9,365.97	4.64	2,021.569	
400.00	400.00	307.00	307.00	1.33	5.44	-96.57	-1,072.09	-9,309.08	9,370.61	9,363.84	6.77	1,385.065	
456.81	456.81	363.80	363.80	1.53	6.45	-96.57	-1,071.96	-9,309.08	9,370.59	9,362.62	7.98	1,174.928	
500.00	500.00	406.16	406.16	1.68	7.20	-96.57	-1,071.97	-9,309.08	9,370.60	9,361.72	8.88	1,055.166	
600.00	600.00	507.00	507.00	2.04	9.00	-96.57	-1,072.09	-9,309.08	9,370.61	9,359.57	11.04	848.690	
700.00	700.00	607.00	607.00	2.40	10.83	-96.57	-1,072.09	-9,309.08	9,370.61	9,357.38	13.23	708.120	
800.00	799.98	705.66	705.65	2.76	12.64	-85.83	-1,071.98	-9,309.08	9,370.47	9,355.07	15.40	608.491	
849.89	849.82	754.69	754.69	2.94	13.54	-85.84	-1,072.06	-9,309.08	9,370.32	9,353.84	16.48	568.701	
900.00	899.86	806.88	806.86	3.12	14.52	-85.86	-1,072.09	-9,309.08	9,370.13	9,352.50	17.63	531.389	
1,000.00	999.73	906.74	906.73	3.48	16.40	-85.89	-1,072.09	-9,309.08	9,369.76	9,349.88	19.88	471.417	
1,100.00	1,099.59	1,006.60	1,006.59	3.84	18.28	-85.92	-1,072.09	-9,309.08	9,369.38	9,347.26	22.12	423.590	
1,200.00	1,199.45	1,103.93	1,103.91	4.20	20.12	-85.95	-1,071.38	-9,309.08	9,368.93	9,344.62	24.31	385.315	
1,300.00	1,299.32	1,200.97	1,200.95	4.56	21.95	-85.98	-1,071.73	-9,309.08	9,368.60	9,342.10	26.51	353.450	
1,400.00	1,399.18	1,306.22	1,306.18	4.92	23.94	-86.02	-1,072.09	-9,309.08	9,368.28	9,339.42	28.86	324.648	
1,500.00	1,499.04	1,406.09	1,406.04	5.28	25.84	-86.05	-1,072.09	-9,309.08	9,367.92	9,336.81	31.11	301.104	
1,600.00	1,598.91	1,505.95	1,505.91	5.64	27.73	-86.08	-1,072.09	-9,309.08	9,367.56	9,334.19	33.37	280.741	
1,700.00	1,698.77	1,604.00	1,603.95	6.00	29.59	-86.11	-1,071.62	-9,309.08	9,367.15	9,331.56	35.59	263.208	
1,800.00	1,798.63	1,701.92	1,701.87	6.36	31.45	-86.14	-1,071.86	-9,309.08	9,366.82	9,329.02	37.81	247.752	
1,900.00	1,898.49	1,805.57	1,805.49	6.72	33.52	-86.18	-1,072.09	-9,309.08	9,366.50	9,326.26	40.24	232.759	
2,000.00	1,998.36	1,905.43	1,905.36	7.09	35.65	-86.21	-1,072.09	-9,309.08	9,366.15	9,323.42	42.73	219.194	
2,100.00	2,098.22	2,005.30	2,005.22	7.45	37.77	-86.24	-1,072.09	-9,309.08	9,365.81	9,320.59	45.22	207.122	
2,200.00	2,198.08	2,102.39	2,102.31	7.81	39.84	-86.27	-1,071.38	-9,309.08	9,365.38	9,317.73	47.65	196.550	
2,300.00	2,297.95	2,199.33	2,199.24	8.17	41.91	-86.30	-1,071.74	-9,309.08	9,365.08	9,315.01	50.08	187.019	
2,400.00	2,397.81	2,304.98	2,304.81	8.53	44.17	-86.34	-1,072.09	-9,309.08	9,364.79	9,312.09	52.70	177.686	
2,500.00	2,497.67	2,404.85	2,404.67	8.90	46.33	-86.37	-1,072.09	-9,309.08	9,364.46	9,309.23	55.23	169.557	
2,600.00	2,597.54	2,504.71	2,504.54	9.26	48.50	-86.40	-1,072.09	-9,309.08	9,364.13	9,306.37	57.75	162.139	
2,700.00	2,697.40	2,598.77	2,598.57	9.62	50.53	-86.42	-1,070.71	-9,309.08	9,363.63	9,303.48	60.15	155.663	
2,800.00	2,797.26	2,692.76	2,692.54	9.98	52.57	-86.46	-1,071.41	-9,309.08	9,363.40	9,300.85	62.55	149.693	
2,900.00	2,897.13	2,804.40	2,804.13	10.35	54.92	-86.50	-1,072.09	-9,309.08	9,363.15	9,297.89	65.26	143.467	
3,000.00	2,996.99	2,904.26	2,903.99	10.71	56.96	-86.53	-1,072.09	-9,309.08	9,362.84	9,295.17	67.66	138.375	
3,100.00	3,096.85	3,003.94	3,003.66	11.07	58.99	-86.56	-1,071.28	-9,309.08	9,362.42	9,292.36	70.06	133.638	
3,200.00	3,196.72	3,100.73	3,100.45	11.43	60.96	-86.59	-1,071.42	-9,309.08	9,362.12	9,289.73	72.40	129.320	
3,300.00	3,296.58	3,197.51	3,197.22	11.80	62.94	-86.62	-1,071.80	-9,309.08	9,361.86	9,287.13	74.73	125.273	
3,400.00	3,396.44	3,303.77	3,303.44	12.16	65.06	-86.66	-1,072.09	-9,309.08	9,361.59	9,284.37	77.22	121.232	
3,500.00	3,496.31	3,403.64	3,403.31	12.52	67.03	-86.69	-1,072.09	-9,309.08	9,361.29	9,281.74	79.55	117.678	
3,600.00	3,596.17	3,503.50	3,503.17	12.88	69.00	-86.72	-1,072.09	-9,309.08	9,360.99	9,279.11	81.88	114.326	
3,700.00	3,696.03	3,601.01	3,600.66	13.25	70.92	-86.75	-1,070.88	-9,309.08	9,360.53	9,276.37	84.16	111.218	
3,800.00	3,795.89	3,697.33	3,696.98	13.61	72.82	-86.78	-1,071.20	-9,309.08	9,360.28	9,273.85	86.42	108.307	
3,900.00	3,895.76	3,793.64	3,793.28	13.97	74.71	-86.81	-1,071.80	-9,309.08	9,360.07	9,271.38	88.68	105.545	
4,000.00	3,995.62	3,903.00	3,902.62	14.34	76.87	-86.85	-1,072.09	-9,309.08	9,359.81	9,268.61	91.20	102.629	
4,100.00	4,095.48	4,002.87	4,002.48	14.70	78.84	-86.88	-1,072.09	-9,309.08	9,359.52	9,265.99	93.53	100.069	
4,200.00	4,195.35	4,101.84	4,101.46	15.06	80.79	-86.91	-1,071.59	-9,309.08	9,359.17	9,263.33	95.84	97.651	
4,300.00	4,295.21	4,199.44	4,199.05	15.42	82.71	-86.94	-1,071.74	-9,309.08	9,358.92	9,260.79	98.13	95.375	
4,400.00	4,395.07	4,302.50	4,302.07	15.79	84.74	-86.98	-1,072.09	-9,309.08	9,358.68	9,258.16	100.52	93.100	
4,500.00	4,494.94	4,402.36	4,401.94	16.15	86.78	-87.01	-1,072.09	-9,309.08	9,358.41	9,255.48	102.92	90.925	
4,600.00	4,594.80	4,502.22	4,501.80	16.51	88.82	-87.04	-1,072.09	-9,309.08	9,358.14	9,252.81	105.33	88.850	
4,700.00	4,694.66	4,599.73	4,599.29	16.87	90.81	-87.07	-1,071.05	-9,309.08	9,357.73	9,250.05	107.68	86.905	
4,800.00	4,794.53	4,695.29	4,694.85	17.24	92.76	-87.10	-1,071.39	-9,309.08	9,357.51	9,247.52	109.99	85.075	
4,900.00	4,894.39	4,801.87	4,801.39	17.60	94.92	-87.14	-1,072.09	-9,309.08	9,357.34	9,244.82	112.52	83.162	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		245-A027Ua_INC-ONLY						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
5,000.00	4,994.25	4,901.73	4,901.25	17.96	96.82	-87.17	-1,072.09	-9,309.08	9,357.08	9,242.30	114.78	81.523		
5,100.00	5,094.12	5,001.60	5,001.12	18.33	98.72	-87.20	-1,072.09	-9,309.08	9,356.82	9,239.78	117.04	79.947		
5,200.00	5,193.98	5,099.56	5,099.07	18.69	100.58	-87.23	-1,071.31	-9,309.08	9,356.46	9,237.20	119.26	78.454		
5,300.00	5,293.84	5,196.11	5,195.62	19.05	102.41	-87.26	-1,071.57	-9,309.08	9,356.25	9,234.79	121.46	77.034		
5,336.91	5,330.71	5,231.75	5,231.26	19.19	103.09	-87.27	-1,071.73	-9,309.08	9,356.18	9,233.91	122.27	76.522		
5,400.00	5,393.71	5,301.23	5,300.71	19.41	104.42	-87.29	-1,072.09	-9,309.08	9,356.07	9,232.25	123.83	75.558		
5,500.00	5,493.62	5,401.14	5,400.62	19.77	106.46	-87.32	-1,072.09	-9,309.08	9,355.88	9,229.65	126.23	74.120		
5,600.00	5,593.57	5,501.08	5,500.57	20.13	108.50	-87.34	-1,072.09	-9,309.08	9,355.72	9,227.09	128.63	72.736		
5,700.00	5,693.53	5,599.66	5,599.14	20.49	110.51	-87.35	-1,071.58	-9,309.08	9,355.53	9,224.53	131.00	71.418		
5,800.00	5,793.52	5,697.36	5,696.84	20.85	112.50	-87.36	-1,071.77	-9,309.08	9,355.48	9,222.14	133.35	70.159		
5,823.91	5,817.43	5,720.72	5,720.21	20.93	112.98	-87.36	-1,071.84	-9,309.08	9,355.48	9,221.57	133.91	69.865		
5,900.00	5,893.52	5,801.09	5,800.52	21.20	114.67	-87.37	-1,072.09	-9,309.08	9,355.49	9,219.62	135.87	68.856		
5,936.48	5,930.00	5,837.57	5,837.00	21.33	115.55	-98.12	-1,072.09	-9,309.08	9,355.49	9,218.61	136.88	68.350		
6,000.00	5,993.52	5,901.09	5,900.52	21.56	117.07	-98.12	-1,072.09	-9,309.08	9,355.49	9,216.86	138.63	67.487		
6,066.27	6,059.79	5,967.37	5,966.79	21.79	118.67	-98.12	-1,072.09	-9,309.08	9,355.49	9,215.04	140.45	66.609		
6,100.00	6,093.52	6,000.00	5,999.35	21.91	119.45	-98.12	-1,072.09	-9,309.08	9,355.49	9,214.13	141.36	66.183		
6,200.00	6,193.52	6,000.00	5,999.35	22.27	119.45	-98.12	-1,072.09	-9,309.08	9,356.04	9,214.33	141.70	66.025		
6,300.00	6,293.52	6,000.00	5,999.35	22.62	119.45	-98.12	-1,072.09	-9,309.08	9,357.65	9,215.62	142.04	65.882		
6,358.48	6,352.00	6,000.00	5,999.35	22.83	119.45	-98.12	-1,072.09	-9,309.08	9,359.09	9,216.87	142.22	65.806		
6,400.00	6,393.49	6,000.00	5,999.35	22.97	119.45	-23.52	-1,072.09	-9,309.08	9,359.09	9,216.74	142.35	65.747		
6,450.00	6,443.20	6,000.00	5,999.35	23.15	119.45	-23.63	-1,072.09	-9,309.08	9,356.05	9,213.55	142.50	65.656		
6,500.00	6,492.36	6,000.00	5,999.35	23.33	119.45	-23.87	-1,072.09	-9,309.08	9,349.69	9,207.04	142.65	65.543		
6,550.00	6,540.64	6,000.00	5,999.35	23.51	119.45	-24.23	-1,072.09	-9,309.08	9,340.05	9,197.25	142.79	65.409		
6,600.00	6,587.77	6,000.00	5,999.35	23.69	119.45	-24.72	-1,072.09	-9,309.08	9,327.17	9,184.24	142.93	65.255		
6,650.00	6,633.44	6,000.00	5,999.35	23.88	119.45	-25.37	-1,072.09	-9,309.08	9,311.12	9,168.06	143.07	65.082		
6,700.00	6,677.37	6,000.00	5,999.35	24.07	119.45	-26.18	-1,072.09	-9,309.08	9,292.00	9,148.80	143.20	64.890		
6,750.00	6,719.30	6,000.00	5,999.35	24.26	119.45	-27.18	-1,072.09	-9,309.08	9,269.88	9,126.56	143.32	64.680		
6,800.00	6,758.97	6,000.00	5,999.35	24.46	119.45	-28.39	-1,072.09	-9,309.08	9,244.90	9,101.46	143.43	64.454		
6,850.00	6,796.12	6,000.00	5,999.35	24.67	119.45	-29.85	-1,072.09	-9,309.08	9,217.18	9,073.63	143.54	64.211		
6,900.00	6,830.54	6,000.00	5,999.35	24.88	119.45	-31.60	-1,072.09	-9,309.08	9,186.86	9,043.21	143.65	63.954		
6,950.00	6,862.00	6,000.00	5,999.35	25.11	119.45	-33.71	-1,072.09	-9,309.08	9,154.12	9,010.37	143.75	63.682		
7,000.00	6,890.33	6,000.00	5,999.35	25.34	119.45	-36.23	-1,072.09	-9,309.08	9,119.12	8,975.28	143.84	63.397		
7,050.00	6,915.33	6,000.00	5,999.35	25.59	119.45	-39.28	-1,072.09	-9,309.08	9,082.06	8,938.13	143.93	63.099		
7,100.00	6,936.86	6,000.00	5,999.35	25.85	119.45	-42.95	-1,072.09	-9,309.08	9,043.15	8,899.13	144.02	62.790		
7,150.00	6,954.79	6,000.00	5,999.35	26.12	119.45	-47.37	-1,072.09	-9,309.08	9,002.59	8,858.49	144.11	62.471		
7,200.00	6,968.99	6,000.00	5,999.35	26.40	119.45	-52.70	-1,072.09	-9,309.08	8,960.63	8,816.44	144.19	62.143		
7,250.00	6,979.40	6,000.00	5,999.35	26.69	119.45	-59.05	-1,072.09	-9,309.08	8,917.50	8,773.22	144.28	61.807		
7,300.00	6,985.94	6,000.00	5,999.35	27.00	119.45	-66.50	-1,072.09	-9,309.08	8,873.44	8,729.08	144.37	61.465		
7,350.00	6,988.56	6,000.00	5,999.35	27.31	119.45	-74.98	-1,072.09	-9,309.08	8,828.73	8,684.28	144.46	61.117		
7,358.93	6,988.62	6,000.00	5,999.35	27.36	119.45	-76.58	-1,072.09	-9,309.08	8,820.70	8,676.23	144.47	61.054		
7,400.00	6,988.59	6,000.00	5,999.35	27.63	119.45	-76.58	-1,072.09	-9,309.08	8,783.74	8,639.19	144.55	60.767		
7,500.00	6,988.52	6,000.00	5,999.35	28.33	119.45	-76.58	-1,072.09	-9,309.08	8,693.91	8,549.16	144.75	60.061		
7,600.00	6,988.45	6,000.00	5,999.35	29.10	119.45	-76.58	-1,072.09	-9,309.08	8,604.29	8,459.32	144.98	59.350		
7,658.93	6,988.41	6,000.00	5,999.35	29.59	119.45	-76.58	-1,072.09	-9,309.08	8,551.60	8,406.48	145.12	58.928		
7,700.00	6,988.38	6,000.00	5,999.35	29.94	119.45	-76.19	-1,072.09	-9,309.08	8,514.79	8,369.56	145.22	58.632		
7,800.00	6,988.31	6,000.00	5,999.35	30.84	119.45	-75.14	-1,072.09	-9,309.08	8,424.29	8,278.80	145.48	57.905		
7,900.00	6,988.24	6,000.00	5,999.35	31.79	119.45	-73.92	-1,072.09	-9,309.08	8,332.60	8,186.85	145.74	57.173		
8,000.00	6,988.16	6,000.00	5,999.35	32.78	119.45	-72.48	-1,072.09	-9,309.08	8,239.79	8,093.79	146.00	56.436		
8,100.00	6,988.09	6,000.00	5,999.35	33.82	119.45	-70.77	-1,072.09	-9,309.08	8,145.95	7,999.69	146.25	55.697		
8,200.00	6,988.01	6,000.00	5,999.35	34.88	119.45	-68.71	-1,072.09	-9,309.08	8,051.15	7,904.65	146.49	54.959		
8,300.00	6,987.94	6,000.00	5,999.35	35.98	119.45	-66.19	-1,072.09	-9,309.08	7,955.47	7,808.75	146.72	54.222		
8,400.00	6,987.86	6,000.00	5,999.35	37.11	119.45	-63.06	-1,072.09	-9,309.08	7,859.00	7,712.08	146.93	53.488		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC											Offset Site Error: 0.00 usft						
Survey Program: 245-A027Ua_INC-ONLY				Reference		Offset		Semi Major Axis		Highside		Offset Wellbore Centre		Rule Assigned:		Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning				
8,416.35	6,987.85	6,000.00	5,999.35	37.29	119.45	-62.47	-1,072.09	-9,309.08	7,843.16	7,696.20	146.96	53.369					
8,500.00	6,987.78	6,000.00	5,999.35	38.25	119.45	-62.47	-1,072.09	-9,309.08	7,762.10	7,614.97	147.13	52.758					
8,600.00	6,987.70	6,000.00	5,999.35	39.43	119.45	-62.47	-1,072.09	-9,309.08	7,665.26	7,517.93	147.33	52.026					
8,700.00	6,987.62	6,000.00	5,999.35	40.64	119.45	-62.47	-1,072.09	-9,309.08	7,568.51	7,420.96	147.55	51.294					
8,800.00	6,987.55	6,000.00	5,999.35	41.88	119.45	-62.47	-1,072.09	-9,309.08	7,471.84	7,324.06	147.78	50.561					
8,900.00	6,987.47	6,000.00	5,999.35	43.14	119.45	-62.47	-1,072.09	-9,309.08	7,375.26	7,227.24	148.02	49.826					
9,000.00	6,987.39	6,000.00	5,999.35	44.42	119.45	-62.47	-1,072.09	-9,309.08	7,278.77	7,130.50	148.27	49.091					
9,100.00	6,987.31	6,000.00	5,999.35	45.72	119.45	-62.47	-1,072.09	-9,309.08	7,182.38	7,033.85	148.53	48.356					
9,200.00	6,987.23	6,000.00	5,999.35	47.04	119.45	-62.47	-1,072.09	-9,309.08	7,086.09	6,937.28	148.81	47.619					
9,300.00	6,987.15	6,000.00	5,999.35	48.38	119.45	-62.47	-1,072.09	-9,309.08	6,989.90	6,840.81	149.10	46.882					
9,400.00	6,987.08	6,000.00	5,999.35	49.73	119.45	-62.47	-1,072.09	-9,309.08	6,893.82	6,744.42	149.40	46.144					
9,500.00	6,987.00	6,000.00	5,999.35	51.10	119.45	-62.47	-1,072.09	-9,309.08	6,797.86	6,648.14	149.71	45.405					
9,600.00	6,986.92	6,000.00	5,999.35	52.48	119.45	-62.47	-1,072.09	-9,309.08	6,702.01	6,551.96	150.05	44.667					
9,700.00	6,986.84	6,000.00	5,999.35	53.87	119.45	-62.47	-1,072.09	-9,309.08	6,606.29	6,455.89	150.39	43.927					
9,800.00	6,986.76	6,000.00	5,999.35	55.28	119.45	-62.47	-1,072.09	-9,309.08	6,510.69	6,359.94	150.75	43.188					
9,900.00	6,986.68	6,000.00	5,999.35	56.69	119.45	-62.47	-1,072.09	-9,309.08	6,415.23	6,264.10	151.13	42.448					
10,000.00	6,986.61	6,000.00	5,999.35	58.12	119.45	-62.47	-1,072.09	-9,309.08	6,319.91	6,168.38	151.53	41.708					
10,100.00	6,986.53	6,000.00	5,999.35	59.55	119.45	-62.47	-1,072.09	-9,309.08	6,224.73	6,072.79	151.94	40.968					
10,200.00	6,986.45	6,000.00	5,999.35	61.00	119.45	-62.47	-1,072.09	-9,309.08	6,129.71	5,977.34	152.37	40.228					
10,300.00	6,986.37	6,000.00	5,999.35	62.45	119.45	-62.47	-1,072.09	-9,309.08	6,034.85	5,882.02	152.83	39.488					
10,400.00	6,986.29	6,000.00	5,999.35	63.90	119.45	-62.47	-1,072.09	-9,309.08	5,940.16	5,786.86	153.30	38.749					
10,500.00	6,986.21	6,000.00	5,999.35	65.37	119.45	-62.47	-1,072.09	-9,309.08	5,845.64	5,691.85	153.79	38.010					
10,600.00	6,986.14	6,000.00	5,999.35	66.84	119.45	-62.47	-1,072.09	-9,309.08	5,751.31	5,597.01	154.31	37.272					
10,700.00	6,986.06	6,000.00	5,999.35	68.32	119.45	-62.47	-1,072.09	-9,309.08	5,657.18	5,502.33	154.85	36.534					
10,800.00	6,985.98	6,000.00	5,999.35	69.80	119.45	-62.47	-1,072.09	-9,309.08	5,563.25	5,407.84	155.41	35.797					
10,900.00	6,985.90	6,000.00	5,999.35	71.29	119.45	-62.47	-1,072.09	-9,309.08	5,469.54	5,313.54	156.00	35.061					
11,000.00	6,985.82	6,000.00	5,999.35	72.78	119.45	-62.47	-1,072.09	-9,309.08	5,376.05	5,219.44	156.61	34.327					
11,100.00	6,985.75	6,000.00	5,999.35	74.28	119.45	-62.47	-1,072.09	-9,309.08	5,282.80	5,125.54	157.26	33.594					
11,200.00	6,985.67	6,000.00	5,999.35	75.78	119.45	-62.47	-1,072.09	-9,309.08	5,189.80	5,031.87	157.93	32.862					
11,300.00	6,985.59	6,000.00	5,999.35	77.29	119.45	-62.47	-1,072.09	-9,309.08	5,097.07	4,938.44	158.63	32.132					
11,400.00	6,985.51	6,000.00	5,999.35	78.80	119.45	-62.47	-1,072.09	-9,309.08	5,004.61	4,845.26	159.36	31.405					
11,500.00	6,985.43	6,000.00	5,999.35	80.31	119.45	-62.47	-1,072.09	-9,309.08	4,912.46	4,752.33	160.12	30.679					
11,600.00	6,985.35	6,000.00	5,999.35	81.83	119.45	-62.47	-1,072.09	-9,309.08	4,820.61	4,659.69	160.92	29.956					
11,700.00	6,985.28	6,000.00	5,999.35	83.35	119.45	-62.47	-1,072.09	-9,309.08	4,729.10	4,567.34	161.76	29.235					
11,800.00	6,985.20	6,000.00	5,999.35	84.87	119.45	-62.47	-1,072.09	-9,309.08	4,637.94	4,475.30	162.63	28.518					
11,900.00	6,985.12	6,000.00	5,999.35	86.40	119.45	-62.47	-1,072.09	-9,309.08	4,547.14	4,383.60	163.55	27.803					
12,000.00	6,985.04	6,000.00	5,999.35	87.93	119.45	-62.47	-1,072.09	-9,309.08	4,456.75	4,292.25	164.50	27.093					
12,100.00	6,984.96	6,000.00	5,999.35	89.46	119.45	-62.47	-1,072.09	-9,309.08	4,366.77	4,201.27	165.50	26.386					
12,200.00	6,984.88	6,000.00	5,999.35	90.99	119.45	-62.47	-1,072.09	-9,309.08	4,277.23	4,110.69	166.54	25.683					
12,300.00	6,984.81	6,000.00	5,999.35	92.53	119.45	-62.47	-1,072.09	-9,309.08	4,188.17	4,020.54	167.63	24.985					
12,400.00	6,984.73	6,000.00	5,999.35	94.07	119.45	-62.47	-1,072.09	-9,309.08	4,099.62	3,930.85	168.77	24.292					
12,500.00	6,984.65	6,000.00	5,999.35	95.61	119.45	-62.47	-1,072.09	-9,309.08	4,011.60	3,841.64	169.96	23.604					
12,600.00	6,984.57	6,000.00	5,999.35	97.15	119.45	-62.47	-1,072.09	-9,309.08	3,924.16	3,752.96	171.20	22.921					
12,700.00	6,984.49	6,000.00	5,999.35	98.70	119.45	-62.47	-1,072.09	-9,309.08	3,837.33	3,664.82	172.50	22.245					
12,800.00	6,984.41	6,000.00	5,999.35	100.25	119.45	-62.47	-1,072.09	-9,309.08	3,751.15	3,577.29	173.86	21.576					
12,900.00	6,984.34	6,000.00	5,999.35	101.80	119.45	-62.47	-1,072.09	-9,309.08	3,665.68	3,490.40	175.28	20.913					
13,000.00	6,984.26	6,000.00	5,999.35	103.35	119.45	-62.47	-1,072.09	-9,309.08	3,580.96	3,404.20	176.76	20.258					
13,100.00	6,984.18	6,000.00	5,999.35	104.90	119.45	-62.47	-1,072.09	-9,309.08	3,497.05	3,318.73	178.31	19.612					
13,200.00	6,984.10	6,000.00	5,999.35	106.45	119.45	-62.47	-1,072.09	-9,309.08	3,414.00	3,234.07	179.93	18.974					
13,300.00	6,984.02	6,000.00	5,999.35	108.01	119.45	-62.47	-1,072.09	-9,309.08	3,331.89	3,150.26	181.62	18.345					
13,400.00	6,983.94	6,000.00	5,999.35	109.56	119.45	-62.47	-1,072.09	-9,309.08	3,250.78	3,067.39	183.39	17.726					
13,500.00	6,983.87	6,000.00	5,999.35	111.12	119.45	-62.47	-1,072.09	-9,309.08	3,170.74	2,985.52	185.23	17.118					

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC													Offset Site Error:	0.00 usft	
Survey Program:		245-A027Ua_INC-ONLY		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
13,600.00	6,983.79	6,000.00	5,999.35	112.68	119.45	-62.47	-1,072.09	-9,309.08	3,091.87	2,904.73	187.14	16.521			
13,700.00	6,983.71	6,000.00	5,999.35	114.24	119.45	-62.47	-1,072.09	-9,309.08	3,014.26	2,825.12	189.14	15.937			
13,800.00	6,983.63	6,000.00	5,999.35	115.80	119.45	-62.47	-1,072.09	-9,309.08	2,938.00	2,746.78	191.22	15.365			
13,900.00	6,983.55	6,000.00	5,999.35	117.37	119.45	-62.47	-1,072.09	-9,309.08	2,863.20	2,669.82	193.37	14.807			
14,000.00	6,983.47	6,000.00	5,999.35	118.93	119.45	-62.47	-1,072.09	-9,309.08	2,789.97	2,594.36	195.61	14.263			
14,100.00	6,983.40	6,000.00	5,999.35	120.50	119.45	-62.47	-1,072.09	-9,309.08	2,718.46	2,520.53	197.93	13.734			
14,200.00	6,983.32	6,000.00	5,999.35	122.06	119.45	-62.47	-1,072.09	-9,309.08	2,648.79	2,448.47	200.33	13.222			
14,300.00	6,983.24	6,000.00	5,999.35	123.63	119.45	-62.47	-1,072.09	-9,309.08	2,581.12	2,378.32	202.79	12.728			
14,400.00	6,983.16	6,000.00	5,999.35	125.20	119.45	-62.47	-1,072.09	-9,309.08	2,515.60	2,310.26	205.33	12.251			
14,500.00	6,983.08	6,000.00	5,999.35	126.77	119.45	-62.47	-1,072.09	-9,309.08	2,452.41	2,244.47	207.93	11.794			
14,600.00	6,983.00	6,000.00	5,999.35	128.33	119.45	-62.47	-1,072.09	-9,309.08	2,391.73	2,181.14	210.59	11.357			
14,700.00	6,982.93	6,000.00	5,999.35	129.91	119.45	-62.47	-1,072.09	-9,309.08	2,333.76	2,120.48	213.28	10.942			
14,800.00	6,982.85	6,000.00	5,999.35	131.48	119.45	-62.47	-1,072.09	-9,309.08	2,278.71	2,062.70	216.01	10.549			
14,900.00	6,982.77	6,000.00	5,999.35	133.05	119.45	-62.47	-1,072.09	-9,309.08	2,226.79	2,008.04	218.75	10.180			
15,000.00	6,982.69	6,000.00	5,999.35	134.62	119.45	-62.47	-1,072.09	-9,309.08	2,178.22	1,956.74	221.48	9.835			
15,100.00	6,982.61	6,000.00	5,999.35	136.20	119.45	-62.47	-1,072.09	-9,309.08	2,133.24	1,909.06	224.18	9.516			
15,200.00	6,982.54	6,000.00	5,999.35	137.77	119.45	-62.47	-1,072.09	-9,309.08	2,092.08	1,865.25	226.83	9.223			
15,300.00	6,982.46	6,000.00	5,999.35	139.35	119.45	-62.47	-1,072.09	-9,309.08	2,054.96	1,825.56	229.40	8.958			
15,400.00	6,982.38	6,000.00	5,999.35	140.92	119.45	-62.47	-1,072.09	-9,309.08	2,022.11	1,790.25	231.86	8.721			
15,500.00	6,982.30	6,000.00	5,999.35	142.50	119.45	-62.47	-1,072.09	-9,309.08	1,993.74	1,759.56	234.18	8.514			
15,600.00	6,982.22	6,000.00	5,999.35	144.07	119.45	-62.47	-1,072.09	-9,309.08	1,970.04	1,733.71	236.33	8.336			
15,700.00	6,982.14	6,000.00	5,999.35	145.65	119.45	-62.47	-1,072.09	-9,309.08	1,951.19	1,712.89	238.29	8.188			
15,800.00	6,982.07	6,000.00	5,999.35	147.23	119.45	-62.47	-1,072.09	-9,309.08	1,937.32	1,697.28	240.03	8.071			
15,900.00	6,981.99	6,000.00	5,999.35	148.81	119.45	-62.47	-1,072.09	-9,309.08	1,928.54	1,687.01	241.53	7.985			
16,000.00	6,981.91	6,000.00	5,999.35	150.39	119.45	-62.47	-1,072.09	-9,309.08	1,924.92	1,682.16	242.76	7.929			
16,019.66	6,981.89	6,000.00	5,999.35	150.70	119.45	-62.47	-1,072.09	-9,309.08	1,924.82	1,681.85	242.97	7.922 CC, ES			
16,100.00	6,981.83	6,000.00	5,999.35	151.97	119.45	-62.47	-1,072.09	-9,309.08	1,926.50	1,682.78	243.72	7.905 SF			
16,200.00	6,981.75	6,000.00	5,999.35	153.55	119.45	-62.47	-1,072.09	-9,309.08	1,933.25	1,688.86	244.40	7.910			
16,300.00	6,981.67	6,000.00	5,999.35	155.13	119.45	-62.47	-1,072.09	-9,309.08	1,945.13	1,700.34	244.79	7.946			
16,400.00	6,981.60	6,000.00	5,999.35	156.71	119.45	-62.47	-1,072.09	-9,309.08	1,962.04	1,717.13	244.91	8.011			
16,500.00	6,981.52	6,000.00	5,999.35	158.29	119.45	-62.47	-1,072.09	-9,309.08	1,983.85	1,739.09	244.77	8.105			
16,600.00	6,981.44	6,000.00	5,999.35	159.88	119.45	-62.47	-1,072.09	-9,309.08	2,010.41	1,766.04	244.37	8.227			
16,700.00	6,981.36	6,000.00	5,999.35	161.46	119.45	-62.47	-1,072.09	-9,309.08	2,041.52	1,797.77	243.75	8.376			
16,800.00	6,981.28	6,000.00	5,999.35	163.04	119.45	-62.47	-1,072.09	-9,309.08	2,076.99	1,834.07	242.92	8.550			
16,900.00	6,981.20	6,000.00	5,999.35	164.62	119.45	-62.47	-1,072.09	-9,309.08	2,116.59	1,874.69	241.90	8.750			
17,000.00	6,981.13	6,000.00	5,999.35	166.21	119.45	-62.47	-1,072.09	-9,309.08	2,160.10	1,919.36	240.73	8.973			
17,100.00	6,981.05	6,000.00	5,999.35	167.79	119.45	-62.47	-1,072.09	-9,309.08	2,207.28	1,967.85	239.43	9.219			
17,200.00	6,980.97	6,000.00	5,999.35	169.38	119.45	-62.47	-1,072.09	-9,309.08	2,257.91	2,019.89	238.02	9.486			
17,300.00	6,980.89	6,000.00	5,999.35	170.96	119.45	-62.47	-1,072.09	-9,309.08	2,311.76	2,075.24	236.52	9.774			
17,400.00	6,980.81	6,000.00	5,999.35	172.55	119.45	-62.47	-1,072.09	-9,309.08	2,368.61	2,133.65	234.96	10.081			
17,500.00	6,980.73	6,000.00	5,999.35	174.13	119.45	-62.47	-1,072.09	-9,309.08	2,428.24	2,194.90	233.34	10.406			
17,600.00	6,980.66	6,000.00	5,999.35	175.72	119.45	-62.47	-1,072.09	-9,309.08	2,490.47	2,258.77	231.70	10.749			
17,700.00	6,980.58	6,000.00	5,999.35	177.31	119.45	-62.47	-1,072.09	-9,309.08	2,555.09	2,325.05	230.04	11.107			
17,800.00	6,980.50	6,000.00	5,999.35	178.89	119.45	-62.47	-1,072.09	-9,309.08	2,621.94	2,393.56	228.38	11.481			
17,900.00	6,980.42	6,000.00	5,999.35	180.48	119.45	-62.47	-1,072.09	-9,309.08	2,690.84	2,464.12	226.73	11.868			
18,000.00	6,980.34	6,000.00	5,999.35	182.07	119.45	-62.47	-1,072.09	-9,309.08	2,761.65	2,536.56	225.09	12.269			
18,100.00	6,980.26	6,000.00	5,999.35	183.66	119.45	-62.47	-1,072.09	-9,309.08	2,834.21	2,610.75	223.47	12.683			
18,200.00	6,980.19	6,000.00	5,999.35	185.24	119.45	-62.47	-1,072.09	-9,309.08	2,908.41	2,686.53	221.88	13.108			
18,300.00	6,980.11	6,000.00	5,999.35	186.83	119.45	-62.47	-1,072.09	-9,309.08	2,984.11	2,763.79	220.32	13.544			
18,400.00	6,980.03	6,000.00	5,999.35	188.42	119.45	-62.47	-1,072.09	-9,309.08	3,061.21	2,842.41	218.80	13.991			
18,500.00	6,979.95	6,000.00	5,999.35	190.01	119.45	-62.47	-1,072.09	-9,309.08	3,139.59	2,922.28	217.32	14.447			
18,600.00	6,979.87	6,000.00	5,999.35	191.60	119.45	-62.47	-1,072.09	-9,309.08	3,219.18	3,003.31	215.87	14.912			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		245-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance			Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
18,700.00	6,979.79	6,000.00	5,999.35	193.19	119.45	-62.47	-1,072.09	-9,309.08	3,299.88	3,085.40	214.47	15.386		
18,800.00	6,979.72	6,000.00	5,999.35	194.78	119.45	-62.47	-1,072.09	-9,309.08	3,381.61	3,168.49	213.11	15.868		
18,900.00	6,979.64	6,000.00	5,999.35	196.37	119.45	-62.47	-1,072.09	-9,309.08	3,464.29	3,252.49	211.80	16.357		
19,000.00	6,979.56	6,000.00	5,999.35	197.96	119.45	-62.47	-1,072.09	-9,309.08	3,547.87	3,337.35	210.53	16.852		
19,100.00	6,979.48	6,000.00	5,999.35	199.55	119.45	-62.47	-1,072.09	-9,309.08	3,632.28	3,422.99	209.29	17.355		
19,200.00	6,979.40	6,000.00	5,999.35	201.14	119.45	-62.47	-1,072.09	-9,309.08	3,717.46	3,509.36	208.10	17.863		
19,300.00	6,979.33	6,000.00	5,999.35	202.73	119.45	-62.47	-1,072.09	-9,309.08	3,803.37	3,596.41	206.96	18.378		
19,400.00	6,979.25	6,000.00	5,999.35	204.32	119.45	-62.47	-1,072.09	-9,309.08	3,889.94	3,684.10	205.85	18.897		
19,500.00	6,979.17	6,000.00	5,999.35	205.91	119.45	-62.47	-1,072.09	-9,309.08	3,977.15	3,772.37	204.78	19.422		
19,600.00	6,979.09	6,000.00	5,999.35	207.50	119.45	-62.47	-1,072.09	-9,309.08	4,064.95	3,861.20	203.75	19.951		
19,700.00	6,979.01	6,000.00	5,999.35	209.09	119.45	-62.47	-1,072.09	-9,309.08	4,153.30	3,950.54	202.75	20.485		
19,800.00	6,978.93	6,000.00	5,999.35	210.69	119.45	-62.47	-1,072.09	-9,309.08	4,242.16	4,040.37	201.79	21.022		
19,900.00	6,978.86	6,000.00	5,999.35	212.28	119.45	-62.47	-1,072.09	-9,309.08	4,331.51	4,130.64	200.87	21.564		
20,000.00	6,978.78	6,000.00	5,999.35	213.87	119.45	-62.47	-1,072.09	-9,309.08	4,421.32	4,221.34	199.98	22.109		
20,100.00	6,978.70	6,000.00	5,999.35	215.46	119.45	-62.47	-1,072.09	-9,309.08	4,511.56	4,312.44	199.12	22.658		
20,200.00	6,978.62	6,000.00	5,999.35	217.05	119.45	-62.47	-1,072.09	-9,309.08	4,602.20	4,403.91	198.29	23.209		
20,300.00	6,978.54	6,000.00	5,999.35	218.65	119.45	-62.47	-1,072.09	-9,309.08	4,693.22	4,495.72	197.49	23.764		
20,400.00	6,978.46	6,000.00	5,999.35	220.24	119.45	-62.47	-1,072.09	-9,309.08	4,784.60	4,587.87	196.72	24.321		
20,500.00	6,978.39	6,000.00	5,999.35	221.83	119.45	-62.47	-1,072.09	-9,309.08	4,876.31	4,680.33	195.98	24.881		
20,600.00	6,978.31	6,000.00	5,999.35	223.43	119.45	-62.47	-1,072.09	-9,309.08	4,968.35	4,773.08	195.27	25.444		
20,700.00	6,978.23	6,000.00	5,999.35	225.02	119.45	-62.47	-1,072.09	-9,309.08	5,060.69	4,866.11	194.58	26.008		
20,800.00	6,978.15	6,000.00	5,999.35	226.61	119.45	-62.47	-1,072.09	-9,309.08	5,153.31	4,959.40	193.91	26.575		
20,900.00	6,978.07	6,000.00	5,999.35	228.21	119.45	-62.47	-1,072.09	-9,309.08	5,246.21	5,052.93	193.27	27.144		
21,000.00	6,977.99	6,000.00	5,999.35	229.80	119.45	-62.47	-1,072.09	-9,309.08	5,339.36	5,146.70	192.66	27.714		
21,100.00	6,977.92	6,000.00	5,999.35	231.39	119.45	-62.47	-1,072.09	-9,309.08	5,432.76	5,240.69	192.06	28.287		
21,200.00	6,977.84	6,000.00	5,999.35	232.99	119.45	-62.47	-1,072.09	-9,309.08	5,526.38	5,334.90	191.49	28.860		
21,300.00	6,977.76	6,000.00	5,999.35	234.58	119.45	-62.47	-1,072.09	-9,309.08	5,620.23	5,429.30	190.93	29.436		
21,400.00	6,977.68	6,000.00	5,999.35	236.18	119.45	-62.47	-1,072.09	-9,309.08	5,714.28	5,523.89	190.40	30.012		
21,500.00	6,977.60	6,000.00	5,999.35	237.77	119.45	-62.47	-1,072.09	-9,309.08	5,808.54	5,618.66	189.88	30.590		
21,600.00	6,977.52	6,000.00	5,999.35	239.37	119.45	-62.47	-1,072.09	-9,309.08	5,902.98	5,713.60	189.38	31.169		
21,700.00	6,977.45	6,000.00	5,999.35	240.96	119.45	-62.47	-1,072.09	-9,309.08	5,997.60	5,808.70	188.90	31.749		
21,800.00	6,977.37	6,000.00	5,999.35	242.56	119.45	-62.47	-1,072.09	-9,309.08	6,092.40	5,903.96	188.44	32.330		
21,900.00	6,977.29	6,000.00	5,999.35	244.15	119.45	-62.47	-1,072.09	-9,309.08	6,187.36	5,999.36	187.99	32.912		
22,000.00	6,977.21	6,000.00	5,999.35	245.75	119.45	-62.47	-1,072.09	-9,309.08	6,282.47	6,094.91	187.56	33.495		
22,100.00	6,977.13	6,000.00	5,999.35	247.34	119.45	-62.47	-1,072.09	-9,309.08	6,377.74	6,190.59	187.15	34.079		
22,200.00	6,977.05	6,000.00	5,999.35	248.94	119.45	-62.47	-1,072.09	-9,309.08	6,473.14	6,286.40	186.75	34.663		
22,269.73	6,977.00	6,000.00	5,999.35	250.05	119.45	-62.47	-1,072.09	-9,309.08	6,539.75	6,353.27	186.47	35.071		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149B - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 520-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	44.00	44.00	0.00	0.94	-93.02	-592.98	-11,246.15	11,261.77				
100.00	100.00	144.00	144.00	0.25	3.06	-93.02	-592.98	-11,246.15	11,261.77	11,258.46	3.32	3,396.333	
200.00	200.00	244.00	244.00	0.61	5.19	-93.02	-592.98	-11,246.15	11,261.77	11,255.97	5.80	1,940.808	
300.00	300.00	344.00	344.00	0.97	7.32	-93.02	-592.98	-11,246.15	11,261.77	11,253.48	8.29	1,358.579	
400.00	400.00	444.00	444.00	1.33	9.45	-93.02	-592.98	-11,246.15	11,261.77	11,251.00	10.78	1,045.066	
500.00	500.00	544.03	544.00	1.68	11.58	-93.02	-592.98	-11,246.15	11,261.77	11,248.51	13.26	849.082	
600.00	600.00	644.03	644.00	2.04	13.71	-93.02	-592.98	-11,246.15	11,261.77	11,246.02	15.75	715.021	
700.00	700.00	744.03	744.00	2.40	15.84	-93.02	-592.98	-11,246.15	11,261.77	11,243.53	18.24	617.521	
800.00	799.98	842.19	842.15	2.76	17.92	-82.27	-592.07	-11,246.15	11,261.49	11,240.80	20.68	544.455	
849.89	849.82	890.96	890.92	2.94	18.96	-82.29	-592.26	-11,246.15	11,261.21	11,239.31	21.90	514.204	
900.00	899.86	939.92	939.88	3.12	20.00	-82.30	-592.54	-11,246.15	11,260.87	11,237.75	23.12	487.032	
1,000.00	999.73	1,043.83	1,043.73	3.48	22.30	-82.33	-592.98	-11,246.15	11,260.19	11,234.42	25.77	436.865	
1,100.00	1,099.59	1,143.69	1,143.59	3.84	24.60	-82.36	-592.98	-11,246.15	11,259.50	11,231.06	28.44	395.927	
1,200.00	1,199.45	1,243.55	1,243.45	4.20	26.91	-82.39	-592.98	-11,246.15	11,258.80	11,227.70	31.10	361.993	
1,300.00	1,299.32	1,341.36	1,341.25	4.56	29.16	-82.41	-592.05	-11,246.15	11,258.06	11,224.34	33.72	333.876	
1,400.00	1,399.18	1,439.08	1,438.96	4.92	31.42	-82.44	-592.54	-11,246.15	11,257.39	11,221.06	36.33	309.826	
1,500.00	1,499.04	1,543.26	1,543.04	5.28	33.92	-82.46	-592.98	-11,246.15	11,256.73	11,217.54	39.19	287.221	
1,600.00	1,598.91	1,643.12	1,642.91	5.64	36.42	-82.49	-592.98	-11,246.15	11,256.04	11,213.99	42.05	267.666	
1,700.00	1,698.77	1,742.99	1,742.77	6.00	38.91	-82.52	-592.98	-11,246.15	11,255.36	11,210.45	44.91	250.600	
1,800.00	1,798.63	1,839.70	1,839.45	6.36	41.34	-82.54	-591.58	-11,246.15	11,254.60	11,206.90	47.70	235.966	
1,900.00	1,898.49	1,936.28	1,936.02	6.72	43.75	-82.57	-592.29	-11,246.15	11,253.96	11,203.49	50.47	222.961	
2,000.00	1,998.36	2,042.75	2,042.36	7.09	46.47	-82.60	-592.98	-11,246.15	11,253.33	11,199.77	53.55	210.133	
2,100.00	2,098.22	2,142.61	2,142.22	7.45	49.08	-82.62	-592.98	-11,246.15	11,252.65	11,196.13	56.53	199.072	
2,200.00	2,198.08	2,242.40	2,241.99	7.81	51.69	-82.64	-591.38	-11,246.15	11,251.89	11,192.39	59.50	189.121	
2,300.00	2,297.95	2,338.82	2,338.40	8.17	54.21	-82.67	-591.64	-11,246.15	11,251.23	11,188.85	62.38	180.372	
2,400.00	2,397.81	2,435.20	2,434.77	8.53	56.73	-82.70	-592.40	-11,246.15	11,250.61	11,185.35	65.26	172.399	
2,500.00	2,497.67	2,542.26	2,541.67	8.90	59.41	-82.73	-592.98	-11,246.15	11,249.98	11,181.67	68.31	164.697	
2,600.00	2,597.54	2,642.12	2,641.54	9.26	61.83	-82.76	-592.98	-11,246.15	11,249.32	11,178.24	71.08	158.255	
2,700.00	2,697.40	2,741.99	2,741.40	9.62	64.24	-82.78	-592.98	-11,246.15	11,248.66	11,174.80	73.86	152.297	
2,800.00	2,797.26	2,837.93	2,837.30	9.98	66.56	-82.80	-591.29	-11,246.15	11,247.90	11,171.36	76.54	146.952	
2,900.00	2,897.13	2,933.83	2,933.18	10.35	68.88	-82.83	-592.10	-11,246.15	11,247.30	11,168.08	79.22	141.972	
3,000.00	2,996.99	3,041.73	3,040.99	10.71	71.36	-82.86	-592.98	-11,246.15	11,246.70	11,164.63	82.07	137.044	
3,100.00	3,096.85	3,141.59	3,140.85	11.07	73.47	-82.89	-592.98	-11,246.15	11,246.05	11,161.51	84.54	133.025	
3,200.00	3,196.72	3,241.46	3,240.72	11.43	75.59	-82.91	-592.98	-11,246.15	11,245.40	11,158.39	87.02	129.235	
3,300.00	3,296.58	3,341.32	3,340.58	11.80	77.70	-82.94	-592.98	-11,246.15	11,244.76	11,155.27	89.49	125.654	
3,400.00	3,396.44	3,439.91	3,439.16	12.16	79.78	-82.96	-591.45	-11,246.15	11,244.01	11,152.08	91.94	122.301	
3,500.00	3,496.31	3,538.07	3,537.30	12.52	81.86	-82.99	-591.73	-11,246.15	11,243.39	11,149.02	94.38	119.135	
3,600.00	3,596.17	3,636.20	3,635.43	12.88	83.93	-83.01	-592.25	-11,246.15	11,242.79	11,145.97	96.81	116.128	
3,700.00	3,696.03	3,740.88	3,740.03	13.25	86.18	-83.05	-592.98	-11,246.15	11,242.20	11,142.78	99.42	113.076	
3,800.00	3,795.89	3,840.75	3,839.89	13.61	88.70	-83.07	-592.98	-11,246.15	11,241.57	11,139.27	102.30	109.888	
3,900.00	3,895.76	3,940.61	3,939.76	13.97	91.21	-83.10	-592.98	-11,246.15	11,240.94	11,135.76	105.18	106.875	
4,000.00	3,995.62	4,040.47	4,039.62	14.34	93.73	-83.12	-592.98	-11,246.15	11,240.31	11,132.25	108.06	104.023	
4,100.00	4,095.48	4,140.34	4,139.48	14.70	96.24	-83.15	-592.98	-11,246.15	11,239.68	11,128.75	110.93	101.318	
4,200.00	4,195.35	4,240.20	4,239.35	15.06	98.76	-83.18	-592.98	-11,246.15	11,239.06	11,125.25	113.81	98.751	
4,300.00	4,295.21	4,340.06	4,339.21	15.42	101.27	-83.20	-592.98	-11,246.15	11,238.44	11,121.75	116.69	96.310	
4,400.00	4,395.07	4,439.92	4,439.07	15.79	103.79	-83.23	-592.98	-11,246.15	11,237.82	11,118.25	119.57	93.986	
4,500.00	4,494.94	4,539.79	4,538.94	16.15	106.30	-83.26	-592.98	-11,246.15	11,237.20	11,114.76	122.45	91.772	
4,600.00	4,594.80	4,639.65	4,638.80	16.51	108.82	-83.28	-592.98	-11,246.15	11,236.59	11,111.27	125.33	89.659	
4,700.00	4,694.66	4,739.51	4,738.66	16.87	111.34	-83.31	-592.98	-11,246.15	11,235.98	11,107.78	128.20	87.642	
4,800.00	4,794.53	4,838.74	4,837.85	17.24	113.83	-83.31	-588.61	-11,246.15	11,235.06	11,103.99	131.07	85.721	
4,900.00	4,894.39	4,937.93	4,937.03	17.60	116.33	-83.34	-588.73	-11,246.15	11,234.46	11,100.53	133.93	83.885	
5,000.00	4,994.25	5,037.10	5,036.20	17.96	118.83	-83.37	-588.94	-11,246.15	11,233.87	11,097.08	136.79	82.126	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149B - OH - OH-INC											Offset Site Error: 0.00 usft		
Survey Program: 520-A027Ua_INC-ONLY				Rule Assigned:								Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
5,100.00	5,094.12	5,136.28	5,135.37	18.33	121.33	-83.40	-589.23	-11,246.15	11,233.29	11,093.64	139.65	80.440	
5,200.00	5,193.98	5,235.44	5,234.53	18.69	123.83	-83.42	-589.61	-11,246.15	11,232.71	11,090.20	142.51	78.821	
5,300.00	5,293.84	5,334.60	5,333.68	19.05	126.33	-83.45	-590.07	-11,246.15	11,232.15	11,086.78	145.37	77.266	
5,336.91	5,330.71	5,371.20	5,370.28	19.19	127.25	-83.46	-590.26	-11,246.15	11,231.94	11,085.52	146.43	76.707	
5,400.00	5,393.71	5,433.76	5,432.83	19.41	128.82	-83.48	-590.61	-11,246.15	11,231.61	11,083.38	148.23	75.772	
5,500.00	5,493.62	5,532.96	5,532.02	19.77	131.32	-83.50	-591.25	-11,246.15	11,231.18	11,080.09	151.09	74.334	
5,600.00	5,593.57	5,632.19	5,631.24	20.13	133.82	-83.52	-591.96	-11,246.15	11,230.85	11,076.90	153.95	72.952	
5,700.00	5,693.53	5,731.44	5,730.49	20.49	136.32	-83.54	-592.77	-11,246.15	11,230.63	11,073.82	156.81	71.621	
5,800.00	5,793.52	5,839.09	5,837.52	20.85	139.39	-83.55	-592.98	-11,246.15	11,230.46	11,070.23	160.23	70.088	
5,900.00	5,893.52	5,939.09	5,937.52	21.20	142.34	-83.55	-592.98	-11,246.15	11,230.38	11,066.83	163.54	68.670	
5,936.48	5,930.00	5,975.57	5,974.00	21.33	143.42	-94.30	-592.98	-11,246.15	11,230.37	11,065.62	164.75	68.167	
6,000.00	5,993.52	6,039.09	6,037.52	21.56	145.30	-94.30	-592.98	-11,246.15	11,230.37	11,063.52	166.85	67.308	
6,100.00	6,093.52	6,139.09	6,137.52	21.91	148.25	-94.30	-592.98	-11,246.15	11,230.37	11,060.21	170.16	66.000	
6,200.00	6,193.52	6,239.09	6,237.52	22.27	151.21	-94.30	-592.98	-11,246.15	11,230.37	11,056.90	173.47	64.741	
6,300.00	6,293.52	6,339.09	6,337.52	22.62	154.16	-94.30	-592.98	-11,246.15	11,230.37	11,053.60	176.77	63.530	
6,358.48	6,352.00	6,397.57	6,396.00	22.83	155.89	-94.30	-592.98	-11,246.15	11,230.37	11,051.66	178.71	62.842	
6,400.00	6,393.49	6,439.06	6,437.49	22.97	157.11	-19.74	-592.98	-11,246.15	11,229.10	11,049.02	180.08	62.356	
6,450.00	6,443.20	6,488.77	6,487.20	23.15	158.58	-19.90	-592.98	-11,246.15	11,224.19	11,042.46	181.72	61.765	
6,500.00	6,492.36	6,537.93	6,536.36	23.33	160.03	-20.19	-592.98	-11,246.15	11,215.62	11,032.27	183.35	61.170	
6,550.00	6,540.64	6,586.21	6,584.64	23.51	161.46	-20.61	-592.98	-11,246.15	11,203.46	11,018.50	184.95	60.575	
6,600.00	6,587.77	6,633.34	6,631.77	23.69	162.85	-21.17	-592.98	-11,246.15	11,187.76	11,001.25	186.52	59.983	
6,650.00	6,633.44	6,679.01	6,677.44	23.88	164.20	-21.89	-592.98	-11,246.15	11,168.64	10,980.61	188.03	59.397	
6,700.00	6,677.37	6,722.94	6,721.37	24.07	165.50	-22.79	-592.98	-11,246.15	11,146.22	10,956.72	189.49	58.821	
6,750.00	6,719.30	6,764.87	6,763.30	24.26	166.74	-23.91	-592.98	-11,246.15	11,120.63	10,929.74	190.89	58.257	
6,800.00	6,758.97	6,804.54	6,802.97	24.46	167.91	-25.28	-592.98	-11,246.15	11,092.03	10,899.82	192.21	57.708	
6,850.00	6,796.12	6,841.69	6,840.12	24.67	169.01	-26.95	-592.98	-11,246.15	11,060.60	10,867.15	193.45	57.175	
6,900.00	6,830.54	6,876.11	6,874.54	24.88	170.02	-29.00	-592.98	-11,246.15	11,026.55	10,831.95	194.60	56.662	
6,950.00	6,862.00	6,907.58	6,906.00	25.11	170.95	-31.52	-592.98	-11,246.15	10,990.08	10,794.42	195.66	56.170	
7,000.00	6,890.33	6,935.90	6,934.33	25.34	171.79	-34.62	-592.98	-11,246.15	10,951.42	10,754.81	196.61	55.701	
7,050.00	6,915.33	6,960.90	6,959.33	25.59	172.53	-38.46	-592.98	-11,246.15	10,910.82	10,713.35	197.46	55.255	
7,100.00	6,936.86	6,982.43	6,980.86	25.85	173.17	-43.26	-592.98	-11,246.15	10,868.52	10,670.32	198.20	54.836	
7,150.00	6,954.79	7,000.36	6,998.79	26.12	173.69	-49.26	-592.98	-11,246.15	10,824.79	10,625.97	198.83	54.444	
7,200.00	6,968.99	7,014.57	7,012.99	26.40	174.11	-56.71	-592.98	-11,246.15	10,779.91	10,580.57	199.33	54.080	
7,250.00	6,979.40	7,024.97	7,023.40	26.69	174.42	-65.78	-592.98	-11,246.15	10,734.14	10,534.42	199.73	53.745	
7,300.00	6,985.94	7,031.51	7,029.94	27.00	174.61	-76.39	-592.98	-11,246.15	10,687.78	10,487.79	200.00	53.440	
7,350.00	6,988.56	7,034.13	7,032.56	27.31	174.69	-88.00	-592.98	-11,246.15	10,641.12	10,440.97	200.15	53.166	
7,358.93	6,988.62	7,034.19	7,032.62	27.36	174.69	-90.10	-592.98	-11,246.15	10,632.78	10,432.61	200.17	53.120	
7,400.00	6,988.59	7,034.16	7,032.59	27.63	174.69	-90.10	-592.98	-11,246.15	10,594.41	10,394.18	200.23	52.912	
7,500.00	6,988.52	7,034.09	7,032.52	28.33	174.69	-90.10	-592.98	-11,246.15	10,501.07	10,300.68	200.39	52.404	
7,600.00	6,988.45	7,034.02	7,032.45	29.10	174.69	-90.10	-592.98	-11,246.15	10,407.86	10,207.30	200.57	51.893	
7,658.93	6,988.41	7,033.98	7,032.41	29.59	174.69	-90.10	-592.98	-11,246.15	10,352.99	10,152.32	200.68	51.590	
7,700.00	6,988.38	7,033.95	7,032.38	29.94	174.69	-90.11	-592.98	-11,246.15	10,314.67	10,113.91	200.76	51.378	
7,800.00	6,988.31	7,033.88	7,032.31	30.84	174.69	-90.12	-592.98	-11,246.15	10,220.59	10,019.63	200.96	50.859	
7,900.00	6,988.24	7,033.81	7,032.24	31.79	174.68	-90.14	-592.98	-11,246.15	10,125.48	9,924.33	201.15	50.337	
8,000.00	6,988.16	7,033.73	7,032.16	32.78	174.68	-90.16	-592.98	-11,246.15	10,029.44	9,828.10	201.34	49.813	
8,100.00	6,988.09	7,033.66	7,032.09	33.82	174.68	-90.18	-592.98	-11,246.15	9,932.54	9,731.02	201.52	49.288	
8,200.00	6,988.01	7,033.58	7,032.01	34.88	174.68	-90.22	-592.98	-11,246.15	9,834.90	9,633.21	201.68	48.764	
8,300.00	6,987.94	7,033.51	7,031.94	35.98	174.67	-90.26	-592.98	-11,246.15	9,736.59	9,534.76	201.83	48.242	
8,400.00	6,987.86	7,033.43	7,031.86	37.11	174.67	-90.33	-592.98	-11,246.15	9,637.74	9,435.78	201.96	47.722	
8,416.35	6,987.85	7,033.42	7,031.85	37.29	174.67	-90.35	-592.98	-11,246.15	9,621.52	9,419.55	201.97	47.637	
8,500.00	6,987.78	7,033.35	7,031.78	38.25	174.67	-90.34	-592.98	-11,246.15	9,538.58	9,336.51	202.07	47.204	
8,600.00	6,987.70	7,033.27	7,031.70	39.43	174.67	-90.34	-592.98	-11,246.15	9,439.43	9,237.24	202.19	46.687	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149B - OH - OH-INC												Offset Site Error:	0.00 usft		
Survey Program:		520-A027Ua_INC-ONLY					Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)				
8,700.00	6,987.62	7,033.19	7,031.62	40.64	174.66	-90.34	-592.98	-11,246.15	9,340.30	9,137.99	202.31	46.168			
8,800.00	6,987.55	7,033.12	7,031.55	41.88	174.66	-90.33	-592.98	-11,246.15	9,241.19	9,038.75	202.44	45.650			
8,900.00	6,987.47	7,033.04	7,031.47	43.14	174.66	-90.33	-592.98	-11,246.15	9,142.10	8,939.53	202.57	45.131			
9,000.00	6,987.39	7,032.96	7,031.39	44.42	174.66	-90.33	-592.98	-11,246.15	9,043.03	8,840.32	202.71	44.611			
9,100.00	6,987.31	7,032.88	7,031.31	45.72	174.66	-90.32	-592.98	-11,246.15	8,943.98	8,741.13	202.85	44.092			
9,200.00	6,987.23	7,032.80	7,031.23	47.04	174.65	-90.32	-592.98	-11,246.15	8,844.95	8,641.95	203.00	43.572			
9,300.00	6,987.15	7,032.72	7,031.15	48.38	174.65	-90.31	-592.98	-11,246.15	8,745.94	8,542.79	203.15	43.051			
9,400.00	6,987.08	7,032.65	7,031.08	49.73	174.65	-90.31	-592.98	-11,246.15	8,646.96	8,443.64	203.31	42.531			
9,500.00	6,987.00	7,032.57	7,031.00	51.10	174.65	-90.31	-592.98	-11,246.15	8,548.00	8,344.52	203.48	42.009			
9,600.00	6,986.92	7,032.49	7,030.92	52.48	174.64	-90.30	-592.98	-11,246.15	8,449.06	8,245.41	203.65	41.488			
9,700.00	6,986.84	7,032.41	7,030.84	53.87	174.64	-90.30	-592.98	-11,246.15	8,350.15	8,146.32	203.83	40.966			
9,800.00	6,986.76	7,032.33	7,030.76	55.28	174.64	-90.30	-592.98	-11,246.15	8,251.26	8,047.25	204.02	40.444			
9,900.00	6,986.68	7,032.26	7,030.68	56.69	174.64	-90.29	-592.98	-11,246.15	8,152.41	7,948.20	204.21	39.922			
10,000.00	6,986.61	7,032.18	7,030.61	58.12	174.63	-90.29	-592.98	-11,246.15	8,053.58	7,849.17	204.41	39.399			
10,100.00	6,986.53	7,032.10	7,030.53	59.55	174.63	-90.29	-592.98	-11,246.15	7,954.78	7,750.16	204.62	38.876			
10,200.00	6,986.45	7,032.02	7,030.45	61.00	174.63	-90.28	-592.98	-11,246.15	7,856.01	7,651.18	204.83	38.353			
10,300.00	6,986.37	7,031.94	7,030.37	62.45	174.63	-90.28	-592.98	-11,246.15	7,757.27	7,552.21	205.06	37.830			
10,400.00	6,986.29	7,031.86	7,030.29	63.90	174.63	-90.27	-592.98	-11,246.15	7,658.57	7,453.28	205.29	37.306			
10,500.00	6,986.21	7,031.79	7,030.21	65.37	174.62	-90.27	-592.98	-11,246.15	7,559.89	7,354.36	205.53	36.782			
10,600.00	6,986.14	7,031.71	7,030.14	66.84	174.62	-90.27	-592.98	-11,246.15	7,461.26	7,255.48	205.78	36.258			
10,700.00	6,986.06	7,031.63	7,030.06	68.32	174.62	-90.26	-592.98	-11,246.15	7,362.66	7,156.62	206.04	35.734			
10,800.00	6,985.98	7,031.55	7,029.98	69.80	174.62	-90.26	-592.98	-11,246.15	7,264.10	7,057.79	206.31	35.209			
10,900.00	6,985.90	7,031.47	7,029.90	71.29	174.61	-90.26	-592.98	-11,246.15	7,165.58	6,958.98	206.59	34.684			
11,000.00	6,985.82	7,031.39	7,029.82	72.78	174.61	-90.25	-592.98	-11,246.15	7,067.10	6,860.21	206.89	34.159			
11,100.00	6,985.75	7,031.32	7,029.75	74.28	174.61	-90.25	-592.98	-11,246.15	6,968.66	6,761.47	207.19	33.634			
11,200.00	6,985.67	7,031.24	7,029.67	75.78	174.61	-90.25	-592.98	-11,246.15	6,870.27	6,662.77	207.50	33.109			
11,300.00	6,985.59	7,031.16	7,029.59	77.29	174.60	-90.24	-592.98	-11,246.15	6,771.93	6,564.10	207.83	32.584			
11,400.00	6,985.51	7,031.08	7,029.51	78.80	174.60	-90.24	-592.98	-11,246.15	6,673.64	6,465.46	208.17	32.058			
11,500.00	6,985.43	7,031.00	7,029.43	80.31	174.60	-90.23	-592.98	-11,246.15	6,575.39	6,366.87	208.53	31.533			
11,600.00	6,985.35	7,030.92	7,029.35	81.83	174.60	-90.23	-592.98	-11,246.15	6,477.20	6,268.31	208.89	31.007			
11,700.00	6,985.28	7,030.85	7,029.28	83.35	174.60	-90.23	-592.98	-11,246.15	6,379.07	6,169.79	209.28	30.482			
11,800.00	6,985.20	7,030.77	7,029.20	84.87	174.59	-90.22	-592.98	-11,246.15	6,281.00	6,071.32	209.67	29.956			
11,900.00	6,985.12	7,030.69	7,029.12	86.40	174.59	-90.22	-592.98	-11,246.15	6,182.98	5,972.90	210.09	29.430			
12,000.00	6,985.04	7,030.61	7,029.04	87.93	174.59	-90.22	-592.98	-11,246.15	6,085.04	5,874.52	210.52	28.905			
12,100.00	6,984.96	7,030.53	7,028.96	89.46	174.59	-90.21	-592.98	-11,246.15	5,987.16	5,776.19	210.97	28.379			
12,200.00	6,984.88	7,030.45	7,028.88	90.99	174.58	-90.21	-592.98	-11,246.15	5,889.35	5,677.91	211.44	27.854			
12,300.00	6,984.81	7,030.38	7,028.81	92.53	174.58	-90.21	-592.98	-11,246.15	5,791.62	5,579.69	211.93	27.328			
12,400.00	6,984.73	7,030.30	7,028.73	94.07	174.58	-90.20	-592.98	-11,246.15	5,693.96	5,481.53	212.43	26.803			
12,500.00	6,984.65	7,030.22	7,028.65	95.61	174.58	-90.20	-592.98	-11,246.15	5,596.39	5,383.42	212.96	26.278			
12,600.00	6,984.57	7,030.14	7,028.57	97.15	174.57	-90.19	-592.98	-11,246.15	5,498.90	5,285.39	213.52	25.754			
12,700.00	6,984.49	7,030.06	7,028.49	98.70	174.57	-90.19	-592.98	-11,246.15	5,401.51	5,187.41	214.10	25.229			
12,800.00	6,984.41	7,029.98	7,028.41	100.25	174.57	-90.19	-592.98	-11,246.15	5,304.21	5,089.52	214.70	24.705			
12,900.00	6,984.34	7,029.91	7,028.34	101.80	174.57	-90.18	-592.98	-11,246.15	5,207.02	4,991.69	215.33	24.182			
13,000.00	6,984.26	7,029.83	7,028.26	103.35	174.57	-90.18	-592.98	-11,246.15	5,109.94	4,893.95	215.99	23.658			
13,100.00	6,984.18	7,029.75	7,028.18	104.90	174.56	-90.18	-592.98	-11,246.15	5,012.97	4,796.29	216.68	23.136			
13,200.00	6,984.10	7,029.67	7,028.10	106.45	174.56	-90.17	-592.98	-11,246.15	4,916.12	4,698.72	217.40	22.614			
13,300.00	6,984.02	7,029.59	7,028.02	108.01	174.56	-90.17	-592.98	-11,246.15	4,819.40	4,601.25	218.15	22.092			
13,400.00	6,983.94	7,029.52	7,027.94	109.56	174.56	-90.17	-592.98	-11,246.15	4,722.81	4,503.87	218.94	21.571			
13,500.00	6,983.87	7,029.44	7,027.87	111.12	174.55	-90.16	-592.98	-11,246.15	4,626.37	4,406.61	219.77	21.051			
13,600.00	6,983.79	7,029.36	7,027.79	112.68	174.55	-90.16	-592.98	-11,246.15	4,530.09	4,309.45	220.64	20.532			
13,700.00	6,983.71	7,029.28	7,027.71	114.24	174.55	-90.15	-592.98	-11,246.15	4,433.97	4,212.42	221.55	20.014			
13,800.00	6,983.63	7,029.20	7,027.63	115.80	174.55	-90.15	-592.98	-11,246.15	4,338.03	4,115.52	222.50	19.497			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149B - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		520-A027Ua_INC-ONLY				Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,900.00	6,983.55	7,029.12	7,027.55	117.37	174.54	-90.15	-592.98	-11,246.15	4,242.27	4,018.76	223.51	18.980	
14,000.00	6,983.47	7,029.05	7,027.47	118.93	174.54	-90.14	-592.98	-11,246.15	4,146.71	3,922.15	224.56	18.466	
14,100.00	6,983.40	7,028.97	7,027.40	120.50	174.54	-90.14	-592.98	-11,246.15	4,051.37	3,825.70	225.67	17.952	
14,200.00	6,983.32	7,028.89	7,027.32	122.06	174.54	-90.14	-592.98	-11,246.15	3,956.26	3,729.42	226.84	17.441	
14,300.00	6,983.24	7,028.81	7,027.24	123.63	174.54	-90.13	-592.98	-11,246.15	3,861.39	3,633.32	228.07	16.931	
14,400.00	6,983.16	7,028.73	7,027.16	125.20	174.53	-90.13	-592.98	-11,246.15	3,766.79	3,537.42	229.37	16.422	
14,500.00	6,983.08	7,028.65	7,027.08	126.77	174.53	-90.13	-592.98	-11,246.15	3,672.48	3,441.74	230.74	15.916	
14,600.00	6,983.00	7,028.58	7,027.00	128.33	174.53	-90.12	-592.98	-11,246.15	3,578.48	3,346.29	232.19	15.412	
14,700.00	6,982.93	7,028.50	7,026.93	129.91	174.53	-90.12	-592.98	-11,246.15	3,484.80	3,251.09	233.71	14.911	
14,800.00	6,982.85	7,028.42	7,026.85	131.48	174.52	-90.11	-592.98	-11,246.15	3,391.50	3,156.17	235.33	14.412	
14,900.00	6,982.77	7,028.34	7,026.77	133.05	174.52	-90.11	-592.98	-11,246.15	3,298.58	3,061.54	237.04	13.916	
15,000.00	6,982.69	7,028.26	7,026.69	134.62	174.52	-90.11	-592.98	-11,246.15	3,206.09	2,967.24	238.85	13.423	
15,100.00	6,982.61	7,028.18	7,026.61	136.20	174.52	-90.10	-592.98	-11,246.15	3,114.06	2,873.29	240.77	12.934	
15,200.00	6,982.54	7,028.11	7,026.54	137.77	174.51	-90.10	-592.98	-11,246.15	3,022.54	2,779.73	242.81	12.448	
15,300.00	6,982.46	7,028.03	7,026.46	139.35	174.51	-90.10	-592.98	-11,246.15	2,931.57	2,686.60	244.97	11.967	
15,400.00	6,982.38	7,027.95	7,026.38	140.92	174.51	-90.09	-592.98	-11,246.15	2,841.22	2,593.95	247.27	11.490	
15,500.00	6,982.30	7,027.87	7,026.30	142.50	174.51	-90.09	-592.98	-11,246.15	2,751.52	2,501.81	249.71	11.019	
15,600.00	6,982.22	7,027.79	7,026.22	144.07	174.51	-90.09	-592.98	-11,246.15	2,662.57	2,410.25	252.32	10.552	
15,700.00	6,982.14	7,027.71	7,026.14	145.65	174.50	-90.08	-592.98	-11,246.15	2,574.42	2,319.33	255.09	10.092	
15,800.00	6,982.07	7,027.64	7,026.07	147.23	174.50	-90.08	-592.98	-11,246.15	2,487.17	2,229.13	258.04	9.639	
15,900.00	6,981.99	7,027.56	7,025.99	148.81	174.50	-90.07	-592.98	-11,246.15	2,400.91	2,139.73	261.19	9.192	
16,000.00	6,981.91	7,027.48	7,025.91	150.39	174.50	-90.07	-592.98	-11,246.15	2,315.77	2,051.23	264.54	8.754	
16,100.00	6,981.83	7,027.40	7,025.83	151.97	174.49	-90.07	-592.98	-11,246.15	2,231.85	1,963.73	268.12	8.324	
16,200.00	6,981.75	7,027.32	7,025.75	153.55	174.49	-90.06	-592.98	-11,246.15	2,149.31	1,877.38	271.93	7.904	
16,300.00	6,981.67	7,027.24	7,025.67	155.13	174.49	-90.06	-592.98	-11,246.15	2,068.31	1,792.33	275.98	7.494	
16,400.00	6,981.60	7,027.17	7,025.60	156.71	174.49	-90.06	-592.98	-11,246.15	1,989.04	1,708.74	280.30	7.096	
16,500.00	6,981.52	7,027.09	7,025.52	158.29	174.48	-90.05	-592.98	-11,246.15	1,911.71	1,626.83	284.88	6.711	
16,600.00	6,981.44	7,027.01	7,025.44	159.88	174.48	-90.05	-592.98	-11,246.15	1,836.58	1,546.85	289.73	6.339	
16,700.00	6,981.36	7,026.93	7,025.36	161.46	174.48	-90.05	-592.98	-11,246.15	1,763.92	1,469.07	294.85	5.982	
16,800.00	6,981.28	7,026.85	7,025.28	163.04	174.48	-90.04	-592.98	-11,246.15	1,694.04	1,393.81	300.23	5.643	
16,900.00	6,981.20	7,026.77	7,025.20	164.62	174.48	-90.04	-592.98	-11,246.15	1,627.32	1,321.48	305.84	5.321	
17,000.00	6,981.13	7,026.70	7,025.13	166.21	174.47	-90.03	-592.98	-11,246.15	1,564.14	1,252.50	311.64	5.019	
17,100.00	6,981.05	7,026.62	7,025.05	167.79	174.47	-90.03	-592.98	-11,246.15	1,504.96	1,187.39	317.57	4.739	
17,200.00	6,980.97	7,026.54	7,024.97	169.38	174.47	-90.03	-592.98	-11,246.15	1,450.27	1,126.71	323.56	4.482	
17,300.00	6,980.89	7,026.46	7,024.89	170.96	174.47	-90.02	-592.98	-11,246.15	1,400.60	1,071.11	329.49	4.251	
17,400.00	6,980.81	7,026.38	7,024.81	172.55	174.46	-90.02	-592.98	-11,246.15	1,356.48	1,021.26	335.22	4.047	
17,500.00	6,980.73	7,026.31	7,024.73	174.13	174.46	-90.02	-592.98	-11,246.15	1,318.49	977.90	340.60	3.871	
17,600.00	6,980.66	7,026.23	7,024.66	175.72	174.46	-90.01	-592.98	-11,246.15	1,287.17	941.74	345.43	3.726	
17,700.00	6,980.58	7,026.15	7,024.58	177.31	174.46	-90.01	-592.98	-11,246.15	1,263.00	913.46	349.54	3.613	
17,800.00	6,980.50	7,026.07	7,024.50	178.89	174.45	-90.01	-592.98	-11,246.15	1,246.42	893.66	352.75	3.533	
17,900.00	6,980.42	7,025.99	7,024.42	180.48	174.45	-90.00	-592.98	-11,246.15	1,237.71	882.78	354.93	3.487	
17,958.12	6,980.38	7,025.95	7,024.38	181.40	174.45	-90.00	-592.98	-11,246.15	1,236.35	880.66	355.68	3.476 CC, ES	
18,000.00	6,980.34	7,025.91	7,024.34	182.07	174.45	-90.00	-592.98	-11,246.15	1,237.06	881.07	355.98	3.475 SF	
18,100.00	6,980.26	7,025.84	7,024.26	183.66	174.45	-89.99	-592.98	-11,246.15	1,244.46	888.57	355.89	3.497	
18,200.00	6,980.19	7,025.76	7,024.19	185.24	174.45	-89.99	-592.98	-11,246.15	1,259.79	905.10	354.69	3.552	
18,300.00	6,980.11	7,025.68	7,024.11	186.83	174.44	-89.99	-592.98	-11,246.15	1,282.75	930.27	352.48	3.639	
18,400.00	6,980.03	7,025.60	7,024.03	188.42	174.44	-89.98	-592.98	-11,246.15	1,312.94	963.53	349.41	3.758	
18,500.00	6,979.95	7,025.52	7,023.95	190.01	174.44	-89.98	-592.98	-11,246.15	1,349.89	1,004.23	345.65	3.905	
18,600.00	6,979.87	7,025.44	7,023.87	191.60	174.44	-89.98	-592.98	-11,246.15	1,393.04	1,051.67	341.38	4.081	
18,700.00	6,979.79	7,025.37	7,023.79	193.19	174.43	-89.97	-592.98	-11,246.15	1,441.86	1,105.11	336.75	4.282	
18,800.00	6,979.72	7,025.29	7,023.72	194.78	174.43	-89.97	-592.98	-11,246.15	1,495.77	1,163.86	331.91	4.507	
18,900.00	6,979.64	7,025.21	7,023.64	196.37	174.43	-89.97	-592.98	-11,246.15	1,554.25	1,227.27	326.98	4.753	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149B - OH - OH-INC											Offset Site Error: 0.00 usft		
Survey Program: Reference		520-A027Ua_INC-ONLY Offset					Rule Assigned:		Offset Well Error: 0.00 usft				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	6,979.56	7,025.13	7,023.56	197.96	174.43	-89.96	-592.98	-11,246.15	1,616.81	1,294.74	322.07	5.020	
19,100.00	6,979.48	7,025.05	7,023.48	199.55	174.42	-89.96	-592.98	-11,246.15	1,682.99	1,365.75	317.23	5.305	
19,200.00	6,979.40	7,024.97	7,023.40	201.14	174.42	-89.95	-592.98	-11,246.15	1,752.38	1,439.84	312.54	5.607	
19,300.00	6,979.33	7,024.90	7,023.33	202.73	174.42	-89.95	-592.98	-11,246.15	1,824.61	1,516.60	308.01	5.924	
19,400.00	6,979.25	7,024.82	7,023.25	204.32	174.42	-89.95	-592.98	-11,246.15	1,899.36	1,595.68	303.68	6.254	
19,500.00	6,979.17	7,024.74	7,023.17	205.91	174.42	-89.94	-592.98	-11,246.15	1,976.35	1,676.79	299.56	6.598	
19,600.00	6,979.09	7,024.66	7,023.09	207.50	174.41	-89.94	-592.98	-11,246.15	2,055.32	1,759.67	295.65	6.952	
19,700.00	6,979.01	7,024.58	7,023.01	209.09	174.41	-89.94	-592.98	-11,246.15	2,136.05	1,844.10	291.95	7.317	
19,800.00	6,978.93	7,024.50	7,022.93	210.69	174.41	-89.93	-592.98	-11,246.15	2,218.35	1,929.90	288.45	7.690	
19,900.00	6,978.86	7,024.43	7,022.86	212.28	174.41	-89.93	-592.98	-11,246.15	2,302.06	2,016.90	285.16	8.073	
20,000.00	6,978.78	7,024.35	7,022.78	213.87	174.40	-89.93	-592.98	-11,246.15	2,387.02	2,104.96	282.06	8.463	
20,100.00	6,978.70	7,024.27	7,022.70	215.46	174.40	-89.92	-592.98	-11,246.15	2,473.10	2,193.96	279.14	8.860	
20,200.00	6,978.62	7,024.19	7,022.62	217.05	174.40	-89.92	-592.98	-11,246.15	2,560.19	2,283.80	276.39	9.263	
20,300.00	6,978.54	7,024.11	7,022.54	218.65	174.40	-89.92	-592.98	-11,246.15	2,648.20	2,374.40	273.80	9.672	
20,400.00	6,978.46	7,024.03	7,022.46	220.24	174.39	-89.91	-592.98	-11,246.15	2,737.03	2,465.66	271.37	10.086	
20,500.00	6,978.39	7,023.96	7,022.39	221.83	174.39	-89.91	-592.98	-11,246.15	2,826.61	2,557.53	269.08	10.505	
20,600.00	6,978.31	7,023.88	7,022.31	223.43	174.39	-89.90	-592.98	-11,246.15	2,916.87	2,649.95	266.92	10.928	
20,700.00	6,978.23	7,023.80	7,022.23	225.02	174.39	-89.90	-592.98	-11,246.15	3,007.74	2,742.85	264.88	11.355	
20,800.00	6,978.15	7,023.72	7,022.15	226.61	174.38	-89.90	-592.98	-11,246.15	3,099.17	2,836.21	262.96	11.786	
20,900.00	6,978.07	7,023.64	7,022.07	228.21	174.38	-89.89	-592.98	-11,246.15	3,191.12	2,929.97	261.15	12.219	
21,000.00	6,977.99	7,023.56	7,021.99	229.80	174.38	-89.89	-592.98	-11,246.15	3,283.54	3,024.09	259.44	12.656	
21,100.00	6,977.92	7,023.49	7,021.92	231.39	174.38	-89.89	-592.98	-11,246.15	3,376.39	3,118.56	257.83	13.096	
21,200.00	6,977.84	7,023.41	7,021.84	232.99	174.38	-89.88	-592.98	-11,246.15	3,469.63	3,213.33	256.30	13.537	
21,300.00	6,977.76	7,023.33	7,021.76	234.58	174.37	-89.88	-592.98	-11,246.15	3,563.25	3,308.39	254.86	13.981	
21,400.00	6,977.68	7,023.25	7,021.68	236.18	174.37	-89.88	-592.98	-11,246.15	3,657.20	3,403.71	253.49	14.428	
21,500.00	6,977.60	7,023.17	7,021.60	237.77	174.37	-89.87	-592.98	-11,246.15	3,751.47	3,499.27	252.19	14.875	
21,600.00	6,977.52	7,023.10	7,021.52	239.37	174.37	-89.87	-592.98	-11,246.15	3,846.02	3,595.05	250.97	15.325	
21,700.00	6,977.45	7,023.02	7,021.45	240.96	174.36	-89.86	-592.98	-11,246.15	3,940.84	3,691.04	249.80	15.776	
21,800.00	6,977.37	7,022.94	7,021.37	242.56	174.36	-89.86	-592.98	-11,246.15	4,035.92	3,787.22	248.70	16.228	
21,900.00	6,977.29	7,022.86	7,021.29	244.15	174.36	-89.86	-592.98	-11,246.15	4,131.22	3,883.57	247.65	16.682	
22,000.00	6,977.21	7,022.78	7,021.21	245.75	174.36	-89.85	-592.98	-11,246.15	4,226.75	3,980.09	246.65	17.136	
22,100.00	6,977.13	7,022.70	7,021.13	247.34	174.35	-89.85	-592.98	-11,246.15	4,322.47	4,076.77	245.71	17.592	
22,200.00	6,977.05	7,022.63	7,021.05	248.94	174.35	-89.85	-592.98	-11,246.15	4,418.39	4,173.58	244.81	18.049	
22,269.73	6,977.00	7,022.57	7,021.00	250.05	174.35	-89.84	-592.98	-11,246.15	4,485.37	4,241.16	244.20	18.367	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 327-MWD OWSG Rev5												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	2,707.00	2,536.45	0.00	15.45	-93.43	-524.29	-8,749.16	9,145.91				
100.00	100.00	2,738.00	2,565.17	0.25	15.64	-93.38	-515.83	-8,741.15	9,117.64	9,101.93	15.71	580.438	
200.00	200.00	2,738.00	2,565.17	0.61	15.64	-93.38	-515.83	-8,741.15	9,090.27	9,074.39	15.88	572.469	
300.00	300.00	2,738.00	2,565.17	0.97	15.64	-93.38	-515.83	-8,741.15	9,063.93	9,047.79	16.14	561.696	
400.00	400.00	2,771.92	2,596.86	1.33	15.84	-93.32	-506.82	-8,733.05	9,038.19	9,021.55	16.64	543.211	
500.00	500.00	2,800.00	2,623.28	1.68	16.00	-93.28	-499.65	-8,726.85	9,013.56	8,996.44	17.12	526.376	
600.00	600.00	2,800.00	2,623.28	2.04	16.00	-93.28	-499.65	-8,726.85	8,989.69	8,972.23	17.45	515.118	
700.00	700.00	2,831.24	2,652.87	2.40	16.17	-93.23	-492.08	-8,720.27	8,966.69	8,948.72	17.97	498.949	
800.00	799.98	2,975.38	2,790.52	2.76	16.89	-82.78	-462.42	-8,689.49	8,943.57	8,924.52	19.05	469.386	
849.89	849.82	2,988.00	2,802.59	2.94	16.95	-83.01	-459.95	-8,686.78	8,931.88	8,912.59	19.29	463.127	
900.00	899.86	2,988.00	2,802.59	3.12	16.95	-83.01	-459.95	-8,686.78	8,920.30	8,900.85	19.46	458.474	
1,000.00	999.73	3,019.00	2,832.38	3.48	17.09	-82.98	-454.14	-8,680.47	8,897.87	8,877.93	19.95	446.059	
1,100.00	1,099.59	3,030.60	2,843.57	3.84	17.14	-82.97	-452.08	-8,678.21	8,876.28	8,855.94	20.35	436.276	
1,200.00	1,199.45	3,082.00	2,893.27	4.20	17.36	-82.94	-443.40	-8,668.39	8,855.38	8,834.46	20.93	423.150	
1,300.00	1,299.32	3,145.00	2,954.24	4.56	17.63	-82.89	-432.81	-8,656.61	8,834.91	8,813.35	21.57	409.680	
1,400.00	1,399.18	3,175.00	2,983.33	4.92	17.75	-82.87	-427.86	-8,651.21	8,815.08	8,793.03	22.05	399.842	
1,500.00	1,499.04	3,206.00	3,013.49	5.28	17.86	-82.85	-423.08	-8,645.84	8,796.00	8,773.47	22.53	390.414	
1,600.00	1,598.91	3,237.00	3,043.73	5.64	17.98	-82.84	-418.64	-8,640.66	8,777.66	8,754.65	23.01	381.464	
1,700.00	1,698.77	3,269.00	3,075.01	6.00	18.09	-82.82	-414.29	-8,635.53	8,760.07	8,736.58	23.49	372.893	
1,800.00	1,798.63	3,301.00	3,106.36	6.36	18.19	-82.81	-410.12	-8,630.63	8,743.23	8,719.26	23.97	364.744	
1,900.00	1,898.49	3,333.00	3,137.76	6.72	18.30	-82.79	-406.03	-8,626.02	8,727.20	8,702.75	24.45	356.991	
2,000.00	1,998.36	3,362.00	3,166.25	7.09	18.38	-82.78	-402.30	-8,622.10	8,711.96	8,687.06	24.91	349.779	
2,100.00	2,098.22	3,394.00	3,197.72	7.45	18.48	-82.76	-398.26	-8,617.89	8,697.39	8,672.02	25.38	342.720	
2,200.00	2,198.08	3,426.00	3,229.25	7.81	18.57	-82.75	-394.52	-8,613.92	8,683.59	8,657.75	25.84	335.991	
2,300.00	2,297.95	3,458.00	3,260.86	8.17	18.65	-82.74	-391.23	-8,610.21	8,670.61	8,644.31	26.31	329.586	
2,400.00	2,397.81	3,470.87	3,273.60	8.53	18.68	-82.74	-390.04	-8,608.82	8,658.47	8,631.78	26.70	324.345	
2,500.00	2,497.67	3,488.00	3,290.58	8.90	18.72	-82.74	-388.57	-8,607.10	8,647.28	8,620.18	27.10	319.126	
2,600.00	2,597.54	3,519.00	3,321.36	9.26	18.78	-82.73	-386.12	-8,604.34	8,637.04	8,609.50	27.54	313.608	
2,700.00	2,697.40	3,519.00	3,321.36	9.62	18.78	-82.73	-386.12	-8,604.34	8,627.68	8,599.80	27.88	309.495	
2,800.00	2,797.26	3,550.00	3,352.18	9.98	18.84	-82.73	-383.78	-8,601.98	8,619.19	8,590.88	28.31	304.448	
2,900.00	2,897.13	3,582.00	3,384.03	10.35	18.90	-82.72	-381.45	-8,599.99	8,611.68	8,582.94	28.74	299.643	
3,000.00	2,996.99	3,593.85	3,395.84	10.71	18.92	-82.72	-380.63	-8,599.36	8,605.02	8,575.92	29.10	295.677	
3,100.00	3,096.85	3,613.00	3,414.93	11.07	18.94	-82.72	-379.42	-8,598.43	8,599.27	8,569.79	29.48	291.657	
3,200.00	3,196.72	3,644.00	3,445.86	11.43	18.98	-82.72	-377.92	-8,597.23	8,594.43	8,564.54	29.89	287.522	
3,300.00	3,296.58	3,657.76	3,459.61	11.80	18.99	-82.72	-377.49	-8,596.83	8,590.51	8,560.26	30.25	283.989	
3,400.00	3,396.44	3,676.00	3,477.84	12.16	19.01	-82.73	-377.20	-8,596.42	8,587.53	8,556.91	30.62	280.484	
3,500.00	3,496.31	3,707.00	3,508.84	12.52	19.01	-82.74	-377.18	-8,595.99	8,585.45	8,554.45	31.00	276.942	
3,600.00	3,596.17	3,738.00	3,539.84	12.88	19.00	-82.75	-377.42	-8,595.75	8,584.12	8,552.75	31.36	273.691	
3,700.00	3,696.03	3,783.17	3,585.00	13.25	18.99	-82.77	-377.71	-8,595.71	8,583.49	8,551.80	31.69	270.843	
3,778.24	3,774.16	3,840.00	3,641.84	13.53	19.00	-82.79	-377.77	-8,595.99	8,583.37	8,551.47	31.90	269.057	
3,800.00	3,795.89	3,840.00	3,641.84	13.61	19.00	-82.79	-377.77	-8,595.99	8,583.40	8,551.43	31.97	268.490	
3,900.00	3,895.76	3,971.63	3,773.46	13.97	35.72	-82.84	-377.90	-8,596.67	8,583.20	8,533.95	49.25	174.284	
4,000.00	3,995.62	4,069.12	3,870.95	14.34	48.18	-82.87	-378.00	-8,597.20	8,583.11	8,521.00	62.11	138.192	
4,100.00	4,095.48	4,166.61	3,968.44	14.70	60.64	-82.90	-378.11	-8,597.76	8,583.04	8,508.07	74.97	114.491	
4,200.00	4,195.35	4,264.10	4,065.93	15.06	73.12	-82.94	-378.22	-8,598.35	8,583.00	8,495.18	87.82	97.732	
4,266.70	4,261.96	4,329.12	4,130.95	15.30	81.44	-82.96	-378.30	-8,598.76	8,583.00	8,486.60	96.40	89.039	
4,300.00	4,295.21	4,361.59	4,163.41	15.42	85.60	-82.97	-378.34	-8,598.97	8,583.00	8,482.32	100.68	85.254	
4,400.00	4,395.07	4,459.07	4,260.90	15.79	98.08	-83.01	-378.46	-8,599.61	8,583.02	8,469.49	113.53	75.602	
4,500.00	4,494.94	4,556.56	4,358.39	16.15	110.56	-83.04	-378.59	-8,600.27	8,583.08	8,456.70	126.38	67.913	
4,600.00	4,594.80	4,654.05	4,455.87	16.51	123.05	-83.08	-378.72	-8,600.97	8,583.17	8,443.93	139.24	61.644	
4,700.00	4,694.66	4,751.54	4,553.36	16.87	135.53	-83.11	-378.86	-8,601.69	8,583.29	8,431.19	152.09	56.435	
4,800.00	4,794.53	4,849.03	4,650.84	17.24	148.02	-83.14	-379.00	-8,602.43	8,583.43	8,418.49	164.94	52.038	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		327-MWD OWSG Rev5					Rule Assigned:			Offset Well Error:			0.00 usft	
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
4,900.00	4,894.39	4,946.51	4,748.33	17.60	160.51	-83.18	-379.15	-8,603.21	8,583.61	8,405.82	177.80	48.277		
5,000.00	4,994.25	5,044.00	4,845.81	17.96	172.99	-83.21	-379.30	-8,604.01	8,583.83	8,393.17	190.65	45.024		
5,100.00	5,094.12	5,141.49	4,943.29	18.33	185.48	-83.25	-379.46	-8,604.84	8,584.07	8,380.56	203.51	42.181		
5,200.00	5,193.98	5,238.97	5,040.77	18.69	197.97	-83.28	-379.63	-8,605.69	8,584.34	8,367.98	216.36	39.676		
5,300.00	5,293.84	5,336.46	5,138.25	19.05	210.45	-83.32	-379.80	-8,606.57	8,584.64	8,355.43	229.21	37.453		
5,336.91	5,330.71	5,372.44	5,174.24	19.19	215.06	-83.33	-379.86	-8,606.90	8,584.76	8,350.80	233.96	36.694		
5,400.00	5,393.71	5,433.95	5,235.74	19.41	222.94	-83.35	-379.97	-8,607.48	8,585.00	8,342.93	242.07	35.465		
5,500.00	5,493.62	5,531.48	5,333.27	19.77	235.43	-83.38	-380.15	-8,608.41	8,585.48	8,330.55	254.93	33.678		
5,600.00	5,593.57	5,629.04	5,430.82	20.13	247.93	-83.41	-380.33	-8,609.37	8,586.09	8,318.30	267.79	32.063		
5,700.00	5,693.53	5,726.63	5,528.40	20.49	260.43	-83.43	-380.52	-8,610.36	8,586.82	8,306.17	280.65	30.596		
5,800.00	5,793.52	5,824.23	5,626.00	20.85	272.93	-83.44	-380.72	-8,611.38	8,587.69	8,294.18	293.51	29.258		
5,900.00	5,893.52	5,921.84	5,723.61	21.20	285.44	-83.45	-380.92	-8,612.42	8,588.68	8,282.31	306.38	28.033		
5,936.48	5,930.00	5,957.45	5,759.22	21.33	290.00	-94.21	-380.99	-8,612.81	8,589.08	8,278.01	311.07	27.612		
6,000.00	5,993.52	6,019.46	5,821.22	21.56	297.94	-94.21	-381.12	-8,613.49	8,589.78	8,270.55	319.24	26.907		
6,100.00	6,093.52	6,117.07	5,918.82	21.91	310.44	-94.21	-381.33	-8,614.58	8,590.92	8,258.82	332.10	25.868		
6,200.00	6,193.52	6,214.68	6,016.43	22.27	322.95	-94.21	-381.55	-8,615.70	8,592.08	8,247.12	344.96	24.907		
6,300.00	6,293.52	6,312.30	6,114.04	22.62	335.45	-94.22	-381.77	-8,616.85	8,593.27	8,235.45	357.82	24.015		
6,358.48	6,352.00	6,369.38	6,171.12	22.83	342.77	-94.22	-381.90	-8,617.54	8,593.98	8,228.63	365.35	23.523		
6,400.00	6,393.49	6,409.89	6,211.63	22.97	347.95	-19.64	-381.99	-8,618.03	8,593.21	8,222.53	370.68	23.182		
6,450.00	6,443.20	6,458.48	6,260.21	23.15	354.18	-19.79	-382.11	-8,618.62	8,588.92	8,211.83	377.09	22.777		
6,500.00	6,492.36	6,506.56	6,308.29	23.33	360.34	-20.05	-382.22	-8,619.22	8,580.97	8,197.55	383.42	22.380		
6,550.00	6,540.64	6,553.84	6,355.56	23.51	366.39	-20.45	-382.34	-8,619.81	8,569.41	8,179.75	389.66	21.992		
6,600.00	6,587.77	6,600.03	6,401.75	23.69	372.31	-21.00	-382.45	-8,620.40	8,554.31	8,158.57	395.75	21.616		
6,650.00	6,633.44	6,644.85	6,446.56	23.88	378.05	-21.70	-382.56	-8,620.97	8,535.78	8,134.12	401.66	21.251		
6,700.00	6,677.37	6,688.01	6,489.72	24.07	383.58	-22.58	-382.66	-8,621.53	8,513.92	8,106.57	407.35	20.901		
6,750.00	6,719.30	6,729.27	6,530.97	24.26	388.87	-23.67	-382.77	-8,622.06	8,488.88	8,076.08	412.80	20.564		
6,800.00	6,758.97	6,768.35	6,570.06	24.46	393.87	-25.01	-382.87	-8,622.58	8,460.81	8,042.85	417.95	20.243		
6,850.00	6,796.12	6,805.03	6,606.73	24.67	398.57	-26.65	-382.96	-8,623.06	8,429.88	8,007.09	422.80	19.938		
6,900.00	6,830.54	6,839.07	6,640.77	24.88	402.93	-28.65	-383.05	-8,623.51	8,396.30	7,969.01	427.29	19.650		
6,950.00	6,862.00	6,870.27	6,671.96	25.11	406.93	-31.10	-383.13	-8,623.93	8,360.27	7,928.85	431.42	19.379		
7,000.00	6,890.33	6,898.43	6,700.12	25.34	410.54	-34.12	-383.20	-8,624.31	8,322.02	7,886.88	435.15	19.125		
7,050.00	6,915.33	6,923.38	6,725.07	25.59	413.73	-37.85	-383.26	-8,624.65	8,281.79	7,843.33	438.46	18.889		
7,100.00	6,936.86	6,944.96	6,746.65	25.85	416.50	-42.49	-383.32	-8,624.95	8,239.83	7,798.50	441.33	18.671		
7,150.00	6,954.79	6,963.05	6,764.73	26.12	418.81	-48.28	-383.37	-8,625.20	8,196.39	7,752.65	443.74	18.471		
7,200.00	6,968.99	6,977.52	6,779.21	26.40	420.67	-55.46	-383.41	-8,625.39	8,151.76	7,706.08	445.69	18.290		
7,250.00	6,979.40	6,988.29	6,789.97	26.69	422.05	-64.20	-383.44	-8,625.54	8,106.21	7,659.06	447.15	18.129		
7,300.00	6,985.94	6,995.29	6,796.97	27.00	422.94	-74.47	-383.45	-8,625.64	8,060.02	7,611.89	448.13	17.986		
7,350.00	6,988.56	6,998.48	6,800.16	27.31	423.35	-85.80	-383.46	-8,625.68	8,013.48	7,564.87	448.62	17.863		
7,358.93	6,988.62	6,998.64	6,800.32	27.36	423.37	-87.88	-383.46	-8,625.69	8,005.16	7,556.51	448.65	17.843		
7,400.00	6,988.59	6,999.12	6,800.80	27.63	423.43	-87.89	-383.46	-8,625.69	7,966.87	7,518.09	448.78	17.752		
7,500.00	6,988.52	7,000.29	6,801.97	28.33	423.58	-87.91	-383.47	-8,625.71	7,873.77	7,424.67	449.10	17.532		
7,600.00	6,988.45	7,001.46	6,803.14	29.10	423.73	-87.93	-383.47	-8,625.73	7,780.84	7,331.40	449.43	17.313		
7,658.93	6,988.41	7,002.14	6,803.83	29.59	423.82	-87.95	-383.47	-8,625.73	7,726.16	7,276.51	449.64	17.183		
7,700.00	6,988.38	7,002.63	6,804.31	29.94	423.88	-87.88	-383.47	-8,625.74	7,687.97	7,238.18	449.79	17.092		
7,800.00	6,988.31	7,003.81	6,805.49	30.84	424.04	-87.70	-383.48	-8,625.76	7,594.24	7,144.09	450.16	16.870		
7,900.00	6,988.24	7,005.02	6,806.70	31.79	424.19	-87.49	-383.48	-8,625.77	7,499.50	7,048.97	450.53	16.646		
8,000.00	6,988.16	7,006.24	6,807.92	32.78	424.35	-87.22	-383.48	-8,625.79	7,403.81	6,952.92	450.89	16.420		
8,100.00	6,988.09	7,007.48	6,809.16	33.82	424.51	-86.88	-383.49	-8,625.81	7,307.27	6,856.02	451.25	16.194		
8,200.00	6,988.01	7,008.73	6,810.41	34.88	424.67	-86.43	-383.49	-8,625.83	7,209.95	6,758.36	451.59	15.966		
8,300.00	6,987.94	7,009.99	6,811.67	35.98	424.83	-85.82	-383.49	-8,625.84	7,111.95	6,660.02	451.92	15.737		
8,400.00	6,987.86	7,011.27	6,812.95	37.11	424.99	-84.94	-383.50	-8,625.86	7,013.36	6,561.12	452.24	15.508		
8,416.35	6,987.85	7,011.48	6,813.16	37.29	425.02	-84.75	-383.50	-8,625.86	6,997.18	6,544.90	452.29	15.471		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		327-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,500.00	6,987.78	7,012.55	6,814.23	38.25	425.15	-84.81	-383.50	-8,625.88	6,914.44	6,461.90	452.54	15.279		
8,600.00	6,987.70	7,013.83	6,815.51	39.43	425.32	-84.88	-383.50	-8,625.90	6,815.55	6,362.70	452.85	15.050		
8,700.00	6,987.62	7,015.11	6,816.80	40.64	425.48	-84.96	-383.51	-8,625.91	6,716.69	6,263.53	453.16	14.822		
8,800.00	6,987.55	7,016.40	6,818.08	41.88	425.65	-85.03	-383.51	-8,625.93	6,617.87	6,164.38	453.49	14.593		
8,900.00	6,987.47	7,017.68	6,819.36	43.14	425.81	-85.10	-383.51	-8,625.95	6,519.08	6,065.26	453.82	14.365		
9,000.00	6,987.39	7,018.97	6,820.65	44.42	425.98	-85.17	-383.52	-8,625.97	6,420.33	5,966.17	454.16	14.137		
9,100.00	6,987.31	7,020.26	6,821.94	45.72	426.14	-85.24	-383.52	-8,625.99	6,321.61	5,867.11	454.50	13.909		
9,200.00	6,987.23	7,021.54	6,823.22	47.04	426.31	-85.32	-383.52	-8,626.00	6,222.94	5,768.08	454.86	13.681		
9,300.00	6,987.15	7,022.83	6,824.51	48.38	426.47	-85.39	-383.53	-8,626.02	6,124.31	5,669.09	455.23	13.453		
9,400.00	6,987.08	7,024.12	6,825.80	49.73	426.64	-85.46	-383.53	-8,626.04	6,025.73	5,570.12	455.60	13.226		
9,500.00	6,987.00	7,025.41	6,827.09	51.10	426.80	-85.53	-383.53	-8,626.06	5,927.19	5,471.20	455.99	12.998		
9,600.00	6,986.92	7,026.70	6,828.38	52.48	426.97	-85.60	-383.54	-8,626.08	5,828.70	5,372.32	456.39	12.771		
9,700.00	6,986.84	7,027.99	6,829.67	53.87	427.13	-85.68	-383.54	-8,626.09	5,730.27	5,273.47	456.80	12.544		
9,800.00	6,986.76	7,029.28	6,830.96	55.28	427.30	-85.75	-383.54	-8,626.11	5,631.89	5,174.67	457.22	12.318		
9,900.00	6,986.68	7,030.57	6,832.25	56.69	427.46	-85.82	-383.55	-8,626.13	5,533.57	5,075.91	457.66	12.091		
10,000.00	6,986.61	7,031.86	6,833.54	58.12	427.63	-85.89	-383.55	-8,626.15	5,435.30	4,977.20	458.10	11.865		
10,100.00	6,986.53	7,033.16	6,834.83	59.55	427.79	-85.97	-383.56	-8,626.17	5,337.11	4,878.54	458.57	11.639		
10,200.00	6,986.45	7,034.45	6,836.13	61.00	427.96	-86.04	-383.56	-8,626.18	5,238.98	4,779.93	459.05	11.413		
10,300.00	6,986.37	7,035.74	6,837.42	62.45	428.13	-86.11	-383.56	-8,626.20	5,140.92	4,681.38	459.54	11.187		
10,400.00	6,986.29	7,037.04	6,838.72	63.90	428.29	-86.19	-383.57	-8,626.22	5,042.94	4,582.88	460.06	10.962		
10,500.00	6,986.21	7,038.34	6,840.01	65.37	428.46	-86.26	-383.57	-8,626.24	4,945.04	4,484.45	460.59	10.736		
10,600.00	6,986.14	7,039.63	6,841.31	66.84	428.62	-86.33	-383.57	-8,626.26	4,847.22	4,386.08	461.14	10.511		
10,700.00	6,986.06	7,040.93	6,842.61	68.32	428.79	-86.40	-383.58	-8,626.27	4,749.49	4,287.78	461.71	10.287		
10,800.00	6,985.98	7,042.23	6,843.91	69.80	428.96	-86.48	-383.58	-8,626.29	4,651.86	4,189.56	462.31	10.062		
10,900.00	6,985.90	7,043.53	6,845.21	71.29	429.12	-86.55	-383.58	-8,626.31	4,554.34	4,091.41	462.93	9.838		
11,000.00	6,985.82	7,044.83	6,846.51	72.78	429.29	-86.62	-383.59	-8,626.33	4,456.92	3,993.35	463.57	9.614		
11,100.00	6,985.75	7,046.13	6,847.81	74.28	429.46	-86.70	-383.59	-8,626.35	4,359.62	3,895.38	464.24	9.391		
11,200.00	6,985.67	7,047.43	6,849.11	75.78	429.62	-86.77	-383.59	-8,626.36	4,262.44	3,797.50	464.94	9.168		
11,300.00	6,985.59	7,048.73	6,850.41	77.29	429.79	-86.84	-383.60	-8,626.38	4,165.40	3,699.72	465.68	8.945		
11,400.00	6,985.51	7,050.03	6,851.71	78.80	429.96	-86.92	-383.60	-8,626.40	4,068.50	3,602.06	466.44	8.722		
11,500.00	6,985.43	7,051.34	6,853.01	80.31	430.12	-86.99	-383.60	-8,626.42	3,971.75	3,504.51	467.24	8.500		
11,600.00	6,985.35	7,052.64	6,854.32	81.83	430.29	-87.06	-383.61	-8,626.44	3,875.17	3,407.08	468.09	8.279		
11,700.00	6,985.28	7,053.95	6,855.62	83.35	430.46	-87.14	-383.61	-8,626.46	3,778.76	3,309.79	468.97	8.058		
11,800.00	6,985.20	7,055.25	6,856.93	84.87	430.63	-87.21	-383.61	-8,626.47	3,682.55	3,212.65	469.90	7.837		
11,900.00	6,985.12	7,056.56	6,858.23	86.40	430.79	-87.28	-383.62	-8,626.49	3,586.54	3,115.67	470.87	7.617		
12,000.00	6,985.04	7,057.86	6,859.54	87.93	430.96	-87.36	-383.62	-8,626.51	3,490.76	3,018.86	471.90	7.397		
12,100.00	6,984.96	7,059.17	6,860.85	89.46	431.13	-87.43	-383.62	-8,626.53	3,395.22	2,922.23	472.99	7.178		
12,200.00	6,984.88	7,060.48	6,862.16	90.99	431.30	-87.50	-383.63	-8,626.55	3,299.94	2,825.80	474.14	6.960		
12,300.00	6,984.81	7,061.79	6,863.47	92.53	431.46	-87.58	-383.63	-8,626.57	3,204.95	2,729.60	475.35	6.742		
12,400.00	6,984.73	7,063.10	6,864.78	94.07	431.63	-87.65	-383.64	-8,626.58	3,110.27	2,633.64	476.64	6.525		
12,500.00	6,984.65	7,064.41	6,866.09	95.61	431.80	-87.73	-383.64	-8,626.60	3,015.94	2,537.94	478.00	6.309		
12,600.00	6,984.57	7,065.72	6,867.40	97.15	431.97	-87.80	-383.64	-8,626.62	2,921.98	2,442.53	479.45	6.094		
12,700.00	6,984.49	7,067.03	6,868.71	98.70	432.13	-87.87	-383.65	-8,626.64	2,828.44	2,347.44	481.00	5.880		
12,800.00	6,984.41	7,068.35	6,870.02	100.25	432.30	-87.95	-383.65	-8,626.66	2,735.35	2,252.71	482.64	5.667		
12,900.00	6,984.34	7,069.66	6,871.34	101.80	432.47	-88.02	-383.65	-8,626.68	2,642.77	2,158.37	484.40	5.456		
13,000.00	6,984.26	7,070.97	6,872.65	103.35	432.64	-88.10	-383.66	-8,626.69	2,550.75	2,064.46	486.28	5.245		
13,100.00	6,984.18	7,072.29	6,873.96	104.90	432.81	-88.17	-383.66	-8,626.71	2,459.34	1,971.05	488.29	5.037		
13,200.00	6,984.10	7,073.61	6,875.28	106.45	432.98	-88.24	-383.66	-8,626.73	2,368.64	1,878.19	490.45	4.830		
13,300.00	6,984.02	7,074.92	6,876.60	108.01	433.15	-88.32	-383.67	-8,626.75	2,278.71	1,785.94	492.77	4.624		
13,400.00	6,983.94	7,076.24	6,877.91	109.56	433.31	-88.39	-383.67	-8,626.77	2,189.65	1,694.39	495.26	4.421		
13,500.00	6,983.87	7,077.56	6,879.23	111.12	433.48	-88.47	-383.67	-8,626.79	2,101.58	1,603.64	497.94	4.221		
13,600.00	6,983.79	7,078.88	6,880.55	112.68	433.65	-88.54	-383.68	-8,626.81	2,014.62	1,513.79	500.83	4.023		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 327-MWD OWSG Rev5												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,700.00	6,983.71	7,080.19	6,881.87	114.24	433.82	-88.61	-383.68	-8,626.82	1,928.92	1,424.97	503.95	3.828	
13,800.00	6,983.63	7,081.52	6,883.19	115.80	433.99	-88.69	-383.68	-8,626.84	1,844.66	1,337.35	507.31	3.636	
13,900.00	6,983.55	7,082.84	6,884.51	117.37	434.16	-88.76	-383.69	-8,626.86	1,762.05	1,251.12	510.94	3.449	
14,000.00	6,983.47	7,084.16	6,885.83	118.93	434.33	-88.84	-383.69	-8,626.88	1,681.33	1,166.49	514.84	3.266	
14,100.00	6,983.40	7,085.48	6,887.15	120.50	434.50	-88.91	-383.70	-8,626.90	1,602.78	1,083.74	519.05	3.088	
14,200.00	6,983.32	7,086.80	6,888.48	122.06	434.67	-88.99	-383.70	-8,626.92	1,526.74	1,003.19	523.55	2.916	
14,300.00	6,983.24	7,088.13	6,889.80	123.63	434.84	-89.06	-383.70	-8,626.94	1,453.61	925.24	528.37	2.751	
14,400.00	6,983.16	7,089.45	6,891.12	125.20	435.01	-89.14	-383.71	-8,626.95	1,383.83	850.36	533.47	2.594	
14,500.00	6,983.08	7,090.78	6,892.45	126.77	435.18	-89.21	-383.71	-8,626.97	1,317.96	779.12	538.84	2.446	
14,600.00	6,983.00	7,092.10	6,893.78	128.33	435.35	-89.29	-383.71	-8,626.99	1,256.60	712.19	544.41	2.308	
14,700.00	6,982.93	7,093.43	6,895.10	129.91	435.52	-89.36	-383.72	-8,627.01	1,200.44	650.37	550.07	2.182	
14,800.00	6,982.85	7,094.76	6,896.43	131.48	435.69	-89.44	-383.72	-8,627.03	1,150.25	594.54	555.70	2.070	
14,900.00	6,982.77	7,096.09	6,897.76	133.05	435.86	-89.51	-383.72	-8,627.05	1,106.83	545.72	561.11	1.973	
15,000.00	6,982.69	7,097.41	6,899.09	134.62	436.03	-89.59	-383.73	-8,627.07	1,071.02	504.95	566.07	1.892	
15,100.00	6,982.61	7,098.74	6,900.42	136.20	436.20	-89.66	-383.73	-8,627.08	1,043.59	473.26	570.33	1.830	
15,200.00	6,982.54	7,100.07	6,901.75	137.77	436.37	-89.74	-383.74	-8,627.10	1,025.22	451.59	573.64	1.787	
15,300.00	6,982.46	7,101.41	6,903.08	139.35	436.54	-89.81	-383.74	-8,627.12	1,016.41	440.61	575.80	1.765	
15,340.04	6,982.43	7,101.94	6,903.61	139.98	436.61	-89.84	-383.74	-8,627.13	1,015.62	439.31	576.31	1.762 CC, ES, SF	
15,400.00	6,982.38	7,102.74	6,904.41	140.92	436.71	-89.89	-383.74	-8,627.14	1,017.38	440.71	576.68	1.764	
15,500.00	6,982.30	7,104.07	6,905.74	142.50	436.88	-89.96	-383.75	-8,627.16	1,028.13	451.86	576.28	1.784	
15,600.00	6,982.22	7,105.40	6,907.08	144.07	437.05	-90.04	-383.75	-8,627.18	1,048.35	473.67	574.68	1.824	
15,700.00	6,982.14	7,106.74	6,908.41	145.65	437.22	-90.11	-383.75	-8,627.20	1,077.51	505.43	572.07	1.884	
15,800.00	6,982.07	7,108.07	6,909.74	147.23	437.39	-90.19	-383.76	-8,627.22	1,114.90	546.22	568.68	1.960	
15,900.00	6,981.99	7,109.41	6,911.08	148.81	437.56	-90.26	-383.76	-8,627.24	1,159.73	594.98	564.75	2.054	
16,000.00	6,981.91	7,110.75	6,912.42	150.39	437.73	-90.34	-383.76	-8,627.25	1,211.18	650.69	560.49	2.161	
16,100.00	6,981.83	7,112.08	6,913.75	151.97	437.91	-90.41	-383.77	-8,627.27	1,268.43	712.34	556.08	2.281	
16,200.00	6,981.75	7,113.42	6,915.09	153.55	438.08	-90.49	-383.77	-8,627.29	1,330.74	779.06	551.68	2.412	
16,300.00	6,981.67	7,114.76	6,916.43	155.13	438.25	-90.56	-383.77	-8,627.31	1,397.44	850.05	547.38	2.553	
16,400.00	6,981.60	7,116.10	6,917.77	156.71	438.42	-90.64	-383.78	-8,627.33	1,467.92	924.66	543.26	2.702	
16,500.00	6,981.52	7,117.44	6,919.11	158.29	438.59	-90.72	-383.78	-8,627.35	1,541.67	1,002.32	539.35	2.858	
16,600.00	6,981.44	7,118.78	6,920.45	159.88	438.76	-90.79	-383.79	-8,627.37	1,618.24	1,082.57	535.67	3.021	
16,700.00	6,981.36	7,120.12	6,921.79	161.46	438.94	-90.87	-383.79	-8,627.39	1,697.24	1,165.01	532.24	3.189	
16,800.00	6,981.28	7,121.46	6,923.13	163.04	439.11	-90.94	-383.79	-8,627.41	1,778.36	1,249.32	529.05	3.361	
16,900.00	6,981.20	7,122.81	6,924.48	164.62	439.28	-91.02	-383.80	-8,627.43	1,861.32	1,335.23	526.09	3.538	
17,000.00	6,981.13	7,124.15	6,925.82	166.21	439.45	-91.09	-383.80	-8,627.44	1,945.88	1,422.52	523.36	3.718	
17,100.00	6,981.05	7,125.50	6,927.17	167.79	439.62	-91.17	-383.80	-8,627.46	2,031.84	1,511.00	520.84	3.901	
17,200.00	6,980.97	7,126.84	6,928.51	169.38	439.80	-91.25	-383.81	-8,627.48	2,119.03	1,600.52	518.51	4.087	
17,300.00	6,980.89	7,128.19	6,929.86	170.96	439.97	-91.32	-383.81	-8,627.50	2,207.31	1,690.94	516.37	4.275	
17,400.00	6,980.81	7,129.53	6,931.20	172.55	440.14	-91.40	-383.82	-8,627.52	2,296.55	1,782.16	514.39	4.465	
17,500.00	6,980.73	7,130.88	6,932.55	174.13	440.31	-91.47	-383.82	-8,627.54	2,386.64	1,874.07	512.57	4.656	
17,600.00	6,980.66	7,132.23	6,933.90	175.72	440.49	-91.55	-383.82	-8,627.56	2,477.49	1,966.60	510.90	4.849	
17,700.00	6,980.58	7,133.58	6,935.25	177.31	440.66	-91.63	-383.83	-8,627.58	2,569.02	2,059.67	509.35	5.044	
17,800.00	6,980.50	7,134.93	6,936.60	178.89	440.83	-91.70	-383.83	-8,627.60	2,661.16	2,153.24	507.93	5.239	
17,900.00	6,980.42	7,136.28	6,937.95	180.48	441.01	-91.78	-383.83	-8,627.62	2,753.85	2,247.24	506.61	5.436	
18,000.00	6,980.34	7,137.63	6,939.30	182.07	441.18	-91.85	-383.84	-8,627.64	2,847.03	2,341.63	505.40	5.633	
18,100.00	6,980.26	7,138.99	6,940.65	183.66	441.35	-91.93	-383.84	-8,627.66	2,940.66	2,436.38	504.28	5.831	
18,200.00	6,980.19	7,140.34	6,942.01	185.24	441.53	-92.01	-383.84	-8,627.67	3,034.70	2,531.45	503.24	6.030	
18,300.00	6,980.11	7,141.69	6,943.36	186.83	441.70	-92.08	-383.85	-8,627.69	3,129.10	2,626.81	502.29	6.230	
18,400.00	6,980.03	7,143.05	6,944.71	188.42	441.87	-92.16	-383.85	-8,627.71	3,223.84	2,722.43	501.41	6.430	
18,500.00	6,979.95	7,144.40	6,946.07	190.01	442.05	-92.24	-383.86	-8,627.73	3,318.89	2,818.29	500.60	6.630	
18,600.00	6,979.87	7,145.76	6,947.43	191.60	442.22	-92.31	-383.86	-8,627.75	3,414.22	2,914.37	499.85	6.831	
18,700.00	6,979.79	7,147.12	6,948.78	193.19	442.39	-92.39	-383.86	-8,627.77	3,509.81	3,010.66	499.16	7.032	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		327-MWD OWSG Rev5					Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,800.00	6,979.72	7,148.47	6,950.14	194.78	442.57	-92.46	-383.87	-8,627.79	3,605.64	3,107.12	498.52	7.233		
18,900.00	6,979.64	7,149.83	6,951.50	196.37	442.74	-92.54	-383.87	-8,627.81	3,701.69	3,203.76	497.93	7.434		
19,000.00	6,979.56	7,151.19	6,952.86	197.96	442.92	-92.62	-383.87	-8,627.83	3,797.94	3,300.56	497.39	7.636		
19,100.00	6,979.48	7,152.55	6,954.22	199.55	443.09	-92.69	-383.88	-8,627.85	3,894.38	3,397.50	496.89	7.838		
19,200.00	6,979.40	7,153.91	6,955.58	201.14	443.26	-92.77	-383.88	-8,627.87	3,991.00	3,494.57	496.43	8.039		
19,300.00	6,979.33	7,155.27	6,956.94	202.73	443.44	-92.85	-383.89	-8,627.89	4,087.78	3,591.77	496.01	8.241		
19,400.00	6,979.25	7,156.64	6,958.30	204.32	443.61	-92.92	-383.89	-8,627.91	4,184.71	3,689.09	495.62	8.443		
19,500.00	6,979.17	7,158.00	6,959.66	205.91	443.79	-93.00	-383.89	-8,627.93	4,281.78	3,786.51	495.27	8.645		
19,600.00	6,979.09	7,159.36	6,961.03	207.50	443.96	-93.08	-383.90	-8,627.95	4,378.98	3,884.03	494.95	8.847		
19,700.00	6,979.01	7,160.73	6,962.39	209.09	444.14	-93.15	-383.90	-8,627.97	4,476.30	3,981.65	494.65	9.049		
19,800.00	6,978.93	7,162.09	6,963.76	210.69	444.31	-93.23	-383.90	-8,627.98	4,573.74	4,079.36	494.39	9.251		
19,900.00	6,978.86	7,163.46	6,965.12	212.28	444.49	-93.31	-383.91	-8,628.00	4,671.29	4,177.15	494.15	9.453		
20,000.00	6,978.78	7,164.83	6,966.49	213.87	444.66	-93.38	-383.91	-8,628.02	4,768.94	4,275.01	493.93	9.655		
20,100.00	6,978.70	7,166.19	6,967.86	215.46	444.84	-93.46	-383.92	-8,628.04	4,866.68	4,372.95	493.73	9.857		
20,200.00	6,978.62	7,167.56	6,969.23	217.05	445.01	-93.54	-383.92	-8,628.06	4,964.52	4,470.96	493.56	10.059		
20,300.00	6,978.54	7,168.93	6,970.60	218.65	445.19	-93.61	-383.92	-8,628.08	5,062.43	4,569.03	493.41	10.260		
20,400.00	6,978.46	7,170.30	6,971.97	220.24	445.36	-93.69	-383.93	-8,628.10	5,160.43	4,667.16	493.27	10.462		
20,500.00	6,978.39	7,171.67	6,973.34	221.83	445.54	-93.77	-383.93	-8,628.12	5,258.50	4,765.35	493.15	10.663		
20,600.00	6,978.31	7,173.04	6,974.71	223.43	445.71	-93.85	-383.93	-8,628.14	5,356.65	4,863.59	493.05	10.864		
20,700.00	6,978.23	7,174.42	6,976.08	225.02	445.89	-93.92	-383.94	-8,628.16	5,454.86	4,961.89	492.97	11.065		
20,800.00	6,978.15	7,175.79	6,977.45	226.61	446.07	-94.00	-383.94	-8,628.18	5,553.13	5,060.23	492.90	11.266		
20,900.00	6,978.07	7,177.16	6,978.83	228.21	446.24	-94.08	-383.95	-8,628.20	5,651.46	5,158.62	492.84	11.467		
21,000.00	6,977.99	7,178.54	6,980.20	229.80	446.42	-94.15	-383.95	-8,628.22	5,749.86	5,257.05	492.80	11.668		
21,100.00	6,977.92	7,179.91	6,981.58	231.39	446.59	-94.23	-383.95	-8,628.24	5,848.30	5,355.53	492.77	11.868		
21,200.00	6,977.84	7,181.29	6,982.95	232.99	446.77	-94.31	-383.96	-8,628.26	5,946.80	5,454.04	492.76	12.068		
21,300.00	6,977.76	7,182.67	6,984.33	234.58	446.95	-94.39	-383.96	-8,628.28	6,045.34	5,552.59	492.75	12.269		
21,400.00	6,977.68	7,184.05	6,985.71	236.18	447.12	-94.46	-383.96	-8,628.30	6,143.94	5,651.18	492.76	12.469		
21,500.00	6,977.60	7,185.42	6,987.09	237.77	447.30	-94.54	-383.97	-8,628.32	6,242.57	5,749.80	492.77	12.668		
21,600.00	6,977.52	7,186.80	6,988.47	239.37	447.48	-94.62	-383.97	-8,628.34	6,341.25	5,848.45	492.80	12.868		
21,700.00	6,977.45	7,188.18	6,989.85	240.96	447.65	-94.69	-383.98	-8,628.36	6,439.97	5,947.14	492.83	13.067		
21,800.00	6,977.37	7,189.57	6,991.23	242.56	447.83	-94.77	-383.98	-8,628.38	6,538.73	6,045.85	492.88	13.266		
21,900.00	6,977.29	7,190.95	6,992.61	244.15	448.01	-94.85	-383.98	-8,628.40	6,637.53	6,144.59	492.93	13.465		
22,000.00	6,977.21	7,192.33	6,993.99	245.75	448.19	-94.93	-383.99	-8,628.42	6,736.36	6,243.36	493.00	13.664		
22,100.00	6,977.13	7,193.71	6,995.38	247.34	448.36	-95.00	-383.99	-8,628.44	6,835.22	6,342.16	493.07	13.863		
22,200.00	6,977.05	7,195.10	6,996.76	248.94	448.54	-95.08	-383.99	-8,628.46	6,934.12	6,440.98	493.14	14.061		
22,269.73	6,977.00	7,196.06	6,997.72	250.05	448.66	-95.14	-384.00	-8,628.47	7,003.09	6,509.89	493.20	14.199		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164 - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 497-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-74.66	2,305.87	-8,406.12	8,716.87				
100.00	100.00	38.00	38.00	0.25	1.20	-74.66	2,305.87	-8,406.12	8,716.65	8,715.19	1.45	5,992.238	
200.00	200.00	138.00	138.00	0.61	4.37	-74.66	2,305.87	-8,406.12	8,716.65	8,711.67	4.98	1,750.225	
300.00	300.00	238.00	238.00	0.97	7.54	-74.66	2,305.87	-8,406.12	8,716.65	8,708.14	8.51	1,024.771	
400.00	400.00	338.00	338.00	1.33	10.71	-74.66	2,305.87	-8,406.12	8,716.65	8,704.62	12.03	724.480	
500.00	500.00	438.00	438.00	1.68	13.87	-74.66	2,305.87	-8,406.12	8,716.65	8,701.09	15.56	560.295	
510.00	510.00	448.00	448.00	1.72	14.19	-74.66	2,305.87	-8,406.12	8,716.65	8,700.74	15.91	547.879	
600.00	600.00	497.00	497.00	2.04	15.74	-74.66	2,305.87	-8,406.12	8,716.74	8,698.96	17.78	490.140	
700.00	700.00	546.42	546.42	2.40	15.79	-74.66	2,306.39	-8,406.33	8,717.46	8,699.29	18.18	479.615	
800.00	799.98	578.27	578.26	2.76	15.80	-63.89	2,307.07	-8,406.67	8,718.19	8,699.64	18.54	470.192	
849.89	849.82	606.36	606.34	2.94	15.81	-63.89	2,307.68	-8,407.09	8,718.23	8,699.50	18.73	465.517	
869.08	868.99	606.36	606.34	3.01	15.81	-63.89	2,307.68	-8,407.09	8,718.21	8,699.41	18.80	463.838	
900.00	899.86	622.98	622.95	3.12	15.82	-63.90	2,308.05	-8,407.40	8,718.23	8,699.32	18.91	461.077	
1,000.00	999.73	639.03	638.99	3.48	15.82	-63.90	2,308.42	-8,407.73	8,718.81	8,699.55	19.26	452.590	
1,100.00	1,099.59	670.04	669.98	3.84	15.83	-63.91	2,309.16	-8,408.77	8,720.36	8,700.73	19.63	444.348	
1,200.00	1,199.45	700.74	700.64	4.20	15.84	-63.91	2,309.85	-8,410.11	8,722.72	8,702.74	19.99	436.432	
1,300.00	1,299.32	714.96	714.84	4.56	15.84	-63.92	2,310.18	-8,410.78	8,725.89	8,705.55	20.34	428.964	
1,400.00	1,399.18	736.70	736.52	4.92	15.85	-63.92	2,310.77	-8,412.17	8,730.12	8,709.42	20.70	421.740	
1,500.00	1,499.04	793.71	793.39	5.28	15.87	-63.94	2,311.57	-8,416.17	8,734.97	8,713.88	21.08	414.325	
1,600.00	1,598.91	793.71	793.39	5.64	15.87	-63.94	2,311.57	-8,416.17	8,740.62	8,719.19	21.43	407.961	
1,700.00	1,698.77	811.19	810.79	6.00	15.88	-63.95	2,311.76	-8,417.75	8,747.32	8,725.54	21.78	401.667	
1,800.00	1,798.63	856.20	855.57	6.36	15.90	-63.97	2,312.05	-8,422.32	8,754.89	8,732.75	22.14	395.354	
1,900.00	1,898.49	887.61	886.80	6.72	15.91	-63.98	2,312.32	-8,425.62	8,763.04	8,740.54	22.50	389.467	
2,000.00	1,998.36	902.38	901.48	7.09	15.91	-63.99	2,312.53	-8,427.28	8,772.08	8,749.23	22.84	383.986	
2,100.00	2,098.22	918.16	917.14	7.45	15.92	-64.00	2,312.84	-8,429.23	8,782.10	8,758.91	23.19	378.738	
2,200.00	2,198.08	956.57	955.22	7.81	15.94	-64.01	2,313.37	-8,434.25	8,792.89	8,769.34	23.55	373.394	
2,300.00	2,297.95	1,011.83	1,009.93	8.17	15.97	-64.04	2,314.16	-8,441.93	8,804.37	8,780.45	23.93	367.976	
2,400.00	2,297.81	1,026.27	1,024.22	8.53	15.99	-64.04	2,314.31	-8,443.98	8,816.47	8,792.20	24.27	363.304	
2,500.00	2,497.67	1,043.02	1,040.75	8.90	16.00	-64.05	2,314.46	-8,446.69	8,829.64	8,805.03	24.61	358.802	
2,600.00	2,597.54	1,043.02	1,040.75	9.26	16.00	-64.05	2,314.46	-8,446.69	8,843.74	8,818.82	24.93	354.802	
2,700.00	2,697.40	1,043.02	1,040.75	9.62	16.00	-64.05	2,314.46	-8,446.69	8,858.96	8,833.72	25.24	350.999	
2,800.00	2,797.26	1,074.75	1,071.93	9.98	16.03	-64.07	2,314.86	-8,452.56	8,875.05	8,849.45	25.60	346.672	
2,900.00	2,897.13	1,074.75	1,071.93	10.35	16.03	-64.07	2,314.86	-8,452.56	8,892.11	8,866.20	25.91	343.225	
3,000.00	2,996.99	1,105.75	1,102.26	10.71	16.06	-64.09	2,315.43	-8,458.93	8,910.13	8,883.87	26.26	339.358	
3,100.00	3,096.85	1,105.75	1,102.26	11.07	16.06	-64.09	2,315.43	-8,458.93	8,929.02	8,902.46	26.56	336.236	
3,200.00	3,196.72	1,136.35	1,132.08	11.43	16.09	-64.10	2,316.25	-8,465.74	8,948.88	8,921.98	26.90	332.683	
3,300.00	3,296.58	1,139.97	1,135.60	11.80	16.09	-64.10	2,316.38	-8,466.58	8,969.58	8,942.38	27.20	329.789	
3,400.00	3,396.44	1,168.18	1,163.01	12.16	16.12	-64.12	2,317.21	-8,473.18	8,991.05	8,963.52	27.53	326.566	
3,500.00	3,496.31	1,199.00	1,192.87	12.52	16.15	-64.14	2,318.08	-8,480.77	9,013.39	8,985.52	27.87	323.408	
3,600.00	3,596.17	1,208.70	1,202.24	12.88	16.16	-64.14	2,318.37	-8,483.28	9,036.58	9,008.41	28.17	320.781	
3,700.00	3,696.03	1,261.54	1,253.19	13.25	16.21	-64.17	2,319.28	-8,497.25	9,060.46	9,031.91	28.55	317.405	
3,800.00	3,795.89	1,261.54	1,253.19	13.61	16.21	-64.17	2,319.28	-8,497.25	9,085.08	9,056.25	28.82	315.205	
3,900.00	3,895.76	1,292.54	1,282.93	13.97	16.24	-64.20	2,319.63	-8,505.99	9,110.56	9,081.40	29.16	312.446	
4,000.00	3,995.62	1,292.54	1,282.93	14.34	16.24	-64.20	2,319.63	-8,505.99	9,136.91	9,107.48	29.43	310.471	
4,100.00	4,095.48	1,310.82	1,300.36	14.70	16.27	-64.21	2,319.76	-8,511.50	9,164.18	9,134.44	29.74	308.177	
4,200.00	4,195.35	1,323.84	1,312.75	15.06	16.28	-64.22	2,319.86	-8,515.51	9,192.27	9,162.24	30.03	306.107	
4,300.00	4,295.21	1,365.67	1,352.43	15.42	16.33	-64.25	2,320.00	-8,528.73	9,221.03	9,190.64	30.38	303.503	
4,400.00	4,395.07	1,385.50	1,371.20	15.79	16.36	-64.27	2,320.09	-8,535.12	9,250.49	9,219.81	30.68	301.476	
4,500.00	4,494.94	1,400.81	1,385.66	16.15	16.38	-64.28	2,320.22	-8,540.17	9,280.77	9,249.79	30.97	299.625	
4,600.00	4,594.80	1,414.27	1,398.31	16.51	16.39	-64.29	2,320.36	-8,544.74	9,311.91	9,280.66	31.26	297.906	
4,700.00	4,694.66	1,443.67	1,425.89	16.87	16.43	-64.32	2,320.63	-8,554.94	9,343.79	9,312.21	31.58	295.879	
4,800.00	4,794.53	1,443.67	1,425.89	17.24	16.43	-64.32	2,320.63	-8,554.94	9,376.49	9,344.67	31.82	294.639	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164 - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program:		497-MWD OWSG Rev5				Rule Assigned:								Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance				Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
4,900.00	4,894.39	1,460.13	1,441.26	17.60	16.46	-64.33	2,320.78	-8,560.83	9,409.95	9,377.84	32.11	293.052			
5,000.00	4,994.25	1,475.04	1,455.07	17.96	16.48	-64.34	2,321.01	-8,566.43	9,444.38	9,411.99	32.39	291.585			
5,100.00	5,094.12	1,475.04	1,455.07	18.33	16.48	-64.34	2,321.01	-8,566.43	9,479.58	9,446.96	32.62	290.577			
5,200.00	5,193.98	1,475.04	1,455.07	18.69	16.48	-64.34	2,321.01	-8,566.43	9,515.71	9,482.85	32.85	289.644			
5,300.00	5,293.84	1,505.65	1,483.22	19.05	16.54	-64.37	2,321.75	-8,578.44	9,552.54	9,519.36	33.18	287.915			
5,336.91	5,330.71	1,505.65	1,483.22	19.19	16.54	-64.37	2,321.75	-8,578.44	9,566.33	9,533.07	33.26	287.611			
5,400.00	5,393.71	1,505.65	1,483.22	19.41	16.54	-64.48	2,321.75	-8,578.44	9,590.25	9,556.85	33.40	287.117			
5,500.00	5,493.62	1,537.35	1,512.16	19.77	16.59	-64.70	2,322.32	-8,591.36	9,628.94	9,595.22	33.72	285.551			
5,600.00	5,593.57	1,567.98	1,539.96	20.13	16.64	-64.92	2,322.16	-8,604.21	9,668.59	9,634.56	34.03	284.090			
5,700.00	5,693.53	1,598.26	1,567.29	20.49	16.69	-65.15	2,321.82	-8,617.24	9,709.29	9,674.95	34.34	282.702			
5,800.00	5,793.52	1,598.26	1,567.29	20.85	16.69	-65.36	2,321.82	-8,617.24	9,750.96	9,716.41	34.55	282.206			
5,900.00	5,893.52	1,629.61	1,595.41	21.20	16.74	-65.59	2,321.75	-8,631.10	9,793.73	9,758.87	34.86	280.912			
5,936.48	5,930.00	1,629.61	1,595.41	21.33	16.74	-76.43	2,321.75	-8,631.10	9,809.54	9,774.61	34.94	280.773			
6,000.00	5,993.52	1,629.61	1,595.41	21.56	16.74	-76.43	2,321.75	-8,631.10	9,837.37	9,802.31	35.06	280.553			
6,100.00	6,093.52	1,660.93	1,623.35	21.91	16.80	-76.45	2,321.70	-8,645.25	9,881.64	9,846.27	35.37	279.360			
6,200.00	6,193.52	1,692.90	1,651.76	22.27	16.86	-76.47	2,321.56	-8,659.91	9,926.48	9,890.79	35.69	278.131			
6,300.00	6,293.52	1,722.18	1,677.68	22.62	16.92	-76.50	2,321.52	-8,673.53	9,971.90	9,935.90	36.00	277.019			
6,358.48	6,352.00	1,722.18	1,677.68	22.83	16.92	-76.50	2,321.52	-8,673.53	9,998.74	9,962.63	36.11	276.899			
6,400.00	6,393.49	1,752.80	1,704.68	22.97	16.99	-1.86	2,321.52	-8,687.97	10,016.69	9,980.38	36.30	275.917			
6,450.00	6,443.20	1,752.80	1,704.68	23.15	16.99	-1.80	2,321.52	-8,687.97	10,035.14	9,998.75	36.39	275.758			
6,500.00	6,492.36	1,752.80	1,704.68	23.33	16.99	-1.76	2,321.52	-8,687.97	10,050.11	10,013.63	36.48	275.501			
6,550.00	6,540.64	1,752.80	1,704.68	23.51	16.99	-1.72	2,321.52	-8,687.97	10,061.53	10,024.97	36.57	275.152			
6,600.00	6,587.77	1,767.59	1,717.65	23.69	17.02	-1.71	2,321.62	-8,695.08	10,069.23	10,032.52	36.71	274.263			
6,650.00	6,633.44	1,784.13	1,732.06	23.88	17.06	-1.71	2,321.95	-8,703.20	10,073.38	10,036.51	36.87	273.246			
6,700.00	6,677.37	1,784.13	1,732.06	24.07	17.06	-1.71	2,321.95	-8,703.20	10,073.71	10,036.76	36.95	272.658			
6,750.00	6,719.30	1,789.38	1,736.61	24.26	17.08	-1.72	2,322.06	-8,705.80	10,070.37	10,033.32	37.04	271.844			
6,800.00	6,758.97	1,815.08	1,758.94	24.46	17.14	-1.76	2,322.62	-8,718.52	10,063.25	10,026.03	37.22	270.344			
6,850.00	6,796.12	1,846.38	1,786.06	24.67	17.23	-1.82	2,322.99	-8,734.14	10,052.39	10,014.97	37.42	268.620			
6,900.00	6,830.54	1,846.38	1,786.06	24.88	17.23	-1.86	2,322.99	-8,734.14	10,037.91	10,000.42	37.48	267.795			
6,950.00	6,862.00	1,846.38	1,786.06	25.11	17.23	-1.92	2,322.99	-8,734.14	10,019.94	9,982.40	37.54	266.924			
7,000.00	6,890.33	1,846.38	1,786.06	25.34	17.23	-1.99	2,322.99	-8,734.14	9,998.57	9,960.99	37.59	266.011			
7,050.00	6,915.33	1,862.34	1,799.80	25.59	17.28	-2.09	2,323.21	-8,742.26	9,973.81	9,936.11	37.70	264.560			
7,100.00	6,936.86	1,877.09	1,812.41	25.85	17.33	-2.22	2,323.60	-8,749.89	9,945.97	9,908.17	37.80	263.118			
7,150.00	6,954.79	1,877.09	1,812.41	26.12	17.33	-2.36	2,323.60	-8,749.89	9,915.04	9,877.21	37.83	262.104			
7,200.00	6,968.99	1,909.21	1,839.85	26.40	17.45	-2.58	2,324.12	-8,766.59	9,881.19	9,843.20	37.99	260.068			
7,250.00	6,979.40	1,909.21	1,839.85	26.69	17.45	-2.81	2,324.12	-8,766.59	9,844.64	9,806.63	38.01	259.007			
7,300.00	6,985.94	1,909.21	1,839.85	27.00	17.45	-3.10	2,324.12	-8,766.59	9,805.63	9,767.62	38.02	257.927			
7,350.00	6,988.56	1,909.21	1,839.85	27.31	17.45	-3.47	2,324.12	-8,766.59	9,764.38	9,726.36	38.02	256.831			
7,358.93	6,988.62	1,922.90	1,851.52	27.36	17.51	-3.58	2,324.21	-8,773.75	9,756.69	9,718.61	38.09	256.181			
7,400.00	6,988.59	1,924.81	1,853.13	27.63	17.52	-3.59	2,324.24	-8,774.76	9,721.64	9,683.56	38.09	255.252			
7,500.00	6,988.52	1,938.67	1,864.84	28.33	17.58	-3.61	2,324.53	-8,782.17	9,636.54	9,598.41	38.14	252.687			
7,600.00	6,988.45	1,938.67	1,864.84	29.10	17.58	-3.61	2,324.53	-8,782.17	9,551.62	9,513.49	38.13	250.505			
7,658.93	6,988.41	1,938.67	1,864.84	29.59	17.58	-3.61	2,324.53	-8,782.17	9,501.72	9,463.59	38.13	249.198			
7,700.00	6,988.38	1,938.67	1,864.84	29.94	17.58	-2.31	2,324.53	-8,782.17	9,466.99	9,428.86	38.13	248.280			
7,800.00	6,988.31	1,938.67	1,864.84	30.84	17.58	0.83	2,324.53	-8,782.17	9,382.60	9,344.47	38.14	246.036			
7,900.00	6,988.24	1,954.76	1,878.34	31.79	17.65	3.92	2,324.95	-8,790.93	9,298.45	9,260.23	38.22	243.271			
8,000.00	6,988.16	1,970.00	1,891.02	32.78	17.72	6.97	2,325.29	-8,799.36	9,214.75	9,176.44	38.31	240.530			
8,100.00	6,988.09	1,970.00	1,891.02	33.82	17.72	9.94	2,325.29	-8,799.36	9,131.53	9,093.20	38.33	238.250			
8,200.00	6,988.01	2,001.36	1,916.99	34.88	17.86	12.86	2,325.85	-8,816.94	9,048.91	9,010.41	38.50	235.012			
8,300.00	6,987.94	2,001.36	1,916.99	35.98	17.86	15.63	2,325.85	-8,816.94	8,966.97	8,928.43	38.54	232.684			
8,400.00	6,987.86	2,017.64	1,930.40	37.11	17.95	18.32	2,326.10	-8,826.17	8,885.86	8,847.20	38.66	229.841			
8,416.35	6,987.85	2,031.12	1,941.44	37.29	18.01	18.79	2,326.33	-8,833.90	8,872.73	8,834.00	38.73	229.065			

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		497-MWD OWSG Rev5					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,500.00	6,987.78	2,031.12	1,941.44	38.25	18.01	18.79	2,326.33	-8,833.90	8,805.50	8,766.72	38.79	227.027		
8,600.00	6,987.70	2,031.12	1,941.44	39.43	18.01	18.79	2,326.33	-8,833.90	8,725.50	8,686.64	38.86	224.513		
8,700.00	6,987.62	2,466.37	2,301.36	40.64	20.76	20.19	2,332.07	-9,078.36	8,644.24	8,603.04	41.20	209.820		
8,800.00	6,987.55	2,555.27	2,376.21	41.88	21.39	20.52	2,335.06	-9,126.22	8,561.96	8,520.18	41.78	204.926		
8,900.00	6,987.47	2,555.27	2,376.21	43.14	21.39	20.52	2,335.06	-9,126.22	8,479.75	8,437.85	41.90	202.377		
9,000.00	6,987.39	2,646.62	2,452.82	44.42	22.07	20.86	2,337.00	-9,175.95	8,397.85	8,355.31	42.54	197.404		
9,100.00	6,987.31	2,677.99	2,479.18	45.72	22.31	20.98	2,337.62	-9,192.93	8,315.72	8,272.85	42.86	193.998		
9,200.00	6,987.23	2,677.99	2,479.18	47.04	22.31	20.98	2,337.62	-9,192.93	8,233.89	8,190.85	43.04	191.323		
9,300.00	6,987.15	2,677.99	2,479.18	48.38	22.31	20.98	2,337.62	-9,192.93	8,152.47	8,109.24	43.23	188.593		
9,400.00	6,987.08	2,709.35	2,505.30	49.73	22.56	21.11	2,338.73	-9,210.26	8,071.35	8,027.74	43.61	185.087		
9,500.00	6,987.00	2,709.35	2,505.30	51.10	22.56	21.11	2,338.73	-9,210.26	7,990.55	7,946.71	43.84	182.273		
9,600.00	6,986.92	3,335.12	3,037.35	52.48	27.65	24.20	2,380.60	-9,535.83	7,907.23	7,859.79	47.44	166.695		
9,700.00	6,986.84	3,347.75	3,048.33	53.87	27.75	24.27	2,381.81	-9,541.97	7,823.11	7,775.36	47.75	163.830		
9,800.00	6,986.76	3,366.51	3,064.59	55.28	27.91	24.39	2,383.66	-9,551.12	7,739.26	7,691.14	48.12	160.837		
9,900.00	6,986.68	3,444.66	3,132.30	56.69	28.55	24.93	2,396.30	-9,588.00	7,655.60	7,606.79	48.81	156.846		
10,000.00	6,986.61	3,458.77	3,144.54	58.12	28.67	25.02	2,397.88	-9,594.82	7,571.93	7,522.74	49.19	153.932		
10,100.00	6,986.53	3,458.77	3,144.54	59.55	28.67	25.02	2,397.88	-9,594.82	7,488.63	7,439.11	49.52	151.223		
10,200.00	6,986.45	3,475.62	3,159.09	61.00	28.82	25.12	2,399.38	-9,603.20	7,405.60	7,355.64	49.96	148.227		
10,300.00	6,986.37	3,489.30	3,170.81	62.45	28.94	25.20	2,400.53	-9,610.16	7,323.02	7,272.61	50.41	145.278		
10,400.00	6,986.29	3,494.13	3,174.93	63.90	28.99	25.23	2,400.93	-9,612.64	7,240.78	7,189.95	50.83	142.451		
10,500.00	6,986.21	3,631.27	3,292.25	65.37	30.17	26.04	2,408.91	-9,683.17	7,158.27	7,106.33	51.95	137.804		
10,600.00	6,986.14	3,645.58	3,304.47	66.84	30.30	26.12	2,409.38	-9,690.60	7,075.87	7,023.41	52.46	134.891		
10,700.00	6,986.06	3,660.18	3,316.90	68.32	30.43	26.21	2,409.84	-9,698.26	6,993.82	6,940.82	52.99	131.977		
10,800.00	6,985.98	3,675.71	3,330.06	69.80	30.57	26.29	2,410.28	-9,706.48	6,912.12	6,858.56	53.56	129.062		
10,900.00	6,985.90	3,691.59	3,343.47	71.29	30.71	26.38	2,410.66	-9,714.98	6,830.79	6,776.64	54.15	126.153		
11,000.00	6,985.82	3,731.92	3,377.35	72.78	31.09	26.61	2,411.15	-9,736.86	6,749.78	6,694.91	54.88	122.995		
11,100.00	6,985.75	3,758.45	3,399.59	74.28	31.34	26.75	2,411.25	-9,751.30	6,668.93	6,613.36	55.57	120.019		
11,200.00	6,985.67	3,769.67	3,408.96	75.78	31.44	26.81	2,411.26	-9,757.48	6,588.47	6,532.26	56.20	117.223		
11,300.00	6,985.59	4,013.00	3,613.18	77.29	33.78	28.17	2,407.65	-9,889.68	6,506.90	6,448.96	57.94	112.300		
11,400.00	6,985.51	4,013.00	3,613.18	78.80	33.78	28.17	2,407.65	-9,889.68	6,425.44	6,366.88	58.57	109.709		
11,500.00	6,985.43	4,043.80	3,639.11	80.31	34.08	28.35	2,407.41	-9,906.30	6,344.37	6,285.00	59.36	106.871		
11,600.00	6,985.35	4,072.04	3,662.81	81.83	34.36	28.52	2,407.09	-9,921.67	6,263.60	6,203.43	60.17	104.093		
11,700.00	6,985.28	4,146.34	3,725.01	83.35	35.09	28.97	2,405.96	-9,962.28	6,183.02	6,121.81	61.21	101.016		
11,800.00	6,985.20	4,223.32	3,789.83	84.87	35.84	29.45	2,405.15	-10,003.80	6,102.08	6,039.81	62.27	97.987		
11,900.00	6,985.12	4,267.00	3,826.67	86.40	36.27	29.75	2,405.42	-10,027.26	6,021.41	5,958.19	63.22	95.239		
12,000.00	6,985.04	4,267.00	3,826.67	87.93	36.27	29.75	2,405.42	-10,027.26	5,941.08	5,877.07	64.01	92.810		
12,100.00	6,984.96	4,267.00	3,826.67	89.46	36.27	29.75	2,405.42	-10,027.26	5,861.35	5,796.52	64.83	90.404		
12,200.00	6,984.88	4,267.00	3,826.67	90.99	36.27	29.75	2,405.42	-10,027.26	5,782.26	5,716.57	65.69	88.026		
12,300.00	6,984.81	4,321.35	3,872.18	92.53	36.88	30.13	2,406.57	-10,056.94	5,702.86	5,636.00	66.85	85.304		
12,400.00	6,984.73	4,336.41	3,884.68	94.07	37.05	30.24	2,407.06	-10,065.33	5,624.48	5,556.64	67.85	82.898		
12,500.00	6,984.65	4,395.00	3,932.79	95.61	37.70	30.67	2,409.65	-10,098.67	5,547.27	5,478.17	69.10	80.279		
12,600.00	6,984.57	4,395.00	3,932.79	97.15	37.70	30.67	2,409.65	-10,098.67	5,469.64	5,399.56	70.09	78.042		
12,700.00	6,984.49	4,395.00	3,932.79	98.70	37.70	30.67	2,409.65	-10,098.67	5,392.75	5,321.64	71.11	75.841		
12,800.00	6,984.41	4,410.56	3,945.45	100.25	37.87	30.79	2,410.49	-10,107.67	5,316.60	5,244.38	72.23	73.609		
12,900.00	6,984.34	4,450.08	3,977.63	101.80	38.30	31.10	2,412.78	-10,130.50	5,240.87	5,167.39	73.48	71.322		
13,000.00	6,984.26	4,462.00	3,987.33	103.35	38.43	31.19	2,413.62	-10,137.37	5,165.65	5,090.99	74.66	69.188		
13,100.00	6,984.18	4,508.00	4,024.67	104.90	38.93	31.58	2,417.74	-10,163.92	5,090.98	5,014.96	76.03	66.963		
13,200.00	6,984.10	4,555.94	4,063.61	106.45	39.46	32.00	2,423.38	-10,191.29	5,016.80	4,939.34	77.45	64.772		
13,300.00	6,984.02	4,604.00	4,102.74	108.01	39.97	32.44	2,429.34	-10,218.56	4,942.81	4,863.88	78.93	62.626		
13,400.00	6,983.94	4,604.00	4,102.74	109.56	39.97	32.44	2,429.34	-10,218.56	4,869.51	4,789.29	80.22	60.703		
13,500.00	6,983.87	4,604.00	4,102.74	111.12	39.97	32.44	2,429.34	-10,218.56	4,797.18	4,715.63	81.55	58.825		
13,600.00	6,983.79	4,604.00	4,102.74	112.68	39.97	32.44	2,429.34	-10,218.56	4,725.86	4,642.94	82.92	56.991		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164 - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		497-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,700.00	6,983.71	4,604.00	4,102.74	114.24	39.97	32.44	2,429.34	-10,218.56	4,655.59	4,571.26	84.33	55.205	
13,800.00	6,983.63	4,604.00	4,102.74	115.80	39.97	32.44	2,429.34	-10,218.56	4,586.43	4,500.65	85.78	53.465	
13,900.00	6,983.55	4,604.00	4,102.74	117.37	39.97	32.44	2,429.34	-10,218.56	4,518.42	4,431.15	87.27	51.774	
14,000.00	6,983.47	4,604.00	4,102.74	118.93	39.97	32.44	2,429.34	-10,218.56	4,451.62	4,362.82	88.80	50.131	
14,100.00	6,983.40	4,604.00	4,102.74	120.50	39.97	32.44	2,429.34	-10,218.56	4,386.08	4,295.72	90.36	48.538	
14,200.00	6,983.32	4,604.00	4,102.74	122.06	39.97	32.44	2,429.34	-10,218.56	4,321.87	4,229.90	91.97	46.994	
14,300.00	6,983.24	4,604.00	4,102.74	123.63	39.97	32.44	2,429.34	-10,218.56	4,259.03	4,165.43	93.60	45.502	
14,400.00	6,983.16	4,604.00	4,102.74	125.20	39.97	32.44	2,429.34	-10,218.56	4,197.63	4,102.36	95.27	44.060	
14,500.00	6,983.08	4,604.00	4,102.74	126.77	39.97	32.44	2,429.34	-10,218.56	4,137.75	4,040.77	96.97	42.669	
14,600.00	6,983.00	4,604.00	4,102.74	128.33	39.97	32.44	2,429.34	-10,218.56	4,079.43	3,980.72	98.70	41.330	
14,700.00	6,982.93	4,604.00	4,102.74	129.91	39.97	32.44	2,429.34	-10,218.56	4,022.75	3,922.29	100.46	40.042	
14,800.00	6,982.85	4,604.00	4,102.74	131.48	39.97	32.44	2,429.34	-10,218.56	3,967.79	3,865.54	102.25	38.806	
14,900.00	6,982.77	4,604.00	4,102.74	133.05	39.97	32.44	2,429.34	-10,218.56	3,914.60	3,810.55	104.05	37.622	
15,000.00	6,982.69	4,604.00	4,102.74	134.62	39.97	32.44	2,429.34	-10,218.56	3,863.28	3,757.41	105.87	36.490	
15,100.00	6,982.61	4,604.00	4,102.74	136.20	39.97	32.44	2,429.34	-10,218.56	3,813.89	3,706.18	107.71	35.409	
15,200.00	6,982.54	4,604.00	4,102.74	137.77	39.97	32.44	2,429.34	-10,218.56	3,766.50	3,656.94	109.56	34.379	
15,300.00	6,982.46	4,604.00	4,102.74	139.35	39.97	32.44	2,429.34	-10,218.56	3,721.20	3,609.79	111.41	33.402	
15,400.00	6,982.38	4,604.00	4,102.74	140.92	39.97	32.44	2,429.34	-10,218.56	3,678.06	3,564.80	113.26	32.475	
15,500.00	6,982.30	4,604.00	4,102.74	142.50	39.97	32.44	2,429.34	-10,218.56	3,637.16	3,522.05	115.11	31.598	
15,600.00	6,982.22	4,604.00	4,102.74	144.07	39.97	32.44	2,429.34	-10,218.56	3,598.57	3,481.63	116.94	30.773	
15,700.00	6,982.14	4,604.00	4,102.74	145.65	39.97	32.44	2,429.34	-10,218.56	3,562.38	3,443.62	118.76	29.997	
15,800.00	6,982.07	4,604.00	4,102.74	147.23	39.97	32.44	2,429.34	-10,218.56	3,528.64	3,408.09	120.55	29.271	
15,900.00	6,981.99	4,604.00	4,102.74	148.81	39.97	32.44	2,429.34	-10,218.56	3,497.44	3,375.13	122.32	28.593	
16,000.00	6,981.91	4,604.00	4,102.74	150.39	39.97	32.44	2,429.34	-10,218.56	3,468.85	3,344.81	124.04	27.965	
16,100.00	6,981.83	4,604.00	4,102.74	151.97	39.97	32.44	2,429.34	-10,218.56	3,442.92	3,317.19	125.73	27.384	
16,200.00	6,981.75	4,604.00	4,102.74	153.55	39.97	32.44	2,429.34	-10,218.56	3,419.72	3,292.36	127.36	26.851	
16,300.00	6,981.67	4,604.00	4,102.74	155.13	39.97	32.44	2,429.34	-10,218.56	3,399.31	3,270.37	128.94	26.364	
16,400.00	6,981.60	4,604.00	4,102.74	156.71	39.97	32.44	2,429.34	-10,218.56	3,381.73	3,251.28	130.45	25.923	
16,500.00	6,981.52	4,604.00	4,102.74	158.29	39.97	32.44	2,429.34	-10,218.56	3,367.03	3,235.13	131.90	25.527	
16,600.00	6,981.44	4,604.00	4,102.74	159.88	39.97	32.44	2,429.34	-10,218.56	3,355.25	3,221.98	133.27	25.176	
16,700.00	6,981.36	4,604.00	4,102.74	161.46	39.97	32.44	2,429.34	-10,218.56	3,346.42	3,211.86	134.56	24.869	
16,800.00	6,981.28	4,604.00	4,102.74	163.04	39.97	32.44	2,429.34	-10,218.56	3,340.55	3,204.78	135.77	24.604	
16,900.00	6,981.20	4,604.00	4,102.74	164.62	39.97	32.44	2,429.34	-10,218.56	3,337.68	3,200.79	136.89	24.382	
16,946.01	6,981.17	4,604.00	4,102.74	165.35	39.97	32.44	2,429.34	-10,218.56	3,337.36	3,199.99	137.38	24.294 CC	
17,000.00	6,981.13	4,604.00	4,102.74	166.21	39.97	32.44	2,429.34	-10,218.56	3,337.80	3,199.88	137.92	24.201 ES	
17,100.00	6,981.05	4,604.00	4,102.74	167.79	39.97	32.44	2,429.34	-10,218.56	3,340.91	3,202.06	138.86	24.060	
17,200.00	6,980.97	4,604.00	4,102.74	169.38	39.97	32.44	2,429.34	-10,218.56	3,347.01	3,207.31	139.70	23.959	
17,300.00	6,980.89	4,604.00	4,102.74	170.96	39.97	32.44	2,429.34	-10,218.56	3,356.08	3,215.64	140.45	23.896	
17,400.00	6,980.81	4,604.00	4,102.74	172.55	39.97	32.44	2,429.34	-10,218.56	3,368.10	3,227.00	141.10	23.870 SF	
17,500.00	6,980.73	4,604.00	4,102.74	174.13	39.97	32.44	2,429.34	-10,218.56	3,383.03	3,241.37	141.66	23.881	
17,600.00	6,980.66	4,604.00	4,102.74	175.72	39.97	32.44	2,429.34	-10,218.56	3,400.84	3,258.71	142.13	23.928	
17,700.00	6,980.58	4,604.00	4,102.74	177.31	39.97	32.44	2,429.34	-10,218.56	3,421.48	3,278.97	142.50	24.010	
17,800.00	6,980.50	4,604.00	4,102.74	178.89	39.97	32.44	2,429.34	-10,218.56	3,444.89	3,302.10	142.79	24.126	
17,900.00	6,980.42	4,604.00	4,102.74	180.48	39.97	32.44	2,429.34	-10,218.56	3,471.04	3,328.04	142.99	24.274	
18,000.00	6,980.34	4,604.00	4,102.74	182.07	39.97	32.44	2,429.34	-10,218.56	3,499.84	3,356.72	143.12	24.454	
18,100.00	6,980.26	4,604.00	4,102.74	183.66	39.97	32.44	2,429.34	-10,218.56	3,531.24	3,388.08	143.17	24.665	
18,200.00	6,980.19	4,604.00	4,102.74	185.24	39.97	32.44	2,429.34	-10,218.56	3,565.18	3,422.04	143.14	24.907	
18,300.00	6,980.11	4,604.00	4,102.74	186.83	39.97	32.44	2,429.34	-10,218.56	3,601.57	3,458.52	143.05	25.177	
18,400.00	6,980.03	4,604.00	4,102.74	188.42	39.97	32.44	2,429.34	-10,218.56	3,640.34	3,497.45	142.90	25.475	
18,500.00	6,979.95	4,604.00	4,102.74	190.01	39.97	32.44	2,429.34	-10,218.56	3,681.42	3,538.74	142.68	25.801	
18,600.00	6,979.87	4,604.00	4,102.74	191.60	39.97	32.44	2,429.34	-10,218.56	3,724.74	3,582.32	142.42	26.154	
18,700.00	6,979.79	4,604.00	4,102.74	193.19	39.97	32.44	2,429.34	-10,218.56	3,770.21	3,628.11	142.10	26.531	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		497-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance			Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
18,800.00	6,979.72	4,604.00	4,102.74	194.78	39.97	32.44	2,429.34	-10,218.56	3,817.76	3,676.01	141.75	26.934		
18,900.00	6,979.64	4,604.00	4,102.74	196.37	39.97	32.44	2,429.34	-10,218.56	3,867.31	3,725.96	141.35	27.360		
19,000.00	6,979.56	4,604.00	4,102.74	197.96	39.97	32.44	2,429.34	-10,218.56	3,918.79	3,777.87	140.91	27.810		
19,100.00	6,979.48	4,604.00	4,102.74	199.55	39.97	32.44	2,429.34	-10,218.56	3,972.11	3,831.66	140.45	28.282		
19,200.00	6,979.40	4,604.00	4,102.74	201.14	39.97	32.44	2,429.34	-10,218.56	4,027.22	3,887.26	139.96	28.775		
19,300.00	6,979.33	4,604.00	4,102.74	202.73	39.97	32.44	2,429.34	-10,218.56	4,084.03	3,944.59	139.44	29.289		
19,400.00	6,979.25	4,604.00	4,102.74	204.32	39.97	32.44	2,429.34	-10,218.56	4,142.47	4,003.57	138.90	29.823		
19,500.00	6,979.17	4,604.00	4,102.74	205.91	39.97	32.44	2,429.34	-10,218.56	4,202.48	4,064.14	138.34	30.377		
19,600.00	6,979.09	4,604.00	4,102.74	207.50	39.97	32.44	2,429.34	-10,218.56	4,264.00	4,126.22	137.77	30.949		
19,700.00	6,979.01	4,604.00	4,102.74	209.09	39.97	32.44	2,429.34	-10,218.56	4,326.95	4,189.76	137.19	31.540		
19,800.00	6,978.93	4,604.00	4,102.74	210.69	39.97	32.44	2,429.34	-10,218.56	4,391.27	4,254.67	136.60	32.148		
19,900.00	6,978.86	4,604.00	4,102.74	212.28	39.97	32.44	2,429.34	-10,218.56	4,456.91	4,320.92	136.00	32.772		
20,000.00	6,978.78	4,604.00	4,102.74	213.87	39.97	32.44	2,429.34	-10,218.56	4,523.81	4,388.42	135.39	33.413		
20,100.00	6,978.70	4,604.00	4,102.74	215.46	39.97	32.44	2,429.34	-10,218.56	4,591.91	4,457.13	134.78	34.069		
20,200.00	6,978.62	4,604.00	4,102.74	217.05	39.97	32.44	2,429.34	-10,218.56	4,661.17	4,527.00	134.17	34.741		
20,300.00	6,978.54	4,604.00	4,102.74	218.65	39.97	32.44	2,429.34	-10,218.56	4,731.52	4,597.96	133.56	35.427		
20,400.00	6,978.46	4,604.00	4,102.74	220.24	39.97	32.44	2,429.34	-10,218.56	4,802.92	4,669.98	132.95	36.127		
20,500.00	6,978.39	4,604.00	4,102.74	221.83	39.97	32.44	2,429.34	-10,218.56	4,875.33	4,742.99	132.34	36.840		
20,600.00	6,978.31	4,604.00	4,102.74	223.43	39.97	32.44	2,429.34	-10,218.56	4,948.70	4,816.97	131.73	37.567		
20,700.00	6,978.23	4,604.00	4,102.74	225.02	39.97	32.44	2,429.34	-10,218.56	5,022.99	4,891.86	131.13	38.306		
20,800.00	6,978.15	4,604.00	4,102.74	226.61	39.97	32.44	2,429.34	-10,218.56	5,098.16	4,967.63	130.53	39.057		
20,900.00	6,978.07	4,604.00	4,102.74	228.21	39.97	32.44	2,429.34	-10,218.56	5,174.17	5,044.23	129.94	39.819		
21,000.00	6,977.99	4,604.00	4,102.74	229.80	39.97	32.44	2,429.34	-10,218.56	5,250.99	5,121.63	129.36	40.593		
21,100.00	6,977.92	4,604.00	4,102.74	231.39	39.97	32.44	2,429.34	-10,218.56	5,328.57	5,199.79	128.78	41.378		
21,200.00	6,977.84	4,604.00	4,102.74	232.99	39.97	32.44	2,429.34	-10,218.56	5,406.89	5,278.68	128.21	42.173		
21,300.00	6,977.76	4,604.00	4,102.74	234.58	39.97	32.44	2,429.34	-10,218.56	5,485.91	5,358.27	127.64	42.978		
21,400.00	6,977.68	4,604.00	4,102.74	236.18	39.97	32.44	2,429.34	-10,218.56	5,565.61	5,438.52	127.09	43.793		
21,500.00	6,977.60	4,604.00	4,102.74	237.77	39.97	32.44	2,429.34	-10,218.56	5,645.96	5,519.41	126.54	44.617		
21,600.00	6,977.52	4,604.00	4,102.74	239.37	39.97	32.44	2,429.34	-10,218.56	5,726.92	5,600.92	126.01	45.450		
21,700.00	6,977.45	4,604.00	4,102.74	240.96	39.97	32.44	2,429.34	-10,218.56	5,808.48	5,683.00	125.48	46.291		
21,800.00	6,977.37	4,604.00	4,102.74	242.56	39.97	32.44	2,429.34	-10,218.56	5,890.61	5,765.65	124.96	47.141		
21,900.00	6,977.29	4,604.00	4,102.74	244.15	39.97	32.44	2,429.34	-10,218.56	5,973.28	5,848.83	124.45	47.999		
22,000.00	6,977.21	4,604.00	4,102.74	245.75	39.97	32.44	2,429.34	-10,218.56	6,056.47	5,932.53	123.95	48.864		
22,100.00	6,977.13	4,604.00	4,102.74	247.34	39.97	32.44	2,429.34	-10,218.56	6,140.17	6,016.71	123.45	49.737		
22,200.00	6,977.05	4,604.00	4,102.74	248.94	39.97	32.44	2,429.34	-10,218.56	6,224.34	6,101.37	122.97	50.617		
22,269.73	6,977.00	4,604.00	4,102.74	250.05	39.97	32.44	2,429.34	-10,218.56	6,283.31	6,160.67	122.64	51.234		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164A - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 535-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-74.52	2,300.31	-8,305.78	8,618.67				
100.00	100.00	36.00	36.00	0.25	0.83	-74.52	2,300.31	-8,305.78	8,618.43	8,617.35	1.08	7,943.988	
200.00	200.00	136.00	136.00	0.61	3.15	-74.52	2,300.31	-8,305.78	8,618.43	8,614.67	3.76	2,292.503	
300.00	300.00	236.00	236.00	0.97	5.47	-74.52	2,300.31	-8,305.78	8,618.43	8,612.00	6.43	1,339.536	
400.00	400.00	336.00	336.00	1.33	7.78	-74.52	2,300.31	-8,305.78	8,618.43	8,609.32	9.11	946.208	
500.00	500.00	436.00	436.00	1.68	10.10	-74.52	2,300.31	-8,305.78	8,618.43	8,606.65	11.78	731.436	
600.00	600.00	536.04	536.00	2.04	12.42	-74.52	2,300.31	-8,305.78	8,618.43	8,603.97	14.46	596.086	
700.00	700.00	636.04	636.00	2.40	14.73	-74.52	2,300.31	-8,305.78	8,618.43	8,601.30	17.13	503.034	
800.00	799.98	736.02	735.98	2.76	17.05	-63.79	2,300.31	-8,305.78	8,617.66	8,597.85	19.81	435.096	
849.89	849.82	785.87	785.82	2.94	18.20	-63.82	2,300.31	-8,305.78	8,616.70	8,595.56	21.14	407.616	
900.00	899.86	835.91	835.86	3.12	19.36	-63.84	2,300.31	-8,305.78	8,615.54	8,593.07	22.48	383.299	
1,000.00	999.73	935.77	935.73	3.48	21.67	-63.87	2,300.31	-8,305.78	8,613.24	8,588.09	25.15	342.498	
1,100.00	1,099.59	1,036.57	1,036.50	3.84	24.01	-63.88	2,302.94	-8,305.78	8,611.63	8,583.79	27.84	309.307	
1,200.00	1,199.45	1,141.87	1,141.79	4.20	26.45	-63.91	2,302.77	-8,305.78	8,609.28	8,578.64	30.64	280.983	
1,300.00	1,299.32	1,247.15	1,247.06	4.56	28.88	-63.95	2,302.35	-8,305.78	8,606.88	8,573.44	33.44	257.398	
1,400.00	1,399.18	1,352.41	1,352.32	4.92	31.32	-63.99	2,301.69	-8,305.78	8,604.41	8,568.18	36.24	237.455	
1,500.00	1,499.04	1,457.66	1,457.54	5.28	33.76	-64.03	2,300.77	-8,305.78	8,601.89	8,562.85	39.03	220.371	
1,600.00	1,598.91	1,535.18	1,534.91	5.64	35.62	-64.05	2,300.31	-8,305.78	8,599.45	8,558.19	41.26	208.434	
1,700.00	1,698.77	1,635.04	1,634.77	6.00	38.14	-64.09	2,300.31	-8,305.78	8,597.16	8,553.02	44.13	194.798	
1,800.00	1,798.63	1,734.90	1,734.63	6.36	40.65	-64.12	2,300.31	-8,305.78	8,594.87	8,547.86	47.01	182.830	
1,900.00	1,898.49	1,843.70	1,843.41	6.72	43.39	-64.14	2,301.49	-8,305.78	8,592.90	8,542.79	50.11	171.475	
2,000.00	1,998.36	1,954.36	1,954.06	7.09	46.18	-64.18	2,300.79	-8,305.78	8,590.45	8,537.19	53.26	161.293	
2,100.00	2,098.22	2,034.67	2,034.22	7.45	48.14	-64.21	2,300.31	-8,305.78	8,588.02	8,532.44	55.58	154.517	
2,200.00	2,198.08	2,134.53	2,134.08	7.81	50.45	-64.24	2,300.31	-8,305.78	8,585.75	8,527.49	58.25	147.386	
2,300.00	2,297.95	2,234.39	2,233.95	8.17	52.76	-64.27	2,300.31	-8,305.78	8,583.47	8,522.55	60.93	140.881	
2,400.00	2,397.81	2,347.37	2,346.88	8.53	55.38	-64.30	2,301.92	-8,305.78	8,581.63	8,517.72	63.90	134.289	
2,500.00	2,497.67	2,462.99	2,462.48	8.90	58.06	-64.34	2,300.83	-8,305.78	8,579.12	8,512.17	66.94	128.156	
2,600.00	2,597.54	2,534.11	2,533.54	9.26	59.57	-64.37	2,300.31	-8,305.78	8,576.67	8,507.85	68.82	124.629	
2,700.00	2,697.40	2,633.97	2,633.40	9.62	61.49	-64.40	2,300.31	-8,305.78	8,574.40	8,503.30	71.10	120.596	
2,800.00	2,797.26	2,733.83	2,733.26	9.98	63.41	-64.43	2,300.31	-8,305.78	8,572.14	8,498.76	73.38	116.814	
2,900.00	2,897.13	2,833.70	2,833.13	10.35	65.33	-64.46	2,300.31	-8,305.78	8,569.88	8,494.22	75.67	113.261	
3,000.00	2,996.99	2,933.56	2,932.99	10.71	67.25	-64.49	2,300.31	-8,305.78	8,567.63	8,489.68	77.95	109.915	
3,100.00	3,096.85	3,033.42	3,032.85	11.07	69.17	-64.53	2,300.31	-8,305.78	8,565.37	8,485.14	80.23	106.760	
3,200.00	3,196.72	3,133.41	3,132.83	11.43	71.14	-64.55	2,302.08	-8,305.78	8,563.57	8,481.02	82.55	103.734	
3,300.00	3,296.58	3,233.92	3,233.33	11.80	73.11	-64.58	2,301.91	-8,305.78	8,561.28	8,476.40	84.89	100.855	
3,400.00	3,396.44	3,340.41	3,339.82	12.16	75.08	-64.61	2,301.63	-8,305.78	8,558.97	8,471.75	87.22	98.131	
3,500.00	3,496.31	3,442.88	3,442.29	12.52	77.05	-64.65	2,301.22	-8,305.78	8,556.62	8,467.07	89.55	95.548	
3,600.00	3,596.17	3,545.35	3,544.75	12.88	79.02	-64.68	2,300.68	-8,305.78	8,554.25	8,462.37	91.89	93.097	
3,700.00	3,696.03	3,632.70	3,632.03	13.25	80.78	-64.71	2,300.31	-8,305.78	8,551.91	8,457.90	94.01	90.971	
3,800.00	3,795.89	3,732.56	3,731.89	13.61	83.00	-64.75	2,300.31	-8,305.78	8,549.67	8,453.09	96.58	88.520	
3,900.00	3,895.76	3,832.42	3,831.76	13.97	85.21	-64.78	2,300.31	-8,305.78	8,547.44	8,448.28	99.16	86.197	
4,000.00	3,995.62	3,936.61	3,935.94	14.34	87.52	-64.81	2,301.05	-8,305.78	8,545.40	8,443.56	101.84	83.913	
4,100.00	4,095.48	4,042.31	4,041.63	14.70	89.87	-64.84	2,300.70	-8,305.78	8,543.09	8,438.55	104.54	81.718	
4,200.00	4,195.35	4,132.11	4,131.35	15.06	92.00	-64.87	2,300.31	-8,305.78	8,540.76	8,433.72	107.04	79.790	
4,300.00	4,295.21	4,231.98	4,231.21	15.42	94.89	-64.90	2,300.31	-8,305.78	8,538.54	8,428.25	110.29	77.417	
4,400.00	4,395.07	4,331.84	4,331.07	15.79	97.79	-64.94	2,300.31	-8,305.78	8,536.32	8,422.77	113.55	75.180	
4,500.00	4,494.94	4,442.07	4,441.27	16.15	100.98	-64.96	2,301.66	-8,305.78	8,534.44	8,417.35	117.10	72.883	
4,600.00	4,594.80	4,554.85	4,554.04	16.51	104.24	-65.00	2,300.76	-8,305.78	8,532.03	8,411.31	120.72	70.674	
4,700.00	4,694.66	4,631.73	4,630.66	16.87	106.69	-65.03	2,300.31	-8,305.78	8,529.68	8,406.14	123.54	69.044	
4,800.00	4,794.53	4,731.59	4,730.53	17.24	110.17	-65.06	2,300.31	-8,305.78	8,527.47	8,400.09	127.38	66.946	
4,900.00	4,894.39	4,831.46	4,830.39	17.60	113.65	-65.10	2,300.31	-8,305.78	8,525.26	8,394.05	131.22	64.971	
5,000.00	4,994.25	4,931.32	4,930.25	17.96	117.12	-65.13	2,300.31	-8,305.78	8,523.06	8,388.01	135.05	63.108	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164A - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		535-A027Ua_INC-ONLY					Rule Assigned:						Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,100.00	5,094.12	5,031.18	5,030.12	18.33	120.60	-65.16	2,300.31	-8,305.78	8,520.86	8,381.97	138.89	61.348		
5,200.00	5,193.98	5,131.04	5,129.98	18.69	124.07	-65.19	2,300.31	-8,305.78	8,518.66	8,375.93	142.73	59.683		
5,300.00	5,293.84	5,230.91	5,229.84	19.05	127.55	-65.22	2,300.31	-8,305.78	8,516.46	8,369.89	146.57	58.105		
5,336.91	5,330.71	5,267.77	5,266.71	19.19	128.83	-65.23	2,300.31	-8,305.78	8,515.66	8,367.67	147.99	57.543		
5,400.00	5,393.71	5,330.78	5,329.71	19.41	131.03	-65.25	2,300.31	-8,305.78	8,514.34	8,363.94	150.41	56.608		
5,500.00	5,493.62	5,430.69	5,429.62	19.77	134.51	-65.27	2,300.31	-8,305.78	8,512.57	8,358.32	154.25	55.188		
5,600.00	5,593.57	5,530.63	5,529.57	20.13	137.99	-65.28	2,300.31	-8,305.78	8,511.16	8,353.07	158.09	53.839		
5,700.00	5,693.53	5,630.60	5,629.53	20.49	141.47	-65.29	2,300.31	-8,305.78	8,510.11	8,348.19	161.92	52.556		
5,800.00	5,793.52	5,730.59	5,729.52	20.85	144.95	-65.30	2,300.31	-8,305.78	8,509.43	8,343.67	165.76	51.335		
5,900.00	5,893.52	5,830.58	5,829.52	21.20	148.43	-65.30	2,300.31	-8,305.78	8,509.11	8,339.52	169.60	50.172		
5,936.48	5,930.00	5,867.07	5,866.00	21.33	149.70	-76.06	2,300.31	-8,305.78	8,509.09	8,338.09	171.00	49.762		
6,000.00	5,993.52	5,930.58	5,929.52	21.56	151.91	-76.06	2,300.31	-8,305.78	8,509.09	8,335.66	173.43	49.063		
6,100.00	6,093.52	6,030.58	6,029.52	21.91	155.39	-76.06	2,300.31	-8,305.78	8,509.09	8,331.82	177.27	48.001		
6,200.00	6,193.52	6,060.00	6,057.39	22.27	156.41	-76.06	2,300.31	-8,305.78	8,509.40	8,330.75	178.64	47.633		
6,300.00	6,293.52	6,060.00	6,057.39	22.62	156.41	-76.06	2,300.31	-8,305.78	8,510.83	8,331.86	178.97	47.554		
6,358.48	6,352.00	6,060.00	6,057.39	22.83	156.41	-76.06	2,300.31	-8,305.78	8,512.21	8,333.06	179.15	47.513		
6,400.00	6,393.49	6,060.00	6,057.39	22.97	156.41	-1.46	2,300.31	-8,305.78	8,512.09	8,332.81	179.28	47.480		
6,450.00	6,443.20	6,060.00	6,057.39	23.15	156.41	-1.46	2,300.31	-8,305.78	8,508.61	8,329.20	179.42	47.424		
6,500.00	6,492.36	6,060.00	6,057.39	23.33	156.41	-1.48	2,300.31	-8,305.78	8,501.53	8,321.98	179.55	47.349		
6,550.00	6,540.64	6,060.00	6,057.39	23.51	156.41	-1.51	2,300.31	-8,305.78	8,490.87	8,311.19	179.68	47.256		
6,600.00	6,587.77	6,060.00	6,057.39	23.69	156.41	-1.54	2,300.31	-8,305.78	8,476.68	8,296.88	179.80	47.146		
6,650.00	6,633.44	6,060.00	6,057.39	23.88	156.41	-1.59	2,300.31	-8,305.78	8,459.04	8,279.13	179.90	47.020		
6,700.00	6,677.37	6,060.00	6,057.39	24.07	156.41	-1.65	2,300.31	-8,305.78	8,438.03	8,258.02	180.00	46.877		
6,750.00	6,719.30	6,060.00	6,057.39	24.26	156.41	-1.72	2,300.31	-8,305.78	8,413.76	8,233.67	180.09	46.720		
6,800.00	6,758.97	6,060.00	6,057.39	24.46	156.41	-1.81	2,300.31	-8,305.78	8,386.34	8,206.18	180.17	46.547		
6,850.00	6,796.12	6,060.00	6,057.39	24.67	156.41	-1.92	2,300.31	-8,305.78	8,355.93	8,175.70	180.23	46.362		
6,900.00	6,830.54	6,060.00	6,057.39	24.88	156.41	-2.06	2,300.31	-8,305.78	8,322.67	8,142.38	180.29	46.163		
6,950.00	6,862.00	6,060.00	6,057.39	25.11	156.41	-2.24	2,300.31	-8,305.78	8,286.74	8,106.41	180.34	45.952		
7,000.00	6,890.33	6,060.00	6,057.39	25.34	156.41	-2.46	2,300.31	-8,305.78	8,248.32	8,067.95	180.37	45.730		
7,050.00	6,915.33	6,060.00	6,057.39	25.59	156.41	-2.75	2,300.31	-8,305.78	8,207.63	8,027.23	180.40	45.497		
7,100.00	6,936.86	6,060.00	6,057.39	25.85	156.41	-3.13	2,300.31	-8,305.78	8,164.86	7,984.45	180.42	45.255		
7,150.00	6,954.79	6,060.00	6,057.39	26.12	156.41	-3.65	2,300.31	-8,305.78	8,120.27	7,939.84	180.43	45.005		
7,200.00	6,968.99	6,060.00	6,057.39	26.40	156.41	-4.42	2,300.31	-8,305.78	8,074.10	7,893.66	180.44	44.747		
7,250.00	6,979.40	6,060.00	6,057.39	26.69	156.41	-5.62	2,300.31	-8,305.78	8,026.60	7,846.16	180.44	44.483		
7,300.00	6,985.94	6,060.00	6,057.39	27.00	156.41	-7.75	2,300.31	-8,305.78	7,978.05	7,797.61	180.44	44.214		
7,350.00	6,988.56	6,060.00	6,057.39	27.31	156.41	-12.54	2,300.31	-8,305.78	7,928.74	7,748.29	180.44	43.941		
7,358.93	6,988.62	6,060.00	6,057.39	27.36	156.41	-14.08	2,300.31	-8,305.78	7,919.87	7,739.43	180.44	43.892		
7,400.00	6,988.59	6,060.00	6,057.39	27.63	156.41	-14.08	2,300.31	-8,305.78	7,879.06	7,698.62	180.44	43.666		
7,500.00	6,988.52	6,060.00	6,057.39	28.33	156.41	-14.08	2,300.31	-8,305.78	7,779.71	7,599.27	180.44	43.116		
7,600.00	6,988.45	6,060.00	6,057.39	29.10	156.41	-14.08	2,300.31	-8,305.78	7,680.37	7,499.94	180.43	42.567		
7,658.93	6,988.41	6,060.00	6,057.39	29.59	156.41	-14.08	2,300.31	-8,305.78	7,621.84	7,441.41	180.43	42.243		
7,700.00	6,988.38	6,060.00	6,057.39	29.94	156.41	-7.14	2,300.31	-8,305.78	7,581.04	7,400.61	180.43	42.017		
7,800.00	6,988.31	6,060.00	6,057.39	30.84	156.41	10.08	2,300.31	-8,305.78	7,481.70	7,301.29	180.42	41.469		
7,900.00	6,988.24	6,060.00	6,057.39	31.79	156.41	25.49	2,300.31	-8,305.78	7,382.46	7,202.05	180.40	40.922		
8,000.00	6,988.16	6,060.00	6,057.39	32.78	156.41	37.63	2,300.31	-8,305.78	7,283.43	7,103.05	180.38	40.378		
8,100.00	6,988.09	6,060.00	6,057.39	33.82	156.41	46.68	2,300.31	-8,305.78	7,184.74	7,004.39	180.35	39.837		
8,200.00	6,988.01	6,060.00	6,057.39	34.88	156.41	53.35	2,300.31	-8,305.78	7,086.55	6,906.23	180.32	39.300		
8,300.00	6,987.94	6,060.00	6,057.39	35.98	156.41	58.35	2,300.31	-8,305.78	6,988.98	6,808.70	180.29	38.766		
8,400.00	6,987.86	6,060.00	6,057.39	37.11	156.41	62.18	2,300.31	-8,305.78	6,892.19	6,711.94	180.26	38.236		
8,416.35	6,987.85	6,060.00	6,057.39	37.29	156.41	62.72	2,300.31	-8,305.78	6,876.45	6,696.20	180.25	38.149		
8,500.00	6,987.78	6,060.00	6,057.39	38.25	156.41	62.72	2,300.31	-8,305.78	6,796.03	6,615.79	180.23	37.707		
8,600.00	6,987.70	6,060.00	6,057.39	39.43	156.41	62.72	2,300.31	-8,305.78	6,699.98	6,519.76	180.22	37.177		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164A - OH - OH-INC													Offset Site Error:	0.00 usft		
Survey Program:		535-A027Ua_INC-ONLY					Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
8,700.00	6,987.62	6,060.00	6,057.39	40.64	156.41	62.72	2,300.31	-8,305.78	6,604.05	6,423.84	180.21	36.646				
8,800.00	6,987.55	6,060.00	6,057.39	41.88	156.41	62.72	2,300.31	-8,305.78	6,508.25	6,328.02	180.22	36.112				
8,900.00	6,987.47	6,060.00	6,057.39	43.14	156.41	62.72	2,300.31	-8,305.78	6,412.57	6,232.33	180.24	35.577				
9,000.00	6,987.39	6,060.00	6,057.39	44.42	156.41	62.72	2,300.31	-8,305.78	6,317.03	6,136.75	180.28	35.041				
9,100.00	6,987.31	6,060.00	6,057.39	45.72	156.41	62.72	2,300.31	-8,305.78	6,221.62	6,041.30	180.33	34.502				
9,200.00	6,987.23	6,060.00	6,057.39	47.04	156.41	62.72	2,300.31	-8,305.78	6,126.37	5,945.97	180.39	33.962				
9,300.00	6,987.15	6,060.00	6,057.39	48.38	156.41	62.72	2,300.31	-8,305.78	6,031.26	5,850.79	180.47	33.419				
9,400.00	6,987.08	6,060.00	6,057.39	49.73	156.41	62.72	2,300.31	-8,305.78	5,936.32	5,755.75	180.57	32.875				
9,500.00	6,987.00	6,060.00	6,057.39	51.10	156.41	62.72	2,300.31	-8,305.78	5,841.55	5,660.86	180.69	32.329				
9,600.00	6,986.92	6,060.00	6,057.39	52.48	156.41	62.72	2,300.31	-8,305.78	5,746.95	5,566.12	180.83	31.781				
9,700.00	6,986.84	6,060.00	6,057.39	53.87	156.41	62.72	2,300.31	-8,305.78	5,652.54	5,471.55	180.99	31.231				
9,800.00	6,986.76	6,060.00	6,057.39	55.28	156.41	62.72	2,300.31	-8,305.78	5,558.33	5,377.15	181.18	30.679				
9,900.00	6,986.68	6,060.00	6,057.39	56.69	156.41	62.72	2,300.31	-8,305.78	5,464.32	5,282.93	181.38	30.126				
10,000.00	6,986.61	6,060.00	6,057.39	58.12	156.41	62.72	2,300.31	-8,305.78	5,370.52	5,188.90	181.62	29.570				
10,100.00	6,986.53	6,060.00	6,057.39	59.55	156.41	62.72	2,300.31	-8,305.78	5,276.96	5,095.07	181.89	29.012				
10,200.00	6,986.45	6,060.00	6,057.39	61.00	156.41	62.72	2,300.31	-8,305.78	5,183.63	5,001.45	182.18	28.453				
10,300.00	6,986.37	6,060.00	6,057.39	62.45	156.41	62.72	2,300.31	-8,305.78	5,090.56	4,908.06	182.51	27.892				
10,400.00	6,986.29	6,060.00	6,057.39	63.90	156.41	62.72	2,300.31	-8,305.78	4,997.76	4,814.89	182.87	27.330				
10,500.00	6,986.21	6,060.00	6,057.39	65.37	156.41	62.72	2,300.31	-8,305.78	4,905.24	4,721.98	183.26	26.766				
10,600.00	6,986.14	6,060.00	6,057.39	66.84	156.41	62.72	2,300.31	-8,305.78	4,813.02	4,629.32	183.69	26.201				
10,700.00	6,986.06	6,060.00	6,057.39	68.32	156.41	62.72	2,300.31	-8,305.78	4,721.11	4,536.95	184.17	25.635				
10,800.00	6,985.98	6,060.00	6,057.39	69.80	156.41	62.72	2,300.31	-8,305.78	4,629.54	4,444.86	184.68	25.068				
10,900.00	6,985.90	6,060.00	6,057.39	71.29	156.41	62.72	2,300.31	-8,305.78	4,538.33	4,353.09	185.24	24.500				
11,000.00	6,985.82	6,060.00	6,057.39	72.78	156.41	62.72	2,300.31	-8,305.78	4,447.50	4,261.66	185.84	23.932				
11,100.00	6,985.75	6,060.00	6,057.39	74.28	156.41	62.72	2,300.31	-8,305.78	4,357.06	4,170.57	186.49	23.363				
11,200.00	6,985.67	6,060.00	6,057.39	75.78	156.41	62.72	2,300.31	-8,305.78	4,267.06	4,079.86	187.19	22.795				
11,300.00	6,985.59	6,060.00	6,057.39	77.29	156.41	62.72	2,300.31	-8,305.78	4,177.50	3,989.56	187.94	22.227				
11,400.00	6,985.51	6,060.00	6,057.39	78.80	156.41	62.72	2,300.31	-8,305.78	4,088.44	3,899.68	188.75	21.660				
11,500.00	6,985.43	6,060.00	6,057.39	80.31	156.41	62.72	2,300.31	-8,305.78	3,999.89	3,810.27	189.62	21.094				
11,600.00	6,985.35	6,060.00	6,057.39	81.83	156.41	62.72	2,300.31	-8,305.78	3,911.89	3,721.34	190.55	20.530				
11,700.00	6,985.28	6,060.00	6,057.39	83.35	156.41	62.72	2,300.31	-8,305.78	3,824.48	3,632.94	191.54	19.967				
11,800.00	6,985.20	6,060.00	6,057.39	84.87	156.41	62.72	2,300.31	-8,305.78	3,737.70	3,545.11	192.59	19.407				
11,900.00	6,985.12	6,060.00	6,057.39	86.40	156.41	62.72	2,300.31	-8,305.78	3,651.60	3,457.88	193.71	18.850				
12,000.00	6,985.04	6,060.00	6,057.39	87.93	156.41	62.72	2,300.31	-8,305.78	3,566.22	3,371.31	194.91	18.297				
12,100.00	6,984.96	6,060.00	6,057.39	89.46	156.41	62.72	2,300.31	-8,305.78	3,481.62	3,285.45	196.18	17.747				
12,200.00	6,984.88	6,060.00	6,057.39	90.99	156.41	62.72	2,300.31	-8,305.78	3,397.86	3,200.34	197.52	17.202				
12,300.00	6,984.81	6,060.00	6,057.39	92.53	156.41	62.72	2,300.31	-8,305.78	3,315.00	3,116.05	198.95	16.662				
12,400.00	6,984.73	6,060.00	6,057.39	94.07	156.41	62.72	2,300.31	-8,305.78	3,233.11	3,032.65	200.46	16.129				
12,500.00	6,984.65	6,060.00	6,057.39	95.61	156.41	62.72	2,300.31	-8,305.78	3,152.27	2,950.21	202.05	15.601				
12,600.00	6,984.57	6,060.00	6,057.39	97.15	156.41	62.72	2,300.31	-8,305.78	3,072.55	2,868.81	203.74	15.081				
12,700.00	6,984.49	6,060.00	6,057.39	98.70	156.41	62.72	2,300.31	-8,305.78	2,994.05	2,788.54	205.51	14.569				
12,800.00	6,984.41	6,060.00	6,057.39	100.25	156.41	62.72	2,300.31	-8,305.78	2,916.87	2,709.48	207.38	14.065				
12,900.00	6,984.34	6,060.00	6,057.39	101.80	156.41	62.72	2,300.31	-8,305.78	2,841.10	2,631.76	209.34	13.571				
13,000.00	6,984.26	6,060.00	6,057.39	103.35	156.41	62.72	2,300.31	-8,305.78	2,766.88	2,555.48	211.40	13.088				
13,100.00	6,984.18	6,060.00	6,057.39	104.90	156.41	62.72	2,300.31	-8,305.78	2,694.33	2,480.77	213.56	12.616				
13,200.00	6,984.10	6,060.00	6,057.39	106.45	156.41	62.72	2,300.31	-8,305.78	2,623.58	2,407.76	215.82	12.156				
13,300.00	6,984.02	6,060.00	6,057.39	108.01	156.41	62.72	2,300.31	-8,305.78	2,554.79	2,336.62	218.17	11.710				
13,400.00	6,983.94	6,060.00	6,057.39	109.56	156.41	62.72	2,300.31	-8,305.78	2,488.12	2,267.50	220.62	11.278				
13,500.00	6,983.87	6,060.00	6,057.39	111.12	156.41	62.72	2,300.31	-8,305.78	2,423.74	2,200.58	223.16	10.861				
13,600.00	6,983.79	6,060.00	6,057.39	112.68	156.41	62.72	2,300.31	-8,305.78	2,361.84	2,136.05	225.78	10.461				
13,700.00	6,983.71	6,060.00	6,057.39	114.24	156.41	62.72	2,300.31	-8,305.78	2,302.62	2,074.13	228.49	10.078				
13,800.00	6,983.63	6,060.00	6,057.39	115.80	156.41	62.72	2,300.31	-8,305.78	2,246.29	2,015.03	231.26	9.713				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164A - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		535-A027Ua_INC-ONLY						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
13,900.00	6,983.55	6,060.00	6,057.39	117.37	156.41	62.72	2,300.31	-8,305.78	2,193.08	1,958.98	234.09	9.368		
14,000.00	6,983.47	6,060.00	6,057.39	118.93	156.41	62.72	2,300.31	-8,305.78	2,143.21	1,906.24	236.97	9.044		
14,100.00	6,983.40	6,060.00	6,057.39	120.50	156.41	62.72	2,300.31	-8,305.78	2,096.93	1,857.06	239.87	8.742		
14,200.00	6,983.32	6,060.00	6,057.39	122.06	156.41	62.72	2,300.31	-8,305.78	2,054.48	1,811.70	242.78	8.462		
14,300.00	6,983.24	6,060.00	6,057.39	123.63	156.41	62.72	2,300.31	-8,305.78	2,016.10	1,770.43	245.67	8.207		
14,400.00	6,983.16	6,060.00	6,057.39	125.20	156.41	62.72	2,300.31	-8,305.78	1,982.03	1,733.51	248.51	7.976		
14,500.00	6,983.08	6,060.00	6,057.39	126.77	156.41	62.72	2,300.31	-8,305.78	1,952.49	1,701.19	251.29	7.770		
14,600.00	6,983.00	6,060.00	6,057.39	128.33	156.41	62.72	2,300.31	-8,305.78	1,927.69	1,673.71	253.97	7.590		
14,700.00	6,982.93	6,060.00	6,057.39	129.91	156.41	62.72	2,300.31	-8,305.78	1,907.81	1,651.28	256.53	7.437		
14,800.00	6,982.85	6,060.00	6,057.39	131.48	156.41	62.72	2,300.31	-8,305.78	1,893.02	1,634.09	258.93	7.311		
14,900.00	6,982.77	6,060.00	6,057.39	133.05	156.41	62.72	2,300.31	-8,305.78	1,883.42	1,622.28	261.14	7.212		
15,000.00	6,982.69	6,060.00	6,057.39	134.62	156.41	62.72	2,300.31	-8,305.78	1,879.11	1,615.95	263.16	7.141		
15,031.10	6,982.67	6,060.00	6,057.39	135.11	156.41	62.72	2,300.31	-8,305.78	1,878.85	1,615.11	263.74	7.124	CC, ES	
15,100.00	6,982.61	6,060.00	6,057.39	136.20	156.41	62.72	2,300.31	-8,305.78	1,880.11	1,615.17	264.95	7.096		
15,200.00	6,982.54	6,060.00	6,057.39	137.77	156.41	62.72	2,300.31	-8,305.78	1,886.43	1,619.93	266.49	7.079	SF	
15,300.00	6,982.46	6,060.00	6,057.39	139.35	156.41	62.72	2,300.31	-8,305.78	1,897.99	1,630.20	267.79	7.088		
15,400.00	6,982.38	6,060.00	6,057.39	140.92	156.41	62.72	2,300.31	-8,305.78	1,914.72	1,645.88	268.84	7.122		
15,500.00	6,982.30	6,060.00	6,057.39	142.50	156.41	62.72	2,300.31	-8,305.78	1,936.47	1,666.84	269.63	7.182		
15,600.00	6,982.22	6,060.00	6,057.39	144.07	156.41	62.72	2,300.31	-8,305.78	1,963.08	1,692.90	270.18	7.266		
15,700.00	6,982.14	6,060.00	6,057.39	145.65	156.41	62.72	2,300.31	-8,305.78	1,994.36	1,723.87	270.49	7.373		
15,800.00	6,982.07	6,060.00	6,057.39	147.23	156.41	62.72	2,300.31	-8,305.78	2,030.08	1,759.50	270.58	7.503		
15,900.00	6,981.99	6,060.00	6,057.39	148.81	156.41	62.72	2,300.31	-8,305.78	2,070.02	1,799.56	270.47	7.653		
16,000.00	6,981.91	6,060.00	6,057.39	150.39	156.41	62.72	2,300.31	-8,305.78	2,113.95	1,843.77	270.18	7.824		
16,100.00	6,981.83	6,060.00	6,057.39	151.97	156.41	62.72	2,300.31	-8,305.78	2,161.61	1,891.89	269.72	8.014		
16,200.00	6,981.75	6,060.00	6,057.39	153.55	156.41	62.72	2,300.31	-8,305.78	2,212.76	1,943.64	269.13	8.222		
16,300.00	6,981.67	6,060.00	6,057.39	155.13	156.41	62.72	2,300.31	-8,305.78	2,267.17	1,998.76	268.41	8.447		
16,400.00	6,981.60	6,060.00	6,057.39	156.71	156.41	62.72	2,300.31	-8,305.78	2,324.62	2,057.02	267.59	8.687		
16,500.00	6,981.52	6,060.00	6,057.39	158.29	156.41	62.72	2,300.31	-8,305.78	2,384.87	2,118.18	266.70	8.942		
16,600.00	6,981.44	6,060.00	6,057.39	159.88	156.41	62.72	2,300.31	-8,305.78	2,447.73	2,182.00	265.73	9.211		
16,700.00	6,981.36	6,060.00	6,057.39	161.46	156.41	62.72	2,300.31	-8,305.78	2,513.00	2,248.28	264.72	9.493		
16,800.00	6,981.28	6,060.00	6,057.39	163.04	156.41	62.72	2,300.31	-8,305.78	2,580.49	2,316.83	263.66	9.787		
16,900.00	6,981.20	6,060.00	6,057.39	164.62	156.41	62.72	2,300.31	-8,305.78	2,650.04	2,387.46	262.58	10.092		
17,000.00	6,981.13	6,060.00	6,057.39	166.21	156.41	62.72	2,300.31	-8,305.78	2,721.48	2,460.00	261.48	10.408		
17,100.00	6,981.05	6,060.00	6,057.39	167.79	156.41	62.72	2,300.31	-8,305.78	2,794.68	2,534.30	260.38	10.733		
17,200.00	6,980.97	6,060.00	6,057.39	169.38	156.41	62.72	2,300.31	-8,305.78	2,869.50	2,610.22	259.27	11.067		
17,300.00	6,980.89	6,060.00	6,057.39	170.96	156.41	62.72	2,300.31	-8,305.78	2,945.81	2,687.64	258.17	11.410		
17,400.00	6,980.81	6,060.00	6,057.39	172.55	156.41	62.72	2,300.31	-8,305.78	3,023.50	2,766.42	257.08	11.761		
17,500.00	6,980.73	6,060.00	6,057.39	174.13	156.41	62.72	2,300.31	-8,305.78	3,102.47	2,846.46	256.01	12.119		
17,600.00	6,980.66	6,060.00	6,057.39	175.72	156.41	62.72	2,300.31	-8,305.78	3,182.63	2,927.68	254.95	12.483		
17,700.00	6,980.58	6,060.00	6,057.39	177.31	156.41	62.72	2,300.31	-8,305.78	3,263.87	3,009.96	253.91	12.854		
17,800.00	6,980.50	6,060.00	6,057.39	178.89	156.41	62.72	2,300.31	-8,305.78	3,346.14	3,093.25	252.89	13.231		
17,900.00	6,980.42	6,060.00	6,057.39	180.48	156.41	62.72	2,300.31	-8,305.78	3,429.35	3,177.45	251.90	13.614		
18,000.00	6,980.34	6,060.00	6,057.39	182.07	156.41	62.72	2,300.31	-8,305.78	3,513.43	3,262.50	250.93	14.002		
18,100.00	6,980.26	6,060.00	6,057.39	183.66	156.41	62.72	2,300.31	-8,305.78	3,598.33	3,348.34	249.99	14.394		
18,200.00	6,980.19	6,060.00	6,057.39	185.24	156.41	62.72	2,300.31	-8,305.78	3,683.98	3,434.91	249.07	14.791		
18,300.00	6,980.11	6,060.00	6,057.39	186.83	156.41	62.72	2,300.31	-8,305.78	3,770.34	3,522.17	248.18	15.192		
18,400.00	6,980.03	6,060.00	6,057.39	188.42	156.41	62.72	2,300.31	-8,305.78	3,857.37	3,610.05	247.31	15.597		
18,500.00	6,979.95	6,060.00	6,057.39	190.01	156.41	62.72	2,300.31	-8,305.78	3,945.00	3,698.53	246.47	16.006		
18,600.00	6,979.87	6,060.00	6,057.39	191.60	156.41	62.72	2,300.31	-8,305.78	4,033.21	3,787.56	245.66	16.418		
18,700.00	6,979.79	6,060.00	6,057.39	193.19	156.41	62.72	2,300.31	-8,305.78	4,121.96	3,877.10	244.87	16.833		
18,800.00	6,979.72	6,060.00	6,057.39	194.78	156.41	62.72	2,300.31	-8,305.78	4,211.22	3,967.12	244.10	17.252		
18,900.00	6,979.64	6,060.00	6,057.39	196.37	156.41	62.72	2,300.31	-8,305.78	4,300.94	4,057.58	243.36	17.673		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164A - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		535-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
19,000.00	6,979.56	6,060.00	6,057.39	197.96	156.41	62.72	2,300.31	-8,305.78	4,391.12	4,148.47	242.64	18.097	
19,100.00	6,979.48	6,060.00	6,057.39	199.55	156.41	62.72	2,300.31	-8,305.78	4,481.70	4,239.75	241.95	18.523	
19,200.00	6,979.40	6,060.00	6,057.39	201.14	156.41	62.72	2,300.31	-8,305.78	4,572.68	4,331.41	241.28	18.952	
19,300.00	6,979.33	6,060.00	6,057.39	202.73	156.41	62.72	2,300.31	-8,305.78	4,664.03	4,423.41	240.63	19.383	
19,400.00	6,979.25	6,060.00	6,057.39	204.32	156.41	62.72	2,300.31	-8,305.78	4,755.73	4,515.73	240.00	19.816	
19,500.00	6,979.17	6,060.00	6,057.39	205.91	156.41	62.72	2,300.31	-8,305.78	4,847.76	4,608.37	239.39	20.250	
19,600.00	6,979.09	6,060.00	6,057.39	207.50	156.41	62.72	2,300.31	-8,305.78	4,940.09	4,701.29	238.80	20.687	
19,700.00	6,979.01	6,060.00	6,057.39	209.09	156.41	62.72	2,300.31	-8,305.78	5,032.72	4,794.49	238.23	21.125	
19,800.00	6,978.93	6,060.00	6,057.39	210.69	156.41	62.72	2,300.31	-8,305.78	5,125.63	4,887.95	237.68	21.565	
19,900.00	6,978.86	6,060.00	6,057.39	212.28	156.41	62.72	2,300.31	-8,305.78	5,218.80	4,981.65	237.15	22.007	
20,000.00	6,978.78	6,060.00	6,057.39	213.87	156.41	62.72	2,300.31	-8,305.78	5,312.21	5,075.58	236.63	22.449	
20,100.00	6,978.70	6,060.00	6,057.39	215.46	156.41	62.72	2,300.31	-8,305.78	5,405.86	5,169.73	236.13	22.893	
20,200.00	6,978.62	6,060.00	6,057.39	217.05	156.41	62.72	2,300.31	-8,305.78	5,499.74	5,264.09	235.65	23.339	
20,300.00	6,978.54	6,060.00	6,057.39	218.65	156.41	62.72	2,300.31	-8,305.78	5,593.83	5,358.65	235.18	23.785	
20,400.00	6,978.46	6,060.00	6,057.39	220.24	156.41	62.72	2,300.31	-8,305.78	5,688.12	5,453.39	234.73	24.233	
20,500.00	6,978.39	6,060.00	6,057.39	221.83	156.41	62.72	2,300.31	-8,305.78	5,782.60	5,548.31	234.29	24.681	
20,600.00	6,978.31	6,060.00	6,057.39	223.43	156.41	62.72	2,300.31	-8,305.78	5,877.26	5,643.40	233.87	25.131	
20,700.00	6,978.23	6,060.00	6,057.39	225.02	156.41	62.72	2,300.31	-8,305.78	5,972.10	5,738.64	233.46	25.581	
20,800.00	6,978.15	6,060.00	6,057.39	226.61	156.41	62.72	2,300.31	-8,305.78	6,067.11	5,834.04	233.06	26.032	
20,900.00	6,978.07	6,060.00	6,057.39	228.21	156.41	62.72	2,300.31	-8,305.78	6,162.27	5,929.59	232.68	26.484	
21,000.00	6,977.99	6,060.00	6,057.39	229.80	156.41	62.72	2,300.31	-8,305.78	6,257.58	6,025.28	232.30	26.937	
21,100.00	6,977.92	6,060.00	6,057.39	231.39	156.41	62.72	2,300.31	-8,305.78	6,353.04	6,121.09	231.94	27.390	
21,200.00	6,977.84	6,060.00	6,057.39	232.99	156.41	62.72	2,300.31	-8,305.78	6,448.63	6,217.04	231.60	27.844	
21,300.00	6,977.76	6,060.00	6,057.39	234.58	156.41	62.72	2,300.31	-8,305.78	6,544.36	6,313.10	231.26	28.299	
21,400.00	6,977.68	6,060.00	6,057.39	236.18	156.41	62.72	2,300.31	-8,305.78	6,640.21	6,409.28	230.93	28.754	
21,500.00	6,977.60	6,060.00	6,057.39	237.77	156.41	62.72	2,300.31	-8,305.78	6,736.18	6,505.57	230.61	29.210	
21,600.00	6,977.52	6,060.00	6,057.39	239.37	156.41	62.72	2,300.31	-8,305.78	6,832.27	6,601.96	230.31	29.666	
21,700.00	6,977.45	6,060.00	6,057.39	240.96	156.41	62.72	2,300.31	-8,305.78	6,928.47	6,698.46	230.01	30.122	
21,800.00	6,977.37	6,060.00	6,057.39	242.56	156.41	62.72	2,300.31	-8,305.78	7,024.78	6,795.05	229.72	30.579	
21,900.00	6,977.29	6,060.00	6,057.39	244.15	156.41	62.72	2,300.31	-8,305.78	7,121.18	6,891.74	229.45	31.036	
22,000.00	6,977.21	6,060.00	6,057.39	245.75	156.41	62.72	2,300.31	-8,305.78	7,217.69	6,988.51	229.18	31.494	
22,100.00	6,977.13	6,060.00	6,057.39	247.34	156.41	62.72	2,300.31	-8,305.78	7,314.29	7,085.37	228.91	31.952	
22,200.00	6,977.05	6,060.00	6,057.39	248.94	156.41	62.72	2,300.31	-8,305.78	7,410.98	7,182.31	228.66	32.410	
22,269.73	6,977.00	6,060.00	6,057.39	250.05	156.41	62.72	2,300.31	-8,305.78	7,478.44	7,249.95	228.49	32.730	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164B - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 563-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-74.57	2,302.17	-8,339.86	8,651.99				
100.00	100.00	38.07	38.07	0.25	0.68	-74.57	2,302.15	-8,339.87	8,651.78	8,650.86	0.93	9,344.866	
200.00	200.00	133.25	133.25	0.61	2.37	-74.57	2,301.93	-8,339.98	8,651.83	8,648.86	2.97	2,912.044	
300.00	300.00	228.43	228.42	0.97	4.06	-74.57	2,301.45	-8,340.22	8,651.94	8,646.92	5.02	1,724.788	
400.00	400.00	323.60	323.59	1.33	5.75	-74.58	2,300.72	-8,340.58	8,652.10	8,645.04	7.06	1,225.276	
500.00	500.00	418.77	418.75	1.68	7.44	-74.59	2,299.74	-8,341.07	8,652.32	8,643.21	9.11	950.140	
600.00	600.00	513.92	513.90	2.04	9.13	-74.59	2,298.51	-8,341.68	8,652.59	8,641.44	11.15	775.931	
700.00	700.00	563.00	562.97	2.40	10.00	-74.60	2,297.77	-8,342.04	8,653.05	8,640.67	12.38	698.994	
800.00	799.98	612.46	612.41	2.76	10.18	-63.85	2,296.80	-8,342.77	8,653.33	8,640.44	12.88	671.715	
849.89	849.82	654.00	653.92	2.94	10.34	-63.87	2,295.67	-8,343.92	8,653.31	8,640.13	13.18	656.591	
900.00	899.86	654.00	653.92	3.12	10.34	-63.87	2,295.67	-8,343.92	8,653.08	8,639.73	13.36	647.826	
913.35	913.19	654.00	653.92	3.17	10.34	-63.87	2,295.67	-8,343.92	8,653.07	8,639.67	13.40	645.532	
1,000.00	999.73	654.00	653.92	3.48	10.34	-63.87	2,295.67	-8,343.92	8,653.51	8,639.80	13.71	631.094	
1,100.00	1,099.59	654.00	653.92	3.84	10.34	-63.87	2,295.67	-8,343.92	8,655.09	8,641.02	14.07	615.325	
1,200.00	1,199.45	744.00	743.66	4.20	10.73	-63.94	2,291.57	-8,349.26	8,657.33	8,642.71	14.62	592.252	
1,300.00	1,299.32	744.00	743.66	4.56	10.73	-63.94	2,291.57	-8,349.26	8,660.18	8,645.21	14.97	578.471	
1,400.00	1,399.18	744.00	743.66	4.92	10.73	-63.94	2,291.57	-8,349.26	8,664.19	8,648.87	15.32	565.462	
1,500.00	1,499.04	798.22	797.54	5.28	10.94	-63.98	2,288.11	-8,354.13	8,668.98	8,653.19	15.79	549.127	
1,600.00	1,598.91	835.00	834.06	5.64	11.08	-64.02	2,285.55	-8,357.72	8,674.42	8,658.21	16.21	535.087	
1,700.00	1,698.77	882.56	881.19	6.00	11.21	-64.07	2,281.77	-8,362.81	8,680.52	8,663.88	16.64	521.796	
1,800.00	1,798.63	928.00	926.11	6.36	11.33	-64.12	2,277.46	-8,368.22	8,687.33	8,670.27	17.06	509.346	
1,900.00	1,898.49	928.00	926.11	6.72	11.33	-64.12	2,277.46	-8,368.22	8,694.98	8,677.58	17.40	499.677	
2,000.00	1,998.36	1,023.00	1,019.59	7.09	11.68	-64.24	2,266.74	-8,381.29	8,703.26	8,685.31	17.94	485.043	
2,100.00	2,098.22	1,023.00	1,019.59	7.45	11.68	-64.24	2,266.74	-8,381.29	8,712.13	8,693.84	18.29	476.429	
2,200.00	2,198.08	1,023.00	1,019.59	7.81	11.68	-64.24	2,266.74	-8,381.29	8,722.14	8,703.51	18.63	468.261	
2,300.00	2,297.95	1,072.44	1,068.00	8.17	11.85	-64.30	2,260.56	-8,389.20	8,732.70	8,713.61	19.09	457.564	
2,400.00	2,397.81	1,118.00	1,112.44	8.53	12.01	-64.37	2,254.70	-8,397.33	8,744.41	8,724.88	19.53	447.664	
2,500.00	2,497.67	1,118.00	1,112.44	8.90	12.01	-64.37	2,254.70	-8,397.33	8,756.76	8,736.89	19.87	440.746	
2,600.00	2,597.54	1,154.83	1,148.25	9.26	12.13	-64.42	2,249.75	-8,404.40	8,770.02	8,749.72	20.30	432.095	
2,700.00	2,697.40	1,210.00	1,201.68	9.62	12.31	-64.51	2,241.84	-8,415.60	8,784.07	8,763.29	20.77	422.870	
2,800.00	2,797.26	1,210.00	1,201.68	9.98	12.31	-64.51	2,241.84	-8,415.60	8,798.76	8,777.66	21.10	416.987	
2,900.00	2,897.13	1,256.72	1,246.71	10.35	12.49	-64.59	2,234.53	-8,425.71	8,814.20	8,792.63	21.57	408.690	
3,000.00	2,996.99	1,305.00	1,292.95	10.71	12.68	-64.67	2,226.25	-8,436.83	8,830.47	8,808.43	22.04	400.700	
3,100.00	3,096.85	1,305.00	1,292.95	11.07	12.68	-64.67	2,226.25	-8,436.83	8,847.45	8,825.09	22.36	395.691	
3,200.00	3,196.72	1,305.00	1,292.95	11.43	12.68	-64.67	2,226.25	-8,436.83	8,865.53	8,842.85	22.68	390.934	
3,300.00	3,296.58	1,395.00	1,378.32	11.80	13.07	-64.84	2,209.39	-8,459.78	8,884.24	8,860.92	23.32	380.977	
3,400.00	3,396.44	1,395.00	1,378.32	12.16	13.07	-64.84	2,209.39	-8,459.78	8,903.54	8,879.90	23.63	376.714	
3,500.00	3,496.31	1,395.00	1,378.32	12.52	13.07	-64.84	2,209.39	-8,459.78	8,923.92	8,899.97	23.95	372.666	
3,600.00	3,596.17	1,433.75	1,414.67	12.88	13.27	-64.92	2,201.47	-8,470.62	8,945.07	8,920.65	24.43	366.170	
3,700.00	3,696.03	1,487.00	1,464.08	13.25	13.55	-65.04	2,189.44	-8,486.39	8,967.19	8,942.22	24.98	359.005	
3,800.00	3,795.89	1,487.00	1,464.08	13.61	13.55	-65.04	2,189.44	-8,486.39	8,989.82	8,964.54	25.28	355.572	
3,900.00	3,895.76	1,487.00	1,464.08	13.97	13.55	-65.04	2,189.44	-8,486.39	9,013.50	8,987.92	25.58	352.314	
4,000.00	3,995.62	1,530.18	1,503.70	14.34	13.78	-65.14	2,178.90	-8,499.93	9,037.80	9,011.70	26.10	346.244	
4,100.00	4,095.48	1,578.00	1,547.14	14.70	14.04	-65.26	2,166.65	-8,515.74	9,063.18	9,036.53	26.65	340.129	
4,200.00	4,195.35	1,578.00	1,547.14	15.06	14.04	-65.26	2,166.65	-8,515.74	9,089.07	9,062.13	26.94	337.375	
4,300.00	4,295.21	1,578.00	1,547.14	15.42	14.04	-65.26	2,166.65	-8,515.74	9,115.98	9,088.75	27.23	334.766	
4,400.00	4,395.07	1,578.00	1,547.14	15.79	14.04	-65.26	2,166.65	-8,515.74	9,143.91	9,116.39	27.52	332.295	
4,500.00	4,494.94	1,622.15	1,586.77	16.15	14.27	-65.37	2,154.85	-8,531.22	9,172.24	9,144.18	28.06	326.919	
4,600.00	4,594.80	1,670.00	1,629.11	16.51	14.53	-65.49	2,141.55	-8,549.11	9,201.99	9,173.37	28.62	321.534	
4,700.00	4,694.66	1,670.00	1,629.11	16.87	14.53	-65.49	2,141.55	-8,549.11	9,232.03	9,203.13	28.90	319.461	
4,800.00	4,794.53	1,670.00	1,629.11	17.24	14.53	-65.49	2,141.55	-8,549.11	9,263.05	9,233.87	29.17	317.504	
4,900.00	4,894.39	1,670.00	1,629.11	17.60	14.53	-65.49	2,141.55	-8,549.11	9,295.04	9,265.60	29.45	315.657	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		563-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,000.00	4,994.25	1,670.00	1,629.11	17.96	14.53	-65.49	2,141.55	-8,549.11	9,328.00	9,298.28	29.71	313.916		
5,100.00	5,094.12	1,716.93	1,670.11	18.33	14.74	-65.62	2,128.30	-8,567.69	9,361.28	9,331.00	30.28	309.185		
5,200.00	5,193.98	1,763.00	1,709.97	18.69	14.96	-65.74	2,115.39	-8,586.85	9,395.89	9,365.05	30.83	304.718		
5,300.00	5,293.84	1,763.00	1,709.97	19.05	14.96	-65.74	2,115.39	-8,586.85	9,430.82	9,399.73	31.10	303.282		
5,336.91	5,330.71	1,763.00	1,709.97	19.19	14.96	-65.74	2,115.39	-8,586.85	9,443.96	9,412.77	31.19	302.774		
5,400.00	5,393.71	1,763.00	1,709.97	19.41	14.96	-65.85	2,115.39	-8,586.85	9,466.76	9,435.40	31.35	301.939		
5,500.00	5,493.62	1,763.00	1,709.97	19.77	14.96	-66.04	2,115.39	-8,586.85	9,503.91	9,472.31	31.61	300.704		
5,600.00	5,593.57	1,811.59	1,751.56	20.13	15.14	-66.35	2,101.59	-8,607.84	9,541.85	9,509.68	32.16	296.690		
5,700.00	5,693.53	1,859.00	1,791.69	20.49	15.32	-66.67	2,087.71	-8,628.93	9,581.03	9,548.33	32.71	292.941		
5,800.00	5,793.52	1,859.00	1,791.69	20.85	15.32	-66.87	2,087.71	-8,628.93	9,620.99	9,588.04	32.95	292.018		
5,900.00	5,893.52	1,859.00	1,791.69	21.20	15.32	-67.08	2,087.71	-8,628.93	9,662.12	9,628.94	33.18	291.188		
5,936.48	5,930.00	1,859.00	1,791.69	21.33	15.32	-77.91	2,087.71	-8,628.93	9,677.42	9,644.15	33.27	290.907		
6,000.00	5,993.52	1,859.00	1,791.69	21.56	15.32	-77.91	2,087.71	-8,628.93	9,704.36	9,670.94	33.41	290.445		
6,100.00	6,093.52	1,901.01	1,826.67	21.91	15.54	-78.02	2,074.80	-8,648.29	9,746.93	9,712.95	33.98	286.834		
6,200.00	6,193.52	1,952.00	1,868.09	22.27	15.81	-78.16	2,058.02	-8,672.83	9,790.86	9,756.23	34.62	282.769		
6,300.00	6,293.52	1,952.00	1,868.09	22.62	15.81	-78.16	2,058.02	-8,672.83	9,834.83	9,799.98	34.85	282.204		
6,358.48	6,352.00	1,952.00	1,868.09	22.83	15.81	-78.16	2,058.02	-8,672.83	9,860.93	9,825.95	34.98	281.898		
6,400.00	6,393.49	1,952.00	1,868.09	22.97	15.81	-3.45	2,058.02	-8,672.83	9,878.41	9,843.34	35.07	281.688		
6,450.00	6,443.20	1,952.00	1,868.09	23.15	15.81	-3.35	2,058.02	-8,672.83	9,896.35	9,861.18	35.17	281.369		
6,500.00	6,492.36	1,952.00	1,868.09	23.33	15.81	-3.27	2,058.02	-8,672.83	9,910.81	9,875.53	35.28	280.947		
6,550.00	6,540.64	1,952.00	1,868.09	23.51	15.81	-3.22	2,058.02	-8,672.83	9,921.72	9,886.34	35.38	280.426		
6,600.00	6,587.77	1,952.00	1,868.09	23.69	15.81	-3.18	2,058.02	-8,672.83	9,929.01	9,893.53	35.48	279.817		
6,650.00	6,633.44	1,952.00	1,868.09	23.88	15.81	-3.16	2,058.02	-8,672.83	9,932.66	9,897.08	35.58	279.127		
6,700.00	6,677.37	1,993.08	1,900.73	24.07	16.03	-3.27	2,043.84	-8,693.36	9,932.22	9,896.16	36.07	275.397		
6,750.00	6,719.30	2,001.86	1,907.63	24.26	16.08	-3.32	2,040.77	-8,697.82	9,928.34	9,892.10	36.24	273.950		
6,800.00	6,758.97	2,046.00	1,942.00	24.46	16.33	-3.48	2,025.07	-8,720.64	9,921.09	9,884.34	36.75	269.998		
6,850.00	6,796.12	2,046.00	1,942.00	24.67	16.33	-3.55	2,025.07	-8,720.64	9,909.75	9,872.92	36.83	269.065		
6,900.00	6,830.54	2,046.00	1,942.00	24.88	16.33	-3.64	2,025.07	-8,720.64	9,894.86	9,857.95	36.91	268.085		
6,950.00	6,862.00	2,046.00	1,942.00	25.11	16.33	-3.75	2,025.07	-8,720.64	9,876.50	9,839.52	36.98	267.062		
7,000.00	6,890.33	2,046.00	1,942.00	25.34	16.33	-3.89	2,025.07	-8,720.64	9,854.77	9,817.72	37.05	266.000		
7,050.00	6,915.33	2,046.00	1,942.00	25.59	16.33	-4.08	2,025.07	-8,720.64	9,829.77	9,792.67	37.11	264.906		
7,100.00	6,936.86	2,046.00	1,942.00	25.85	16.33	-4.30	2,025.07	-8,720.64	9,801.64	9,764.49	37.16	263.782		
7,150.00	6,954.79	2,046.00	1,942.00	26.12	16.33	-4.58	2,025.07	-8,720.64	9,770.53	9,733.33	37.20	262.634		
7,200.00	6,968.99	2,085.75	1,972.49	26.40	16.48	-5.10	2,010.54	-8,741.61	9,736.34	9,698.78	37.57	259.179		
7,250.00	6,979.40	2,094.99	1,979.51	26.69	16.51	-5.60	2,007.10	-8,746.51	9,699.63	9,661.96	37.67	257.481		
7,300.00	6,985.94	2,103.36	1,985.87	27.00	16.54	-6.23	2,003.96	-8,750.97	9,660.47	9,622.71	37.76	255.824		
7,350.00	6,988.56	2,139.00	2,012.72	27.31	16.69	-7.24	1,990.39	-8,770.08	9,619.19	9,581.12	38.07	252.674		
7,358.93	6,988.62	2,139.00	2,012.72	27.36	16.69	-7.41	1,990.39	-8,770.08	9,611.57	9,573.50	38.08	252.437		
7,400.00	6,988.59	2,139.00	2,012.72	27.63	16.69	-7.41	1,990.39	-8,770.08	9,576.39	9,538.31	38.08	251.490		
7,500.00	6,988.52	2,139.00	2,012.72	28.33	16.69	-7.41	1,990.39	-8,770.08	9,490.94	9,452.85	38.09	249.165		
7,600.00	6,988.45	2,139.00	2,012.72	29.10	16.69	-7.41	1,990.39	-8,770.08	9,405.77	9,367.66	38.11	246.795		
7,658.93	6,988.41	5,645.77	5,041.74	29.59	50.25	-43.27	1,177.85	-10,082.45	9,349.16	9,280.33	68.82	135.843		
7,700.00	6,988.38	5,658.36	5,054.07	29.94	50.33	-41.31	1,178.18	-10,084.97	9,309.63	9,240.68	68.95	135.017		
7,800.00	6,988.31	5,688.89	5,083.98	30.84	50.53	-35.89	1,179.00	-10,091.06	9,212.98	9,143.72	69.26	133.020		
7,900.00	6,988.24	5,719.22	5,113.69	31.79	50.73	-29.42	1,179.84	-10,097.07	9,115.82	9,046.26	69.56	131.046		
8,000.00	6,988.16	5,749.29	5,143.16	32.78	50.93	-21.79	1,180.70	-10,102.99	9,018.27	8,948.41	69.85	129.102		
8,100.00	6,988.09	5,779.05	5,172.33	33.82	51.12	-13.03	1,181.57	-10,108.82	8,920.42	8,850.29	70.13	127.190		
8,200.00	6,988.01	5,808.45	5,201.16	34.88	51.31	-3.35	1,182.47	-10,114.54	8,822.40	8,752.00	70.40	125.315		
8,300.00	6,987.94	5,837.45	5,229.60	35.98	51.50	6.75	1,183.37	-10,120.15	8,724.31	8,653.66	70.65	123.478		
8,400.00	6,987.86	5,866.01	5,257.61	37.11	51.69	16.65	1,184.29	-10,125.65	8,626.29	8,555.40	70.89	121.681		
8,416.35	6,987.85	5,870.64	5,262.14	37.29	51.72	18.22	1,184.44	-10,126.53	8,610.27	8,539.34	70.93	121.391		
8,500.00	6,987.78	5,894.15	5,285.21	38.25	51.88	18.48	1,185.21	-10,131.03	8,528.36	8,457.24	71.12	119.914		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		563-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,600.00	6,987.70	5,921.96	5,312.50	39.43	52.06	18.80	1,186.15	-10,136.32	8,430.42	8,359.07	71.35	118.161	
8,700.00	6,987.62	5,949.46	5,339.48	40.64	52.24	19.13	1,187.10	-10,141.52	8,332.47	8,260.89	71.57	116.419	
8,800.00	6,987.55	5,976.64	5,366.16	41.88	52.42	19.46	1,188.06	-10,146.63	8,234.50	8,162.70	71.80	114.690	
8,900.00	6,987.47	6,003.52	5,392.55	43.14	52.60	19.80	1,189.04	-10,151.65	8,136.52	8,064.50	72.02	112.974	
9,000.00	6,987.39	6,030.10	5,418.65	44.42	52.77	20.15	1,190.02	-10,156.59	8,038.53	7,966.28	72.24	111.269	
9,100.00	6,987.31	6,056.38	5,444.46	45.72	52.95	20.51	1,191.01	-10,161.45	7,940.52	7,868.06	72.47	109.575	
9,200.00	6,987.23	6,054.86	5,442.95	47.04	52.91	20.49	1,190.96	-10,161.26	7,842.64	7,770.17	72.47	108.224	
9,300.00	6,987.15	6,074.25	5,461.98	48.38	53.03	20.76	1,191.71	-10,164.88	7,744.69	7,672.05	72.64	106.621	
9,400.00	6,987.08	6,093.60	5,480.98	49.73	53.16	21.03	1,192.47	-10,168.50	7,646.74	7,573.93	72.81	105.023	
9,500.00	6,987.00	6,112.92	5,499.95	51.10	53.28	21.32	1,193.24	-10,172.10	7,548.80	7,475.82	72.98	103.430	
9,600.00	6,986.92	6,132.22	5,518.89	52.48	53.40	21.60	1,194.02	-10,175.69	7,450.87	7,377.71	73.16	101.842	
9,700.00	6,986.84	6,151.48	5,537.80	53.87	53.52	21.90	1,194.81	-10,179.28	7,352.94	7,279.60	73.34	100.259	
9,800.00	6,986.76	6,170.72	5,556.68	55.28	53.64	22.20	1,195.62	-10,182.86	7,255.02	7,181.50	73.52	98.681	
9,900.00	6,986.68	6,189.92	5,575.53	56.69	53.76	22.51	1,196.43	-10,186.43	7,157.11	7,083.41	73.70	97.108	
10,000.00	6,986.61	6,209.09	5,594.35	58.12	53.88	22.83	1,197.26	-10,189.99	7,059.21	6,985.32	73.89	95.539	
10,100.00	6,986.53	6,228.24	5,613.14	59.55	54.00	23.15	1,198.09	-10,193.54	6,961.32	6,887.24	74.08	93.976	
10,200.00	6,986.45	6,247.35	5,631.91	61.00	54.13	23.48	1,198.94	-10,197.08	6,863.43	6,789.17	74.26	92.418	
10,300.00	6,986.37	6,266.43	5,650.64	62.45	54.25	23.82	1,199.80	-10,200.62	6,765.56	6,691.10	74.46	90.865	
10,400.00	6,986.29	6,285.49	5,669.34	63.90	54.37	24.17	1,200.66	-10,204.15	6,667.69	6,593.04	74.65	89.317	
10,500.00	6,986.21	6,304.51	5,688.02	65.37	54.49	24.53	1,201.54	-10,207.67	6,569.84	6,494.99	74.85	87.774	
10,600.00	6,986.14	6,323.51	5,706.67	66.84	54.61	24.89	1,202.43	-10,211.18	6,471.99	6,396.94	75.05	86.235	
10,700.00	6,986.06	6,342.47	5,725.28	68.32	54.72	25.27	1,203.33	-10,214.68	6,374.16	6,298.91	75.25	84.702	
10,800.00	6,985.98	6,361.41	5,743.87	69.80	54.84	25.65	1,204.23	-10,218.17	6,276.35	6,200.88	75.46	83.173	
10,900.00	6,985.90	6,380.31	5,762.43	71.29	54.96	26.04	1,205.15	-10,221.66	6,178.54	6,102.87	75.67	81.649	
11,000.00	6,985.82	6,399.19	5,780.96	72.78	55.08	26.45	1,206.08	-10,225.14	6,080.75	6,004.87	75.89	80.130	
11,100.00	6,985.75	6,418.04	5,799.46	74.28	55.20	26.86	1,207.02	-10,228.61	5,982.98	5,906.87	76.10	78.616	
11,200.00	6,985.67	6,436.85	5,817.93	75.78	55.32	27.28	1,207.97	-10,232.07	5,885.22	5,808.89	76.33	77.106	
11,300.00	6,985.59	6,455.64	5,836.38	77.29	55.44	27.72	1,208.93	-10,235.52	5,787.48	5,710.92	76.55	75.601	
11,400.00	6,985.51	6,474.40	5,854.79	78.80	55.56	28.16	1,209.90	-10,238.97	5,689.75	5,612.97	76.78	74.101	
11,500.00	6,985.43	6,499.18	5,879.12	80.31	55.70	28.77	1,211.18	-10,243.51	5,592.04	5,515.00	77.04	72.584	
11,600.00	6,985.35	6,524.22	5,903.71	81.83	55.85	29.41	1,212.44	-10,248.06	5,494.32	5,417.02	77.31	71.072	
11,700.00	6,985.28	6,548.95	5,928.00	83.35	55.99	30.05	1,213.68	-10,252.54	5,396.61	5,319.04	77.57	69.568	
11,800.00	6,985.20	6,573.38	5,952.00	84.87	56.14	30.72	1,214.87	-10,256.93	5,298.90	5,221.06	77.84	68.072	
11,900.00	6,985.12	6,597.52	5,975.72	86.40	56.28	31.39	1,216.03	-10,261.24	5,201.19	5,123.07	78.12	66.582	
12,000.00	6,985.04	6,621.36	5,999.15	87.93	56.42	32.09	1,217.15	-10,265.47	5,103.49	5,025.09	78.40	65.098	
12,100.00	6,984.96	6,644.91	6,022.31	89.46	56.55	32.79	1,218.24	-10,269.63	5,005.79	4,927.11	78.68	63.621	
12,200.00	6,984.88	6,668.18	6,045.20	90.99	56.69	33.52	1,219.29	-10,273.72	4,908.10	4,829.13	78.97	62.150	
12,300.00	6,984.81	6,691.18	6,067.82	92.53	56.82	34.26	1,220.31	-10,277.73	4,810.43	4,731.16	79.27	60.685	
12,400.00	6,984.73	6,713.90	6,090.18	94.07	56.96	35.01	1,221.30	-10,281.67	4,712.76	4,633.19	79.57	59.225	
12,500.00	6,984.65	6,736.36	6,112.27	95.61	57.09	35.79	1,222.26	-10,285.54	4,615.12	4,535.23	79.89	57.770	
12,600.00	6,984.57	6,758.55	6,134.12	97.15	57.22	36.58	1,223.19	-10,289.34	4,517.49	4,437.28	80.21	56.320	
12,700.00	6,984.49	6,780.49	6,155.71	98.70	57.35	37.39	1,224.09	-10,293.08	4,419.88	4,339.34	80.55	54.874	
12,800.00	6,984.41	6,802.17	6,177.06	100.25	57.47	38.21	1,224.97	-10,296.75	4,322.30	4,241.41	80.89	53.433	
12,900.00	6,984.34	6,823.60	6,198.17	101.80	57.60	39.06	1,225.81	-10,300.36	4,224.74	4,143.49	81.25	51.996	
13,000.00	6,984.26	6,844.79	6,219.04	103.35	57.72	39.92	1,226.63	-10,303.91	4,127.22	4,045.59	81.63	50.562	
13,100.00	6,984.18	6,865.73	6,239.68	104.90	57.84	40.80	1,227.43	-10,307.40	4,029.72	3,947.70	82.02	49.132	
13,200.00	6,984.10	6,886.44	6,260.09	106.45	57.96	41.70	1,228.20	-10,310.83	3,932.27	3,849.84	82.43	47.705	
13,300.00	6,984.02	6,906.91	6,280.27	108.01	58.08	42.62	1,228.94	-10,314.20	3,834.86	3,752.00	82.86	46.281	
13,400.00	6,983.94	6,927.16	6,300.23	109.56	58.20	43.56	1,229.66	-10,317.52	3,737.50	3,654.18	83.31	44.860	
13,500.00	6,983.87	6,947.18	6,319.97	111.12	58.32	44.52	1,230.36	-10,320.78	3,640.19	3,556.39	83.80	43.442	
13,600.00	6,983.79	6,967.11	6,339.63	112.68	58.44	45.50	1,231.04	-10,324.01	3,542.94	3,458.63	84.30	42.025	
13,700.00	6,983.71	6,989.20	6,361.42	114.24	58.56	46.63	1,231.79	-10,327.55	3,445.74	3,360.90	84.85	40.611	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		563-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,800.00	6,983.63	7,010.82	6,382.75	115.80	58.68	47.77	1,232.51	-10,330.99	3,348.61	3,263.19	85.42	39.200	
13,900.00	6,983.55	7,031.99	6,403.64	117.37	58.79	48.93	1,233.22	-10,334.32	3,251.55	3,165.51	86.04	37.791	
14,000.00	6,983.47	7,052.72	6,424.11	118.93	58.91	50.11	1,233.91	-10,337.54	3,154.57	3,067.87	86.70	36.384	
14,100.00	6,983.40	7,073.02	6,444.16	120.50	59.02	51.29	1,234.58	-10,340.67	3,057.68	2,970.27	87.42	34.979	
14,200.00	6,983.32	7,092.92	6,463.81	122.06	59.13	52.50	1,235.24	-10,343.70	2,960.90	2,872.71	88.18	33.576	
14,300.00	6,983.24	7,112.41	6,483.07	123.63	59.24	53.71	1,235.88	-10,346.64	2,864.23	2,775.21	89.02	32.176	
14,400.00	6,983.16	7,131.51	6,501.95	125.20	59.34	54.93	1,236.50	-10,349.50	2,767.69	2,677.77	89.93	30.778	
14,500.00	6,983.08	7,150.24	6,520.46	126.77	59.45	56.17	1,237.11	-10,352.27	2,671.31	2,580.39	90.91	29.383	
14,600.00	6,983.00	7,168.60	6,538.61	128.33	59.55	57.41	1,237.70	-10,354.96	2,575.09	2,483.10	92.00	27.991	
14,700.00	6,982.93	7,186.61	6,556.42	129.91	59.65	58.66	1,238.28	-10,357.57	2,479.07	2,385.89	93.18	26.604	
14,800.00	6,982.85	7,204.27	6,573.89	131.48	59.74	59.92	1,238.85	-10,360.11	2,383.27	2,288.78	94.49	25.223	
14,900.00	6,982.77	7,221.59	6,591.02	133.05	59.84	61.18	1,239.41	-10,362.57	2,287.71	2,191.78	95.93	23.847	
15,000.00	6,982.69	7,238.59	6,607.85	134.62	59.93	62.45	1,239.95	-10,364.97	2,192.45	2,094.92	97.53	22.480	
15,100.00	6,982.61	7,255.27	6,624.35	136.20	60.03	63.72	1,240.48	-10,367.30	2,097.51	1,998.21	99.30	21.123	
15,200.00	6,982.54	7,271.65	6,640.56	137.77	60.12	65.00	1,240.99	-10,369.57	2,002.95	1,901.68	101.27	19.777	
15,300.00	6,982.46	7,287.72	6,656.48	139.35	60.20	66.27	1,241.50	-10,371.77	1,908.83	1,805.35	103.48	18.447	
15,400.00	6,982.38	7,303.50	6,672.10	140.92	60.29	67.55	1,242.00	-10,373.91	1,815.22	1,709.27	105.95	17.133	
15,500.00	6,982.30	7,319.00	6,687.45	142.50	60.38	68.82	1,242.48	-10,376.00	1,722.20	1,613.48	108.72	15.841	
15,600.00	6,982.22	7,334.22	6,702.53	144.07	60.46	70.09	1,242.96	-10,378.03	1,629.89	1,518.04	111.84	14.573	
15,700.00	6,982.14	7,349.17	6,717.35	145.65	60.54	71.36	1,243.42	-10,380.01	1,538.40	1,423.03	115.38	13.334	
15,800.00	6,982.07	7,363.86	6,731.90	147.23	60.63	72.62	1,243.87	-10,381.94	1,447.91	1,328.53	119.38	12.129	
15,900.00	6,981.99	7,378.30	6,746.21	148.81	60.70	73.87	1,244.32	-10,383.81	1,358.62	1,234.69	123.93	10.963	
16,000.00	6,981.91	7,392.49	6,760.27	150.39	60.78	75.12	1,244.76	-10,385.64	1,270.77	1,141.65	129.12	9.842	
16,100.00	6,981.83	7,406.43	6,774.09	151.97	60.86	76.36	1,245.18	-10,387.42	1,184.70	1,049.66	135.04	8.773	
16,200.00	6,981.75	7,420.14	6,787.68	153.55	60.94	77.59	1,245.60	-10,389.16	1,100.83	959.03	141.81	7.763	
16,300.00	6,981.67	7,433.62	6,801.05	155.13	61.01	78.81	1,246.01	-10,390.85	1,019.71	870.18	149.53	6.820	
16,400.00	6,981.60	7,446.87	6,814.19	156.71	61.08	80.01	1,246.41	-10,392.50	942.04	783.74	158.30	5.951	
16,500.00	6,981.52	7,459.90	6,827.12	158.29	61.16	81.21	1,246.81	-10,394.11	868.76	700.60	168.16	5.166	
16,600.00	6,981.44	7,472.72	6,839.84	159.88	61.23	82.39	1,247.19	-10,395.68	801.09	622.03	179.06	4.474	
16,700.00	6,981.36	7,484.86	6,851.88	161.46	61.28	83.51	1,247.56	-10,397.16	740.57	549.86	190.71	3.883	
16,800.00	6,981.28	7,497.04	6,863.97	163.04	61.34	84.64	1,247.93	-10,398.64	689.09	486.55	202.54	3.402	
16,900.00	6,981.20	7,509.10	6,875.93	164.62	61.39	85.76	1,248.30	-10,400.09	648.81	435.27	213.53	3.038	
17,000.00	6,981.13	7,521.03	6,887.77	166.21	61.45	86.87	1,248.67	-10,401.52	621.91	399.58	222.33	2.797	
17,100.00	6,981.05	7,532.84	6,899.49	167.79	61.50	87.98	1,249.04	-10,402.93	610.17	382.63	227.54	2.682	
17,123.33	6,981.03	7,535.58	6,902.21	168.16	61.52	88.23	1,249.12	-10,403.26	609.73	381.59	228.14	2.673 CC, ES, SF	
17,200.00	6,980.97	7,544.53	6,911.09	169.38	61.56	89.07	1,249.40	-10,404.32	614.47	386.08	228.39	2.690	
17,300.00	6,980.89	7,556.09	6,922.57	170.96	61.61	90.14	1,249.77	-10,405.69	634.47	409.44	225.03	2.819	
17,400.00	6,980.81	7,567.54	6,933.93	172.55	61.67	91.21	1,250.13	-10,407.03	668.78	450.29	218.49	3.061	
17,500.00	6,980.73	7,578.87	6,945.18	174.13	61.72	92.26	1,250.49	-10,408.36	715.35	505.24	210.11	3.405	
17,600.00	6,980.66	7,590.09	6,956.31	175.72	61.77	93.30	1,250.85	-10,409.66	771.95	570.91	201.04	3.840	
17,700.00	6,980.58	7,601.19	6,967.33	177.31	61.83	94.33	1,251.20	-10,410.95	836.57	644.48	192.09	4.355	
17,800.00	6,980.50	7,612.18	6,978.24	178.89	61.88	95.34	1,251.56	-10,412.21	907.48	723.78	183.70	4.940	
17,900.00	6,980.42	7,623.06	6,989.04	180.48	61.93	96.34	1,251.91	-10,413.46	983.34	807.27	176.06	5.585	
18,000.00	6,980.34	7,633.83	6,999.74	182.07	61.98	97.32	1,252.26	-10,414.69	1,063.08	893.84	169.23	6.282	
18,100.00	6,980.26	7,644.49	7,010.33	183.66	62.03	98.29	1,252.61	-10,415.90	1,145.89	982.72	163.17	7.023	
18,200.00	6,980.19	7,655.05	7,020.81	185.24	62.08	99.24	1,252.96	-10,417.09	1,231.17	1,073.36	157.81	7.801	
18,300.00	6,980.11	7,665.51	7,031.20	186.83	62.13	100.18	1,253.30	-10,418.26	1,318.42	1,165.34	153.08	8.613	
18,400.00	6,980.03	7,675.86	7,041.48	188.42	62.18	101.10	1,253.64	-10,419.42	1,407.29	1,258.40	148.89	9.452	
18,500.00	6,979.95	7,686.11	7,051.66	190.01	62.22	102.01	1,253.99	-10,420.56	1,497.49	1,352.30	145.19	10.314	
18,600.00	6,979.87	7,696.27	7,061.75	191.60	62.27	102.90	1,254.33	-10,421.68	1,588.79	1,446.90	141.89	11.197	
18,700.00	6,979.79	7,706.32	7,071.74	193.19	62.32	103.77	1,254.66	-10,422.79	1,681.02	1,542.06	138.96	12.097	
18,800.00	6,979.72	7,716.28	7,081.63	194.78	62.37	104.63	1,255.00	-10,423.88	1,774.02	1,637.69	136.34	13.012	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		563-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:	0.00 usft		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
18,900.00	6,979.64	7,726.15	7,091.43	196.37	62.41	105.48	1,255.34	-10,424.96	1,867.69	1,733.71	133.98	13.940		
19,000.00	6,979.56	7,735.92	7,101.14	197.96	62.46	106.30	1,255.67	-10,426.02	1,961.94	1,830.06	131.87	14.878		
19,100.00	6,979.48	7,745.60	7,110.76	199.55	62.50	107.11	1,256.00	-10,427.07	2,056.67	1,926.71	129.96	15.825		
19,200.00	6,979.40	7,755.19	7,120.28	201.14	62.55	107.91	1,256.33	-10,428.10	2,151.83	2,023.59	128.24	16.780		
19,300.00	6,979.33	7,764.68	7,129.72	202.73	62.59	108.69	1,256.66	-10,429.12	2,247.37	2,120.69	126.68	17.741		
19,400.00	6,979.25	7,774.09	7,139.07	204.32	62.64	109.46	1,256.98	-10,430.12	2,343.24	2,217.98	125.26	18.707		
19,500.00	6,979.17	7,783.41	7,148.33	205.91	62.68	110.21	1,257.31	-10,431.11	2,439.40	2,315.43	123.97	19.678		
19,600.00	6,979.09	7,792.65	7,157.51	207.50	62.73	110.95	1,257.63	-10,432.08	2,535.82	2,413.03	122.79	20.652		
19,700.00	6,979.01	7,801.80	7,166.61	209.09	62.77	111.67	1,257.95	-10,433.05	2,632.46	2,510.76	121.71	21.629		
19,800.00	6,978.93	7,810.87	7,175.62	210.69	62.81	112.38	1,258.27	-10,434.00	2,729.32	2,608.60	120.72	22.609		
19,900.00	6,978.86	7,819.85	7,184.55	212.28	62.85	113.07	1,258.59	-10,434.93	2,826.36	2,706.55	119.81	23.590		
20,000.00	6,978.78	7,828.76	7,193.40	213.87	62.90	113.75	1,258.90	-10,435.85	2,923.57	2,804.59	118.98	24.572		
20,100.00	6,978.70	7,837.58	7,202.17	215.46	62.94	114.42	1,259.22	-10,436.77	3,020.93	2,902.72	118.21	25.555		
20,200.00	6,978.62	7,846.32	7,210.86	217.05	62.98	115.07	1,259.53	-10,437.66	3,118.43	3,000.92	117.51	26.538		
20,300.00	6,978.54	7,854.99	7,219.48	218.65	63.02	115.71	1,259.84	-10,438.55	3,216.05	3,099.20	116.85	27.522		
20,400.00	6,978.46	7,863.58	7,228.01	220.24	63.06	116.33	1,260.15	-10,439.42	3,313.79	3,197.54	116.25	28.505		
20,500.00	6,978.39	7,872.09	7,236.48	221.83	63.10	116.95	1,260.46	-10,440.29	3,411.64	3,295.94	115.70	29.488		
20,600.00	6,978.31	7,880.53	7,244.87	223.43	63.14	117.55	1,260.76	-10,441.14	3,509.58	3,394.40	115.18	30.470		
20,700.00	6,978.23	7,888.89	7,253.18	225.02	63.18	118.13	1,261.07	-10,441.98	3,607.61	3,492.91	114.71	31.451		
20,800.00	6,978.15	7,897.18	7,261.42	226.61	63.22	118.71	1,261.37	-10,442.81	3,705.73	3,591.46	114.27	32.431		
20,900.00	6,978.07	7,938.00	7,302.02	228.21	63.41	121.45	1,262.87	-10,446.84	3,804.09	3,689.75	114.34	33.270		
21,000.00	6,977.99	7,938.00	7,302.02	229.80	63.41	121.45	1,262.87	-10,446.84	3,902.28	3,788.44	113.84	34.279		
21,100.00	6,977.92	7,938.00	7,302.02	231.39	63.41	121.45	1,262.87	-10,446.84	4,000.56	3,887.19	113.37	35.289		
21,200.00	6,977.84	7,938.00	7,302.02	232.99	63.41	121.45	1,262.87	-10,446.84	4,098.92	3,985.99	112.92	36.298		
21,300.00	6,977.76	7,938.00	7,302.02	234.58	63.41	121.45	1,262.87	-10,446.84	4,197.35	4,084.85	112.51	37.307		
21,400.00	6,977.68	7,938.00	7,302.02	236.18	63.41	121.45	1,262.87	-10,446.84	4,295.86	4,183.75	112.12	38.316		
21,500.00	6,977.60	7,938.00	7,302.02	237.77	63.41	121.45	1,262.87	-10,446.84	4,394.44	4,282.69	111.75	39.324		
21,600.00	6,977.52	7,938.00	7,302.02	239.37	63.41	121.45	1,262.87	-10,446.84	4,493.08	4,381.68	111.40	40.331		
21,700.00	6,977.45	7,938.00	7,302.02	240.96	63.41	121.45	1,262.87	-10,446.84	4,591.78	4,480.70	111.08	41.338		
21,800.00	6,977.37	7,938.00	7,302.02	242.56	63.41	121.45	1,262.87	-10,446.84	4,690.53	4,579.76	110.77	42.344		
21,900.00	6,977.29	7,938.00	7,302.02	244.15	63.41	121.45	1,262.87	-10,446.84	4,789.34	4,678.86	110.48	43.348		
22,000.00	6,977.21	7,938.00	7,302.02	245.75	63.41	121.45	1,262.87	-10,446.84	4,888.19	4,777.98	110.21	44.352		
22,100.00	6,977.13	7,938.00	7,302.02	247.34	63.41	121.45	1,262.87	-10,446.84	4,987.09	4,877.14	109.96	45.354		
22,200.00	6,977.05	7,938.00	7,302.02	248.94	63.41	121.45	1,262.87	-10,446.84	5,086.04	4,976.32	109.72	46.356		
22,269.73	6,977.00	7,938.00	7,302.02	250.05	63.41	121.45	1,262.87	-10,446.84	5,155.05	5,045.49	109.56	47.053		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164C - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 386-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-71.52	2,662.86	-7,969.42	8,402.55				
100.00	100.00	1,690.00	1,571.11	0.25	9.49	-74.76	2,170.81	-7,968.30	8,392.06	8,382.45	9.61	873.383	
200.00	200.00	1,728.83	1,603.21	0.61	9.84	-74.91	2,148.97	-7,968.36	8,374.69	8,364.49	10.20	821.241	
300.00	300.00	1,843.48	1,698.55	0.97	10.91	-75.33	2,085.29	-7,968.31	8,357.74	8,346.19	11.55	723.469	
400.00	400.00	1,881.00	1,729.73	1.33	11.27	-75.48	2,064.41	-7,968.34	8,341.18	8,328.93	12.25	681.057	
500.00	500.00	1,913.00	1,756.57	1.68	11.54	-75.59	2,047.00	-7,968.50	8,325.52	8,312.65	12.87	647.135	
600.00	600.00	1,974.97	1,808.61	2.04	12.13	-75.82	2,013.36	-7,969.05	8,310.62	8,296.82	13.80	602.128	
700.00	700.00	2,009.00	1,837.11	2.40	12.46	-75.95	1,994.76	-7,969.49	8,296.29	8,281.80	14.49	572.584	
800.00	799.98	2,166.00	1,968.29	2.76	13.97	-66.07	1,908.54	-7,971.51	8,281.64	8,265.30	16.33	507.076	
849.89	849.82	2,183.48	1,982.81	2.94	14.14	-66.29	1,898.80	-7,971.65	8,273.66	8,256.97	16.69	495.693	
900.00	899.86	2,198.00	1,994.84	3.12	14.29	-66.35	1,890.68	-7,971.90	8,265.78	8,248.76	17.02	485.645	
1,000.00	999.73	2,325.00	2,099.84	3.48	15.52	-66.87	1,819.28	-7,974.04	8,250.49	8,231.90	18.60	443.688	
1,100.00	1,099.59	2,469.79	2,221.64	3.84	16.86	-67.45	1,741.00	-7,974.31	8,234.94	8,214.67	20.27	406.226	
1,200.00	1,199.45	2,503.65	2,250.19	4.20	17.18	-67.59	1,722.79	-7,974.23	8,219.47	8,198.50	20.97	391.957	
1,300.00	1,299.32	2,643.00	2,367.74	4.56	18.50	-68.15	1,647.97	-7,973.55	8,204.02	8,181.39	22.63	362.532	
1,400.00	1,399.18	2,916.00	2,596.67	4.92	21.16	-69.25	1,499.32	-7,970.23	8,189.02	8,163.43	25.59	320.018	
1,500.00	1,499.04	2,931.00	2,609.07	5.28	21.31	-69.32	1,490.89	-7,969.94	8,172.82	8,146.70	26.13	312.829	
1,600.00	1,598.91	3,046.71	2,706.93	5.64	22.34	-69.78	1,429.28	-7,967.24	8,157.35	8,129.84	27.51	296.526	
1,700.00	1,698.77	3,102.16	2,755.17	6.00	22.81	-69.98	1,402.00	-7,965.24	8,142.01	8,113.67	28.35	287.231	
1,800.00	1,798.63	3,122.00	2,772.57	6.36	22.97	-70.06	1,392.50	-7,964.56	8,127.49	8,098.59	28.90	281.253	
1,900.00	1,898.49	3,153.00	2,799.98	6.72	23.21	-70.17	1,378.05	-7,963.65	8,113.89	8,084.37	29.53	274.812	
2,000.00	1,998.36	3,184.00	2,827.59	7.09	23.45	-70.27	1,363.98	-7,962.91	8,101.22	8,071.08	30.15	268.718	
2,100.00	2,098.22	3,216.00	2,856.26	7.45	23.70	-70.38	1,349.79	-7,962.20	8,089.34	8,058.57	30.77	262.873	
2,200.00	2,198.08	3,247.00	2,884.26	7.81	23.92	-70.49	1,336.48	-7,961.63	8,078.33	8,046.94	31.38	257.408	
2,300.00	2,297.95	3,262.18	2,898.07	8.17	24.03	-70.54	1,330.19	-7,961.47	8,068.37	8,036.50	31.87	253.131	
2,400.00	2,397.81	3,279.00	2,913.47	8.53	24.15	-70.59	1,323.44	-7,961.42	8,059.49	8,027.11	32.37	248.947	
2,500.00	2,497.67	3,454.81	3,078.16	8.90	25.23	-71.08	1,262.13	-7,959.58	8,051.32	8,017.51	33.81	238.132	
2,600.00	2,597.54	3,468.00	3,090.72	9.26	25.30	-71.11	1,258.12	-7,959.24	8,042.66	8,008.39	34.27	234.717	
2,700.00	2,697.40	3,500.00	3,121.31	9.62	25.47	-71.19	1,248.75	-7,958.85	8,035.10	8,000.29	34.81	230.821	
2,800.00	2,797.26	3,500.00	3,121.31	9.98	25.47	-71.19	1,248.75	-7,958.85	8,028.52	7,993.33	35.19	228.145	
2,900.00	2,897.13	3,531.00	3,151.15	10.35	25.62	-71.26	1,240.36	-7,958.93	8,023.03	7,987.32	35.72	224.633	
3,000.00	2,996.99	3,657.00	3,273.43	10.71	26.19	-71.51	1,209.96	-7,958.79	8,017.79	7,981.14	36.65	218.768	
3,100.00	3,096.85	3,688.00	3,303.67	11.07	26.31	-71.57	1,203.16	-7,958.69	8,012.84	7,975.69	37.15	215.699	
3,200.00	3,196.72	3,739.80	3,354.50	11.43	26.50	-71.66	1,193.20	-7,958.84	8,008.76	7,971.05	37.71	212.394	
3,300.00	3,296.58	3,875.00	3,487.89	11.80	26.93	-71.86	1,171.21	-7,958.48	8,004.66	7,966.16	38.50	207.894	
3,400.00	3,396.44	3,907.00	3,519.62	12.16	27.02	-71.91	1,167.07	-7,958.31	8,000.83	7,961.87	38.96	205.373	
3,500.00	3,496.31	3,925.63	3,538.12	12.52	27.06	-71.93	1,164.97	-7,958.37	7,997.95	7,958.59	39.37	203.163	
3,600.00	3,596.17	3,938.00	3,550.44	12.88	27.09	-71.94	1,163.72	-7,958.47	7,996.08	7,956.32	39.76	201.116	
3,700.00	3,696.03	3,969.00	3,581.32	13.25	27.15	-71.97	1,161.08	-7,958.97	7,995.16	7,954.98	40.18	198.985	
3,776.88	3,772.80	4,012.41	3,624.64	13.53	27.21	-72.01	1,158.40	-7,959.95	7,995.01	7,954.49	40.53	197.286	
3,800.00	3,795.89	4,028.00	3,640.20	13.61	27.23	-72.02	1,157.71	-7,960.30	7,995.03	7,954.40	40.63	196.777	
3,900.00	3,895.76	4,127.47	3,739.57	13.97	27.36	-72.08	1,153.75	-7,962.52	7,995.14	7,954.01	41.12	194.420	
4,000.00	3,995.62	4,228.72	3,840.72	14.34	27.49	-72.15	1,149.76	-7,964.76	7,995.24	7,953.62	41.62	192.093	
4,100.00	4,095.48	4,329.98	3,941.88	14.70	27.62	-72.21	1,145.82	-7,966.97	7,995.33	7,953.21	42.12	189.822	
4,200.00	4,195.35	4,431.26	4,043.05	15.06	27.75	-72.28	1,141.93	-7,969.15	7,995.41	7,952.79	42.62	187.605	
4,300.00	4,295.21	4,532.54	4,144.24	15.42	27.88	-72.35	1,138.08	-7,971.31	7,995.48	7,952.36	43.12	185.441	
4,400.00	4,395.07	4,633.83	4,245.44	15.79	28.01	-72.41	1,134.29	-7,973.44	7,995.54	7,951.93	43.61	183.327	
4,500.00	4,494.94	4,735.13	4,346.64	16.15	28.14	-72.48	1,130.54	-7,975.54	7,995.59	7,951.48	44.11	181.261	
4,600.00	4,594.80	4,836.44	4,447.86	16.51	28.27	-72.54	1,126.84	-7,977.62	7,995.62	7,951.02	44.61	179.242	
4,700.00	4,694.66	4,937.76	4,549.10	16.87	28.40	-72.60	1,123.19	-7,979.66	7,995.65	7,950.54	45.10	177.268	
4,800.00	4,794.53	5,039.08	4,650.34	17.24	28.53	-72.67	1,119.59	-7,981.68	7,995.66	7,950.06	45.60	175.338	
4,900.00	4,894.39	5,140.42	4,751.60	17.60	28.66	-72.73	1,116.04	-7,983.68	7,995.66	7,949.57	46.10	173.450	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 386-APC_ISCWSA REV 2 MWD												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Offset												Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,994.25	5,241.77	4,852.86	17.96	28.79	-72.79	1,112.54	-7,985.64	7,995.65	7,949.06	46.59	171.602	
5,100.00	5,094.12	5,343.12	4,954.14	18.33	28.93	-72.85	1,109.08	-7,987.58	7,995.63	7,948.54	47.09	169.793	
5,200.00	5,193.98	5,444.48	5,055.43	18.69	29.06	-72.92	1,105.67	-7,989.49	7,995.60	7,948.01	47.59	168.020	
5,300.00	5,293.84	5,545.86	5,156.73	19.05	29.19	-72.98	1,102.32	-7,991.38	7,995.55	7,947.47	48.08	166.283	
5,336.91	5,330.71	5,583.28	5,194.12	19.19	29.24	-73.00	1,101.09	-7,992.07	7,995.53	7,947.26	48.27	165.651	
5,361.08	5,354.84	5,607.78	5,218.60	19.27	29.27	-73.02	1,100.29	-7,992.52	7,995.52	7,947.13	48.39	165.240	
5,400.00	5,393.71	5,647.25	5,258.05	19.41	29.32	-73.04	1,099.01	-7,993.24	7,995.54	7,946.96	48.58	164.583	
5,500.00	5,493.62	5,748.72	5,359.45	19.77	29.45	-73.09	1,095.74	-7,995.07	7,995.75	7,946.68	49.08	162.927	
5,600.00	5,593.57	5,850.25	5,460.91	20.13	29.58	-73.14	1,092.53	-7,996.87	7,996.21	7,946.64	49.57	161.313	
5,700.00	5,693.53	5,951.84	5,562.43	20.49	29.71	-73.19	1,089.36	-7,998.65	7,996.89	7,946.83	50.06	159.740	
5,800.00	5,793.52	6,053.47	5,664.01	20.85	29.84	-73.23	1,086.24	-8,000.40	7,997.82	7,947.26	50.55	158.207	
5,900.00	5,893.52	6,155.15	5,765.62	21.20	29.97	-73.26	1,083.16	-8,002.12	7,998.97	7,947.93	51.04	156.712	
5,936.48	5,930.00	6,192.25	5,802.70	21.33	30.02	-84.03	1,082.05	-8,002.75	7,999.45	7,948.23	51.22	156.176	
6,000.00	5,993.52	6,256.85	5,867.26	21.56	30.11	-84.04	1,080.14	-8,003.82	8,000.30	7,948.77	51.53	155.253	
6,100.00	6,093.52	6,358.56	5,968.91	21.91	30.24	-84.06	1,077.16	-8,005.49	8,001.63	7,949.61	52.02	153.821	
6,200.00	6,193.52	6,460.27	6,070.57	22.27	30.37	-84.09	1,074.24	-8,007.13	8,002.94	7,950.44	52.51	152.414	
6,300.00	6,293.52	6,561.98	6,172.23	22.62	30.50	-84.11	1,071.36	-8,008.75	8,004.23	7,951.23	53.00	151.032	
6,358.48	6,352.00	6,621.47	6,231.69	22.83	30.58	-84.12	1,069.70	-8,009.68	8,004.98	7,951.69	53.28	150.235	
6,400.00	6,393.49	6,663.68	6,273.88	22.97	30.63	-9.54	1,068.53	-8,010.33	8,004.16	7,950.68	53.48	149.654	
6,450.00	6,443.20	6,714.29	6,324.46	23.15	30.70	-9.63	1,067.14	-8,011.11	7,999.65	7,945.92	53.73	148.896	
6,500.00	6,492.36	6,764.36	6,374.51	23.33	30.76	-9.78	1,065.78	-8,011.88	7,991.28	7,937.32	53.97	148.076	
6,550.00	6,540.64	6,813.58	6,423.70	23.51	30.83	-10.00	1,064.45	-8,012.62	7,979.13	7,924.93	54.21	147.201	
6,600.00	6,587.77	6,861.64	6,471.74	23.69	30.89	-10.30	1,063.17	-8,013.34	7,963.27	7,908.83	54.44	146.280	
6,650.00	6,633.44	6,908.24	6,518.32	23.88	30.95	-10.68	1,061.93	-8,014.04	7,943.79	7,889.13	54.66	145.319	
6,700.00	6,677.37	6,953.11	6,563.17	24.07	31.01	-11.16	1,060.76	-8,014.70	7,920.82	7,865.94	54.88	144.325	
6,750.00	6,719.30	6,995.96	6,606.00	24.26	31.06	-11.77	1,059.64	-8,015.32	7,894.50	7,839.41	55.09	143.306	
6,800.00	6,758.97	7,036.52	6,646.54	24.46	31.11	-12.52	1,058.59	-8,015.91	7,865.00	7,809.71	55.28	142.266	
6,850.00	6,796.12	7,074.55	6,684.56	24.67	31.16	-13.45	1,057.61	-8,016.46	7,832.49	7,777.02	55.47	141.212	
6,900.00	6,830.54	7,109.82	6,719.81	24.88	31.21	-14.61	1,056.71	-8,016.97	7,797.18	7,741.55	55.63	140.150	
6,950.00	6,862.00	7,142.10	6,752.07	25.11	31.25	-16.08	1,055.89	-8,017.43	7,759.29	7,703.50	55.79	139.083	
7,000.00	6,890.33	7,171.19	6,781.16	25.34	31.29	-17.96	1,055.16	-8,017.84	7,719.06	7,663.13	55.93	138.018	
7,050.00	6,915.33	7,196.92	6,806.88	25.59	31.32	-20.43	1,054.51	-8,018.20	7,676.73	7,620.68	56.05	136.959	
7,100.00	6,936.86	7,219.13	6,829.08	25.85	31.35	-23.75	1,053.96	-8,018.51	7,632.57	7,576.41	56.16	135.908	
7,150.00	6,954.79	7,237.68	6,847.62	26.12	31.38	-28.37	1,053.50	-8,018.77	7,586.85	7,530.60	56.25	134.870	
7,200.00	6,968.99	7,252.46	6,862.40	26.40	31.39	-35.06	1,053.13	-8,018.98	7,539.85	7,483.52	56.33	133.848	
7,250.00	6,979.40	7,263.38	6,873.31	26.69	31.41	-45.15	1,052.86	-8,019.13	7,491.87	7,435.48	56.40	132.844	
7,300.00	6,985.94	7,270.37	6,880.29	27.00	31.42	-60.56	1,052.69	-8,019.22	7,443.20	7,386.75	56.45	131.859	
7,350.00	6,988.56	7,273.38	6,883.31	27.31	31.42	-82.24	1,052.61	-8,019.27	7,394.14	7,337.65	56.49	130.896	
7,358.93	6,988.62	7,273.50	6,883.43	27.36	31.42	-86.54	1,052.61	-8,019.27	7,385.37	7,328.87	56.50	130.726	
7,400.00	6,988.59	7,273.76	6,883.68	27.63	31.42	-86.55	1,052.61	-8,019.27	7,344.98	7,288.46	56.52	129.948	
7,500.00	6,988.52	7,274.38	6,884.30	28.33	31.42	-86.58	1,052.59	-8,019.28	7,246.70	7,190.10	56.59	128.048	
7,600.00	6,988.45	7,275.00	6,884.92	29.10	31.42	-86.61	1,052.57	-8,019.29	7,148.46	7,091.79	56.67	126.139	
7,658.93	6,988.41	7,275.36	6,885.28	29.59	31.42	-86.62	1,052.57	-8,019.29	7,090.60	7,033.88	56.72	125.010	
7,700.00	6,988.38	7,275.62	6,885.55	29.94	31.42	-86.37	1,052.56	-8,019.30	7,050.22	6,993.46	56.76	124.222	
7,800.00	6,988.31	7,276.33	6,886.25	30.84	31.43	-85.54	1,052.54	-8,019.31	6,951.52	6,894.69	56.83	122.311	
7,900.00	6,988.24	7,277.13	6,887.05	31.79	31.43	-84.22	1,052.52	-8,019.32	6,852.35	6,795.45	56.91	120.417	
8,000.00	6,988.16	7,278.02	6,887.94	32.78	31.43	-81.77	1,052.50	-8,019.33	6,752.82	6,695.85	56.96	118.545	
8,100.00	6,988.09	7,279.01	6,888.93	33.82	31.43	-75.64	1,052.48	-8,019.34	6,653.01	6,596.00	57.01	116.700	
8,200.00	6,988.01	7,280.09	6,890.01	34.88	31.43	-40.48	1,052.45	-8,019.36	6,553.06	6,496.02	57.04	114.886	
8,300.00	6,987.94	7,281.25	6,891.17	35.98	31.43	66.04	1,052.42	-8,019.37	6,453.08	6,396.02	57.05	113.106	
8,400.00	6,987.86	7,282.50	6,892.42	37.11	31.43	79.54	1,052.39	-8,019.39	6,353.18	6,296.13	57.05	111.361	
8,416.35	6,987.85	7,282.72	6,892.64	37.29	31.43	80.44	1,052.38	-8,019.39	6,336.86	6,279.81	57.05	111.080	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		386-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
8,500.00	6,987.78	7,283.81	6,893.73	38.25	31.43	80.59	1,052.36	-8,019.41	6,253.41	6,196.37	57.04	109.639		
8,600.00	6,987.70	7,285.12	6,895.04	39.43	31.44	80.76	1,052.33	-8,019.43	6,153.65	6,096.63	57.02	107.915		
8,700.00	6,987.62	7,286.43	6,896.35	40.64	31.44	80.93	1,052.29	-8,019.45	6,053.90	5,996.88	57.01	106.190		
8,800.00	6,987.55	7,287.74	6,897.66	41.88	31.44	81.10	1,052.26	-8,019.46	5,954.15	5,897.15	57.00	104.462		
8,900.00	6,987.47	7,289.05	6,898.97	43.14	31.44	81.27	1,052.23	-8,019.48	5,854.41	5,797.43	56.99	102.733		
9,000.00	6,987.39	7,290.36	6,900.27	44.42	31.44	81.45	1,052.20	-8,019.50	5,754.69	5,697.71	56.98	101.002		
9,100.00	6,987.31	7,291.67	6,901.58	45.72	31.45	81.62	1,052.16	-8,019.52	5,654.97	5,598.00	56.97	99.270		
9,200.00	6,987.23	7,292.97	6,902.89	47.04	31.45	81.79	1,052.13	-8,019.54	5,555.26	5,498.30	56.96	97.535		
9,300.00	6,987.15	7,294.28	6,904.19	48.38	31.45	81.96	1,052.10	-8,019.55	5,455.56	5,398.61	56.95	95.799		
9,400.00	6,987.08	7,295.58	6,905.50	49.73	31.45	82.14	1,052.07	-8,019.57	5,355.87	5,298.93	56.94	94.061		
9,500.00	6,987.00	7,296.88	6,906.80	51.10	31.45	82.31	1,052.04	-8,019.59	5,256.20	5,199.26	56.93	92.321		
9,600.00	6,986.92	7,298.19	6,908.10	52.48	31.45	82.48	1,052.00	-8,019.61	5,156.53	5,099.60	56.93	90.579		
9,700.00	6,986.84	7,299.49	6,909.40	53.87	31.46	82.66	1,051.97	-8,019.63	5,056.88	4,999.96	56.92	88.836		
9,800.00	6,986.76	7,300.79	6,910.70	55.28	31.46	82.83	1,051.94	-8,019.64	4,957.24	4,900.32	56.92	87.090		
9,900.00	6,986.68	7,302.09	6,912.00	56.69	31.46	83.00	1,051.91	-8,019.66	4,857.62	4,800.70	56.92	85.343		
10,000.00	6,986.61	7,303.39	6,913.30	58.12	31.46	83.17	1,051.88	-8,019.68	4,758.01	4,701.10	56.92	83.593		
10,100.00	6,986.53	7,304.69	6,914.60	59.55	31.46	83.35	1,051.84	-8,019.70	4,658.42	4,601.50	56.92	81.841		
10,200.00	6,986.45	7,305.99	6,915.90	61.00	31.46	83.52	1,051.81	-8,019.71	4,558.85	4,501.93	56.92	80.087		
10,300.00	6,986.37	7,307.29	6,917.20	62.45	31.47	83.69	1,051.78	-8,019.73	4,459.30	4,402.37	56.93	78.331		
10,400.00	6,986.29	7,308.59	6,918.50	63.90	31.47	83.87	1,051.75	-8,019.75	4,359.76	4,302.83	56.94	76.572		
10,500.00	6,986.21	7,309.89	6,919.79	65.37	31.47	84.04	1,051.72	-8,019.77	4,260.25	4,203.30	56.95	74.810		
10,600.00	6,986.14	7,311.18	6,921.09	66.84	31.47	84.21	1,051.69	-8,019.79	4,160.76	4,103.80	56.96	73.046		
10,700.00	6,986.06	7,312.48	6,922.38	68.32	31.47	84.39	1,051.65	-8,019.80	4,061.29	4,004.32	56.98	71.278		
10,800.00	6,985.98	7,313.77	6,923.68	69.80	31.47	84.56	1,051.62	-8,019.82	3,961.86	3,904.86	57.00	69.508		
10,900.00	6,985.90	7,315.07	6,924.97	71.29	31.48	84.73	1,051.59	-8,019.84	3,862.45	3,805.42	57.02	67.734		
11,000.00	6,985.82	7,316.36	6,926.27	72.78	31.48	84.91	1,051.56	-8,019.86	3,763.07	3,706.01	57.05	65.956		
11,100.00	6,985.75	7,317.65	6,927.56	74.28	31.48	85.08	1,051.53	-8,019.88	3,663.72	3,606.63	57.09	64.173		
11,200.00	6,985.67	7,318.94	6,928.85	75.78	31.48	85.26	1,051.50	-8,019.89	3,564.41	3,507.28	57.13	62.387		
11,300.00	6,985.59	7,320.24	6,930.14	77.29	31.48	85.43	1,051.46	-8,019.91	3,465.14	3,407.95	57.18	60.596		
11,400.00	6,985.51	7,321.53	6,931.43	78.80	31.48	85.60	1,051.43	-8,019.93	3,365.91	3,308.67	57.24	58.799		
11,500.00	6,985.43	7,322.82	6,932.72	80.31	31.49	85.78	1,051.40	-8,019.95	3,266.73	3,209.42	57.31	56.997		
11,600.00	6,985.35	7,324.11	6,934.01	81.83	31.49	85.95	1,051.37	-8,019.96	3,167.60	3,110.20	57.40	55.189		
11,700.00	6,985.28	7,325.39	6,935.30	83.35	31.49	86.12	1,051.34	-8,019.98	3,068.52	3,011.03	57.49	53.374		
11,800.00	6,985.20	7,326.68	6,936.58	84.87	31.49	86.30	1,051.31	-8,020.00	2,969.51	2,911.91	57.60	51.551		
11,900.00	6,985.12	7,327.97	6,937.87	86.40	31.49	86.47	1,051.28	-8,020.02	2,870.57	2,812.83	57.73	49.721		
12,000.00	6,985.04	7,329.26	6,939.16	87.93	31.49	86.65	1,051.24	-8,020.03	2,771.70	2,713.81	57.89	47.882		
12,100.00	6,984.96	7,330.54	6,940.44	89.46	31.50	86.82	1,051.21	-8,020.05	2,672.91	2,614.84	58.06	46.034		
12,200.00	6,984.88	7,331.83	6,941.73	90.99	31.50	86.99	1,051.18	-8,020.07	2,574.21	2,515.94	58.27	44.176		
12,300.00	6,984.81	7,333.11	6,943.01	92.53	31.50	87.17	1,051.15	-8,020.09	2,475.63	2,417.11	58.52	42.307		
12,400.00	6,984.73	7,334.40	6,944.29	94.07	31.50	87.34	1,051.12	-8,020.10	2,377.15	2,318.35	58.80	40.426		
12,500.00	6,984.65	7,335.68	6,945.58	95.61	31.50	87.51	1,051.09	-8,020.12	2,278.81	2,219.67	59.14	38.534		
12,600.00	6,984.57	7,336.96	6,946.86	97.15	31.50	87.69	1,051.06	-8,020.14	2,180.62	2,121.09	59.53	36.629		
12,700.00	6,984.49	7,338.24	6,948.14	98.70	31.51	87.86	1,051.03	-8,020.16	2,082.60	2,022.61	60.00	34.711		
12,800.00	6,984.41	7,339.52	6,949.42	100.25	31.51	88.03	1,050.99	-8,020.17	1,984.78	1,924.24	60.55	32.781		
12,900.00	6,984.34	7,340.80	6,950.70	101.80	31.51	88.21	1,050.96	-8,020.19	1,887.19	1,825.99	61.20	30.838		
13,000.00	6,984.26	7,342.08	6,951.98	103.35	31.51	88.38	1,050.93	-8,020.21	1,789.86	1,727.89	61.97	28.883		
13,100.00	6,984.18	7,343.36	6,953.26	104.90	31.51	88.55	1,050.90	-8,020.23	1,692.84	1,629.96	62.88	26.920		
13,200.00	6,984.10	7,344.64	6,954.54	106.45	31.51	88.73	1,050.87	-8,020.24	1,596.19	1,532.21	63.98	24.949		
13,300.00	6,984.02	7,345.92	6,955.81	108.01	31.52	88.90	1,050.84	-8,020.26	1,499.98	1,434.69	65.28	22.976		
13,400.00	6,983.94	7,347.20	6,957.09	109.56	31.52	89.08	1,050.81	-8,020.28	1,404.29	1,337.44	66.85	21.007		
13,500.00	6,983.87	7,348.47	6,958.37	111.12	31.52	89.25	1,050.78	-8,020.30	1,309.25	1,240.52	68.73	19.049		
13,600.00	6,983.79	7,349.75	6,959.64	112.68	31.52	89.42	1,050.75	-8,020.31	1,215.00	1,144.00	71.00	17.113		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164C - OH - OH-SVY											Offset Site Error: 0.00 usft
Survey Program: 386-APC_ISCWSA REV 2 MWD											Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
13,700.00	6,983.71	7,351.02	6,960.92	114.24	31.52	89.59	1,050.71	-8,020.33	1,121.75	1,048.00	
13,800.00	6,983.63	7,352.30	6,962.19	115.80	31.52	89.77	1,050.68	-8,020.35	1,029.76	952.68	13.359
13,900.00	6,983.55	7,353.57	6,963.46	117.37	31.53	89.94	1,050.65	-8,020.37	939.41	858.27	11.577
14,000.00	6,983.47	7,354.84	6,964.73	118.93	31.53	90.11	1,050.62	-8,020.38	851.22	765.12	9.887
14,100.00	6,983.40	7,356.12	6,966.01	120.50	31.53	90.29	1,050.59	-8,020.40	765.93	673.80	8.313
14,200.00	6,983.32	7,357.39	6,967.28	122.06	31.53	90.46	1,050.56	-8,020.42	684.64	585.19	6.884
14,300.00	6,983.24	7,358.66	6,968.55	123.63	31.53	90.63	1,050.53	-8,020.44	608.94	500.76	5.629
14,400.00	6,983.16	7,359.93	6,969.82	125.20	31.53	90.81	1,050.50	-8,020.45	541.18	422.96	4.578
14,500.00	6,983.08	7,361.20	6,971.09	126.77	31.54	90.98	1,050.47	-8,020.47	484.71	355.77	3.759
14,600.00	6,983.00	7,362.47	6,972.36	128.33	31.54	91.15	1,050.44	-8,020.49	443.85	304.96	3.196
14,700.00	6,982.93	7,363.74	6,973.62	129.91	31.54	91.32	1,050.41	-8,020.50	423.16	277.13	2.898
14,739.71	6,982.90	7,364.24	6,974.13	130.53	31.54	91.39	1,050.39	-8,020.51	421.29	273.59	2.852 CC, ES, SF
14,800.00	6,982.85	7,365.00	6,974.89	131.48	31.54	91.50	1,050.38	-8,020.52	425.59	276.78	2.860
14,900.00	6,982.77	7,366.27	6,976.16	133.05	31.54	91.67	1,050.34	-8,020.54	450.75	303.89	3.069
15,000.00	6,982.69	7,367.54	6,977.42	134.62	31.54	91.84	1,050.31	-8,020.56	495.20	353.89	3.504
15,100.00	6,982.61	7,368.80	6,978.69	136.20	31.55	92.01	1,050.28	-8,020.57	554.32	420.27	4.135
15,200.00	6,982.54	7,370.07	6,979.95	137.77	31.55	92.18	1,050.25	-8,020.59	623.95	497.38	4.930
15,300.00	6,982.46	7,371.33	6,981.22	139.35	31.55	92.36	1,050.22	-8,020.61	700.97	581.31	5.858
15,400.00	6,982.38	7,372.59	6,982.48	140.92	31.55	92.53	1,050.19	-8,020.62	783.20	669.62	6.896
15,500.00	6,982.30	7,373.86	6,983.74	142.50	31.55	92.70	1,050.16	-8,020.64	869.16	760.81	8.022
15,600.00	6,982.22	7,375.12	6,985.00	144.07	31.55	92.87	1,050.13	-8,020.66	957.84	853.96	9.220
15,700.00	6,982.14	7,376.38	6,986.26	145.65	31.56	93.04	1,050.10	-8,020.68	1,048.57	948.48	10.477
15,800.00	6,982.07	7,377.64	6,987.52	147.23	31.56	93.21	1,050.07	-8,020.69	1,140.84	1,044.01	11.782
15,900.00	6,981.99	7,378.90	6,988.78	148.81	31.56	93.38	1,050.04	-8,020.71	1,234.32	1,140.28	13.125
16,000.00	6,981.91	7,380.16	6,990.04	150.39	31.56	93.56	1,050.01	-8,020.73	1,328.74	1,237.11	14.500
16,100.00	6,981.83	7,381.42	6,991.30	151.97	31.56	93.73	1,049.98	-8,020.74	1,423.93	1,334.38	15.902
16,200.00	6,981.75	7,382.68	6,992.56	153.55	31.56	93.90	1,049.95	-8,020.76	1,519.73	1,432.01	17.324
16,300.00	6,981.67	7,383.94	6,993.82	155.13	31.56	94.07	1,049.92	-8,020.78	1,616.04	1,529.92	18.764
16,400.00	6,981.60	7,385.19	6,995.07	156.71	31.57	94.24	1,049.89	-8,020.80	1,712.78	1,628.06	20.218
16,500.00	6,981.52	7,386.45	6,996.33	158.29	31.57	94.41	1,049.86	-8,020.81	1,809.86	1,726.39	21.683
16,600.00	6,981.44	7,387.70	6,997.58	159.88	31.57	94.58	1,049.83	-8,020.83	1,907.25	1,824.89	23.157
16,700.00	6,981.36	7,388.96	6,998.84	161.46	31.57	94.75	1,049.80	-8,020.85	2,004.89	1,923.52	24.638
16,800.00	6,981.28	7,390.21	7,000.09	163.04	31.57	94.92	1,049.77	-8,020.86	2,102.76	2,022.27	26.125
16,900.00	6,981.20	7,391.47	7,001.34	164.62	31.57	95.09	1,049.74	-8,020.88	2,200.81	2,121.12	27.619
17,000.00	6,981.13	7,392.72	7,002.60	166.21	31.58	95.26	1,049.71	-8,020.90	2,299.04	2,220.06	29.110
17,100.00	6,981.05	7,393.97	7,003.85	167.79	31.58	95.43	1,049.68	-8,020.91	2,397.41	2,319.07	30.606
17,200.00	6,980.97	7,395.22	7,005.10	169.38	31.58	95.60	1,049.65	-8,020.93	2,495.90	2,418.16	32.103
17,300.00	6,980.89	7,396.48	7,006.35	170.96	31.58	95.77	1,049.62	-8,020.95	2,594.52	2,517.30	33.601
17,400.00	6,980.81	7,397.73	7,007.60	172.55	31.58	95.94	1,049.59	-8,020.96	2,693.23	2,616.50	35.099
17,500.00	6,980.73	7,398.98	7,008.85	174.13	31.58	96.10	1,049.56	-8,020.98	2,792.04	2,715.74	36.596
17,600.00	6,980.66	7,400.22	7,010.10	175.72	31.59	96.27	1,049.53	-8,021.00	2,890.92	2,815.03	38.092
17,700.00	6,980.58	7,401.47	7,011.35	177.31	31.59	96.44	1,049.50	-8,021.02	2,989.88	2,914.36	39.587
17,800.00	6,980.50	7,402.72	7,012.59	178.89	31.59	96.61	1,049.47	-8,021.03	3,088.91	3,013.72	41.080
17,900.00	6,980.42	7,403.97	7,013.84	180.48	31.59	96.78	1,049.44	-8,021.05	3,188.00	3,113.11	42.571
18,000.00	6,980.34	7,405.21	7,015.08	182.07	31.59	96.95	1,049.41	-8,021.07	3,287.14	3,212.53	44.060
18,100.00	6,980.26	7,406.46	7,016.33	183.66	31.59	97.11	1,049.38	-8,021.08	3,386.33	3,311.98	45.546
18,200.00	6,980.19	7,407.70	7,017.57	185.24	31.60	97.28	1,049.35	-8,021.10	3,485.57	3,411.45	47.029
18,300.00	6,980.11	7,408.95	7,018.82	186.83	31.60	97.45	1,049.32	-8,021.12	3,584.85	3,510.95	48.509
18,400.00	6,980.03	7,410.19	7,020.06	188.42	31.60	97.62	1,049.29	-8,021.13	3,684.16	3,610.46	49.987
18,500.00	6,979.95	7,411.44	7,021.30	190.01	31.60	97.78	1,049.26	-8,021.15	3,783.52	3,709.99	51.460
18,600.00	6,979.87	7,412.68	7,022.55	191.60	31.60	97.95	1,049.23	-8,021.17	3,882.90	3,809.55	52.931
18,700.00	6,979.79	7,413.92	7,023.79	193.19	31.60	98.12	1,049.20	-8,021.18	3,982.32	3,909.11	54.398

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164C - OH - OH-SVY											Offset Site Error: 0.00 usft
Survey Program: 386-APC_ISCWSA REV 2 MWD											Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
18,800.00	6,979.72	7,415.16	7,025.03	194.78	31.61	98.28	1,049.17	-8,021.20	4,081.76	4,008.70	55.862
18,900.00	6,979.64	7,416.40	7,026.27	196.37	31.61	98.45	1,049.14	-8,021.22	4,181.24	4,108.29	57.321
19,000.00	6,979.56	7,417.64	7,027.51	197.96	31.61	98.61	1,049.11	-8,021.23	4,280.73	4,207.90	58.778
19,100.00	6,979.48	7,418.88	7,028.75	199.55	31.61	98.78	1,049.08	-8,021.25	4,380.25	4,307.52	60.230
19,200.00	6,979.40	7,420.12	7,029.98	201.14	31.61	98.95	1,049.05	-8,021.27	4,479.79	4,407.16	61.678
19,300.00	6,979.33	7,421.36	7,031.22	202.73	31.61	99.11	1,049.02	-8,021.28	4,579.35	4,506.80	63.122
19,400.00	6,979.25	7,422.59	7,032.46	204.32	31.62	99.28	1,048.99	-8,021.30	4,678.92	4,606.45	64.563
19,500.00	6,979.17	7,423.83	7,033.69	205.91	31.62	99.44	1,048.96	-8,021.32	4,778.52	4,706.11	65.999
19,600.00	6,979.09	7,425.07	7,034.93	207.50	31.62	99.61	1,048.93	-8,021.33	4,878.13	4,805.79	67.431
19,700.00	6,979.01	7,426.30	7,036.17	209.09	31.62	99.77	1,048.90	-8,021.35	4,977.75	4,905.47	68.860
19,800.00	6,978.93	7,427.54	7,037.40	210.69	31.62	99.94	1,048.87	-8,021.37	5,077.39	5,005.15	70.283
19,900.00	6,978.86	7,428.77	7,038.63	212.28	31.62	100.10	1,048.84	-8,021.38	5,177.05	5,104.85	71.703
20,000.00	6,978.78	7,430.00	7,039.87	213.87	31.62	100.26	1,048.81	-8,021.40	5,276.72	5,204.55	73.119
20,100.00	6,978.70	7,431.24	7,041.10	215.46	31.63	100.43	1,048.78	-8,021.42	5,376.39	5,304.26	74.530
20,200.00	6,978.62	7,432.47	7,042.33	217.05	31.63	100.59	1,048.75	-8,021.43	5,476.08	5,403.97	75.937
20,300.00	6,978.54	7,433.70	7,043.56	218.65	31.63	100.75	1,048.72	-8,021.45	5,575.79	5,503.69	77.339
20,400.00	6,978.46	7,434.93	7,044.79	220.24	31.63	100.92	1,048.69	-8,021.47	5,675.50	5,603.42	78.738
20,500.00	6,978.39	7,436.16	7,046.02	221.83	31.63	101.08	1,048.66	-8,021.48	5,775.22	5,703.15	80.132
20,600.00	6,978.31	7,437.39	7,047.25	223.43	31.63	101.24	1,048.63	-8,021.50	5,874.95	5,802.88	81.521
20,700.00	6,978.23	7,438.62	7,048.48	225.02	31.64	101.40	1,048.61	-8,021.51	5,974.69	5,902.62	82.906
20,800.00	6,978.15	7,439.85	7,049.71	226.61	31.64	101.56	1,048.58	-8,021.53	6,074.43	6,002.37	84.287
20,900.00	6,978.07	7,441.07	7,050.93	228.21	31.64	101.73	1,048.55	-8,021.55	6,174.19	6,102.12	85.664
21,000.00	6,977.99	7,442.30	7,052.16	229.80	31.64	101.89	1,048.52	-8,021.56	6,273.95	6,201.87	87.036
21,100.00	6,977.92	7,443.53	7,053.39	231.39	31.64	102.05	1,048.49	-8,021.58	6,373.72	6,301.62	88.403
21,200.00	6,977.84	7,444.75	7,054.61	232.99	31.64	102.21	1,048.46	-8,021.60	6,473.50	6,401.38	89.766
21,300.00	6,977.76	7,445.98	7,055.84	234.58	31.65	102.37	1,048.43	-8,021.61	6,573.28	6,501.15	91.125
21,400.00	6,977.68	7,447.20	7,057.06	236.18	31.65	102.53	1,048.40	-8,021.63	6,673.07	6,600.92	92.479
21,500.00	6,977.60	7,448.43	7,058.28	237.77	31.65	102.69	1,048.37	-8,021.65	6,772.87	6,700.69	93.829
21,600.00	6,977.52	7,449.65	7,059.50	239.37	31.65	102.85	1,048.34	-8,021.66	6,872.67	6,800.46	95.174
21,700.00	6,977.45	7,450.87	7,060.73	240.96	31.65	103.01	1,048.31	-8,021.68	6,972.48	6,900.23	96.515
21,800.00	6,977.37	7,452.09	7,061.95	242.56	31.65	103.17	1,048.28	-8,021.69	7,072.29	7,000.01	97.852
21,900.00	6,977.29	7,453.32	7,063.17	244.15	31.65	103.33	1,048.26	-8,021.71	7,172.11	7,099.79	99.184
22,000.00	6,977.21	7,454.54	7,064.39	245.75	31.66	103.49	1,048.23	-8,021.73	7,271.93	7,199.58	100.511
22,100.00	6,977.13	7,455.76	7,065.61	247.34	31.66	103.65	1,048.20	-8,021.74	7,371.75	7,299.37	101.834
22,200.00	6,977.05	7,456.98	7,066.83	248.94	31.66	103.80	1,048.17	-8,021.76	7,471.59	7,399.15	103.153
22,269.73	6,977.00	7,457.83	7,067.68	250.05	31.66	103.91	1,048.15	-8,021.77	7,541.20	7,468.73	104.069

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 95-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-102.67	-1,073.96	-4,778.40	4,898.89				
100.00	100.00	0.00	0.00	0.25	0.00	-102.67	-1,073.96	-4,778.40	4,897.62	4,897.37	0.25	N/A	
137.88	137.88	25.88	25.88	0.39	0.48	-102.67	-1,073.96	-4,778.40	4,897.61	4,896.74	0.87	5,660.399	
200.00	200.00	88.00	88.00	0.61	1.63	-102.67	-1,073.96	-4,778.40	4,897.61	4,895.37	2.24	2,190.213	
286.67	286.67	174.42	174.42	0.92	3.22	-102.67	-1,073.80	-4,778.40	4,897.57	4,893.43	4.14	1,181.738	
300.00	300.00	186.98	186.98	0.97	3.46	-102.67	-1,073.80	-4,778.40	4,897.57	4,893.15	4.42	1,106.986	
400.00	400.00	288.01	288.00	1.33	5.32	-102.67	-1,073.96	-4,778.40	4,897.61	4,890.96	6.65	736.452	
480.54	480.54	368.52	368.51	1.62	6.81	-102.66	-1,073.69	-4,778.40	4,897.55	4,889.12	8.43	581.150	
500.00	500.00	387.27	387.26	1.68	7.16	-102.66	-1,073.70	-4,778.40	4,897.55	4,888.71	8.84	553.796	
600.00	600.00	483.57	483.56	2.04	8.94	-102.67	-1,073.93	-4,778.40	4,897.60	4,886.62	10.98	445.954	
700.00	700.00	588.02	588.00	2.40	10.87	-102.67	-1,073.96	-4,778.40	4,897.61	4,884.33	13.27	369.033	
800.00	799.98	688.00	687.98	2.76	12.72	-91.93	-1,073.96	-4,778.40	4,897.66	4,882.19	15.48	316.439	
830.54	830.50	718.51	718.50	2.87	13.28	-91.94	-1,073.46	-4,778.40	4,897.60	4,881.45	16.15	303.244	
849.89	849.82	737.45	737.43	2.94	13.63	-91.95	-1,073.47	-4,778.40	4,897.63	4,881.06	16.57	295.575	
900.00	899.86	786.48	786.46	3.12	14.54	-91.98	-1,073.51	-4,778.40	4,897.73	4,880.07	17.66	277.408	
1,000.00	999.73	884.31	884.29	3.48	16.35	-92.04	-1,073.72	-4,778.40	4,897.96	4,878.14	19.82	247.093	
1,100.00	1,099.59	987.62	987.59	3.84	18.30	-92.11	-1,073.96	-4,778.40	4,898.20	4,876.07	22.14	221.286	
1,200.00	1,199.45	1,087.49	1,087.45	4.20	20.25	-92.17	-1,073.96	-4,778.40	4,898.40	4,873.95	24.45	200.354	
1,300.00	1,299.32	1,187.35	1,187.32	4.56	22.21	-92.23	-1,073.96	-4,778.40	4,898.60	4,871.84	26.76	183.038	
1,400.00	1,399.18	1,285.31	1,285.27	4.92	24.12	-92.28	-1,073.51	-4,778.40	4,898.71	4,869.67	29.04	168.689	
1,500.00	1,499.04	1,383.21	1,383.17	5.28	26.04	-92.35	-1,073.77	-4,778.40	4,898.98	4,867.66	31.32	156.436	
1,600.00	1,598.91	1,486.98	1,486.91	5.64	28.07	-92.41	-1,073.96	-4,778.40	4,899.24	4,865.52	33.71	145.328	
1,700.00	1,698.77	1,586.85	1,586.77	6.00	30.03	-92.47	-1,073.96	-4,778.40	4,899.46	4,863.42	36.03	135.968	
1,800.00	1,798.63	1,686.71	1,686.63	6.36	31.99	-92.54	-1,073.96	-4,778.40	4,899.69	4,861.33	38.36	127.740	
1,821.69	1,820.29	1,707.98	1,707.89	6.44	32.41	-92.54	-1,072.80	-4,778.40	4,899.47	4,860.62	38.85	126.104	
1,900.00	1,898.49	1,783.39	1,783.30	6.72	33.89	-92.58	-1,072.92	-4,778.40	4,899.68	4,859.07	40.62	120.632	
2,000.00	1,998.36	1,879.66	1,879.57	7.09	35.78	-92.65	-1,073.35	-4,778.40	4,900.02	4,857.16	42.87	114.302	
2,100.00	2,098.22	1,986.34	1,986.22	7.45	37.88	-92.72	-1,073.96	-4,778.40	4,900.41	4,855.08	45.33	108.113	
2,200.00	2,198.08	2,086.21	2,086.08	7.81	39.84	-92.78	-1,073.96	-4,778.40	4,900.66	4,853.01	47.65	102.842	
2,300.00	2,297.95	2,186.00	2,185.88	8.17	41.80	-92.83	-1,073.48	-4,778.40	4,900.80	4,850.83	49.98	98.062	
2,400.00	2,397.81	2,283.63	2,283.50	8.53	43.72	-92.90	-1,073.58	-4,778.40	4,901.09	4,848.83	52.26	93.786	
2,500.00	2,497.67	2,381.23	2,381.11	8.90	45.64	-92.96	-1,073.87	-4,778.40	4,901.43	4,846.89	54.54	89.869	
2,600.00	2,597.54	2,485.70	2,485.54	9.26	47.65	-93.02	-1,073.96	-4,778.40	4,901.72	4,844.81	56.90	86.139	
2,700.00	2,697.40	2,585.56	2,585.40	9.62	49.55	-93.08	-1,073.96	-4,778.40	4,902.00	4,842.83	59.17	82.848	
2,800.00	2,797.26	2,681.58	2,681.40	9.98	51.38	-93.13	-1,073.20	-4,778.40	4,902.10	4,840.74	61.36	79.893	
2,900.00	2,897.13	2,776.60	2,776.42	10.35	53.18	-93.20	-1,073.71	-4,778.40	4,902.52	4,838.99	63.53	77.168	
3,000.00	2,996.99	2,885.18	2,884.99	10.71	55.16	-93.27	-1,073.96	-4,778.40	4,902.87	4,837.00	65.87	74.437	
3,100.00	3,096.85	2,985.04	2,984.85	11.07	56.94	-93.33	-1,073.96	-4,778.40	4,903.17	4,835.16	68.01	72.097	
3,200.00	3,196.72	3,084.59	3,084.40	11.43	58.71	-93.39	-1,073.70	-4,778.40	4,903.41	4,833.27	70.14	69.904	
3,300.00	3,296.58	3,183.40	3,183.21	11.80	60.47	-93.45	-1,073.77	-4,778.40	4,903.74	4,831.47	72.27	67.855	
3,400.00	3,396.44	3,282.20	3,282.01	12.16	62.23	-93.51	-1,073.92	-4,778.40	4,904.10	4,829.71	74.39	65.923	
3,500.00	3,496.31	3,384.51	3,384.31	12.52	64.26	-93.57	-1,073.96	-4,778.40	4,904.43	4,827.65	76.78	63.873	
3,600.00	3,596.17	3,484.37	3,484.17	12.88	66.29	-93.63	-1,073.96	-4,778.40	4,904.76	4,825.59	79.17	61.949	
3,700.00	3,696.03	3,584.23	3,584.03	13.25	68.32	-93.69	-1,073.96	-4,778.40	4,905.09	4,823.53	81.56	60.138	
3,800.00	3,795.89	3,684.10	3,683.89	13.61	70.34	-93.75	-1,073.96	-4,778.40	4,905.43	4,821.48	83.95	58.431	
3,900.00	3,895.76	3,783.96	3,783.76	13.97	72.37	-93.81	-1,073.96	-4,778.40	4,905.78	4,819.44	86.34	56.817	
4,000.00	3,995.62	3,883.82	3,883.62	14.34	74.40	-93.88	-1,073.96	-4,778.40	4,906.13	4,817.40	88.73	55.291	
4,100.00	4,095.48	3,983.68	3,983.48	14.70	76.42	-93.94	-1,073.96	-4,778.40	4,906.49	4,815.37	91.12	53.845	
4,124.52	4,119.97	4,008.12	4,007.91	14.79	76.92	-93.93	-1,072.43	-4,778.40	4,906.19	4,814.48	91.71	53.499	
4,200.00	4,195.35	4,082.92	4,082.71	15.06	78.44	-93.98	-1,072.45	-4,778.40	4,906.47	4,812.97	93.50	52.476	
4,300.00	4,295.21	4,182.01	4,181.80	15.42	80.45	-94.04	-1,072.53	-4,778.40	4,906.85	4,810.98	95.87	51.181	
4,400.00	4,395.07	4,281.09	4,280.88	15.79	82.46	-94.10	-1,072.68	-4,778.40	4,907.26	4,809.01	98.25	49.948	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		95-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
4,500.00	4,494.94	4,380.17	4,379.96	16.15	84.47	-94.17	-1,072.88	-4,778.40	4,907.69	4,807.07	100.62	48.774		
4,600.00	4,594.80	4,479.24	4,479.03	16.51	86.48	-94.23	-1,073.14	-4,778.40	4,908.14	4,805.15	102.99	47.655		
4,700.00	4,694.66	4,578.31	4,578.10	16.87	88.49	-94.29	-1,073.47	-4,778.40	4,908.62	4,803.25	105.37	46.586		
4,800.00	4,794.53	4,677.37	4,677.15	17.24	90.50	-94.36	-1,073.86	-4,778.40	4,909.12	4,801.37	107.74	45.564		
4,900.00	4,894.39	4,782.76	4,782.39	17.60	92.76	-94.42	-1,073.96	-4,778.40	4,909.54	4,799.18	110.36	44.485		
5,000.00	4,994.25	4,882.63	4,882.25	17.96	94.94	-94.48	-1,073.96	-4,778.40	4,909.95	4,797.05	112.90	43.488		
5,100.00	5,094.12	4,982.49	4,982.12	18.33	97.12	-94.54	-1,073.96	-4,778.40	4,910.36	4,794.92	115.44	42.536		
5,200.00	5,193.98	5,082.35	5,081.98	18.69	99.29	-94.61	-1,073.96	-4,778.40	4,910.78	4,792.80	117.98	41.624		
5,300.00	5,293.84	5,182.22	5,181.84	19.05	101.47	-94.67	-1,073.96	-4,778.40	4,911.20	4,790.68	120.52	40.751		
5,336.91	5,330.71	5,219.08	5,218.71	19.19	102.27	-94.69	-1,073.96	-4,778.40	4,911.36	4,789.90	121.46	40.437		
5,400.00	5,393.71	5,282.09	5,281.71	19.41	103.64	-94.73	-1,073.96	-4,778.40	4,911.62	4,788.56	123.06	39.913		
5,500.00	5,493.62	5,382.00	5,381.62	19.77	105.82	-94.78	-1,073.96	-4,778.40	4,911.97	4,786.37	125.60	39.109		
5,600.00	5,593.57	5,481.94	5,481.57	20.13	108.00	-94.82	-1,073.96	-4,778.40	4,912.25	4,784.12	128.13	38.337		
5,700.00	5,693.53	5,581.91	5,581.53	20.49	110.18	-94.85	-1,073.96	-4,778.40	4,912.46	4,781.79	130.67	37.595		
5,800.00	5,793.52	5,681.90	5,681.52	20.85	112.36	-94.87	-1,073.96	-4,778.40	4,912.60	4,779.39	133.20	36.880		
5,900.00	5,893.52	5,781.89	5,781.52	21.20	114.53	-94.88	-1,073.96	-4,778.40	4,912.66	4,776.92	135.74	36.192		
5,936.48	5,930.00	5,818.37	5,818.00	21.33	115.33	-105.63	-1,073.96	-4,778.40	4,912.67	4,776.00	136.66	35.948		
6,000.00	5,993.52	5,881.89	5,881.52	21.56	116.71	-105.63	-1,073.96	-4,778.40	4,912.67	4,774.40	138.27	35.529		
6,100.00	6,093.52	5,981.89	5,981.52	21.91	118.89	-105.63	-1,073.96	-4,778.40	4,912.67	4,771.86	140.80	34.890		
6,110.00	6,103.52	5,991.89	5,991.52	21.95	119.11	-105.63	-1,073.96	-4,778.40	4,912.67	4,771.61	141.06	34.827		
6,200.00	6,193.52	6,028.00	6,027.37	22.27	119.90	-105.63	-1,073.96	-4,778.40	4,912.97	4,770.81	142.15	34.561		
6,300.00	6,293.52	6,028.00	6,027.37	22.62	119.90	-105.63	-1,073.96	-4,778.40	4,915.08	4,772.64	142.45	34.504		
6,358.48	6,352.00	6,028.00	6,027.37	22.83	119.90	-105.63	-1,073.96	-4,778.40	4,917.27	4,774.67	142.59	34.484		
6,400.00	6,393.49	6,028.00	6,027.37	22.97	119.90	-30.99	-1,073.96	-4,778.40	4,918.08	4,775.39	142.69	34.468		
6,450.00	6,443.20	6,028.00	6,027.37	23.15	119.90	-31.07	-1,073.96	-4,778.40	4,916.44	4,773.66	142.78	34.433		
6,500.00	6,492.36	6,028.00	6,027.37	23.33	119.90	-31.28	-1,073.96	-4,778.40	4,911.95	4,769.08	142.87	34.381		
6,550.00	6,540.64	6,028.00	6,027.37	23.51	119.90	-31.63	-1,073.96	-4,778.40	4,904.63	4,761.69	142.94	34.312		
6,600.00	6,587.77	6,028.00	6,027.37	23.69	119.90	-32.12	-1,073.96	-4,778.40	4,894.52	4,751.51	143.00	34.227		
6,650.00	6,633.44	6,028.00	6,027.37	23.88	119.90	-32.76	-1,073.96	-4,778.40	4,881.65	4,738.60	143.05	34.125		
6,700.00	6,677.37	6,028.00	6,027.37	24.07	119.90	-33.57	-1,073.96	-4,778.40	4,866.09	4,723.00	143.09	34.007		
6,750.00	6,719.30	6,028.00	6,027.37	24.26	119.90	-34.55	-1,073.96	-4,778.40	4,847.91	4,704.78	143.12	33.873		
6,800.00	6,758.97	6,028.00	6,027.37	24.46	119.90	-35.73	-1,073.96	-4,778.40	4,827.18	4,684.04	143.14	33.723		
6,850.00	6,796.12	6,028.00	6,027.37	24.67	119.90	-37.13	-1,073.96	-4,778.40	4,804.01	4,660.85	143.16	33.558		
6,900.00	6,830.54	6,028.00	6,027.37	24.88	119.90	-38.77	-1,073.96	-4,778.40	4,778.50	4,635.34	143.17	33.377		
6,950.00	6,862.00	6,028.00	6,027.37	25.11	119.90	-40.69	-1,073.96	-4,778.40	4,750.78	4,607.61	143.18	33.181		
7,000.00	6,890.33	6,028.00	6,027.37	25.34	119.90	-42.92	-1,073.96	-4,778.40	4,720.98	4,577.79	143.19	32.970		
7,050.00	6,915.33	6,028.00	6,027.37	25.59	119.90	-45.50	-1,073.96	-4,778.40	4,689.24	4,546.04	143.20	32.745		
7,100.00	6,936.86	6,028.00	6,027.37	25.85	119.90	-48.47	-1,073.96	-4,778.40	4,655.72	4,512.50	143.23	32.506		
7,150.00	6,954.79	6,028.00	6,027.37	26.12	119.90	-51.88	-1,073.96	-4,778.40	4,620.60	4,477.34	143.26	32.254		
7,200.00	6,968.99	6,028.00	6,027.37	26.40	119.90	-55.77	-1,073.96	-4,778.40	4,584.05	4,440.75	143.30	31.988		
7,250.00	6,979.40	6,028.00	6,027.37	26.69	119.90	-60.17	-1,073.96	-4,778.40	4,546.27	4,402.90	143.37	31.711		
7,300.00	6,985.94	6,028.00	6,027.37	27.00	119.90	-65.09	-1,073.96	-4,778.40	4,507.46	4,364.02	143.45	31.423		
7,350.00	6,988.56	6,028.00	6,027.37	27.31	119.90	-70.50	-1,073.96	-4,778.40	4,467.84	4,324.30	143.55	31.125		
7,358.93	6,988.62	6,028.00	6,027.37	27.36	119.90	-71.51	-1,073.96	-4,778.40	4,460.70	4,317.13	143.57	31.070		
7,400.00	6,988.59	6,028.00	6,027.37	27.63	119.90	-71.51	-1,073.96	-4,778.40	4,427.87	4,284.21	143.66	30.821		
7,500.00	6,988.52	6,028.00	6,027.37	28.33	119.90	-71.51	-1,073.96	-4,778.40	4,348.52	4,204.59	143.93	30.212		
7,600.00	6,988.45	6,028.00	6,027.37	29.10	119.90	-71.51	-1,073.96	-4,778.40	4,270.04	4,125.79	144.25	29.603		
7,658.93	6,988.41	6,028.00	6,027.37	29.59	119.90	-71.51	-1,073.96	-4,778.40	4,224.22	4,079.76	144.45	29.243		
7,700.00	6,988.38	6,028.00	6,027.37	29.94	119.90	-71.19	-1,073.96	-4,778.40	4,192.29	4,047.69	144.61	28.991		
7,800.00	6,988.31	6,028.00	6,027.37	30.84	119.90	-70.36	-1,073.96	-4,778.40	4,113.78	3,968.78	145.00	28.371		
7,900.00	6,988.24	6,028.00	6,027.37	31.79	119.90	-69.46	-1,073.96	-4,778.40	4,034.16	3,888.75	145.41	27.743		
8,000.00	6,988.16	6,028.00	6,027.37	32.78	119.90	-68.48	-1,073.96	-4,778.40	3,953.48	3,807.63	145.85	27.107		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		95-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,100.00	6,988.09	6,028.00	6,027.37	33.82	119.90	-67.41	-1,073.96	-4,778.40	3,871.76	3,725.47	146.29	26.466	
8,200.00	6,988.01	6,028.00	6,027.37	34.88	119.90	-66.26	-1,073.96	-4,778.40	3,789.05	3,642.30	146.74	25.821	
8,300.00	6,987.94	6,028.00	6,027.37	35.98	119.90	-65.00	-1,073.96	-4,778.40	3,705.37	3,558.17	147.20	25.173	
8,400.00	6,987.86	6,028.00	6,027.37	37.11	119.90	-63.63	-1,073.96	-4,778.40	3,620.77	3,473.12	147.65	24.522	
8,416.35	6,987.85	6,028.00	6,027.37	37.29	119.90	-63.39	-1,073.96	-4,778.40	3,606.85	3,459.13	147.73	24.416	
8,500.00	6,987.78	6,028.00	6,027.37	38.25	119.90	-63.39	-1,073.96	-4,778.40	3,535.87	3,387.75	148.11	23.873	
8,600.00	6,987.70	6,028.00	6,027.37	39.43	119.90	-63.39	-1,073.96	-4,778.40	3,451.75	3,303.13	148.61	23.227	
8,700.00	6,987.62	6,028.00	6,027.37	40.64	119.90	-63.39	-1,073.96	-4,778.40	3,368.50	3,219.35	149.15	22.585	
8,800.00	6,987.55	6,028.00	6,027.37	41.88	119.90	-63.39	-1,073.96	-4,778.40	3,286.18	3,136.45	149.73	21.947	
8,900.00	6,987.47	6,028.00	6,027.37	43.14	119.90	-63.39	-1,073.96	-4,778.40	3,204.87	3,054.51	150.35	21.316	
9,000.00	6,987.39	6,028.00	6,027.37	44.42	119.90	-63.39	-1,073.96	-4,778.40	3,124.64	2,973.62	151.02	20.690	
9,100.00	6,987.31	6,028.00	6,027.37	45.72	119.90	-63.39	-1,073.96	-4,778.40	3,045.58	2,893.84	151.74	20.071	
9,200.00	6,987.23	6,028.00	6,027.37	47.04	119.90	-63.39	-1,073.96	-4,778.40	2,967.79	2,815.28	152.51	19.460	
9,300.00	6,987.15	6,028.00	6,027.37	48.38	119.90	-63.39	-1,073.96	-4,778.40	2,891.36	2,738.04	153.32	18.858	
9,400.00	6,987.08	6,028.00	6,027.37	49.73	119.90	-63.39	-1,073.96	-4,778.40	2,816.41	2,662.22	154.19	18.265	
9,500.00	6,987.00	6,028.00	6,027.37	51.10	119.90	-63.39	-1,073.96	-4,778.40	2,743.06	2,587.95	155.12	17.684	
9,600.00	6,986.92	6,028.00	6,027.37	52.48	119.90	-63.39	-1,073.96	-4,778.40	2,671.44	2,515.35	156.09	17.114	
9,700.00	6,986.84	6,028.00	6,027.37	53.87	119.90	-63.39	-1,073.96	-4,778.40	2,601.69	2,444.56	157.13	16.558	
9,800.00	6,986.76	6,028.00	6,027.37	55.28	119.90	-63.39	-1,073.96	-4,778.40	2,533.97	2,375.76	158.21	16.016	
9,900.00	6,986.68	6,028.00	6,027.37	56.69	119.90	-63.39	-1,073.96	-4,778.40	2,468.44	2,309.09	159.35	15.490	
10,000.00	6,986.61	6,028.00	6,027.37	58.12	119.90	-63.39	-1,073.96	-4,778.40	2,405.29	2,244.74	160.54	14.982	
10,100.00	6,986.53	6,028.00	6,027.37	59.55	119.90	-63.39	-1,073.96	-4,778.40	2,344.70	2,182.91	161.78	14.493	
10,200.00	6,986.45	6,028.00	6,027.37	61.00	119.90	-63.39	-1,073.96	-4,778.40	2,286.88	2,123.81	163.07	14.024	
10,300.00	6,986.37	6,028.00	6,027.37	62.45	119.90	-63.39	-1,073.96	-4,778.40	2,232.04	2,067.65	164.40	13.577	
10,400.00	6,986.29	6,028.00	6,027.37	63.90	119.90	-63.39	-1,073.96	-4,778.40	2,180.42	2,014.66	165.76	13.154	
10,500.00	6,986.21	6,028.00	6,027.37	65.37	119.90	-63.39	-1,073.96	-4,778.40	2,132.23	1,965.08	167.15	12.756	
10,600.00	6,986.14	6,028.00	6,027.37	66.84	119.90	-63.39	-1,073.96	-4,778.40	2,087.73	1,919.17	168.56	12.386	
10,700.00	6,986.06	6,028.00	6,027.37	68.32	119.90	-63.39	-1,073.96	-4,778.40	2,047.15	1,877.17	169.98	12.044	
10,800.00	6,985.98	6,028.00	6,027.37	69.80	119.90	-63.39	-1,073.96	-4,778.40	2,010.73	1,839.33	171.39	11.732	
10,900.00	6,985.90	6,028.00	6,027.37	71.29	119.90	-63.39	-1,073.96	-4,778.40	1,978.70	1,805.90	172.80	11.451	
11,000.00	6,985.82	6,028.00	6,027.37	72.78	119.90	-63.39	-1,073.96	-4,778.40	1,951.27	1,777.09	174.17	11.203	
11,100.00	6,985.75	6,028.00	6,027.37	74.28	119.90	-63.39	-1,073.96	-4,778.40	1,928.64	1,753.13	175.51	10.989	
11,200.00	6,985.67	6,028.00	6,027.37	75.78	119.90	-63.39	-1,073.96	-4,778.40	1,910.98	1,734.19	176.79	10.809	
11,300.00	6,985.59	6,028.00	6,027.37	77.29	119.90	-63.39	-1,073.96	-4,778.40	1,898.43	1,720.43	178.00	10.665	
11,400.00	6,985.51	6,028.00	6,027.37	78.80	119.90	-63.39	-1,073.96	-4,778.40	1,891.10	1,711.97	179.13	10.557	
11,488.98	6,985.44	6,028.00	6,027.37	80.14	119.90	-63.39	-1,073.96	-4,778.40	1,889.00	1,708.94	180.06	10.491 CC	
11,500.00	6,985.43	6,028.00	6,027.37	80.31	119.90	-63.39	-1,073.96	-4,778.40	1,889.04	1,708.87	180.17	10.485 ES	
11,600.00	6,985.35	6,028.00	6,027.37	81.83	119.90	-63.39	-1,073.96	-4,778.40	1,892.26	1,711.16	181.11	10.448	
11,700.00	6,985.28	6,028.00	6,027.37	83.35	119.90	-63.39	-1,073.96	-4,778.40	1,900.75	1,718.82	181.93	10.448 SF	
11,800.00	6,985.20	6,028.00	6,027.37	84.87	119.90	-63.39	-1,073.96	-4,778.40	1,914.44	1,731.80	182.64	10.482	
11,900.00	6,985.12	6,028.00	6,027.37	86.40	119.90	-63.39	-1,073.96	-4,778.40	1,933.20	1,749.98	183.22	10.551	
12,000.00	6,985.04	6,028.00	6,027.37	87.93	119.90	-63.39	-1,073.96	-4,778.40	1,956.90	1,773.21	183.69	10.653	
12,100.00	6,984.96	6,028.00	6,027.37	89.46	119.90	-63.39	-1,073.96	-4,778.40	1,985.37	1,801.32	184.04	10.787	
12,200.00	6,984.88	6,028.00	6,027.37	90.99	119.90	-63.39	-1,073.96	-4,778.40	2,018.39	1,834.11	184.28	10.953	
12,300.00	6,984.81	6,028.00	6,027.37	92.53	119.90	-63.39	-1,073.96	-4,778.40	2,055.74	1,871.33	184.41	11.148	
12,400.00	6,984.73	6,028.00	6,027.37	94.07	119.90	-63.39	-1,073.96	-4,778.40	2,097.21	1,912.77	184.44	11.370	
12,500.00	6,984.65	6,028.00	6,027.37	95.61	119.90	-63.39	-1,073.96	-4,778.40	2,142.54	1,958.16	184.38	11.620	
12,600.00	6,984.57	6,028.00	6,027.37	97.15	119.90	-63.39	-1,073.96	-4,778.40	2,191.51	2,007.26	184.25	11.894	
12,700.00	6,984.49	6,028.00	6,027.37	98.70	119.90	-63.39	-1,073.96	-4,778.40	2,243.86	2,059.82	184.04	12.193	
12,800.00	6,984.41	6,028.00	6,027.37	100.25	119.90	-63.39	-1,073.96	-4,778.40	2,299.37	2,115.61	183.76	12.513	
12,900.00	6,984.34	6,028.00	6,027.37	101.80	119.90	-63.39	-1,073.96	-4,778.40	2,357.82	2,174.38	183.44	12.853	
13,000.00	6,984.26	6,028.00	6,027.37	103.35	119.90	-63.39	-1,073.96	-4,778.40	2,418.99	2,235.92	183.07	13.213	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		95-A027Ua_INC-ONLY						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
13,100.00	6,984.18	6,028.00	6,027.37	104.90	119.90	-63.39	-1,073.96	-4,778.40	2,482.68	2,300.01	182.67	13.591		
13,200.00	6,984.10	6,028.00	6,027.37	106.45	119.90	-63.39	-1,073.96	-4,778.40	2,548.71	2,366.47	182.24	13.985		
13,300.00	6,984.02	6,028.00	6,027.37	108.01	119.90	-63.39	-1,073.96	-4,778.40	2,616.89	2,435.10	181.79	14.395		
13,400.00	6,983.94	6,028.00	6,027.37	109.56	119.90	-63.39	-1,073.96	-4,778.40	2,687.07	2,505.75	181.32	14.819		
13,500.00	6,983.87	6,028.00	6,027.37	111.12	119.90	-63.39	-1,073.96	-4,778.40	2,759.08	2,578.24	180.84	15.257		
13,600.00	6,983.79	6,028.00	6,027.37	112.68	119.90	-63.39	-1,073.96	-4,778.40	2,832.80	2,652.44	180.36	15.707		
13,700.00	6,983.71	6,028.00	6,027.37	114.24	119.90	-63.39	-1,073.96	-4,778.40	2,908.08	2,728.21	179.87	16.168		
13,800.00	6,983.63	6,028.00	6,027.37	115.80	119.90	-63.39	-1,073.96	-4,778.40	2,984.82	2,805.44	179.38	16.639		
13,900.00	6,983.55	6,028.00	6,027.37	117.37	119.90	-63.39	-1,073.96	-4,778.40	3,062.90	2,884.00	178.90	17.121		
14,000.00	6,983.47	6,028.00	6,027.37	118.93	119.90	-63.39	-1,073.96	-4,778.40	3,142.22	2,963.80	178.42	17.612		
14,100.00	6,983.40	6,028.00	6,027.37	120.50	119.90	-63.39	-1,073.96	-4,778.40	3,222.69	3,044.75	177.95	18.110		
14,200.00	6,983.32	6,028.00	6,027.37	122.06	119.90	-63.39	-1,073.96	-4,778.40	3,304.23	3,126.75	177.48	18.617		
14,300.00	6,983.24	6,028.00	6,027.37	123.63	119.90	-63.39	-1,073.96	-4,778.40	3,386.76	3,209.73	177.03	19.131		
14,400.00	6,983.16	6,028.00	6,027.37	125.20	119.90	-63.39	-1,073.96	-4,778.40	3,470.21	3,293.62	176.59	19.652		
14,500.00	6,983.08	6,028.00	6,027.37	126.77	119.90	-63.39	-1,073.96	-4,778.40	3,554.51	3,378.36	176.15	20.179		
14,600.00	6,983.00	6,028.00	6,027.37	128.33	119.90	-63.39	-1,073.96	-4,778.40	3,639.61	3,463.88	175.73	20.711		
14,700.00	6,982.93	6,028.00	6,027.37	129.91	119.90	-63.39	-1,073.96	-4,778.40	3,725.45	3,550.13	175.32	21.249		
14,800.00	6,982.85	6,028.00	6,027.37	131.48	119.90	-63.39	-1,073.96	-4,778.40	3,811.98	3,637.05	174.93	21.792		
14,900.00	6,982.77	6,028.00	6,027.37	133.05	119.90	-63.39	-1,073.96	-4,778.40	3,899.15	3,724.61	174.54	22.339		
15,000.00	6,982.69	6,028.00	6,027.37	134.62	119.90	-63.39	-1,073.96	-4,778.40	3,986.93	3,812.76	174.17	22.891		
15,100.00	6,982.61	6,028.00	6,027.37	136.20	119.90	-63.39	-1,073.96	-4,778.40	4,075.26	3,901.45	173.81	23.447		
15,200.00	6,982.54	6,028.00	6,027.37	137.77	119.90	-63.39	-1,073.96	-4,778.40	4,164.13	3,990.67	173.46	24.006		
15,300.00	6,982.46	6,028.00	6,027.37	139.35	119.90	-63.39	-1,073.96	-4,778.40	4,253.49	4,080.37	173.13	24.569		
15,400.00	6,982.38	6,028.00	6,027.37	140.92	119.90	-63.39	-1,073.96	-4,778.40	4,343.32	4,170.51	172.80	25.135		
15,500.00	6,982.30	6,028.00	6,027.37	142.50	119.90	-63.39	-1,073.96	-4,778.40	4,433.58	4,261.09	172.49	25.704		
15,600.00	6,982.22	6,028.00	6,027.37	144.07	119.90	-63.39	-1,073.96	-4,778.40	4,524.25	4,352.06	172.19	26.275		
15,700.00	6,982.14	6,028.00	6,027.37	145.65	119.90	-63.39	-1,073.96	-4,778.40	4,615.30	4,443.40	171.90	26.849		
15,800.00	6,982.07	6,028.00	6,027.37	147.23	119.90	-63.39	-1,073.96	-4,778.40	4,706.72	4,535.10	171.62	27.426		
15,900.00	6,981.99	6,028.00	6,027.37	148.81	119.90	-63.39	-1,073.96	-4,778.40	4,798.48	4,627.13	171.35	28.004		
16,000.00	6,981.91	6,028.00	6,027.37	150.39	119.90	-63.39	-1,073.96	-4,778.40	4,890.56	4,719.48	171.09	28.585		
16,100.00	6,981.83	6,028.00	6,027.37	151.97	119.90	-63.39	-1,073.96	-4,778.40	4,982.95	4,812.11	170.84	29.168		
16,200.00	6,981.75	6,028.00	6,027.37	153.55	119.90	-63.39	-1,073.96	-4,778.40	5,075.63	4,905.03	170.60	29.752		
16,300.00	6,981.67	6,028.00	6,027.37	155.13	119.90	-63.39	-1,073.96	-4,778.40	5,168.58	4,998.21	170.37	30.338		
16,400.00	6,981.60	6,028.00	6,027.37	156.71	119.90	-63.39	-1,073.96	-4,778.40	5,261.79	5,091.64	170.15	30.925		
16,500.00	6,981.52	6,028.00	6,027.37	158.29	119.90	-63.39	-1,073.96	-4,778.40	5,355.24	5,185.31	169.93	31.514		
16,600.00	6,981.44	6,028.00	6,027.37	159.88	119.90	-63.39	-1,073.96	-4,778.40	5,448.93	5,279.20	169.73	32.104		
16,700.00	6,981.36	6,028.00	6,027.37	161.46	119.90	-63.39	-1,073.96	-4,778.40	5,542.84	5,373.31	169.53	32.695		
16,800.00	6,981.28	6,028.00	6,027.37	163.04	119.90	-63.39	-1,073.96	-4,778.40	5,636.95	5,467.61	169.34	33.287		
16,900.00	6,981.20	6,028.00	6,027.37	164.62	119.90	-63.39	-1,073.96	-4,778.40	5,731.27	5,562.11	169.16	33.880		
17,000.00	6,981.13	6,028.00	6,027.37	166.21	119.90	-63.39	-1,073.96	-4,778.40	5,825.77	5,656.79	168.99	34.475		
17,100.00	6,981.05	6,028.00	6,027.37	167.79	119.90	-63.39	-1,073.96	-4,778.40	5,920.46	5,751.64	168.82	35.069		
17,200.00	6,980.97	6,028.00	6,027.37	169.38	119.90	-63.39	-1,073.96	-4,778.40	6,015.32	5,846.66	168.66	35.665		
17,300.00	6,980.89	6,028.00	6,027.37	170.96	119.90	-63.39	-1,073.96	-4,778.40	6,110.34	5,941.83	168.51	36.261		
17,400.00	6,980.81	6,028.00	6,027.37	172.55	119.90	-63.39	-1,073.96	-4,778.40	6,205.52	6,037.16	168.36	36.858		
17,500.00	6,980.73	6,028.00	6,027.37	174.13	119.90	-63.39	-1,073.96	-4,778.40	6,300.85	6,132.62	168.22	37.456		
17,600.00	6,980.66	6,028.00	6,027.37	175.72	119.90	-63.39	-1,073.96	-4,778.40	6,396.32	6,228.23	168.09	38.053		
17,700.00	6,980.58	6,028.00	6,027.37	177.31	119.90	-63.39	-1,073.96	-4,778.40	6,491.92	6,323.96	167.96	38.652		
17,800.00	6,980.50	6,028.00	6,027.37	178.89	119.90	-63.39	-1,073.96	-4,778.40	6,587.66	6,419.82	167.84	39.250		
17,900.00	6,980.42	6,028.00	6,027.37	180.48	119.90	-63.39	-1,073.96	-4,778.40	6,683.52	6,515.80	167.72	39.849		
18,000.00	6,980.34	6,028.00	6,027.37	182.07	119.90	-63.39	-1,073.96	-4,778.40	6,779.50	6,611.90	167.61	40.448		
18,100.00	6,980.26	6,028.00	6,027.37	183.66	119.90	-63.39	-1,073.96	-4,778.40	6,875.60	6,708.10	167.50	41.048		
18,200.00	6,980.19	6,028.00	6,027.37	185.24	119.90	-63.39	-1,073.96	-4,778.40	6,971.81	6,804.41	167.40	41.647		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		95-A027Ua_INC-ONLY					Rule Assigned:						Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
18,300.00	6,980.11	6,028.00	6,027.37	186.83	119.90	-63.39	-1,073.96	-4,778.40	7,068.12	6,900.81	167.30	42.247		
18,400.00	6,980.03	6,028.00	6,027.37	188.42	119.90	-63.39	-1,073.96	-4,778.40	7,164.53	6,997.32	167.21	42.847		
18,500.00	6,979.95	6,028.00	6,027.37	190.01	119.90	-63.39	-1,073.96	-4,778.40	7,261.04	7,093.92	167.12	43.447		
18,600.00	6,979.87	6,028.00	6,027.37	191.60	119.90	-63.39	-1,073.96	-4,778.40	7,357.64	7,190.60	167.04	44.047		
18,700.00	6,979.79	6,028.00	6,027.37	193.19	119.90	-63.39	-1,073.96	-4,778.40	7,454.34	7,287.37	166.96	44.647		
18,800.00	6,979.72	6,028.00	6,027.37	194.78	119.90	-63.39	-1,073.96	-4,778.40	7,551.11	7,384.22	166.89	45.246		
18,900.00	6,979.64	6,028.00	6,027.37	196.37	119.90	-63.39	-1,073.96	-4,778.40	7,647.97	7,481.16	166.82	45.846		
19,000.00	6,979.56	6,028.00	6,027.37	197.96	119.90	-63.39	-1,073.96	-4,778.40	7,744.92	7,578.16	166.75	46.446		
19,100.00	6,979.48	6,028.00	6,027.37	199.55	119.90	-63.39	-1,073.96	-4,778.40	7,841.93	7,675.24	166.69	47.045		
19,200.00	6,979.40	6,028.00	6,027.37	201.14	119.90	-63.39	-1,073.96	-4,778.40	7,939.03	7,772.39	166.63	47.644		
19,300.00	6,979.33	6,028.00	6,027.37	202.73	119.90	-63.39	-1,073.96	-4,778.40	8,036.19	7,869.61	166.58	48.243		
19,400.00	6,979.25	6,028.00	6,027.37	204.32	119.90	-63.39	-1,073.96	-4,778.40	8,133.42	7,966.90	166.52	48.842		
19,500.00	6,979.17	6,028.00	6,027.37	205.91	119.90	-63.39	-1,073.96	-4,778.40	8,230.72	8,064.24	166.48	49.441		
19,600.00	6,979.09	6,028.00	6,027.37	207.50	119.90	-63.39	-1,073.96	-4,778.40	8,328.08	8,161.65	166.43	50.039		
19,700.00	6,979.01	6,028.00	6,027.37	209.09	119.90	-63.39	-1,073.96	-4,778.40	8,425.51	8,259.12	166.39	50.637		
19,800.00	6,978.93	6,028.00	6,027.37	210.69	119.90	-63.39	-1,073.96	-4,778.40	8,522.99	8,356.64	166.35	51.235		
19,900.00	6,978.86	6,028.00	6,027.37	212.28	119.90	-63.39	-1,073.96	-4,778.40	8,620.53	8,454.22	166.31	51.833		
20,000.00	6,978.78	6,028.00	6,027.37	213.87	119.90	-63.39	-1,073.96	-4,778.40	8,718.13	8,551.85	166.28	52.430		
20,100.00	6,978.70	6,028.00	6,027.37	215.46	119.90	-63.39	-1,073.96	-4,778.40	8,815.78	8,649.53	166.25	53.026		
20,200.00	6,978.62	6,028.00	6,027.37	217.05	119.90	-63.39	-1,073.96	-4,778.40	8,913.48	8,747.26	166.23	53.623		
20,300.00	6,978.54	6,028.00	6,027.37	218.65	119.90	-63.39	-1,073.96	-4,778.40	9,011.24	8,845.03	166.20	54.219		
20,400.00	6,978.46	6,028.00	6,027.37	220.24	119.90	-63.39	-1,073.96	-4,778.40	9,109.04	8,942.86	166.18	54.814		
20,500.00	6,978.39	6,028.00	6,027.37	221.83	119.90	-63.39	-1,073.96	-4,778.40	9,206.89	9,040.73	166.16	55.409		
20,600.00	6,978.31	6,028.00	6,027.37	223.43	119.90	-63.39	-1,073.96	-4,778.40	9,304.78	9,138.64	166.15	56.004		
20,700.00	6,978.23	6,028.00	6,027.37	225.02	119.90	-63.39	-1,073.96	-4,778.40	9,402.72	9,236.59	166.13	56.598		
20,800.00	6,978.15	6,028.00	6,027.37	226.61	119.90	-63.39	-1,073.96	-4,778.40	9,500.70	9,334.58	166.12	57.192		
20,900.00	6,978.07	6,028.00	6,027.37	228.21	119.90	-63.39	-1,073.96	-4,778.40	9,598.73	9,432.62	166.11	57.785		
21,000.00	6,977.99	6,028.00	6,027.37	229.80	119.90	-63.39	-1,073.96	-4,778.40	9,696.79	9,530.69	166.11	58.377		
21,100.00	6,977.92	6,028.00	6,027.37	231.39	119.90	-63.39	-1,073.96	-4,778.40	9,794.90	9,628.80	166.10	58.970		
21,200.00	6,977.84	6,028.00	6,027.37	232.99	119.90	-63.39	-1,073.96	-4,778.40	9,893.04	9,726.94	166.10	59.561		
21,300.00	6,977.76	6,028.00	6,027.37	234.58	119.90	-63.39	-1,073.96	-4,778.40	9,991.22	9,825.12	166.10	60.152		
21,400.00	6,977.68	6,028.00	6,027.37	236.18	119.90	-63.39	-1,073.96	-4,778.40	10,089.43	9,923.33	166.10	60.743		
21,500.00	6,977.60	6,028.00	6,027.37	237.77	119.90	-63.39	-1,073.96	-4,778.40	10,187.68	10,021.57	166.11	61.333		
21,600.00	6,977.52	6,028.00	6,027.37	239.37	119.90	-63.39	-1,073.96	-4,778.40	10,285.96	10,119.85	166.11	61.922		
21,700.00	6,977.45	6,028.00	6,027.37	240.96	119.90	-63.39	-1,073.96	-4,778.40	10,384.28	10,218.16	166.12	62.511		
21,800.00	6,977.37	6,028.00	6,027.37	242.56	119.90	-63.39	-1,073.96	-4,778.40	10,482.62	10,316.49	166.13	63.099		
21,900.00	6,977.29	6,028.00	6,027.37	244.15	119.90	-63.39	-1,073.96	-4,778.40	10,581.00	10,414.86	166.14	63.686		
22,000.00	6,977.21	6,028.00	6,027.37	245.75	119.90	-63.39	-1,073.96	-4,778.40	10,679.41	10,513.26	166.16	64.273		
22,100.00	6,977.13	6,028.00	6,027.37	247.34	119.90	-63.39	-1,073.96	-4,778.40	10,777.85	10,611.68	166.17	64.860		
22,200.00	6,977.05	6,028.00	6,027.37	248.94	119.90	-63.39	-1,073.96	-4,778.40	10,876.32	10,710.13	166.19	65.445		
22,269.73	6,977.00	6,028.00	6,027.37	250.05	119.90	-63.39	-1,073.96	-4,778.40	10,944.99	10,778.79	166.20	65.853		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171A - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 561-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-102.52	-1,078.13	-4,854.24	4,973.76				
100.00	100.00	0.00	0.00	0.25	0.00	-102.52	-1,078.13	-4,854.24	4,972.54	4,972.28	0.25	N/A	
111.00	111.00	0.00	0.00	0.29	0.00	-102.52	-1,078.13	-4,854.24	4,972.52	4,972.23	0.29	N/A	
200.00	200.00	0.00	0.00	0.61	0.00	-102.52	-1,078.13	-4,854.24	4,973.32	4,972.71	0.61	8,140.945	
300.00	300.00	0.00	0.00	0.97	0.00	-102.52	-1,078.13	-4,854.24	4,976.11	4,975.14	0.97	5,122.703	
400.00	400.00	0.00	0.00	1.33	0.00	-102.52	-1,078.13	-4,854.24	4,980.91	4,979.58	1.33	3,741.524	
500.00	500.00	0.00	0.00	1.68	0.00	-102.52	-1,078.13	-4,854.24	4,987.72	4,986.03	1.69	2,951.356	
576.33	576.33	175.68	175.57	1.96	10.91	-102.51	-1,078.37	-4,859.41	4,986.06	4,973.23	12.82	388.891	
600.00	600.00	184.59	184.47	2.04	11.46	-102.51	-1,078.39	-4,859.95	4,987.47	4,974.00	13.46	370.499	
700.00	700.00	222.21	222.00	2.40	13.80	-102.51	-1,078.51	-4,862.52	4,994.19	4,978.03	16.17	308.915	
800.00	799.98	259.76	259.43	2.76	16.13	-91.59	-1,078.65	-4,865.55	5,002.21	4,983.34	18.87	265.085	
849.89	849.82	278.46	278.05	2.94	17.29	-91.51	-1,078.72	-4,867.24	5,006.71	4,986.50	20.22	247.652	
900.00	899.86	297.21	296.71	3.12	18.45	-91.52	-1,078.80	-4,869.05	5,011.56	4,989.99	21.57	232.365	
1,000.00	999.73	334.57	333.86	3.48	20.77	-91.53	-1,078.98	-4,873.00	5,022.14	4,997.88	24.26	207.009	
1,100.00	1,099.59	371.82	370.86	3.84	23.09	-91.54	-1,079.18	-4,877.41	5,033.96	5,007.01	26.95	186.805	
1,200.00	1,199.45	561.00	557.68	4.20	34.83	-91.60	-1,080.52	-4,906.90	5,053.11	5,014.08	39.03	129.472	
1,300.00	1,299.32	561.00	557.68	4.56	34.83	-91.60	-1,080.52	-4,906.90	5,064.75	5,025.32	39.43	128.461	
1,400.00	1,399.18	561.00	557.68	4.92	34.83	-91.60	-1,080.52	-4,906.90	5,078.33	5,038.52	39.81	127.571	
1,500.00	1,499.04	561.00	557.68	5.28	34.83	-91.60	-1,080.52	-4,906.90	5,093.84	5,053.66	40.17	126.798	
1,600.00	1,598.91	561.00	557.68	5.64	34.83	-91.60	-1,080.52	-4,906.90	5,111.26	5,070.74	40.52	126.137	
1,700.00	1,698.77	658.54	653.49	6.00	34.92	-91.62	-1,081.48	-4,925.18	5,129.92	5,088.96	40.96	125.255	
1,800.00	1,798.63	682.00	676.53	6.36	34.92	-91.62	-1,081.53	-4,929.59	5,148.89	5,107.59	41.30	124.670	
1,900.00	1,898.49	712.00	705.89	6.72	34.94	-91.62	-1,081.13	-4,935.73	5,169.16	5,127.52	41.64	124.134	
2,000.00	1,998.36	712.00	705.89	7.09	34.94	-91.62	-1,081.13	-4,935.73	5,191.18	5,149.23	41.95	123.753	
2,100.00	2,098.22	773.00	765.06	7.45	34.99	-91.60	-1,079.12	-4,950.40	5,214.24	5,171.91	42.34	123.164	
2,200.00	2,198.08	797.45	788.65	7.81	35.00	-91.59	-1,078.22	-4,956.79	5,238.69	5,196.04	42.65	122.829	
2,300.00	2,297.95	834.00	823.86	8.17	35.02	-91.57	-1,077.10	-4,966.49	5,264.17	5,221.20	42.97	122.508	
2,400.00	2,397.81	864.00	852.63	8.53	35.03	-91.56	-1,075.91	-4,974.93	5,290.88	5,247.61	43.28	122.261	
2,500.00	2,497.67	894.00	881.22	8.90	35.05	-91.54	-1,074.29	-4,983.85	5,318.84	5,275.26	43.57	122.063	
2,600.00	2,597.54	923.00	908.77	9.26	35.07	-91.51	-1,072.50	-4,992.75	5,347.86	5,304.00	43.86	121.919	
2,700.00	2,697.40	955.00	939.07	9.62	35.08	-91.48	-1,070.55	-5,002.85	5,377.94	5,333.79	44.15	121.805	
2,800.00	2,797.26	988.05	970.21	9.98	35.11	-91.45	-1,068.60	-5,013.74	5,409.23	5,364.78	44.44	121.712	
2,900.00	2,897.13	1,017.00	997.34	10.35	35.13	-91.43	-1,066.86	-5,023.68	5,441.71	5,397.00	44.72	121.692	
3,000.00	2,996.99	1,017.00	997.34	10.71	35.13	-91.43	-1,066.86	-5,023.68	5,475.57	5,430.66	44.91	121.917	
3,100.00	3,096.85	1,075.50	1,051.79	11.07	35.20	-91.37	-1,063.34	-5,044.77	5,510.07	5,464.79	45.28	121.700	
3,200.00	3,196.72	1,109.00	1,082.76	11.43	35.24	-91.34	-1,061.34	-5,057.40	5,545.87	5,500.32	45.56	121.732	
3,300.00	3,296.58	1,178.93	1,147.14	11.80	35.31	-91.26	-1,056.79	-5,084.32	5,582.42	5,536.48	45.94	121.516	
3,400.00	3,396.44	1,203.00	1,169.26	12.16	35.33	-91.24	-1,055.04	-5,093.65	5,619.53	5,573.35	46.18	121.691	
3,500.00	3,496.31	1,245.33	1,207.94	12.52	35.38	-91.18	-1,051.69	-5,110.52	5,657.51	5,611.03	46.48	121.710	
3,600.00	3,596.17	1,297.00	1,254.58	12.88	35.45	-91.11	-1,047.15	-5,132.28	5,696.94	5,650.12	46.82	121.681	
3,700.00	3,696.03	1,297.00	1,254.58	13.25	35.45	-91.11	-1,047.15	-5,132.28	5,736.98	5,690.02	46.96	122.171	
3,800.00	3,795.89	1,419.84	1,365.85	13.61	35.64	-91.01	-1,041.94	-5,183.95	5,777.52	5,729.91	47.61	121.357	
3,900.00	3,895.76	1,503.82	1,442.37	13.97	35.74	-90.97	-1,041.12	-5,218.55	5,817.80	5,769.75	48.05	121.083	
4,000.00	3,995.62	1,575.00	1,507.08	14.34	35.82	-90.93	-1,040.34	-5,248.18	5,858.44	5,810.00	48.43	120.959	
4,100.00	4,095.48	1,615.40	1,543.69	14.70	35.86	-90.91	-1,039.69	-5,265.27	5,899.60	5,850.88	48.72	121.103	
4,200.00	4,195.35	1,670.00	1,592.93	15.06	35.93	-90.87	-1,038.36	-5,288.80	5,941.45	5,892.40	49.05	121.133	
4,300.00	4,295.21	1,721.57	1,639.24	15.42	36.00	-90.83	-1,036.63	-5,311.42	5,983.87	5,934.49	49.37	121.192	
4,400.00	4,395.07	1,782.33	1,693.61	15.79	36.08	-90.77	-1,033.99	-5,338.42	6,026.75	5,977.01	49.74	121.171	
4,500.00	4,494.94	1,856.00	1,759.21	16.15	36.17	-90.70	-1,029.74	-5,371.68	6,070.10	6,019.94	50.16	121.025	
4,600.00	4,594.80	1,856.00	1,759.21	16.51	36.17	-90.70	-1,029.74	-5,371.68	6,114.12	6,063.86	50.26	121.642	
4,700.00	4,694.66	1,919.15	1,814.91	16.87	36.27	-90.62	-1,024.79	-5,401.01	6,158.63	6,107.97	50.66	121.568	
4,800.00	4,794.53	1,961.09	1,851.50	17.24	36.34	-90.55	-1,020.63	-5,421.08	6,204.09	6,153.13	50.96	121.751	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171A - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program:		561-MWD OWSG Rev5					Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)				
4,900.00	4,894.39	2,045.87	1,925.29	17.60	36.48	-90.42	-1,011.96	-5,461.92	6,249.88	6,198.42	51.46	121.440			
5,000.00	4,994.25	2,377.66	2,216.93	17.96	37.05	-89.92	-976.04	-5,615.86	6,293.59	6,240.42	53.16	118.385			
5,100.00	5,094.12	2,506.00	2,331.56	18.33	37.30	-89.76	-964.34	-5,672.37	6,335.41	6,281.50	53.90	117.531			
5,200.00	5,193.98	2,551.05	2,371.96	18.69	37.41	-89.72	-961.06	-5,692.00	6,377.39	6,323.11	54.28	117.500			
5,300.00	5,293.84	3,337.00	3,088.56	19.05	39.41	-88.94	-897.11	-6,003.41	6,416.76	6,358.44	58.32	110.029			
5,336.91	5,330.71	3,337.00	3,088.56	19.19	39.41	-88.94	-897.11	-6,003.41	6,428.88	6,370.49	58.40	110.091			
5,400.00	5,393.71	3,337.00	3,088.56	19.41	39.41	-89.06	-897.11	-6,003.41	6,450.04	6,391.52	58.52	110.213			
5,500.00	5,493.62	3,337.00	3,088.56	19.77	39.41	-89.24	-897.11	-6,003.41	6,484.71	6,426.00	58.71	110.444			
5,600.00	5,593.57	3,337.00	3,088.56	20.13	39.41	-89.43	-897.11	-6,003.41	6,520.74	6,461.85	58.89	110.722			
5,700.00	5,693.53	3,337.00	3,088.56	20.49	39.41	-89.64	-897.11	-6,003.41	6,558.11	6,499.05	59.06	111.045			
5,800.00	5,793.52	3,337.00	3,088.56	20.85	39.41	-89.85	-897.11	-6,003.41	6,596.79	6,537.57	59.21	111.410			
5,900.00	5,893.52	3,337.00	3,088.56	21.20	39.41	-90.06	-897.11	-6,003.41	6,636.74	6,577.39	59.35	111.818			
5,936.48	5,930.00	3,337.00	3,088.56	21.33	39.41	-100.90	-897.11	-6,003.41	6,651.64	6,592.24	59.40	111.977			
6,000.00	5,993.52	3,337.00	3,088.56	21.56	39.41	-100.90	-897.11	-6,003.41	6,677.96	6,618.48	59.48	112.266			
6,100.00	6,093.52	3,337.00	3,088.56	21.91	39.41	-100.90	-897.11	-6,003.41	6,720.41	6,660.81	59.60	112.751			
6,200.00	6,193.52	3,337.00	3,088.56	22.27	39.41	-100.90	-897.11	-6,003.41	6,764.08	6,704.36	59.72	113.272			
6,300.00	6,293.52	3,337.00	3,088.56	22.62	39.41	-100.90	-897.11	-6,003.41	6,808.93	6,749.11	59.82	113.828			
6,358.48	6,352.00	3,337.00	3,088.56	22.83	39.41	-100.90	-897.11	-6,003.41	6,835.70	6,775.83	59.87	114.169			
6,400.00	6,393.49	3,337.00	3,088.56	22.97	39.41	-25.51	-897.11	-6,003.41	6,853.86	6,793.96	59.91	114.408			
6,450.00	6,443.20	3,337.00	3,088.56	23.15	39.41	-24.71	-897.11	-6,003.41	6,873.05	6,813.11	59.94	114.662			
6,500.00	6,492.36	3,337.00	3,088.56	23.33	39.41	-24.08	-897.11	-6,003.41	6,889.22	6,829.25	59.97	114.870			
6,550.00	6,540.64	3,337.00	3,088.56	23.51	39.41	-23.58	-897.11	-6,003.41	6,902.30	6,842.29	60.00	115.031			
6,600.00	6,587.77	3,337.00	3,088.56	23.69	39.41	-23.22	-897.11	-6,003.41	6,912.21	6,852.18	60.03	115.145			
6,650.00	6,633.44	3,337.00	3,088.56	23.88	39.41	-22.98	-897.11	-6,003.41	6,918.92	6,858.87	60.05	115.213			
6,700.00	6,677.37	3,337.00	3,088.56	24.07	39.41	-22.86	-897.11	-6,003.41	6,922.40	6,862.33	60.07	115.235			
6,750.00	6,719.30	3,337.00	3,088.56	24.26	39.41	-22.85	-897.11	-6,003.41	6,922.62	6,862.53	60.09	115.212			
6,800.00	6,758.97	3,337.00	3,088.56	24.46	39.41	-22.96	-897.11	-6,003.41	6,919.58	6,859.49	60.10	115.141			
6,850.00	6,796.12	3,337.00	3,088.56	24.67	39.41	-23.18	-897.11	-6,003.41	6,913.31	6,853.20	60.10	115.024			
6,900.00	6,830.54	3,337.00	3,088.56	24.88	39.41	-23.53	-897.11	-6,003.41	6,903.82	6,843.71	60.11	114.859			
6,950.00	6,862.00	3,337.00	3,088.56	25.11	39.41	-24.00	-897.11	-6,003.41	6,891.17	6,831.06	60.11	114.646			
7,000.00	6,890.33	3,337.00	3,088.56	25.34	39.41	-24.62	-897.11	-6,003.41	6,875.41	6,815.30	60.11	114.385			
7,050.00	6,915.33	3,337.00	3,088.56	25.59	39.41	-25.39	-897.11	-6,003.41	6,856.62	6,796.52	60.11	114.075			
7,100.00	6,936.86	3,337.00	3,088.56	25.85	39.41	-26.34	-897.11	-6,003.41	6,834.90	6,774.80	60.10	113.717			
7,150.00	6,954.79	3,337.00	3,088.56	26.12	39.41	-27.48	-897.11	-6,003.41	6,810.35	6,750.24	60.10	113.310			
7,200.00	6,968.99	3,337.00	3,088.56	26.40	39.41	-28.87	-897.11	-6,003.41	6,783.09	6,722.98	60.10	112.854			
7,250.00	6,979.40	3,337.00	3,088.56	26.69	39.41	-30.53	-897.11	-6,003.41	6,753.25	6,693.14	60.11	112.351			
7,300.00	6,985.94	3,337.00	3,088.56	27.00	39.41	-32.51	-897.11	-6,003.41	6,720.99	6,660.88	60.12	111.802			
7,350.00	6,988.56	3,337.00	3,088.56	27.31	39.41	-34.90	-897.11	-6,003.41	6,686.48	6,626.35	60.13	111.208			
7,358.93	6,988.62	3,337.00	3,088.56	27.36	39.41	-35.37	-897.11	-6,003.41	6,680.09	6,619.96	60.13	111.091			
7,400.00	6,988.59	3,337.00	3,088.56	27.63	39.41	-35.37	-897.11	-6,003.41	6,650.62	6,590.48	60.14	110.587			
7,500.00	6,988.52	3,337.00	3,088.56	28.33	39.41	-35.37	-897.11	-6,003.41	6,579.39	6,519.22	60.18	109.337			
7,600.00	6,988.45	3,337.00	3,088.56	29.10	39.41	-35.37	-897.11	-6,003.41	6,508.91	6,448.68	60.24	108.055			
7,658.93	6,988.41	3,337.00	3,088.56	29.59	39.41	-35.37	-897.11	-6,003.41	6,467.75	6,407.46	60.29	107.286			
7,700.00	6,988.38	3,337.00	3,088.56	29.94	39.41	-34.72	-897.11	-6,003.41	6,439.10	6,378.77	60.32	106.743			
7,800.00	6,988.31	3,337.00	3,088.56	30.84	39.41	-33.08	-897.11	-6,003.41	6,368.91	6,308.48	60.42	105.405			
7,900.00	6,988.24	3,337.00	3,088.56	31.79	39.41	-31.39	-897.11	-6,003.41	6,298.15	6,237.62	60.53	104.051			
8,000.00	6,988.16	3,337.00	3,088.56	32.78	39.41	-29.64	-897.11	-6,003.41	6,226.91	6,166.27	60.64	102.691			
8,100.00	6,988.09	3,337.00	3,088.56	33.82	39.41	-27.84	-897.11	-6,003.41	6,155.24	6,094.49	60.74	101.331			
8,200.00	6,988.01	3,337.00	3,088.56	34.88	39.41	-25.99	-897.11	-6,003.41	6,083.22	6,022.37	60.85	99.976			
8,300.00	6,987.94	3,337.00	3,088.56	35.98	39.41	-24.10	-897.11	-6,003.41	6,010.93	5,949.99	60.94	98.633			
8,400.00	6,987.86	3,337.00	3,088.56	37.11	39.41	-22.17	-897.11	-6,003.41	5,938.45	5,877.42	61.03	97.306			
8,416.35	6,987.85	3,337.00	3,088.56	37.29	39.41	-21.85	-897.11	-6,003.41	5,926.59	5,865.54	61.04	97.090			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		561-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
8,500.00	6,987.78	3,337.00	3,088.56	38.25	39.41	-21.85	-897.11	-6,003.41	5,866.17	5,805.06	61.11	95.992		
8,600.00	6,987.70	3,337.00	3,088.56	39.43	39.41	-21.85	-897.11	-6,003.41	5,794.70	5,733.49	61.21	94.676		
8,700.00	6,987.62	3,337.00	3,088.56	40.64	39.41	-21.85	-897.11	-6,003.41	5,724.08	5,662.77	61.31	93.357		
8,800.00	6,987.55	3,337.00	3,088.56	41.88	39.41	-21.85	-897.11	-6,003.41	5,654.35	5,592.92	61.44	92.038		
8,900.00	6,987.47	3,337.00	3,088.56	43.14	39.41	-21.85	-897.11	-6,003.41	5,585.54	5,523.97	61.57	90.719		
9,000.00	6,987.39	3,337.00	3,088.56	44.42	39.41	-21.85	-897.11	-6,003.41	5,517.69	5,455.97	61.72	89.402		
9,100.00	6,987.31	3,337.00	3,088.56	45.72	39.41	-21.85	-897.11	-6,003.41	5,450.82	5,388.94	61.88	88.089		
9,200.00	6,987.23	3,337.00	3,088.56	47.04	39.41	-21.85	-897.11	-6,003.41	5,384.98	5,322.93	62.05	86.782		
9,300.00	6,987.15	3,337.00	3,088.56	48.38	39.41	-21.85	-897.11	-6,003.41	5,320.21	5,257.97	62.24	85.481		
9,400.00	6,987.08	3,337.00	3,088.56	49.73	39.41	-21.85	-897.11	-6,003.41	5,256.54	5,194.10	62.44	84.190		
9,500.00	6,987.00	3,337.00	3,088.56	51.10	39.41	-21.85	-897.11	-6,003.41	5,194.02	5,131.37	62.65	82.910		
9,600.00	6,986.92	3,337.00	3,088.56	52.48	39.41	-21.85	-897.11	-6,003.41	5,132.68	5,069.81	62.87	81.642		
9,700.00	6,986.84	3,337.00	3,088.56	53.87	39.41	-21.85	-897.11	-6,003.41	5,072.57	5,009.47	63.10	80.390		
9,800.00	6,986.76	3,337.00	3,088.56	55.28	39.41	-21.85	-897.11	-6,003.41	5,013.74	4,950.40	63.34	79.155		
9,900.00	6,986.68	3,337.00	3,088.56	56.69	39.41	-21.85	-897.11	-6,003.41	4,956.23	4,892.63	63.59	77.939		
10,000.00	6,986.61	3,337.00	3,088.56	58.12	39.41	-21.85	-897.11	-6,003.41	4,900.08	4,836.23	63.85	76.744		
10,100.00	6,986.53	3,337.00	3,088.56	59.55	39.41	-21.85	-897.11	-6,003.41	4,845.34	4,781.23	64.12	75.573		
10,200.00	6,986.45	3,337.00	3,088.56	61.00	39.41	-21.85	-897.11	-6,003.41	4,792.07	4,727.68	64.39	74.426		
10,300.00	6,986.37	3,337.00	3,088.56	62.45	39.41	-21.85	-897.11	-6,003.41	4,740.31	4,675.64	64.66	73.307		
10,400.00	6,986.29	3,337.00	3,088.56	63.90	39.41	-21.85	-897.11	-6,003.41	4,690.11	4,625.16	64.94	72.218		
10,500.00	6,986.21	3,337.00	3,088.56	65.37	39.41	-21.85	-897.11	-6,003.41	4,641.52	4,576.29	65.23	71.159		
10,600.00	6,986.14	3,337.00	3,088.56	66.84	39.41	-21.85	-897.11	-6,003.41	4,594.59	4,529.08	65.51	70.134		
10,700.00	6,986.06	3,337.00	3,088.56	68.32	39.41	-21.85	-897.11	-6,003.41	4,549.38	4,483.59	65.80	69.144		
10,800.00	6,985.98	3,337.00	3,088.56	69.80	39.41	-21.85	-897.11	-6,003.41	4,505.94	4,439.86	66.08	68.190		
10,900.00	6,985.90	3,337.00	3,088.56	71.29	39.41	-21.85	-897.11	-6,003.41	4,464.31	4,397.95	66.36	67.275		
11,000.00	6,985.82	3,337.00	3,088.56	72.78	39.41	-21.85	-897.11	-6,003.41	4,424.55	4,357.91	66.64	66.399		
11,100.00	6,985.75	3,337.00	3,088.56	74.28	39.41	-21.85	-897.11	-6,003.41	4,386.71	4,319.80	66.91	65.565		
11,200.00	6,985.67	3,337.00	3,088.56	75.78	39.41	-21.85	-897.11	-6,003.41	4,350.84	4,283.67	67.17	64.773		
11,300.00	6,985.59	3,337.00	3,088.56	77.29	39.41	-21.85	-897.11	-6,003.41	4,316.99	4,249.56	67.43	64.026		
11,400.00	6,985.51	3,337.00	3,088.56	78.80	39.41	-21.85	-897.11	-6,003.41	4,285.21	4,217.53	67.67	63.323		
11,500.00	6,985.43	3,337.00	3,088.56	80.31	39.41	-21.85	-897.11	-6,003.41	4,255.54	4,187.63	67.91	62.666		
11,600.00	6,985.35	3,337.00	3,088.56	81.83	39.41	-21.85	-897.11	-6,003.41	4,228.02	4,159.89	68.13	62.056		
11,700.00	6,985.28	3,337.00	3,088.56	83.35	39.41	-21.85	-897.11	-6,003.41	4,202.71	4,134.36	68.34	61.494		
11,800.00	6,985.20	3,337.00	3,088.56	84.87	39.41	-21.85	-897.11	-6,003.41	4,179.63	4,111.09	68.54	60.979		
11,900.00	6,985.12	3,337.00	3,088.56	86.40	39.41	-21.85	-897.11	-6,003.41	4,158.84	4,090.11	68.73	60.512		
12,000.00	6,985.04	3,337.00	3,088.56	87.93	39.41	-21.85	-897.11	-6,003.41	4,140.35	4,071.45	68.90	60.093		
12,100.00	6,984.96	3,337.00	3,088.56	89.46	39.41	-21.85	-897.11	-6,003.41	4,124.21	4,055.15	69.06	59.722		
12,200.00	6,984.88	3,337.00	3,088.56	90.99	39.41	-21.85	-897.11	-6,003.41	4,110.44	4,041.24	69.20	59.397		
12,300.00	6,984.81	3,337.00	3,088.56	92.53	39.41	-21.85	-897.11	-6,003.41	4,099.06	4,029.72	69.34	59.119		
12,400.00	6,984.73	3,337.00	3,088.56	94.07	39.41	-21.85	-897.11	-6,003.41	4,090.09	4,020.64	69.46	58.885		
12,500.00	6,984.65	3,337.00	3,088.56	95.61	39.41	-21.85	-897.11	-6,003.41	4,083.56	4,013.99	69.57	58.693		
12,600.00	6,984.57	3,337.00	3,088.56	97.15	39.41	-21.85	-897.11	-6,003.41	4,079.47	4,009.78	69.69	58.541		
12,700.00	6,984.49	3,337.00	3,088.56	98.70	39.41	-21.85	-897.11	-6,003.41	4,077.82	4,008.03	69.79	58.427		
12,717.06	6,984.48	3,337.00	3,088.56	98.96	39.41	-21.85	-897.11	-6,003.41	4,077.79	4,007.97	69.81	58.411	CC, ES	
12,800.00	6,984.41	3,337.00	3,088.56	100.25	39.41	-21.85	-897.11	-6,003.41	4,078.63	4,008.73	69.90	58.346		
12,900.00	6,984.34	3,337.00	3,088.56	101.80	39.41	-21.85	-897.11	-6,003.41	4,081.89	4,011.87	70.02	58.294		
13,000.00	6,984.26	3,337.00	3,088.56	103.35	39.41	-21.85	-897.11	-6,003.41	4,087.59	4,017.44	70.15	58.266		
13,100.00	6,984.18	3,337.00	3,088.56	104.90	39.41	-21.85	-897.11	-6,003.41	4,095.73	4,025.42	70.31	58.256		
13,200.00	6,984.10	3,337.00	3,088.56	106.45	39.41	-21.85	-897.11	-6,003.41	4,106.29	4,035.80	70.48	58.258		
13,300.00	6,984.02	3,337.00	3,088.56	108.01	39.41	-21.85	-897.11	-6,003.41	4,119.24	4,048.55	70.70	58.267		
13,400.00	6,983.94	3,337.00	3,088.56	109.56	39.41	-21.85	-897.11	-6,003.41	4,134.58	4,063.63	70.95	58.276		
13,500.00	6,983.87	3,337.00	3,088.56	111.12	39.41	-21.85	-897.11	-6,003.41	4,152.27	4,081.02	71.25	58.279		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171A - OH - OH-SVY											Offset Site Error: 0.00 usft
Survey Program: 561-MWD OWSG Rev5											Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
13,600.00	6,983.79	3,337.00	3,088.56	112.68	39.41	-21.85	-897.11	-6,003.41	4,172.28	4,100.68	58.274
13,700.00	6,983.71	3,337.00	3,088.56	114.24	39.41	-21.85	-897.11	-6,003.41	4,194.58	4,122.58	58.257
13,800.00	6,983.63	3,337.00	3,088.56	115.80	39.41	-21.85	-897.11	-6,003.41	4,219.14	4,146.68	58.228
13,900.00	6,983.55	3,337.00	3,088.56	117.37	39.41	-21.85	-897.11	-6,003.41	4,245.90	4,172.94	58.190
14,000.00	6,983.47	3,337.00	3,088.56	118.93	39.41	-21.85	-897.11	-6,003.41	4,274.84	4,201.33	58.147
14,100.00	6,983.40	3,337.00	3,088.56	120.50	39.41	-21.85	-897.11	-6,003.41	4,305.91	4,231.80	58.102
14,200.00	6,983.32	3,337.00	3,088.56	122.06	39.41	-21.85	-897.11	-6,003.41	4,339.06	4,264.33	58.061
14,300.00	6,983.24	3,337.00	3,088.56	123.63	39.41	-21.85	-897.11	-6,003.41	4,374.25	4,298.87	58.029
14,400.00	6,983.16	3,337.00	3,088.56	125.20	39.41	-21.85	-897.11	-6,003.41	4,411.42	4,335.38	58.013 SF
14,500.00	6,983.08	3,337.00	3,088.56	126.77	39.41	-21.85	-897.11	-6,003.41	4,450.53	4,373.82	58.015
14,600.00	6,983.00	3,337.00	3,088.56	128.33	39.41	-21.85	-897.11	-6,003.41	4,491.53	4,414.14	58.041
14,700.00	6,982.93	3,337.00	3,088.56	129.91	39.41	-21.85	-897.11	-6,003.41	4,534.36	4,456.30	58.091
14,800.00	6,982.85	3,337.00	3,088.56	131.48	39.41	-21.85	-897.11	-6,003.41	4,578.97	4,500.26	58.170
14,900.00	6,982.77	3,337.00	3,088.56	133.05	39.41	-21.85	-897.11	-6,003.41	4,625.32	4,545.95	58.277
15,000.00	6,982.69	3,337.00	3,088.56	134.62	39.41	-21.85	-897.11	-6,003.41	4,673.35	4,593.34	58.415
15,100.00	6,982.61	3,337.00	3,088.56	136.20	39.41	-21.85	-897.11	-6,003.41	4,723.00	4,642.38	58.582
15,200.00	6,982.54	3,337.00	3,088.56	137.77	39.41	-21.85	-897.11	-6,003.41	4,774.24	4,693.02	58.781
15,300.00	6,982.46	3,337.00	3,088.56	139.35	39.41	-21.85	-897.11	-6,003.41	4,827.00	4,745.20	59.009
15,400.00	6,982.38	3,337.00	3,088.56	140.92	39.41	-21.85	-897.11	-6,003.41	4,881.24	4,798.88	59.267
15,500.00	6,982.30	3,337.00	3,088.56	142.50	39.41	-21.85	-897.11	-6,003.41	4,936.91	4,854.02	59.555
15,600.00	6,982.22	3,337.00	3,088.56	144.07	39.41	-21.85	-897.11	-6,003.41	4,993.97	4,910.55	59.871
15,700.00	6,982.14	3,337.00	3,088.56	145.65	39.41	-21.85	-897.11	-6,003.41	5,052.35	4,968.45	60.214
15,800.00	6,982.07	3,337.00	3,088.56	147.23	39.41	-21.85	-897.11	-6,003.41	5,112.03	5,027.65	60.584
15,900.00	6,981.99	3,337.00	3,088.56	148.81	39.41	-21.85	-897.11	-6,003.41	5,172.96	5,088.12	60.980
16,000.00	6,981.91	3,337.00	3,088.56	150.39	39.41	-21.85	-897.11	-6,003.41	5,235.08	5,149.82	61.401
16,100.00	6,981.83	3,337.00	3,088.56	151.97	39.41	-21.85	-897.11	-6,003.41	5,298.36	5,212.69	61.845
16,200.00	6,981.75	3,337.00	3,088.56	153.55	39.41	-21.85	-897.11	-6,003.41	5,362.76	5,276.70	62.313
16,300.00	6,981.67	3,337.00	3,088.56	155.13	39.41	-21.85	-897.11	-6,003.41	5,428.24	5,341.81	62.803
16,400.00	6,981.60	3,337.00	3,088.56	156.71	39.41	-21.85	-897.11	-6,003.41	5,494.76	5,407.98	63.313
16,500.00	6,981.52	3,337.00	3,088.56	158.29	39.41	-21.85	-897.11	-6,003.41	5,562.28	5,475.16	63.844
16,600.00	6,981.44	3,337.00	3,088.56	159.88	39.41	-21.85	-897.11	-6,003.41	5,630.77	5,543.33	64.395
16,700.00	6,981.36	3,337.00	3,088.56	161.46	39.41	-21.85	-897.11	-6,003.41	5,700.19	5,612.45	64.964
16,800.00	6,981.28	3,337.00	3,088.56	163.04	39.41	-21.85	-897.11	-6,003.41	5,770.51	5,682.48	65.551
16,900.00	6,981.20	3,337.00	3,088.56	164.62	39.41	-21.85	-897.11	-6,003.41	5,841.69	5,753.39	66.155
17,000.00	6,981.13	3,337.00	3,088.56	166.21	39.41	-21.85	-897.11	-6,003.41	5,913.71	5,825.15	66.775
17,100.00	6,981.05	3,337.00	3,088.56	167.79	39.41	-21.85	-897.11	-6,003.41	5,986.53	5,897.72	67.410
17,200.00	6,980.97	3,337.00	3,088.56	169.38	39.41	-21.85	-897.11	-6,003.41	6,060.13	5,971.09	68.061
17,300.00	6,980.89	3,337.00	3,088.56	170.96	39.41	-21.85	-897.11	-6,003.41	6,134.47	6,045.21	68.726
17,400.00	6,980.81	3,337.00	3,088.56	172.55	39.41	-21.85	-897.11	-6,003.41	6,209.53	6,120.06	69.404
17,500.00	6,980.73	3,337.00	3,088.56	174.13	39.41	-21.85	-897.11	-6,003.41	6,285.29	6,195.62	70.096
17,600.00	6,980.66	3,337.00	3,088.56	175.72	39.41	-21.85	-897.11	-6,003.41	6,361.72	6,271.86	70.800
17,700.00	6,980.58	3,337.00	3,088.56	177.31	39.41	-21.85	-897.11	-6,003.41	6,438.79	6,348.76	71.516
17,800.00	6,980.50	3,337.00	3,088.56	178.89	39.41	-21.85	-897.11	-6,003.41	6,516.49	6,426.29	72.243
17,900.00	6,980.42	3,337.00	3,088.56	180.48	39.41	-21.85	-897.11	-6,003.41	6,594.79	6,504.43	72.981
18,000.00	6,980.34	3,337.00	3,088.56	182.07	39.41	-21.85	-897.11	-6,003.41	6,673.67	6,583.15	73.729
18,100.00	6,980.26	3,337.00	3,088.56	183.66	39.41	-21.85	-897.11	-6,003.41	6,753.10	6,662.44	74.488
18,200.00	6,980.19	3,337.00	3,088.56	185.24	39.41	-21.85	-897.11	-6,003.41	6,833.08	6,742.28	75.256
18,300.00	6,980.11	3,337.00	3,088.56	186.83	39.41	-21.85	-897.11	-6,003.41	6,913.58	6,822.65	76.033
18,400.00	6,980.03	3,337.00	3,088.56	188.42	39.41	-21.85	-897.11	-6,003.41	6,994.58	6,903.53	76.818
18,500.00	6,979.95	3,337.00	3,088.56	190.01	39.41	-21.85	-897.11	-6,003.41	7,076.07	6,984.90	77.612
18,600.00	6,979.87	3,337.00	3,088.56	191.60	39.41	-21.85	-897.11	-6,003.41	7,158.03	7,066.74	78.414
18,700.00	6,979.79	3,337.00	3,088.56	193.19	39.41	-21.85	-897.11	-6,003.41	7,240.44	7,149.05	79.223

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171A - OH - OH-SVY													Offset Site Error: 0.00 usft	
Survey Program: 561-MWD OWSG Rev5								Rule Assigned:					Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,800.00	6,979.72	3,337.00	3,088.56	194.78	39.41	-21.85	-897.11	-6,003.41	7,323.29	7,231.79	91.50	80.040		
18,900.00	6,979.64	3,337.00	3,088.56	196.37	39.41	-21.85	-897.11	-6,003.41	7,406.56	7,314.97	91.59	80.863		
19,000.00	6,979.56	3,337.00	3,088.56	197.96	39.41	-21.85	-897.11	-6,003.41	7,490.24	7,398.55	91.69	81.693		
19,100.00	6,979.48	3,337.00	3,088.56	199.55	39.41	-21.85	-897.11	-6,003.41	7,574.32	7,482.54	91.78	82.530		
19,200.00	6,979.40	3,337.00	3,088.56	201.14	39.41	-21.85	-897.11	-6,003.41	7,658.78	7,566.92	91.86	83.372		
19,300.00	6,979.33	3,337.00	3,088.56	202.73	39.41	-21.85	-897.11	-6,003.41	7,743.61	7,651.66	91.95	84.220		
19,400.00	6,979.25	3,337.00	3,088.56	204.32	39.41	-21.85	-897.11	-6,003.41	7,828.80	7,736.77	92.02	85.073		
19,500.00	6,979.17	3,337.00	3,088.56	205.91	39.41	-21.85	-897.11	-6,003.41	7,914.33	7,822.23	92.10	85.932		
19,600.00	6,979.09	3,337.00	3,088.56	207.50	39.41	-21.85	-897.11	-6,003.41	8,000.20	7,908.03	92.17	86.795		
19,700.00	6,979.01	3,337.00	3,088.56	209.09	39.41	-21.85	-897.11	-6,003.41	8,086.40	7,994.15	92.24	87.664		
19,800.00	6,978.93	3,337.00	3,088.56	210.69	39.41	-21.85	-897.11	-6,003.41	8,172.91	8,080.60	92.31	88.536		
19,900.00	6,978.86	3,337.00	3,088.56	212.28	39.41	-21.85	-897.11	-6,003.41	8,259.72	8,167.35	92.38	89.413		
20,000.00	6,978.78	3,337.00	3,088.56	213.87	39.41	-21.85	-897.11	-6,003.41	8,346.83	8,254.39	92.44	90.295		
20,100.00	6,978.70	3,337.00	3,088.56	215.46	39.41	-21.85	-897.11	-6,003.41	8,434.23	8,341.73	92.50	91.180		
20,200.00	6,978.62	3,337.00	3,088.56	217.05	39.41	-21.85	-897.11	-6,003.41	8,521.90	8,429.34	92.56	92.068		
20,300.00	6,978.54	3,337.00	3,088.56	218.65	39.41	-21.85	-897.11	-6,003.41	8,609.84	8,517.22	92.62	92.960		
20,400.00	6,978.46	3,337.00	3,088.56	220.24	39.41	-21.85	-897.11	-6,003.41	8,698.04	8,605.37	92.67	93.856		
20,500.00	6,978.39	3,337.00	3,088.56	221.83	39.41	-21.85	-897.11	-6,003.41	8,786.50	8,693.77	92.73	94.754		
20,600.00	6,978.31	3,337.00	3,088.56	223.43	39.41	-21.85	-897.11	-6,003.41	8,875.20	8,782.41	92.78	95.656		
20,700.00	6,978.23	3,337.00	3,088.56	225.02	39.41	-21.85	-897.11	-6,003.41	8,964.13	8,871.30	92.83	96.560		
20,800.00	6,978.15	3,337.00	3,088.56	226.61	39.41	-21.85	-897.11	-6,003.41	9,053.30	8,960.42	92.89	97.467		
20,900.00	6,978.07	3,337.00	3,088.56	228.21	39.41	-21.85	-897.11	-6,003.41	9,142.70	9,049.76	92.94	98.376		
21,000.00	6,977.99	3,337.00	3,088.56	229.80	39.41	-21.85	-897.11	-6,003.41	9,232.31	9,139.32	92.99	99.288		
21,100.00	6,977.92	3,337.00	3,088.56	231.39	39.41	-21.85	-897.11	-6,003.41	9,322.13	9,229.09	93.03	100.202		
21,200.00	6,977.84	3,337.00	3,088.56	232.99	39.41	-21.85	-897.11	-6,003.41	9,412.15	9,319.07	93.08	101.118		
21,300.00	6,977.76	3,337.00	3,088.56	234.58	39.41	-21.85	-897.11	-6,003.41	9,502.38	9,409.25	93.13	102.036		
21,400.00	6,977.68	3,337.00	3,088.56	236.18	39.41	-21.85	-897.11	-6,003.41	9,592.80	9,499.63	93.17	102.956		
21,500.00	6,977.60	3,337.00	3,088.56	237.77	39.41	-21.85	-897.11	-6,003.41	9,683.41	9,590.19	93.22	103.878		
21,600.00	6,977.52	3,337.00	3,088.56	239.37	39.41	-21.85	-897.11	-6,003.41	9,774.20	9,680.94	93.26	104.801		
21,700.00	6,977.45	3,337.00	3,088.56	240.96	39.41	-21.85	-897.11	-6,003.41	9,865.17	9,771.86	93.31	105.725		
21,800.00	6,977.37	3,337.00	3,088.56	242.56	39.41	-21.85	-897.11	-6,003.41	9,956.31	9,862.96	93.35	106.651		
21,900.00	6,977.29	3,337.00	3,088.56	244.15	39.41	-21.85	-897.11	-6,003.41	10,047.63	9,954.23	93.40	107.579		
22,000.00	6,977.21	3,337.00	3,088.56	245.75	39.41	-21.85	-897.11	-6,003.41	10,139.10	10,045.66	93.44	108.507		
22,100.00	6,977.13	3,337.00	3,088.56	247.34	39.41	-21.85	-897.11	-6,003.41	10,230.74	10,137.25	93.49	109.437		
22,200.00	6,977.05	3,337.00	3,088.56	248.94	39.41	-21.85	-897.11	-6,003.41	10,322.53	10,229.00	93.53	110.367		
22,269.73	6,977.00	3,337.00	3,088.56	250.05	39.41	-21.85	-897.11	-6,003.41	10,386.62	10,293.06	93.56	111.016		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171B - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 324-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	37.10	37.10	0.00	0.41	-71.94	1,474.46	-4,521.50	4,755.84				
100.00	100.00	132.23	132.23	0.25	1.47	-71.94	1,474.48	-4,521.59	4,755.93	4,754.21	1.72	2,767.520	
200.00	200.00	227.35	227.35	0.61	2.52	-71.94	1,474.53	-4,521.76	4,756.13	4,752.99	3.13	1,518.272	
300.00	300.00	324.00	324.00	0.97	3.60	-71.94	1,474.61	-4,522.04	4,756.42	4,751.86	4.56	1,042.266	
400.00	400.00	413.21	413.21	1.33	3.76	-71.94	1,474.90	-4,522.33	4,756.83	4,751.75	5.08	935.954	
500.00	500.00	497.63	497.62	1.68	3.86	-71.94	1,474.92	-4,522.96	4,757.55	4,752.00	5.55	857.589	
600.00	600.00	565.00	564.97	2.04	3.98	-71.96	1,473.72	-4,524.35	4,758.90	4,752.88	6.01	791.515	
700.00	700.00	603.83	603.72	2.40	4.43	-71.98	1,471.98	-4,525.92	4,761.19	4,754.61	6.58	723.227	
800.00	799.98	655.00	654.64	2.76	5.23	-61.25	1,467.95	-4,529.03	4,763.72	4,756.63	7.09	671.854	
849.89	849.82	689.12	688.46	2.94	5.75	-61.30	1,464.31	-4,531.65	4,764.69	4,757.27	7.42	642.387	
900.00	899.86	724.37	723.31	3.12	6.29	-61.38	1,459.93	-4,534.65	4,765.62	4,757.89	7.74	616.019	
1,000.00	999.73	792.30	790.18	3.48	6.91	-61.56	1,449.97	-4,541.24	4,767.99	4,759.70	8.29	575.072	
1,100.00	1,099.59	862.31	858.80	3.84	7.26	-61.76	1,438.40	-4,548.90	4,771.07	4,762.25	8.82	540.773	
1,200.00	1,199.45	926.00	921.17	4.20	7.44	-61.94	1,427.74	-4,556.19	4,774.76	4,765.43	9.33	511.732	
1,300.00	1,299.32	993.77	987.36	4.56	7.65	-62.14	1,415.86	-4,564.57	4,779.19	4,769.32	9.87	484.138	
1,400.00	1,399.18	1,052.19	1,044.13	4.92	7.86	-62.33	1,404.70	-4,572.58	4,784.56	4,774.16	10.40	459.935	
1,500.00	1,499.04	1,113.00	1,103.02	5.28	8.12	-62.53	1,392.47	-4,581.59	4,790.83	4,779.88	10.95	437.354	
1,600.00	1,598.91	1,174.50	1,162.29	5.64	8.36	-62.75	1,379.31	-4,591.38	4,797.96	4,786.43	11.53	416.230	
1,700.00	1,698.77	1,253.07	1,237.58	6.00	8.67	-63.04	1,361.21	-4,604.69	4,805.83	4,793.66	12.17	394.795	
1,800.00	1,798.63	1,331.39	1,312.25	6.36	8.97	-63.35	1,341.95	-4,618.37	4,814.08	4,801.24	12.84	375.032	
1,900.00	1,898.49	1,393.00	1,370.61	6.72	9.21	-63.61	1,325.83	-4,629.74	4,823.09	4,809.65	13.45	358.713	
2,000.00	1,998.36	1,471.68	1,444.71	7.09	9.53	-63.95	1,304.13	-4,644.91	4,832.81	4,818.65	14.16	341.379	
2,100.00	2,098.22	1,535.45	1,504.42	7.45	9.77	-64.23	1,285.75	-4,657.64	4,843.19	4,828.38	14.81	326.934	
2,200.00	2,198.08	1,601.99	1,566.39	7.81	10.03	-64.53	1,265.88	-4,671.52	4,854.44	4,838.95	15.49	313.301	
2,300.00	2,297.95	1,670.00	1,629.48	8.17	10.27	-64.85	1,245.00	-4,686.01	4,866.31	4,850.12	16.19	300.528	
2,400.00	2,397.81	1,724.94	1,680.11	8.53	10.51	-65.12	1,227.51	-4,698.16	4,879.07	4,862.22	16.85	289.538	
2,500.00	2,497.67	1,764.00	1,715.84	8.90	10.67	-65.31	1,214.58	-4,707.25	4,893.00	4,875.59	17.41	280.967	
2,600.00	2,597.54	1,827.99	1,774.04	9.26	10.95	-65.64	1,192.92	-4,722.71	4,907.96	4,889.81	18.15	270.420	
2,700.00	2,697.40	1,858.00	1,801.24	9.62	11.09	-65.79	1,182.67	-4,730.15	4,924.02	4,905.35	18.67	263.792	
2,800.00	2,797.26	1,923.62	1,860.55	9.98	11.34	-66.13	1,160.19	-4,746.97	4,941.05	4,921.61	19.44	254.225	
2,900.00	2,897.13	1,983.00	1,914.02	10.35	11.58	-66.43	1,139.87	-4,762.91	4,959.35	4,939.20	20.16	246.046	
3,000.00	2,996.99	2,280.08	2,184.05	10.71	12.84	-67.90	1,041.23	-4,837.58	4,977.70	4,955.23	22.47	221.543	
3,100.00	3,096.85	2,357.00	2,254.46	11.07	13.17	-68.26	1,015.77	-4,855.20	4,993.33	4,970.03	23.30	214.275	
3,200.00	3,196.72	2,433.53	2,324.63	11.43	13.50	-68.63	990.85	-4,872.89	5,009.53	4,985.41	24.13	207.643	
3,300.00	3,296.58	2,677.38	2,550.33	11.80	14.61	-69.72	914.70	-4,924.99	5,024.56	4,998.53	26.03	193.021	
3,400.00	3,396.44	2,729.00	2,598.03	12.16	14.85	-69.96	897.93	-4,935.36	5,038.76	5,012.06	26.70	188.718	
3,500.00	3,496.31	2,784.79	2,649.44	12.52	15.12	-70.22	879.67	-4,946.99	5,053.93	5,026.53	27.39	184.494	
3,600.00	3,596.17	2,888.77	2,745.29	12.88	15.66	-70.69	846.05	-4,969.28	5,069.87	5,041.47	28.40	178.487	
3,700.00	3,696.03	3,009.00	2,856.77	13.25	16.30	-71.22	808.41	-4,993.93	5,085.23	5,055.73	29.50	172.379	
3,800.00	3,795.89	3,136.26	2,975.42	13.61	16.98	-71.76	770.03	-5,019.28	5,100.41	5,069.79	30.62	166.583	
3,900.00	3,895.76	3,202.51	3,037.23	13.97	17.35	-72.04	750.25	-5,032.58	5,116.06	5,084.71	31.35	163.182	
4,000.00	3,995.62	3,327.96	3,153.62	14.34	18.12	-72.58	710.47	-5,057.25	5,131.41	5,098.89	32.51	157.826	
4,100.00	4,095.48	3,382.00	3,203.94	14.70	18.48	-72.81	693.99	-5,068.07	5,147.53	5,114.32	33.21	155.004	
4,200.00	4,195.35	3,693.27	3,496.43	15.06	20.26	-74.04	604.48	-5,125.34	5,162.92	5,127.49	35.43	145.735	
4,300.00	4,295.21	3,759.00	3,558.99	15.42	20.60	-74.28	587.35	-5,135.97	5,176.09	5,139.97	36.12	143.286	
4,400.00	4,395.07	3,813.61	3,611.00	15.79	20.89	-74.47	573.49	-5,145.13	5,190.08	5,153.33	36.76	141.196	
4,500.00	4,494.94	4,237.95	4,023.79	16.15	22.98	-75.59	497.44	-5,202.72	5,200.50	5,161.19	39.32	132.272	
4,600.00	4,594.80	4,304.16	4,089.25	16.51	23.45	-75.71	490.46	-5,209.80	5,209.35	5,169.32	40.04	130.107	
4,700.00	4,694.66	4,359.00	4,143.48	16.87	24.00	-75.80	485.13	-5,215.95	5,218.88	5,178.19	40.69	128.265	
4,800.00	4,794.53	4,359.00	4,143.48	17.24	24.00	-75.80	485.13	-5,215.95	5,229.87	5,188.83	41.04	127.419	
4,900.00	4,894.39	4,405.57	4,189.51	17.60	24.19	-75.87	481.48	-5,222.00	5,241.80	5,200.22	41.57	126.082	
5,000.00	4,994.25	4,451.00	4,234.30	17.96	24.38	-75.92	479.25	-5,229.26	5,255.73	5,213.63	42.10	124.852	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171B - OH - OH-SVY											Offset Site Error:	0.00 usft
Survey Program: 324-MWD OWSG Rev5											Offset Well Error:	0.00 usft
Rule Assigned:												
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
5,100.00	5,094.12	4,451.00	4,234.30	18.33	24.38	-75.92	479.25	-5,229.26	5,270.62	5,228.20	42.42	124.238
5,200.00	5,193.98	4,451.00	4,234.30	18.69	24.38	-75.92	479.25	-5,229.26	5,287.36	5,244.62	42.74	123.717
5,300.00	5,293.84	4,555.20	4,336.70	19.05	25.28	-76.03	475.70	-5,248.22	5,304.12	5,260.24	43.88	120.883
5,336.91	5,330.71	4,575.64	4,356.74	19.19	25.51	-76.05	475.01	-5,252.12	5,310.66	5,266.51	44.15	120.275
5,400.00	5,393.71	4,610.51	4,390.92	19.41	25.93	-76.14	473.86	-5,258.92	5,322.13	5,277.50	44.62	119.266
5,500.00	5,493.62	4,665.66	4,444.92	19.77	26.64	-76.29	472.05	-5,270.01	5,341.12	5,295.76	45.36	117.741
5,600.00	5,593.57	4,720.65	4,498.67	20.13	27.39	-76.43	470.27	-5,281.51	5,361.11	5,315.02	46.10	116.304
5,700.00	5,693.53	4,821.00	4,596.51	20.49	28.78	-76.61	467.11	-5,303.58	5,382.43	5,335.24	47.19	114.061
5,800.00	5,793.52	4,887.22	4,661.05	20.85	29.03	-76.75	465.43	-5,318.31	5,403.96	5,356.11	47.84	112.948
5,900.00	5,893.52	5,270.14	5,036.84	21.20	30.29	-76.86	469.20	-5,391.27	5,422.82	5,372.73	50.08	108.275
5,936.48	5,930.00	5,405.07	5,170.06	21.33	30.66	-87.61	474.12	-5,412.15	5,428.50	5,377.71	50.79	106.877
6,000.00	5,993.52	5,574.05	5,337.35	21.56	31.16	-87.56	479.54	-5,435.24	5,437.31	5,385.53	51.79	104.997
6,100.00	6,093.52	5,728.60	5,490.75	21.91	31.62	-87.52	483.55	-5,453.65	5,449.17	5,396.37	52.81	103.192
6,200.00	6,193.52	5,811.67	5,573.22	22.27	31.85	-87.51	485.36	-5,463.48	5,461.10	5,407.59	53.51	102.056
6,300.00	6,293.52	5,894.68	5,655.60	22.62	32.10	-87.50	486.95	-5,473.57	5,473.32	5,419.11	54.21	100.957
6,358.48	6,352.00	5,954.00	5,714.45	22.83	32.28	-87.49	487.94	-5,480.93	5,480.62	5,425.95	54.67	100.248
6,400.00	6,393.49	6,021.29	5,781.23	22.97	32.53	-12.81	489.20	-5,489.11	5,484.41	5,429.26	55.15	99.438
6,450.00	6,443.20	6,139.66	5,898.82	23.15	33.00	-12.80	492.34	-5,502.30	5,484.96	5,429.04	55.92	98.091
6,500.00	6,492.36	6,257.63	6,016.14	23.33	33.48	-12.89	496.65	-5,513.94	5,481.05	5,424.38	56.67	96.718
6,550.00	6,540.64	6,374.14	6,132.09	23.51	33.98	-13.08	502.05	-5,523.94	5,472.74	5,415.34	57.41	95.332
6,600.00	6,587.77	6,388.00	6,145.89	23.69	33.90	-13.35	502.66	-5,525.04	5,460.50	5,402.96	57.54	94.903
6,650.00	6,633.44	6,388.00	6,145.89	23.88	33.90	-13.69	502.66	-5,525.04	5,444.99	5,387.27	57.72	94.328
6,700.00	6,677.37	6,388.00	6,145.89	24.07	33.90	-14.13	502.66	-5,525.04	5,426.31	5,368.41	57.90	93.716
6,750.00	6,719.30	6,388.00	6,145.89	24.26	33.90	-14.67	502.66	-5,525.04	5,404.53	5,346.46	58.07	93.070
6,800.00	6,758.97	6,388.00	6,145.89	24.46	33.90	-15.33	502.66	-5,525.04	5,379.75	5,321.53	58.23	92.391
6,850.00	6,796.12	6,388.00	6,145.89	24.67	33.90	-16.14	502.66	-5,525.04	5,352.09	5,293.71	58.38	91.684
6,900.00	6,830.54	6,388.00	6,145.89	24.88	33.90	-17.13	502.66	-5,525.04	5,321.67	5,263.15	58.51	90.949
6,950.00	6,862.00	6,388.00	6,145.89	25.11	33.90	-18.34	502.66	-5,525.04	5,288.63	5,229.99	58.64	90.189
7,000.00	6,890.33	6,388.00	6,145.89	25.34	33.90	-19.82	502.66	-5,525.04	5,253.13	5,194.37	58.76	89.406
7,050.00	6,915.33	6,388.00	6,145.89	25.59	33.90	-21.66	502.66	-5,525.04	5,215.34	5,156.48	58.86	88.604
7,100.00	6,936.86	6,388.00	6,145.89	25.85	33.90	-23.98	502.66	-5,525.04	5,175.44	5,116.49	58.96	87.783
7,150.00	6,954.79	6,388.00	6,145.89	26.12	33.90	-26.92	502.66	-5,525.04	5,133.64	5,074.60	59.04	86.946
7,200.00	6,968.99	6,388.00	6,145.89	26.40	33.90	-30.75	502.66	-5,525.04	5,090.15	5,031.03	59.12	86.096
7,250.00	6,979.40	6,388.00	6,145.89	26.69	33.90	-35.83	502.66	-5,525.04	5,045.20	4,986.01	59.19	85.235
7,300.00	6,985.94	6,388.00	6,145.89	27.00	33.90	-42.68	502.66	-5,525.04	4,999.03	4,939.77	59.26	84.365
7,350.00	6,988.56	6,388.00	6,145.89	27.31	33.90	-52.04	502.66	-5,525.04	4,951.89	4,892.58	59.31	83.488
7,358.93	6,988.62	6,388.00	6,145.89	27.36	33.90	-54.04	502.66	-5,525.04	4,943.39	4,884.07	59.32	83.329
7,400.00	6,988.59	6,388.00	6,145.89	27.63	33.90	-54.04	502.66	-5,525.04	4,904.26	4,844.89	59.37	82.610
7,500.00	6,988.52	6,388.00	6,145.89	28.33	33.90	-54.04	502.66	-5,525.04	4,809.12	4,749.64	59.48	80.853
7,600.00	6,988.45	6,388.00	6,145.89	29.10	33.90	-54.04	502.66	-5,525.04	4,714.18	4,654.58	59.61	79.089
7,658.93	6,988.41	6,388.00	6,145.89	29.59	33.90	-54.04	502.66	-5,525.04	4,658.34	4,598.65	59.69	78.046
7,700.00	6,988.38	6,388.00	6,145.89	29.94	33.90	-52.57	502.66	-5,525.04	4,619.39	4,559.64	59.75	77.318
7,800.00	6,988.31	6,388.00	6,145.89	30.84	33.90	-48.58	502.66	-5,525.04	4,524.09	4,464.21	59.89	75.544
7,900.00	6,988.24	6,388.00	6,145.89	31.79	33.90	-43.93	502.66	-5,525.04	4,428.22	4,368.20	60.02	73.776
8,000.00	6,988.16	6,388.00	6,145.89	32.78	33.90	-38.50	502.66	-5,525.04	4,331.85	4,271.70	60.15	72.018
8,100.00	6,988.09	6,388.00	6,145.89	33.82	33.90	-32.25	502.66	-5,525.04	4,235.08	4,174.81	60.26	70.275
8,200.00	6,988.01	6,388.00	6,145.89	34.88	33.90	-25.14	502.66	-5,525.04	4,137.99	4,077.62	60.36	68.551
8,300.00	6,987.94	6,388.00	6,145.89	35.98	33.90	-17.28	502.66	-5,525.04	4,040.68	3,980.24	60.45	66.849
8,400.00	6,987.86	6,388.00	6,145.89	37.11	33.90	-8.90	502.66	-5,525.04	3,943.27	3,882.77	60.51	65.172
8,416.35	6,987.85	6,388.00	6,145.89	37.29	33.90	-7.50	502.66	-5,525.04	3,927.34	3,866.83	60.51	64.900
8,500.00	6,987.78	6,388.00	6,145.89	38.25	33.90	-7.50	502.66	-5,525.04	3,845.89	3,785.34	60.55	63.514
8,600.00	6,987.70	6,388.00	6,145.89	39.43	33.90	-7.50	502.66	-5,525.04	3,748.65	3,688.05	60.60	61.857

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		324-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,700.00	6,987.62	6,388.00	6,145.89	40.64	33.90	-7.50	502.66	-5,525.04	3,651.56	3,590.90	60.65	60.203		
8,800.00	6,987.55	6,388.00	6,145.89	41.88	33.90	-7.50	502.66	-5,525.04	3,554.63	3,493.92	60.71	58.551		
8,900.00	6,987.47	6,388.00	6,145.89	43.14	33.90	-7.50	502.66	-5,525.04	3,457.87	3,397.10	60.77	56.902		
9,000.00	6,987.39	6,388.00	6,145.89	44.42	33.90	-7.50	502.66	-5,525.04	3,361.30	3,300.47	60.83	55.255		
9,100.00	6,987.31	6,388.00	6,145.89	45.72	33.90	-7.50	502.66	-5,525.04	3,264.94	3,204.04	60.90	53.612		
9,200.00	6,987.23	6,388.00	6,145.89	47.04	33.90	-7.50	502.66	-5,525.04	3,168.80	3,107.83	60.97	51.972		
9,300.00	6,987.15	6,388.00	6,145.89	48.38	33.90	-7.50	502.66	-5,525.04	3,072.91	3,011.87	61.05	50.336		
9,400.00	6,987.08	6,388.00	6,145.89	49.73	33.90	-7.50	502.66	-5,525.04	2,977.30	2,916.17	61.13	48.704		
9,500.00	6,987.00	6,388.00	6,145.89	51.10	33.90	-7.50	502.66	-5,525.04	2,881.98	2,820.76	61.22	47.077		
9,600.00	6,986.92	6,388.00	6,145.89	52.48	33.90	-7.50	502.66	-5,525.04	2,786.98	2,725.67	61.31	45.456		
9,700.00	6,986.84	6,388.00	6,145.89	53.87	33.90	-7.50	502.66	-5,525.04	2,692.35	2,630.94	61.41	43.840		
9,800.00	6,986.76	6,388.00	6,145.89	55.28	33.90	-7.50	502.66	-5,525.04	2,598.12	2,536.60	61.52	42.231		
9,900.00	6,986.68	6,388.00	6,145.89	56.69	33.90	-7.50	502.66	-5,525.04	2,504.34	2,442.71	61.64	40.630		
10,000.00	6,986.61	6,388.00	6,145.89	58.12	33.90	-7.50	502.66	-5,525.04	2,411.06	2,349.30	61.76	39.037		
10,100.00	6,986.53	6,388.00	6,145.89	59.55	33.90	-7.50	502.66	-5,525.04	2,318.34	2,256.45	61.90	37.454		
10,200.00	6,986.45	6,388.00	6,145.89	61.00	33.90	-7.50	502.66	-5,525.04	2,226.25	2,164.21	62.04	35.882		
10,300.00	6,986.37	6,388.00	6,145.89	62.45	33.90	-7.50	502.66	-5,525.04	2,134.88	2,072.67	62.20	34.322		
10,400.00	6,986.29	6,388.00	6,145.89	63.90	33.90	-7.50	502.66	-5,525.04	2,044.31	1,981.93	62.37	32.776		
10,500.00	6,986.21	6,388.00	6,145.89	65.37	33.90	-7.50	502.66	-5,525.04	1,954.65	1,892.10	62.55	31.247		
10,600.00	6,986.14	6,388.00	6,145.89	66.84	33.90	-7.50	502.66	-5,525.04	1,866.06	1,803.31	62.75	29.738		
10,700.00	6,986.06	6,388.00	6,145.89	68.32	33.90	-7.50	502.66	-5,525.04	1,778.67	1,715.71	62.96	28.250		
10,800.00	6,985.98	6,388.00	6,145.89	69.80	33.90	-7.50	502.66	-5,525.04	1,692.67	1,629.49	63.18	26.790		
10,900.00	6,985.90	6,388.00	6,145.89	71.29	33.90	-7.50	502.66	-5,525.04	1,608.30	1,544.88	63.42	25.360		
11,000.00	6,985.82	6,388.00	6,145.89	72.78	33.90	-7.50	502.66	-5,525.04	1,525.82	1,462.16	63.66	23.967		
11,100.00	6,985.75	6,388.00	6,145.89	74.28	33.90	-7.50	502.66	-5,525.04	1,445.55	1,381.64	63.91	22.619		
11,200.00	6,985.67	6,388.00	6,145.89	75.78	33.90	-7.50	502.66	-5,525.04	1,367.88	1,303.73	64.15	21.323		
11,300.00	6,985.59	6,388.00	6,145.89	77.29	33.90	-7.50	502.66	-5,525.04	1,293.29	1,228.92	64.37	20.091		
11,400.00	6,985.51	6,388.00	6,145.89	78.80	33.90	-7.50	502.66	-5,525.04	1,222.32	1,157.78	64.55	18.936		
11,500.00	6,985.43	6,388.00	6,145.89	80.31	33.90	-7.50	502.66	-5,525.04	1,155.67	1,091.01	64.66	17.874		
11,600.00	6,985.35	6,388.00	6,145.89	81.83	33.90	-7.50	502.66	-5,525.04	1,094.10	1,029.45	64.65	16.923		
11,700.00	6,985.28	6,388.00	6,145.89	83.35	33.90	-7.50	502.66	-5,525.04	1,038.53	974.05	64.48	16.106		
11,800.00	6,985.20	6,388.00	6,145.89	84.87	33.90	-7.50	502.66	-5,525.04	989.97	925.87	64.10	15.445		
11,900.00	6,985.12	6,388.00	6,145.89	86.40	33.90	-7.50	502.66	-5,525.04	949.49	886.05	63.44	14.967		
12,000.00	6,985.04	6,388.00	6,145.89	87.93	33.90	-7.50	502.66	-5,525.04	918.16	855.67	62.49	14.693		
12,100.00	6,984.96	6,388.00	6,145.89	89.46	33.90	-7.50	502.66	-5,525.04	896.94	835.66	61.28	14.636 SF		
12,200.00	6,984.88	6,388.00	6,145.89	90.99	33.90	-7.50	502.66	-5,525.04	886.56	826.61	59.95	14.788		
12,242.55	6,984.85	6,388.00	6,145.89	91.65	33.90	-7.50	502.66	-5,525.04	885.54	826.14	59.40	14.908 CC, ES		
12,300.00	6,984.81	6,388.00	6,145.89	92.53	33.90	-7.50	502.66	-5,525.04	887.40	828.68	58.72	15.111		
12,400.00	6,984.73	6,388.00	6,145.89	94.07	33.90	-7.50	502.66	-5,525.04	899.43	841.54	57.89	15.537		
12,500.00	6,984.65	6,388.00	6,145.89	95.61	33.90	-7.50	502.66	-5,525.04	922.20	864.59	57.61	16.007		
12,600.00	6,984.57	6,388.00	6,145.89	97.15	33.90	-7.50	502.66	-5,525.04	954.96	897.12	57.83	16.512		
12,700.00	6,984.49	6,388.00	6,145.89	98.70	33.90	-7.50	502.66	-5,525.04	996.71	938.36	58.35	17.081		
12,800.00	6,984.41	6,388.00	6,145.89	100.25	33.90	-7.50	502.66	-5,525.04	1,046.39	987.42	58.97	17.746		
12,900.00	6,984.34	6,388.00	6,145.89	101.80	33.90	-7.50	502.66	-5,525.04	1,102.91	1,043.35	59.56	18.518		
13,000.00	6,984.26	6,388.00	6,145.89	103.35	33.90	-7.50	502.66	-5,525.04	1,165.29	1,105.21	60.08	19.397		
13,100.00	6,984.18	6,388.00	6,145.89	104.90	33.90	-7.50	502.66	-5,525.04	1,232.64	1,172.13	60.51	20.372		
13,200.00	6,984.10	6,388.00	6,145.89	106.45	33.90	-7.50	502.66	-5,525.04	1,304.18	1,243.32	60.85	21.431		
13,300.00	6,984.02	6,388.00	6,145.89	108.01	33.90	-7.50	502.66	-5,525.04	1,379.26	1,318.13	61.13	22.562		
13,400.00	6,983.94	6,388.00	6,145.89	109.56	33.90	-7.50	502.66	-5,525.04	1,457.35	1,395.99	61.35	23.753		
13,500.00	6,983.87	6,388.00	6,145.89	111.12	33.90	-7.50	502.66	-5,525.04	1,537.97	1,476.44	61.53	24.995		
13,600.00	6,983.79	6,388.00	6,145.89	112.68	33.90	-7.50	502.66	-5,525.04	1,620.75	1,559.08	61.68	26.278		
13,700.00	6,983.71	6,388.00	6,145.89	114.24	33.90	-7.50	502.66	-5,525.04	1,705.38	1,643.58	61.80	27.596		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		324-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		
13,800.00	6,983.63	6,388.00	6,145.89	115.80	33.90	-7.50	502.66	-5,525.04	1,791.60	1,729.70	61.90	28.943	
13,900.00	6,983.55	6,388.00	6,145.89	117.37	33.90	-7.50	502.66	-5,525.04	1,879.18	1,817.19	61.99	30.315	
14,000.00	6,983.47	6,388.00	6,145.89	118.93	33.90	-7.50	502.66	-5,525.04	1,967.94	1,905.87	62.07	31.706	
14,100.00	6,983.40	6,388.00	6,145.89	120.50	33.90	-7.50	502.66	-5,525.04	2,057.74	1,995.60	62.14	33.115	
14,200.00	6,983.32	6,388.00	6,145.89	122.06	33.90	-7.50	502.66	-5,525.04	2,148.43	2,086.23	62.21	34.537	
14,300.00	6,983.24	6,388.00	6,145.89	123.63	33.90	-7.50	502.66	-5,525.04	2,239.92	2,177.65	62.27	35.971	
14,400.00	6,983.16	6,388.00	6,145.89	125.20	33.90	-7.50	502.66	-5,525.04	2,332.11	2,269.78	62.33	37.414	
14,500.00	6,983.08	6,388.00	6,145.89	126.77	33.90	-7.50	502.66	-5,525.04	2,424.92	2,362.53	62.39	38.865	
14,600.00	6,983.00	6,388.00	6,145.89	128.33	33.90	-7.50	502.66	-5,525.04	2,518.28	2,455.83	62.45	40.323	
14,700.00	6,982.93	6,388.00	6,145.89	129.91	33.90	-7.50	502.66	-5,525.04	2,612.13	2,549.62	62.51	41.786	
14,800.00	6,982.85	6,388.00	6,145.89	131.48	33.90	-7.50	502.66	-5,525.04	2,706.42	2,643.85	62.57	43.253	
14,900.00	6,982.77	6,388.00	6,145.89	133.05	33.90	-7.50	502.66	-5,525.04	2,801.11	2,738.47	62.63	44.723	
15,000.00	6,982.69	6,388.00	6,145.89	134.62	33.90	-7.50	502.66	-5,525.04	2,896.15	2,833.46	62.69	46.196	
15,100.00	6,982.61	6,388.00	6,145.89	136.20	33.90	-7.50	502.66	-5,525.04	2,991.52	2,928.76	62.75	47.670	
15,200.00	6,982.54	6,388.00	6,145.89	137.77	33.90	-7.50	502.66	-5,525.04	3,087.18	3,024.36	62.82	49.146	
15,300.00	6,982.46	6,388.00	6,145.89	139.35	33.90	-7.50	502.66	-5,525.04	3,183.10	3,120.22	62.88	50.622	
15,400.00	6,982.38	6,388.00	6,145.89	140.92	33.90	-7.50	502.66	-5,525.04	3,279.27	3,216.33	62.94	52.098	
15,500.00	6,982.30	6,388.00	6,145.89	142.50	33.90	-7.50	502.66	-5,525.04	3,375.67	3,312.66	63.01	53.574	
15,600.00	6,982.22	6,388.00	6,145.89	144.07	33.90	-7.50	502.66	-5,525.04	3,472.26	3,409.19	63.07	55.050	
15,700.00	6,982.14	6,388.00	6,145.89	145.65	33.90	-7.50	502.66	-5,525.04	3,569.05	3,505.91	63.14	56.524	
15,800.00	6,982.07	6,388.00	6,145.89	147.23	33.90	-7.50	502.66	-5,525.04	3,666.01	3,602.80	63.21	57.997	
15,900.00	6,981.99	6,388.00	6,145.89	148.81	33.90	-7.50	502.66	-5,525.04	3,763.12	3,699.84	63.28	59.469	
16,000.00	6,981.91	6,388.00	6,145.89	150.39	33.90	-7.50	502.66	-5,525.04	3,860.39	3,797.04	63.35	60.939	
16,100.00	6,981.83	6,388.00	6,145.89	151.97	33.90	-7.50	502.66	-5,525.04	3,957.79	3,894.37	63.42	62.407	
16,200.00	6,981.75	6,388.00	6,145.89	153.55	33.90	-7.50	502.66	-5,525.04	4,055.31	3,991.82	63.49	63.873	
16,300.00	6,981.67	6,388.00	6,145.89	155.13	33.90	-7.50	502.66	-5,525.04	4,152.96	4,089.39	63.56	65.336	
16,400.00	6,981.60	6,388.00	6,145.89	156.71	33.90	-7.50	502.66	-5,525.04	4,250.71	4,187.07	63.64	66.797	
16,500.00	6,981.52	6,388.00	6,145.89	158.29	33.90	-7.50	502.66	-5,525.04	4,348.57	4,284.86	63.71	68.255	
16,600.00	6,981.44	6,388.00	6,145.89	159.88	33.90	-7.50	502.66	-5,525.04	4,446.52	4,382.73	63.79	69.711	
16,700.00	6,981.36	6,388.00	6,145.89	161.46	33.90	-7.50	502.66	-5,525.04	4,544.56	4,480.70	63.86	71.163	
16,800.00	6,981.28	6,388.00	6,145.89	163.04	33.90	-7.50	502.66	-5,525.04	4,642.68	4,578.74	63.94	72.613	
16,900.00	6,981.20	6,388.00	6,145.89	164.62	33.90	-7.50	502.66	-5,525.04	4,740.88	4,676.87	64.01	74.059	
17,000.00	6,981.13	6,388.00	6,145.89	166.21	33.90	-7.50	502.66	-5,525.04	4,839.16	4,775.07	64.09	75.503	
17,100.00	6,981.05	6,388.00	6,145.89	167.79	33.90	-7.50	502.66	-5,525.04	4,937.51	4,873.33	64.17	76.942	
17,200.00	6,980.97	6,388.00	6,145.89	169.38	33.90	-7.50	502.66	-5,525.04	5,035.92	4,971.66	64.25	78.379	
17,300.00	6,980.89	6,388.00	6,145.89	170.96	33.90	-7.50	502.66	-5,525.04	5,134.39	5,070.06	64.33	79.812	
17,400.00	6,980.81	6,388.00	6,145.89	172.55	33.90	-7.50	502.66	-5,525.04	5,232.92	5,168.51	64.41	81.242	
17,500.00	6,980.73	6,388.00	6,145.89	174.13	33.90	-7.50	502.66	-5,525.04	5,331.50	5,267.01	64.49	82.667	
17,600.00	6,980.66	6,388.00	6,145.89	175.72	33.90	-7.50	502.66	-5,525.04	5,430.14	5,365.56	64.58	84.090	
17,700.00	6,980.58	6,388.00	6,145.89	177.31	33.90	-7.50	502.66	-5,525.04	5,528.82	5,464.17	64.66	85.508	
17,800.00	6,980.50	6,388.00	6,145.89	178.89	33.90	-7.50	502.66	-5,525.04	5,627.56	5,562.81	64.74	86.923	
17,900.00	6,980.42	6,388.00	6,145.89	180.48	33.90	-7.50	502.66	-5,525.04	5,726.33	5,661.51	64.83	88.334	
18,000.00	6,980.34	6,388.00	6,145.89	182.07	33.90	-7.50	502.66	-5,525.04	5,825.15	5,760.24	64.91	89.741	
18,100.00	6,980.26	6,388.00	6,145.89	183.66	33.90	-7.50	502.66	-5,525.04	5,924.01	5,859.01	65.00	91.144	
18,200.00	6,980.19	6,388.00	6,145.89	185.24	33.90	-7.50	502.66	-5,525.04	6,022.90	5,957.82	65.08	92.543	
18,300.00	6,980.11	6,388.00	6,145.89	186.83	33.90	-7.50	502.66	-5,525.04	6,121.83	6,056.66	65.17	93.938	
18,400.00	6,980.03	6,388.00	6,145.89	188.42	33.90	-7.50	502.66	-5,525.04	6,220.80	6,155.54	65.26	95.330	
18,500.00	6,979.95	6,388.00	6,145.89	190.01	33.90	-7.50	502.66	-5,525.04	6,319.79	6,254.45	65.34	96.717	
18,600.00	6,979.87	6,388.00	6,145.89	191.60	33.90	-7.50	502.66	-5,525.04	6,418.82	6,353.39	65.43	98.100	
18,700.00	6,979.79	6,388.00	6,145.89	193.19	33.90	-7.50	502.66	-5,525.04	6,517.88	6,452.36	65.52	99.479	
18,800.00	6,979.72	6,388.00	6,145.89	194.78	33.90	-7.50	502.66	-5,525.04	6,616.97	6,551.36	65.61	100.853	
18,900.00	6,979.64	6,388.00	6,145.89	196.37	33.90	-7.50	502.66	-5,525.04	6,716.08	6,650.38	65.70	102.224	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		324-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
19,000.00	6,979.56	6,388.00	6,145.89	197.96	33.90	-7.50	502.66	-5,525.04	6,815.22	6,749.43	65.79	103.590	
19,100.00	6,979.48	6,388.00	6,145.89	199.55	33.90	-7.50	502.66	-5,525.04	6,914.39	6,848.51	65.88	104.953	
19,200.00	6,979.40	6,388.00	6,145.89	201.14	33.90	-7.50	502.66	-5,525.04	7,013.57	6,947.60	65.97	106.311	
19,300.00	6,979.33	6,388.00	6,145.89	202.73	33.90	-7.50	502.66	-5,525.04	7,112.79	7,046.72	66.06	107.664	
19,400.00	6,979.25	6,388.00	6,145.89	204.32	33.90	-7.50	502.66	-5,525.04	7,212.02	7,145.86	66.16	109.014	
19,500.00	6,979.17	6,388.00	6,145.89	205.91	33.90	-7.50	502.66	-5,525.04	7,311.27	7,245.02	66.25	110.359	
19,600.00	6,979.09	6,388.00	6,145.89	207.50	33.90	-7.50	502.66	-5,525.04	7,410.55	7,344.20	66.34	111.700	
19,700.00	6,979.01	6,388.00	6,145.89	209.09	33.90	-7.50	502.66	-5,525.04	7,509.84	7,443.40	66.44	113.036	
19,800.00	6,978.93	6,388.00	6,145.89	210.69	33.90	-7.50	502.66	-5,525.04	7,609.15	7,542.62	66.53	114.369	
19,900.00	6,978.86	6,388.00	6,145.89	212.28	33.90	-7.50	502.66	-5,525.04	7,708.48	7,641.85	66.63	115.697	
20,000.00	6,978.78	6,388.00	6,145.89	213.87	33.90	-7.50	502.66	-5,525.04	7,807.83	7,741.10	66.72	117.020	
20,100.00	6,978.70	6,388.00	6,145.89	215.46	33.90	-7.50	502.66	-5,525.04	7,907.19	7,840.37	66.82	118.339	
20,200.00	6,978.62	6,388.00	6,145.89	217.05	33.90	-7.50	502.66	-5,525.04	8,006.57	7,939.65	66.91	119.654	
20,300.00	6,978.54	6,388.00	6,145.89	218.65	33.90	-7.50	502.66	-5,525.04	8,105.96	8,038.95	67.01	120.965	
20,400.00	6,978.46	6,388.00	6,145.89	220.24	33.90	-7.50	502.66	-5,525.04	8,205.37	8,138.26	67.11	122.271	
20,500.00	6,978.39	6,388.00	6,145.89	221.83	33.90	-7.50	502.66	-5,525.04	8,304.79	8,237.59	67.21	123.572	
20,600.00	6,978.31	6,388.00	6,145.89	223.43	33.90	-7.50	502.66	-5,525.04	8,404.23	8,336.93	67.30	124.870	
20,700.00	6,978.23	6,388.00	6,145.89	225.02	33.90	-7.50	502.66	-5,525.04	8,503.68	8,436.28	67.40	126.163	
20,800.00	6,978.15	6,388.00	6,145.89	226.61	33.90	-7.50	502.66	-5,525.04	8,603.14	8,535.64	67.50	127.451	
20,900.00	6,978.07	6,388.00	6,145.89	228.21	33.90	-7.50	502.66	-5,525.04	8,702.62	8,635.02	67.60	128.735	
21,000.00	6,977.99	6,388.00	6,145.89	229.80	33.90	-7.50	502.66	-5,525.04	8,802.10	8,734.40	67.70	130.015	
21,100.00	6,977.92	6,388.00	6,145.89	231.39	33.90	-7.50	502.66	-5,525.04	8,901.60	8,833.80	67.80	131.290	
21,200.00	6,977.84	6,388.00	6,145.89	232.99	33.90	-7.50	502.66	-5,525.04	9,001.11	8,933.21	67.90	132.561	
21,300.00	6,977.76	6,388.00	6,145.89	234.58	33.90	-7.50	502.66	-5,525.04	9,100.63	9,032.63	68.00	133.828	
21,400.00	6,977.68	6,388.00	6,145.89	236.18	33.90	-7.50	502.66	-5,525.04	9,200.16	9,132.06	68.10	135.090	
21,500.00	6,977.60	6,388.00	6,145.89	237.77	33.90	-7.50	502.66	-5,525.04	9,299.70	9,231.50	68.21	136.347	
21,600.00	6,977.52	6,388.00	6,145.89	239.37	33.90	-7.50	502.66	-5,525.04	9,399.25	9,330.95	68.31	137.601	
21,700.00	6,977.45	6,388.00	6,145.89	240.96	33.90	-7.50	502.66	-5,525.04	9,498.81	9,430.40	68.41	138.850	
21,800.00	6,977.37	6,388.00	6,145.89	242.56	33.90	-7.50	502.66	-5,525.04	9,598.38	9,529.87	68.51	140.094	
21,900.00	6,977.29	6,388.00	6,145.89	244.15	33.90	-7.50	502.66	-5,525.04	9,697.96	9,629.34	68.62	141.334	
22,000.00	6,977.21	6,388.00	6,145.89	245.75	33.90	-7.50	502.66	-5,525.04	9,797.55	9,728.83	68.72	142.570	
22,100.00	6,977.13	6,388.00	6,145.89	247.34	33.90	-7.50	502.66	-5,525.04	9,897.14	9,828.32	68.83	143.801	
22,200.00	6,977.05	6,388.00	6,145.89	248.94	33.90	-7.50	502.66	-5,525.04	9,996.74	9,927.81	68.93	145.028	
22,269.73	6,977.00	6,388.00	6,145.89	250.05	33.90	-7.50	502.66	-5,525.04	10,066.20	9,997.19	69.00	145.881	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 288-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	39.00	39.00	0.00	0.79	-72.09	1,470.31	-4,550.49	4,782.13				
100.00	100.00	139.00	139.00	0.25	2.82	-72.09	1,470.31	-4,550.49	4,782.13	4,779.07	3.07	1,559.735	
200.00	200.00	239.00	239.00	0.61	4.84	-72.09	1,470.31	-4,550.49	4,782.13	4,776.68	5.45	877.529	
210.00	210.00	249.00	249.00	0.65	5.04	-72.09	1,470.31	-4,550.49	4,782.13	4,776.45	5.69	840.756	
300.00	300.00	311.38	311.38	0.97	5.85	-72.09	1,470.35	-4,550.55	4,782.28	4,775.47	6.81	701.744	
400.00	400.00	386.52	386.51	1.33	5.97	-72.09	1,470.50	-4,551.23	4,783.18	4,775.89	7.29	656.236	
500.00	500.00	460.53	460.52	1.68	6.10	-72.10	1,470.01	-4,552.39	4,784.49	4,776.73	7.76	616.349	
600.00	600.00	517.33	517.30	2.04	6.15	-72.12	1,469.29	-4,553.88	4,786.59	4,778.41	8.18	585.410	
700.00	700.00	562.00	561.92	2.40	6.18	-72.14	1,468.30	-4,555.54	4,789.59	4,781.02	8.58	558.449	
800.00	799.98	622.00	621.80	2.76	6.28	-61.37	1,466.30	-4,558.79	4,792.89	4,783.88	9.01	532.115	
849.89	849.82	622.00	621.80	2.94	6.28	-61.34	1,466.30	-4,558.79	4,794.37	4,785.19	9.18	522.203	
900.00	899.86	646.56	646.27	3.12	6.35	-61.37	1,465.28	-4,560.56	4,795.98	4,786.58	9.40	510.105	
1,000.00	999.73	682.00	681.54	3.48	6.45	-61.42	1,463.60	-4,563.63	4,800.28	4,790.47	9.81	489.215	
1,100.00	1,099.59	719.08	718.36	3.84	6.57	-61.48	1,461.50	-4,567.45	4,805.90	4,795.66	10.24	469.396	
1,200.00	1,199.45	742.00	741.07	4.20	6.65	-61.52	1,460.00	-4,570.11	4,812.87	4,802.24	10.63	452.774	
1,300.00	1,299.32	803.00	801.31	4.56	6.87	-61.64	1,455.45	-4,578.56	4,821.33	4,810.20	11.13	433.318	
1,400.00	1,399.18	803.00	801.31	4.92	6.87	-61.64	1,455.45	-4,578.56	4,831.03	4,819.56	11.46	421.401	
1,500.00	1,499.04	842.32	839.94	5.28	7.03	-61.72	1,452.17	-4,585.09	4,842.27	4,830.36	11.91	406.474	
1,600.00	1,598.91	863.00	860.20	5.64	7.11	-61.76	1,450.33	-4,588.85	4,854.98	4,842.68	12.30	394.590	
1,700.00	1,698.77	898.51	894.85	6.00	7.25	-61.85	1,447.00	-4,595.87	4,869.11	4,856.36	12.75	381.918	
1,800.00	1,798.63	924.00	919.61	6.36	7.36	-61.91	1,444.48	-4,601.38	4,884.74	4,871.58	13.16	371.242	
1,900.00	1,898.49	963.28	957.59	6.72	7.52	-62.01	1,440.29	-4,610.47	4,901.71	4,888.09	13.62	359.949	
2,000.00	1,998.36	986.00	979.46	7.09	7.61	-62.07	1,437.65	-4,616.01	4,919.99	4,905.97	14.01	351.055	
2,100.00	2,098.22	1,027.11	1,018.83	7.45	7.79	-62.19	1,432.48	-4,626.67	4,939.53	4,925.04	14.49	340.931	
2,200.00	2,198.08	1,049.00	1,039.66	7.81	7.88	-62.25	1,429.52	-4,632.71	4,960.52	4,945.64	14.88	333.323	
2,300.00	2,297.95	1,082.42	1,071.28	8.17	8.04	-62.36	1,424.79	-4,642.43	4,982.87	4,967.54	15.33	324.985	
2,400.00	2,397.81	1,110.00	1,097.21	8.53	8.16	-62.45	1,420.73	-4,650.91	5,006.64	4,990.89	15.75	317.795	
2,500.00	2,497.67	1,110.00	1,097.21	8.90	8.16	-62.45	1,420.73	-4,650.91	5,032.02	5,015.98	16.04	313.669	
2,600.00	2,597.54	1,173.00	1,155.72	9.26	8.48	-62.66	1,410.94	-4,672.10	5,058.67	5,042.00	16.67	303.487	
2,700.00	2,697.40	1,173.00	1,155.72	9.62	8.48	-62.66	1,410.94	-4,672.10	5,086.58	5,069.63	16.95	300.145	
2,800.00	2,797.26	1,173.00	1,155.72	9.98	8.48	-62.66	1,410.94	-4,672.10	5,116.29	5,099.07	17.22	297.147	
2,900.00	2,897.13	1,235.00	1,212.15	10.35	8.82	-62.88	1,400.69	-4,695.62	5,147.29	5,129.40	17.89	287.778	
3,000.00	2,996.99	1,235.00	1,212.15	10.71	8.82	-62.88	1,400.69	-4,695.62	5,179.43	5,161.28	18.15	285.405	
3,100.00	3,096.85	1,235.00	1,212.15	11.07	8.82	-62.88	1,400.69	-4,695.62	5,213.29	5,194.89	18.40	283.309	
3,200.00	3,196.72	1,297.00	1,267.29	11.43	9.17	-63.13	1,389.50	-4,721.65	5,248.40	5,229.31	19.09	274.930	
3,300.00	3,296.58	1,297.00	1,267.29	11.80	9.17	-63.13	1,389.50	-4,721.65	5,284.57	5,265.24	19.33	273.327	
3,400.00	3,396.44	1,297.00	1,267.29	12.16	9.17	-63.13	1,389.50	-4,721.65	5,322.38	5,302.81	19.57	271.951	
3,500.00	3,496.31	1,331.98	1,297.78	12.52	9.36	-63.27	1,382.73	-4,737.42	5,361.22	5,341.15	20.07	267.161	
3,600.00	3,596.17	1,359.00	1,321.01	12.88	9.50	-63.38	1,377.42	-4,750.15	5,401.54	5,381.03	20.50	263.471	
3,700.00	3,696.03	1,359.00	1,321.01	13.25	9.50	-63.38	1,377.42	-4,750.15	5,443.06	5,422.34	20.72	262.672	
3,800.00	3,795.89	1,391.17	1,348.31	13.61	9.66	-63.52	1,370.86	-4,765.86	5,485.74	5,464.55	21.19	258.911	
3,900.00	3,895.76	1,421.00	1,373.27	13.97	9.81	-63.65	1,364.44	-4,780.87	5,529.61	5,507.98	21.63	255.608	
4,000.00	3,995.62	1,421.00	1,373.27	14.34	9.81	-63.65	1,364.44	-4,780.87	5,574.64	5,552.80	21.84	255.273	
4,100.00	4,095.48	1,446.75	1,394.50	14.70	9.94	-63.77	1,358.67	-4,794.24	5,620.77	5,598.52	22.26	252.551	
4,200.00	4,195.35	1,482.00	1,423.04	15.06	10.11	-63.93	1,350.50	-4,813.25	5,668.30	5,645.55	22.75	249.123	
4,300.00	4,295.21	1,482.00	1,423.04	15.42	10.11	-63.93	1,350.50	-4,813.25	5,716.62	5,693.68	22.94	249.163	
4,400.00	4,395.07	1,482.00	1,423.04	15.79	10.11	-63.93	1,350.50	-4,813.25	5,766.27	5,743.14	23.13	249.323	
4,500.00	4,494.94	1,507.29	1,443.13	16.15	10.25	-64.05	1,344.45	-4,827.37	5,816.92	5,793.37	23.55	247.029	
4,600.00	4,594.80	1,543.00	1,470.91	16.51	10.43	-64.23	1,335.62	-4,848.00	5,868.89	5,844.83	24.06	243.880	
4,700.00	4,694.66	1,543.00	1,470.91	16.87	10.43	-64.23	1,335.62	-4,848.00	5,921.53	5,897.29	24.24	244.320	
4,800.00	4,794.53	1,543.00	1,470.91	17.24	10.43	-64.23	1,335.62	-4,848.00	5,975.38	5,950.97	24.40	244.854	
4,900.00	4,894.39	1,569.69	1,491.25	17.60	10.56	-64.36	1,328.74	-4,863.86	6,030.15	6,005.33	24.82	242.922	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 288-MWD OWSG Rev5												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,994.25	1,604.00	1,516.87	17.96	10.72	-64.54	1,319.47	-4,884.69	6,085.99	6,060.68	25.31	240.427	
5,100.00	5,094.12	1,604.00	1,516.87	18.33	10.72	-64.54	1,319.47	-4,884.69	6,142.54	6,117.07	25.47	241.168	
5,200.00	5,193.98	1,642.10	1,544.85	18.69	10.85	-64.74	1,308.62	-4,908.18	6,199.97	6,174.01	25.96	238.855	
5,300.00	5,293.84	1,667.00	1,562.95	19.05	10.95	-64.87	1,301.24	-4,923.60	6,258.05	6,231.73	26.32	237.742	
5,336.91	5,330.71	1,690.88	1,580.18	19.19	11.01	-65.00	1,293.98	-4,938.45	6,279.63	6,253.05	26.58	236.248	
5,400.00	5,393.71	1,711.67	1,595.09	19.41	11.08	-65.32	1,287.53	-4,951.44	6,316.81	6,289.97	26.84	235.311	
5,500.00	5,493.62	1,749.68	1,622.11	19.77	11.23	-65.87	1,275.50	-4,975.30	6,376.52	6,349.22	27.29	233.631	
5,600.00	5,593.57	1,791.00	1,651.31	20.13	11.70	-66.44	1,262.23	-5,001.35	6,437.04	6,409.26	27.78	231.694	
5,700.00	5,693.53	1,826.18	1,676.02	20.49	12.12	-66.98	1,250.83	-5,023.65	6,498.40	6,470.19	28.22	230.310	
5,800.00	5,793.52	2,219.32	1,957.84	20.85	17.10	-69.28	1,122.65	-5,265.80	6,558.14	6,526.20	31.94	205.314	
5,900.00	5,893.52	2,259.00	1,986.92	21.20	17.60	-69.80	1,109.90	-5,289.60	6,617.24	6,584.79	32.45	203.909	
5,936.48	5,930.00	2,283.69	2,004.96	21.33	17.92	-80.79	1,101.94	-5,304.45	6,638.96	6,606.23	32.73	202.823	
6,000.00	5,993.52	2,310.76	2,024.71	21.56	18.28	-80.91	1,093.24	-5,320.80	6,676.99	6,643.92	33.07	201.900	
6,100.00	6,093.52	2,354.00	2,056.17	21.91	18.84	-81.10	1,079.43	-5,347.05	6,737.26	6,703.65	33.61	200.470	
6,200.00	6,193.52	2,399.71	2,089.36	22.27	19.44	-81.30	1,064.97	-5,374.96	6,797.99	6,763.82	34.17	198.949	
6,300.00	6,293.52	2,446.00	2,122.91	22.62	20.05	-81.50	1,050.50	-5,403.38	6,859.15	6,824.41	34.74	197.466	
6,358.48	6,352.00	2,471.43	2,141.29	22.83	20.40	-81.60	1,042.57	-5,419.05	6,895.12	6,860.06	35.05	196.701	
6,400.00	6,393.49	2,489.67	2,154.45	22.97	20.64	-6.75	1,036.85	-5,430.32	6,919.67	6,884.39	35.28	196.160	
6,450.00	6,443.20	2,512.51	2,170.88	23.15	20.95	-6.52	1,029.65	-5,444.47	6,946.40	6,910.86	35.55	195.422	
6,500.00	6,492.36	2,540.00	2,190.58	23.33	21.32	-6.36	1,020.94	-5,461.54	6,969.91	6,934.05	35.86	194.368	
6,550.00	6,540.64	2,587.61	2,224.72	23.51	21.97	-6.32	1,005.89	-5,491.12	6,989.98	6,953.61	36.37	192.193	
6,600.00	6,587.77	2,645.90	2,266.67	23.69	22.76	-6.37	987.72	-5,527.28	7,006.39	6,969.41	36.98	189.457	
6,650.00	6,633.44	6,735.96	5,855.41	23.88	68.41	-13.86	534.77	-7,071.08	7,013.30	6,931.87	81.43	86.126	
6,700.00	6,677.37	6,782.54	5,901.60	24.07	69.40	-14.31	537.74	-7,076.39	6,995.36	6,912.60	82.76	84.528	
6,750.00	6,719.30	6,827.56	5,946.23	24.26	70.36	-14.88	540.60	-7,081.52	6,973.93	6,889.89	84.04	82.986	
6,800.00	6,758.97	6,870.74	5,989.04	24.46	71.28	-15.60	543.35	-7,086.44	6,949.14	6,863.88	85.26	81.505	
6,850.00	6,796.12	6,911.82	6,029.77	24.67	72.17	-16.49	545.97	-7,091.12	6,921.15	6,834.73	86.42	80.088	
6,900.00	6,830.54	6,950.54	6,068.15	24.88	73.01	-17.60	548.44	-7,095.53	6,890.12	6,802.61	87.51	78.737	
6,950.00	6,862.00	6,986.66	6,103.97	25.11	73.79	-18.98	550.74	-7,099.64	6,856.25	6,767.73	88.52	77.456	
7,000.00	6,890.33	6,990.00	6,107.28	25.34	73.87	-20.61	550.95	-7,100.02	6,819.83	6,731.12	88.71	76.878	
7,050.00	6,915.33	6,990.00	6,107.28	25.59	73.87	-22.63	550.95	-7,100.02	6,781.14	6,692.33	88.80	76.360	
7,100.00	6,936.86	6,990.00	6,107.28	25.85	73.87	-25.20	550.95	-7,100.02	6,740.38	6,651.50	88.88	75.833	
7,150.00	6,954.79	6,990.00	6,107.28	26.12	73.87	-28.51	550.95	-7,100.02	6,697.79	6,608.83	88.95	75.298	
7,200.00	6,968.99	6,990.00	6,107.28	26.40	73.87	-32.86	550.95	-7,100.02	6,653.57	6,564.57	89.00	74.757	
7,250.00	6,979.40	6,990.00	6,107.28	26.69	73.87	-38.71	550.95	-7,100.02	6,607.99	6,518.94	89.04	74.212	
7,300.00	6,985.94	6,990.00	6,107.28	27.00	73.87	-46.69	550.95	-7,100.02	6,561.28	6,472.21	89.07	73.663	
7,350.00	6,988.56	6,990.00	6,107.28	27.31	73.87	-57.62	550.95	-7,100.02	6,513.73	6,424.64	89.09	73.115	
7,358.93	6,988.62	6,990.00	6,107.28	27.36	73.87	-59.94	550.95	-7,100.02	6,505.17	6,416.08	89.09	73.016	
7,400.00	6,988.59	6,990.00	6,107.28	27.63	73.87	-59.94	550.95	-7,100.02	6,465.77	6,376.66	89.10	72.566	
7,500.00	6,988.52	6,990.00	6,107.28	28.33	73.87	-59.94	550.95	-7,100.02	6,369.91	6,280.78	89.13	71.469	
7,600.00	6,988.45	6,990.00	6,107.28	29.10	73.87	-59.94	550.95	-7,100.02	6,274.18	6,185.02	89.16	70.368	
7,658.93	6,988.41	6,990.00	6,107.28	29.59	73.87	-59.94	550.95	-7,100.02	6,217.84	6,128.65	89.19	69.716	
7,700.00	6,988.38	6,990.00	6,107.28	29.94	73.87	-58.55	550.95	-7,100.02	6,178.52	6,089.31	89.21	69.260	
7,800.00	6,988.31	6,990.00	6,107.28	30.84	73.87	-54.66	550.95	-7,100.02	6,082.30	5,993.04	89.26	68.141	
7,900.00	6,988.24	6,990.00	6,107.28	31.79	73.87	-49.90	550.95	-7,100.02	5,985.44	5,896.13	89.32	67.013	
8,000.00	6,988.16	6,990.00	6,107.28	32.78	73.87	-44.05	550.95	-7,100.02	5,888.05	5,798.68	89.38	65.879	
8,100.00	6,988.09	6,990.00	6,107.28	33.82	73.87	-36.86	550.95	-7,100.02	5,790.21	5,700.78	89.43	64.743	
8,200.00	6,988.01	6,990.00	6,107.28	34.88	73.87	-28.14	550.95	-7,100.02	5,692.03	5,602.54	89.49	63.605	
8,300.00	6,987.94	6,990.00	6,107.28	35.98	73.87	-17.91	550.95	-7,100.02	5,593.60	5,504.06	89.54	62.469	
8,400.00	6,987.86	6,990.00	6,107.28	37.11	73.87	-6.55	550.95	-7,100.02	5,495.05	5,405.46	89.59	61.336	
8,416.35	6,987.85	6,990.00	6,107.28	37.29	73.87	-4.64	550.95	-7,100.02	5,478.93	5,389.33	89.60	61.151	
8,500.00	6,987.78	6,990.00	6,107.28	38.25	73.87	-4.64	550.95	-7,100.02	5,396.48	5,306.85	89.63	60.206	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		288-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,600.00	6,987.70	6,990.00	6,107.28	39.43	73.87	-4.64	550.95	-7,100.02	5,297.97	5,208.29	89.68	59.077	
8,700.00	6,987.62	6,990.00	6,107.28	40.64	73.87	-4.64	550.95	-7,100.02	5,199.51	5,109.78	89.73	57.948	
8,800.00	6,987.55	6,990.00	6,107.28	41.88	73.87	-4.64	550.95	-7,100.02	5,101.11	5,011.33	89.78	56.819	
8,900.00	6,987.47	6,990.00	6,107.28	43.14	73.87	-4.64	550.95	-7,100.02	5,002.78	4,912.95	89.83	55.691	
9,000.00	6,987.39	6,990.00	6,107.28	44.42	73.87	-4.64	550.95	-7,100.02	4,904.51	4,814.63	89.89	54.564	
9,100.00	6,987.31	6,990.00	6,107.28	45.72	73.87	-4.64	550.95	-7,100.02	4,806.32	4,716.37	89.94	53.437	
9,200.00	6,987.23	6,990.00	6,107.28	47.04	73.87	-4.64	550.95	-7,100.02	4,708.20	4,618.19	90.00	52.311	
9,300.00	6,987.15	6,990.00	6,107.28	48.38	73.87	-4.64	550.95	-7,100.02	4,610.16	4,520.09	90.07	51.185	
9,400.00	6,987.08	6,990.00	6,107.28	49.73	73.87	-4.64	550.95	-7,100.02	4,512.21	4,422.07	90.14	50.060	
9,500.00	6,987.00	6,990.00	6,107.28	51.10	73.87	-4.64	550.95	-7,100.02	4,414.35	4,324.14	90.21	48.937	
9,600.00	6,986.92	6,990.00	6,107.28	52.48	73.87	-4.64	550.95	-7,100.02	4,316.59	4,226.31	90.28	47.814	
9,700.00	6,986.84	6,990.00	6,107.28	53.87	73.87	-4.64	550.95	-7,100.02	4,218.93	4,128.57	90.36	46.692	
9,800.00	6,986.76	6,990.00	6,107.28	55.28	73.87	-4.64	550.95	-7,100.02	4,121.38	4,030.95	90.44	45.572	
9,900.00	6,986.68	6,990.00	6,107.28	56.69	73.87	-4.64	550.95	-7,100.02	4,023.96	3,933.44	90.52	44.453	
10,000.00	6,986.61	6,990.00	6,107.28	58.12	73.87	-4.64	550.95	-7,100.02	3,926.67	3,836.05	90.61	43.336	
10,100.00	6,986.53	6,990.00	6,107.28	59.55	73.87	-4.64	550.95	-7,100.02	3,829.51	3,738.81	90.70	42.220	
10,200.00	6,986.45	6,990.00	6,107.28	61.00	73.87	-4.64	550.95	-7,100.02	3,732.50	3,641.70	90.80	41.106	
10,300.00	6,986.37	6,990.00	6,107.28	62.45	73.87	-4.64	550.95	-7,100.02	3,635.66	3,544.76	90.91	39.994	
10,400.00	6,986.29	6,990.00	6,107.28	63.90	73.87	-4.64	550.95	-7,100.02	3,538.99	3,447.98	91.01	38.884	
10,500.00	6,986.21	6,990.00	6,107.28	65.37	73.87	-4.64	550.95	-7,100.02	3,442.52	3,351.39	91.13	37.776	
10,600.00	6,986.14	6,990.00	6,107.28	66.84	73.87	-4.64	550.95	-7,100.02	3,346.25	3,255.00	91.25	36.671	
10,700.00	6,986.06	6,990.00	6,107.28	68.32	73.87	-4.64	550.95	-7,100.02	3,250.20	3,158.83	91.38	35.569	
10,800.00	6,985.98	6,990.00	6,107.28	69.80	73.87	-4.64	550.95	-7,100.02	3,154.41	3,062.89	91.51	34.470	
10,900.00	6,985.90	6,990.00	6,107.28	71.29	73.87	-4.64	550.95	-7,100.02	3,058.88	2,967.22	91.65	33.374	
11,000.00	6,985.82	6,990.00	6,107.28	72.78	73.87	-4.64	550.95	-7,100.02	2,963.64	2,871.83	91.81	32.282	
11,100.00	6,985.75	6,990.00	6,107.28	74.28	73.87	-4.64	550.95	-7,100.02	2,868.73	2,776.76	91.97	31.194	
11,200.00	6,985.67	6,990.00	6,107.28	75.78	73.87	-4.64	550.95	-7,100.02	2,774.18	2,682.04	92.13	30.110	
11,300.00	6,985.59	6,990.00	6,107.28	77.29	73.87	-4.64	550.95	-7,100.02	2,680.02	2,587.71	92.31	29.032	
11,400.00	6,985.51	6,990.00	6,107.28	78.80	73.87	-4.64	550.95	-7,100.02	2,586.30	2,493.80	92.50	27.959	
11,500.00	6,985.43	6,990.00	6,107.28	80.31	73.87	-4.64	550.95	-7,100.02	2,493.07	2,400.37	92.70	26.893	
11,600.00	6,985.35	6,990.00	6,107.28	81.83	73.87	-4.64	550.95	-7,100.02	2,400.38	2,307.47	92.92	25.834	
11,700.00	6,985.28	6,990.00	6,107.28	83.35	73.87	-4.64	550.95	-7,100.02	2,308.31	2,215.17	93.14	24.783	
11,800.00	6,985.20	6,990.00	6,107.28	84.87	73.87	-4.64	550.95	-7,100.02	2,216.92	2,123.54	93.38	23.741	
11,900.00	6,985.12	6,990.00	6,107.28	86.40	73.87	-4.64	550.95	-7,100.02	2,126.31	2,032.68	93.63	22.710	
12,000.00	6,985.04	6,990.00	6,107.28	87.93	73.87	-4.64	550.95	-7,100.02	2,036.57	1,942.68	93.89	21.691	
12,100.00	6,984.96	6,990.00	6,107.28	89.46	73.87	-4.64	550.95	-7,100.02	1,947.84	1,853.68	94.16	20.687	
12,200.00	6,984.88	6,990.00	6,107.28	90.99	73.87	-4.64	550.95	-7,100.02	1,860.25	1,765.81	94.44	19.698	
12,300.00	6,984.81	6,990.00	6,107.28	92.53	73.87	-4.64	550.95	-7,100.02	1,773.97	1,679.25	94.72	18.729	
12,400.00	6,984.73	6,990.00	6,107.28	94.07	73.87	-4.64	550.95	-7,100.02	1,689.21	1,594.21	94.99	17.782	
12,500.00	6,984.65	6,990.00	6,107.28	95.61	73.87	-4.64	550.95	-7,100.02	1,606.20	1,510.94	95.25	16.862	
12,600.00	6,984.57	6,990.00	6,107.28	97.15	73.87	-4.64	550.95	-7,100.02	1,525.22	1,429.74	95.49	15.973	
12,700.00	6,984.49	6,990.00	6,107.28	98.70	73.87	-4.64	550.95	-7,100.02	1,446.64	1,350.97	95.67	15.122	
12,800.00	6,984.41	6,990.00	6,107.28	100.25	73.87	-4.64	550.95	-7,100.02	1,370.84	1,275.07	95.77	14.314	
12,900.00	6,984.34	6,990.00	6,107.28	101.80	73.87	-4.64	550.95	-7,100.02	1,298.33	1,202.58	95.75	13.560	
13,000.00	6,984.26	6,990.00	6,107.28	103.35	73.87	-4.64	550.95	-7,100.02	1,229.67	1,134.12	95.55	12.869	
13,100.00	6,984.18	6,990.00	6,107.28	104.90	73.87	-4.64	550.95	-7,100.02	1,165.57	1,070.46	95.11	12.255	
13,200.00	6,984.10	6,990.00	6,107.28	106.45	73.87	-4.64	550.95	-7,100.02	1,106.79	1,012.46	94.34	11.732	
13,300.00	6,984.02	6,990.00	6,107.28	108.01	73.87	-4.64	550.95	-7,100.02	1,054.25	961.11	93.14	11.319	
13,400.00	6,983.94	6,990.00	6,107.28	109.56	73.87	-4.64	550.95	-7,100.02	1,008.90	917.49	91.41	11.037	
13,500.00	6,983.87	6,990.00	6,107.28	111.12	73.87	-4.64	550.95	-7,100.02	971.77	882.67	89.10	10.906 SF	
13,600.00	6,983.79	6,990.00	6,107.28	112.68	73.87	-4.64	550.95	-7,100.02	943.81	857.61	86.20	10.949	
13,700.00	6,983.71	6,990.00	6,107.28	114.24	73.87	-4.64	550.95	-7,100.02	925.86	843.03	82.84	11.177	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY											Offset Site Error: 0.00 usft
Survey Program: 288-MWD OWSG Rev5											Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
13,800.00	6,983.63	6,990.00	6,107.28	115.80	73.87	-4.64	550.95	-7,100.02	918.51	839.16	79.36 11.574 ES
13,817.77	6,983.62	6,990.00	6,107.28	116.08	73.87	-4.64	550.95	-7,100.02	918.34	839.57	78.77 11.659 CC
13,900.00	6,983.55	6,990.00	6,107.28	117.37	73.87	-4.64	550.95	-7,100.02	922.02	845.64	76.37 12.072
14,000.00	6,983.47	6,990.00	6,107.28	118.93	73.87	-4.64	550.95	-7,100.02	936.25	861.59	74.66 12.540
14,100.00	6,983.40	6,990.00	6,107.28	120.50	73.87	-4.64	550.95	-7,100.02	960.73	886.11	74.62 12.875
14,200.00	6,983.32	6,990.00	6,107.28	122.06	73.87	-4.64	550.95	-7,100.02	994.71	918.82	75.89 13.107
14,300.00	6,983.24	6,990.00	6,107.28	123.63	73.87	-4.64	550.95	-7,100.02	1,037.26	959.48	77.78 13.336
14,400.00	6,983.16	6,990.00	6,107.28	125.20	73.87	-4.64	550.95	-7,100.02	1,087.36	1,007.59	79.77 13.632
14,500.00	6,983.08	6,990.00	6,107.28	126.77	73.87	-4.64	550.95	-7,100.02	1,144.03	1,062.42	81.61 14.019
14,600.00	6,983.00	6,990.00	6,107.28	128.33	73.87	-4.64	550.95	-7,100.02	1,206.33	1,123.13	83.20 14.499
14,700.00	6,982.93	6,990.00	6,107.28	129.91	73.87	-4.64	550.95	-7,100.02	1,273.46	1,188.91	84.55 15.061
14,800.00	6,982.85	6,990.00	6,107.28	131.48	73.87	-4.64	550.95	-7,100.02	1,344.67	1,259.00	85.67 15.696
14,900.00	6,982.77	6,990.00	6,107.28	133.05	73.87	-4.64	550.95	-7,100.02	1,419.36	1,332.77	86.59 16.392
15,000.00	6,982.69	6,990.00	6,107.28	134.62	73.87	-4.64	550.95	-7,100.02	1,497.01	1,409.66	87.34 17.139
15,100.00	6,982.61	6,990.00	6,107.28	136.20	73.87	-4.64	550.95	-7,100.02	1,577.17	1,489.20	87.97 17.928
15,200.00	6,982.54	6,990.00	6,107.28	137.77	73.87	-4.64	550.95	-7,100.02	1,659.49	1,571.00	88.49 18.753
15,300.00	6,982.46	6,990.00	6,107.28	139.35	73.87	-4.64	550.95	-7,100.02	1,743.67	1,654.74	88.93 19.608
15,400.00	6,982.38	6,990.00	6,107.28	140.92	73.87	-4.64	550.95	-7,100.02	1,829.43	1,740.13	89.30 20.487
15,500.00	6,982.30	6,990.00	6,107.28	142.50	73.87	-4.64	550.95	-7,100.02	1,916.58	1,826.96	89.61 21.387
15,600.00	6,982.22	6,990.00	6,107.28	144.07	73.87	-4.64	550.95	-7,100.02	2,004.92	1,915.04	89.89 22.305
15,700.00	6,982.14	6,990.00	6,107.28	145.65	73.87	-4.64	550.95	-7,100.02	2,094.32	2,004.19	90.13 23.238
15,800.00	6,982.07	6,990.00	6,107.28	147.23	73.87	-4.64	550.95	-7,100.02	2,184.63	2,094.29	90.34 24.183
15,900.00	6,981.99	6,990.00	6,107.28	148.81	73.87	-4.64	550.95	-7,100.02	2,275.75	2,185.22	90.53 25.138
16,000.00	6,981.91	6,990.00	6,107.28	150.39	73.87	-4.64	550.95	-7,100.02	2,367.59	2,276.89	90.70 26.103
16,100.00	6,981.83	6,990.00	6,107.28	151.97	73.87	-4.64	550.95	-7,100.02	2,460.07	2,369.21	90.86 27.075
16,200.00	6,981.75	6,990.00	6,107.28	153.55	73.87	-4.64	550.95	-7,100.02	2,553.11	2,462.10	91.01 28.053
16,300.00	6,981.67	6,990.00	6,107.28	155.13	73.87	-4.64	550.95	-7,100.02	2,646.66	2,555.52	91.15 29.037
16,400.00	6,981.60	6,990.00	6,107.28	156.71	73.87	-4.64	550.95	-7,100.02	2,740.67	2,649.39	91.28 30.025
16,500.00	6,981.52	6,990.00	6,107.28	158.29	73.87	-4.64	550.95	-7,100.02	2,835.09	2,743.69	91.40 31.018
16,600.00	6,981.44	6,990.00	6,107.28	159.88	73.87	-4.64	550.95	-7,100.02	2,929.88	2,838.35	91.52 32.013
16,700.00	6,981.36	6,990.00	6,107.28	161.46	73.87	-4.64	550.95	-7,100.02	3,025.00	2,933.36	91.64 33.011
16,800.00	6,981.28	6,990.00	6,107.28	163.04	73.87	-4.64	550.95	-7,100.02	3,120.43	3,028.68	91.75 34.011
16,900.00	6,981.20	6,990.00	6,107.28	164.62	73.87	-4.64	550.95	-7,100.02	3,216.13	3,124.28	91.86 35.012
17,000.00	6,981.13	6,990.00	6,107.28	166.21	73.87	-4.64	550.95	-7,100.02	3,312.09	3,220.13	91.96 36.015
17,100.00	6,981.05	6,990.00	6,107.28	167.79	73.87	-4.64	550.95	-7,100.02	3,408.29	3,316.22	92.07 37.019
17,200.00	6,980.97	6,990.00	6,107.28	169.38	73.87	-4.64	550.95	-7,100.02	3,504.69	3,412.52	92.17 38.024
17,300.00	6,980.89	6,990.00	6,107.28	170.96	73.87	-4.64	550.95	-7,100.02	3,601.29	3,509.02	92.27 39.029
17,400.00	6,980.81	6,990.00	6,107.28	172.55	73.87	-4.64	550.95	-7,100.02	3,698.07	3,605.70	92.37 40.034
17,500.00	6,980.73	6,990.00	6,107.28	174.13	73.87	-4.64	550.95	-7,100.02	3,795.02	3,702.55	92.47 41.039
17,600.00	6,980.66	6,990.00	6,107.28	175.72	73.87	-4.64	550.95	-7,100.02	3,892.13	3,799.55	92.57 42.045
17,700.00	6,980.58	6,990.00	6,107.28	177.31	73.87	-4.64	550.95	-7,100.02	3,989.37	3,896.70	92.67 43.049
17,800.00	6,980.50	6,990.00	6,107.28	178.89	73.87	-4.64	550.95	-7,100.02	4,086.75	3,993.98	92.77 44.053
17,900.00	6,980.42	6,990.00	6,107.28	180.48	73.87	-4.64	550.95	-7,100.02	4,184.25	4,091.39	92.87 45.057
18,000.00	6,980.34	6,990.00	6,107.28	182.07	73.87	-4.64	550.95	-7,100.02	4,281.87	4,188.91	92.96 46.060
18,100.00	6,980.26	6,990.00	6,107.28	183.66	73.87	-4.64	550.95	-7,100.02	4,379.60	4,286.54	93.06 47.062
18,200.00	6,980.19	6,990.00	6,107.28	185.24	73.87	-4.64	550.95	-7,100.02	4,477.42	4,384.27	93.16 48.063
18,300.00	6,980.11	6,990.00	6,107.28	186.83	73.87	-4.64	550.95	-7,100.02	4,575.34	4,482.09	93.25 49.063
18,400.00	6,980.03	6,990.00	6,107.28	188.42	73.87	-4.64	550.95	-7,100.02	4,673.35	4,580.00	93.35 50.062
18,500.00	6,979.95	6,990.00	6,107.28	190.01	73.87	-4.64	550.95	-7,100.02	4,771.44	4,677.99	93.45 51.059
18,600.00	6,979.87	6,990.00	6,107.28	191.60	73.87	-4.64	550.95	-7,100.02	4,869.61	4,776.06	93.55 52.055
18,700.00	6,979.79	6,990.00	6,107.28	193.19	73.87	-4.64	550.95	-7,100.02	4,967.85	4,874.21	93.64 53.050
18,800.00	6,979.72	6,990.00	6,107.28	194.78	73.87	-4.64	550.95	-7,100.02	5,066.16	4,972.42	93.74 54.044

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		288-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,900.00	6,979.64	6,990.00	6,107.28	196.37	73.87	-4.64	550.95	-7,100.02	5,164.54	5,070.70	93.84	55.036		
19,000.00	6,979.56	6,990.00	6,107.28	197.96	73.87	-4.64	550.95	-7,100.02	5,262.97	5,169.04	93.94	56.026		
19,100.00	6,979.48	6,990.00	6,107.28	199.55	73.87	-4.64	550.95	-7,100.02	5,361.47	5,267.43	94.04	57.015		
19,200.00	6,979.40	6,990.00	6,107.28	201.14	73.87	-4.64	550.95	-7,100.02	5,460.02	5,365.88	94.13	58.002		
19,300.00	6,979.33	6,990.00	6,107.28	202.73	73.87	-4.64	550.95	-7,100.02	5,558.62	5,464.38	94.23	58.988		
19,400.00	6,979.25	6,990.00	6,107.28	204.32	73.87	-4.64	550.95	-7,100.02	5,657.27	5,562.94	94.33	59.972		
19,500.00	6,979.17	6,990.00	6,107.28	205.91	73.87	-4.64	550.95	-7,100.02	5,755.96	5,661.53	94.43	60.954		
19,600.00	6,979.09	6,990.00	6,107.28	207.50	73.87	-4.64	550.95	-7,100.02	5,854.71	5,760.17	94.53	61.934		
19,700.00	6,979.01	6,990.00	6,107.28	209.09	73.87	-4.64	550.95	-7,100.02	5,953.49	5,858.86	94.63	62.913		
19,800.00	6,978.93	6,990.00	6,107.28	210.69	73.87	-4.64	550.95	-7,100.02	6,052.31	5,957.58	94.73	63.889		
19,900.00	6,978.86	6,990.00	6,107.28	212.28	73.87	-4.64	550.95	-7,100.02	6,151.17	6,056.34	94.83	64.864		
20,000.00	6,978.78	6,990.00	6,107.28	213.87	73.87	-4.64	550.95	-7,100.02	6,250.07	6,155.14	94.93	65.837		
20,100.00	6,978.70	6,990.00	6,107.28	215.46	73.87	-4.64	550.95	-7,100.02	6,349.00	6,253.97	95.03	66.808		
20,200.00	6,978.62	6,990.00	6,107.28	217.05	73.87	-4.64	550.95	-7,100.02	6,447.97	6,352.83	95.13	67.778		
20,300.00	6,978.54	6,990.00	6,107.28	218.65	73.87	-4.64	550.95	-7,100.02	6,546.96	6,451.73	95.24	68.745		
20,400.00	6,978.46	6,990.00	6,107.28	220.24	73.87	-4.64	550.95	-7,100.02	6,645.99	6,550.65	95.34	69.710		
20,500.00	6,978.39	6,990.00	6,107.28	221.83	73.87	-4.64	550.95	-7,100.02	6,745.04	6,649.60	95.44	70.673		
20,600.00	6,978.31	6,990.00	6,107.28	223.43	73.87	-4.64	550.95	-7,100.02	6,844.12	6,748.58	95.54	71.634		
20,700.00	6,978.23	6,990.00	6,107.28	225.02	73.87	-4.64	550.95	-7,100.02	6,943.23	6,847.59	95.65	72.594		
20,800.00	6,978.15	6,990.00	6,107.28	226.61	73.87	-4.64	550.95	-7,100.02	7,042.37	6,946.62	95.75	73.551		
20,900.00	6,978.07	6,990.00	6,107.28	228.21	73.87	-4.64	550.95	-7,100.02	7,141.53	7,045.67	95.85	74.506		
21,000.00	6,977.99	6,990.00	6,107.28	229.80	73.87	-4.64	550.95	-7,100.02	7,240.71	7,144.75	95.96	75.459		
21,100.00	6,977.92	6,990.00	6,107.28	231.39	73.87	-4.64	550.95	-7,100.02	7,339.91	7,243.85	96.06	76.410		
21,200.00	6,977.84	6,990.00	6,107.28	232.99	73.87	-4.64	550.95	-7,100.02	7,439.13	7,342.97	96.16	77.359		
21,300.00	6,977.76	6,990.00	6,107.28	234.58	73.87	-4.64	550.95	-7,100.02	7,538.38	7,442.11	96.27	78.306		
21,400.00	6,977.68	6,990.00	6,107.28	236.18	73.87	-4.64	550.95	-7,100.02	7,637.64	7,541.27	96.37	79.251		
21,500.00	6,977.60	6,990.00	6,107.28	237.77	73.87	-4.64	550.95	-7,100.02	7,736.93	7,640.45	96.48	80.193		
21,600.00	6,977.52	6,990.00	6,107.28	239.37	73.87	-4.64	550.95	-7,100.02	7,836.23	7,739.65	96.58	81.134		
21,700.00	6,977.45	6,990.00	6,107.28	240.96	73.87	-4.64	550.95	-7,100.02	7,935.55	7,838.86	96.69	82.072		
21,800.00	6,977.37	6,990.00	6,107.28	242.56	73.87	-4.64	550.95	-7,100.02	8,034.89	7,938.09	96.80	83.008		
21,900.00	6,977.29	6,990.00	6,107.28	244.15	73.87	-4.64	550.95	-7,100.02	8,134.24	8,037.34	96.90	83.942		
22,000.00	6,977.21	6,990.00	6,107.28	245.75	73.87	-4.64	550.95	-7,100.02	8,233.61	8,136.60	97.01	84.874		
22,100.00	6,977.13	6,990.00	6,107.28	247.34	73.87	-4.64	550.95	-7,100.02	8,332.99	8,235.87	97.12	85.804		
22,200.00	6,977.05	6,990.00	6,107.28	248.94	73.87	-4.64	550.95	-7,100.02	8,432.39	8,335.16	97.22	86.731		
22,269.73	6,977.00	6,990.00	6,107.28	250.05	73.87	-4.64	550.95	-7,100.02	8,501.70	8,404.40	97.30	87.377		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 406-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-96.72	-1,036.90	-8,799.68	8,861.47				
100.00	100.00	0.00	0.00	0.25	0.00	-96.72	-1,036.90	-8,799.68	8,860.60	8,860.35	0.25	N/A	
145.66	145.66	18.66	18.66	0.41	0.33	-96.72	-1,036.90	-8,799.68	8,860.56	8,859.81	0.75	N/A	
200.00	200.00	73.00	73.00	0.61	1.29	-96.72	-1,036.90	-8,799.68	8,860.56	8,858.65	1.90	4,656.333	
300.00	300.00	173.00	173.00	0.97	3.07	-96.72	-1,036.90	-8,799.68	8,860.56	8,856.52	4.03	2,197.001	
400.00	400.00	273.00	273.00	1.33	4.84	-96.72	-1,036.90	-8,799.68	8,860.56	8,854.39	6.16	1,437.669	
500.00	500.00	373.00	373.00	1.68	6.61	-96.72	-1,036.90	-8,799.68	8,860.56	8,852.26	8.29	1,068.405	
600.00	600.00	473.00	473.00	2.04	8.40	-96.72	-1,036.90	-8,799.68	8,860.56	8,850.11	10.44	848.433	
700.00	700.00	573.00	573.00	2.40	10.20	-96.72	-1,036.90	-8,799.68	8,860.56	8,847.95	12.60	703.026	
800.00	799.98	672.98	672.98	2.76	12.00	-85.98	-1,036.90	-8,799.68	8,860.43	8,845.67	14.76	600.204	
849.89	849.82	722.59	722.59	2.94	12.90	-85.99	-1,036.59	-8,799.68	8,860.25	8,844.41	15.83	559.560	
900.00	899.86	772.24	772.23	3.12	13.79	-86.01	-1,036.61	-8,799.68	8,860.07	8,843.16	16.91	524.021	
1,000.00	999.73	871.31	871.30	3.48	15.58	-86.05	-1,036.71	-8,799.68	8,859.71	8,840.66	19.05	465.051	
1,100.00	1,099.59	970.37	970.36	3.84	17.36	-86.08	-1,036.88	-8,799.68	8,859.37	8,838.18	21.19	417.994	
1,200.00	1,199.45	1,072.47	1,072.45	4.20	19.32	-86.11	-1,036.90	-8,799.68	8,859.02	8,835.51	23.51	376.815	
1,300.00	1,299.32	1,172.33	1,172.32	4.56	21.24	-86.15	-1,036.90	-8,799.68	8,858.67	8,832.87	25.79	343.426	
1,400.00	1,399.18	1,271.34	1,271.33	4.92	23.15	-86.18	-1,036.38	-8,799.68	8,858.25	8,830.19	28.06	315.648	
1,500.00	1,499.04	1,369.34	1,369.32	5.28	25.04	-86.21	-1,036.54	-8,799.68	8,857.93	8,827.61	30.31	292.214	
1,600.00	1,598.91	1,467.32	1,467.30	5.64	26.92	-86.25	-1,036.88	-8,799.68	8,857.62	8,825.06	32.56	272.019	
1,700.00	1,698.77	1,571.83	1,571.77	6.00	29.07	-86.28	-1,036.90	-8,799.68	8,857.28	8,822.21	35.07	252.536	
1,800.00	1,798.63	1,671.69	1,671.63	6.36	31.14	-86.32	-1,036.90	-8,799.68	8,856.95	8,819.45	37.50	236.209	
1,900.00	1,898.49	1,770.91	1,770.84	6.72	33.18	-86.34	-1,035.69	-8,799.68	8,856.46	8,816.56	39.91	221.933	
2,000.00	1,998.36	1,867.46	1,867.38	7.09	35.18	-86.38	-1,035.89	-8,799.68	8,856.16	8,813.89	42.26	209.560	
2,100.00	2,098.22	1,963.98	1,963.90	7.45	37.17	-86.41	-1,036.39	-8,799.68	8,855.89	8,811.27	44.62	198.495	
2,200.00	2,198.08	2,071.23	2,071.08	7.81	39.42	-86.45	-1,036.90	-8,799.68	8,855.63	8,808.40	47.23	187.501	
2,300.00	2,297.95	2,171.09	2,170.95	8.17	41.58	-86.49	-1,036.90	-8,799.68	8,855.30	8,805.55	49.75	177.997	
2,400.00	2,397.81	2,270.95	2,270.81	8.53	43.74	-86.52	-1,036.90	-8,799.68	8,854.98	8,802.71	52.27	169.409	
2,500.00	2,497.67	2,368.01	2,367.85	8.90	45.83	-86.54	-1,035.85	-8,799.68	8,854.53	8,799.80	54.73	161.788	
2,600.00	2,597.54	2,464.25	2,464.09	9.26	47.91	-86.58	-1,036.25	-8,799.68	8,854.27	8,797.10	57.17	154.873	
2,700.00	2,697.40	2,570.64	2,570.40	9.62	50.22	-86.62	-1,036.90	-8,799.68	8,854.04	8,794.21	59.84	147.972	
2,800.00	2,797.26	2,670.51	2,670.26	9.98	52.40	-86.65	-1,036.90	-8,799.68	8,853.74	8,791.36	62.38	141.936	
2,900.00	2,897.13	2,770.37	2,770.13	10.35	54.58	-86.69	-1,036.90	-8,799.68	8,853.43	8,788.51	64.92	136.372	
3,000.00	2,996.99	2,870.23	2,869.99	10.71	56.76	-86.72	-1,036.90	-8,799.68	8,853.13	8,785.67	67.46	131.228	
3,100.00	3,096.85	2,970.10	2,969.85	11.07	58.94	-86.76	-1,036.90	-8,799.68	8,852.83	8,782.83	70.01	126.457	
3,200.00	3,196.72	3,069.96	3,069.72	11.43	61.12	-86.79	-1,036.90	-8,799.68	8,852.54	8,779.99	72.55	122.021	
3,290.81	3,287.40	3,135.00	3,134.64	11.76	62.54	-86.81	-1,036.90	-8,799.68	8,852.31	8,778.01	74.30	119.145	
3,300.00	3,296.58	3,135.00	3,134.64	11.80	62.54	-86.81	-1,036.90	-8,799.68	8,852.32	8,777.98	74.33	119.092	
3,400.00	3,396.44	3,135.00	3,134.64	12.16	62.54	-86.81	-1,036.90	-8,799.68	8,852.98	8,778.30	74.69	118.535	
3,500.00	3,496.31	3,135.00	3,134.64	12.52	62.54	-86.81	-1,036.90	-8,799.68	8,854.78	8,779.75	75.03	118.013	
3,600.00	3,596.17	3,135.00	3,134.64	12.88	62.54	-86.81	-1,036.90	-8,799.68	8,857.71	8,782.34	75.37	117.524	
3,700.00	3,696.03	3,135.00	3,134.64	13.25	62.54	-86.81	-1,036.90	-8,799.68	8,861.76	8,786.07	75.70	117.069	
3,800.00	3,795.89	3,135.00	3,134.64	13.61	62.54	-86.81	-1,036.90	-8,799.68	8,866.94	8,790.93	76.01	116.648	
3,900.00	3,895.76	3,135.00	3,134.64	13.97	62.54	-86.81	-1,036.90	-8,799.68	8,873.25	8,796.92	76.32	116.259	
4,000.00	3,995.62	3,135.00	3,134.64	14.34	62.54	-86.81	-1,036.90	-8,799.68	8,880.67	8,804.05	76.62	115.902	
4,100.00	4,095.48	3,135.00	3,134.64	14.70	62.54	-86.81	-1,036.90	-8,799.68	8,889.22	8,812.31	76.91	115.577	
4,200.00	4,195.35	3,135.00	3,134.64	15.06	62.54	-86.81	-1,036.90	-8,799.68	8,898.88	8,821.69	77.19	115.284	
4,300.00	4,295.21	3,135.00	3,134.64	15.42	62.54	-86.81	-1,036.90	-8,799.68	8,909.65	8,832.19	77.46	115.021	
4,400.00	4,395.07	3,135.00	3,134.64	15.79	62.54	-86.81	-1,036.90	-8,799.68	8,921.53	8,843.81	77.72	114.788	
4,500.00	4,494.94	3,135.00	3,134.64	16.15	62.54	-86.81	-1,036.90	-8,799.68	8,934.51	8,856.54	77.97	114.585	
4,600.00	4,594.80	3,135.00	3,134.64	16.51	62.54	-86.81	-1,036.90	-8,799.68	8,948.60	8,870.38	78.21	114.411	
4,700.00	4,694.66	3,135.00	3,134.64	16.87	62.54	-86.81	-1,036.90	-8,799.68	8,963.77	8,885.33	78.45	114.267	
4,800.00	4,794.53	3,135.00	3,134.64	17.24	62.54	-86.81	-1,036.90	-8,799.68	8,980.04	8,901.37	78.67	114.150	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226 - OH - OH-INC												Offset Site Error: 0.00 usft							
Survey Program: 406-A027Ua_INC-ONLY				Reference		Offset		Semi Major Axis		Highside		Offset Wellbore Centre		Rule Assigned:				Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning						
4,900.00	4,894.39	3,135.00	3,134.64	17.60	62.54	-86.81	-1,036.90	-8,799.68	8,997.38	8,918.50	78.88	114.062							
5,000.00	4,994.25	3,135.00	3,134.64	17.96	62.54	-86.81	-1,036.90	-8,799.68	9,015.80	8,936.72	79.08	114.002							
5,100.00	5,094.12	3,135.00	3,134.64	18.33	62.54	-86.81	-1,036.90	-8,799.68	9,035.30	8,956.02	79.28	113.968							
5,200.00	5,193.98	3,135.00	3,134.64	18.69	62.54	-86.81	-1,036.90	-8,799.68	9,055.85	8,976.39	79.46	113.961							
5,300.00	5,293.84	3,135.00	3,134.64	19.05	62.54	-86.81	-1,036.90	-8,799.68	9,077.46	8,997.82	79.64	113.981							
5,336.91	5,330.71	3,135.00	3,134.64	19.19	62.54	-86.81	-1,036.90	-8,799.68	9,085.70	9,006.00	79.70	113.994							
5,400.00	5,393.71	3,135.00	3,134.64	19.41	62.54	-86.88	-1,036.90	-8,799.68	9,100.12	9,020.32	79.81	114.026							
5,500.00	5,493.62	3,135.00	3,134.64	19.77	62.54	-87.01	-1,036.90	-8,799.68	9,123.87	9,043.91	79.96	114.100							
5,600.00	5,593.57	3,135.00	3,134.64	20.13	62.54	-87.13	-1,036.90	-8,799.68	9,148.70	9,068.59	80.11	114.202							
5,700.00	5,693.53	3,135.00	3,134.64	20.49	62.54	-87.27	-1,036.90	-8,799.68	9,174.58	9,094.34	80.25	114.330							
5,800.00	5,793.52	3,135.00	3,134.64	20.85	62.54	-87.41	-1,036.90	-8,799.68	9,201.53	9,121.15	80.37	114.486							
5,900.00	5,893.52	3,135.00	3,134.64	21.20	62.54	-87.55	-1,036.90	-8,799.68	9,229.51	9,149.02	80.49	114.667							
5,936.48	5,930.00	3,135.00	3,134.64	21.33	62.54	-98.36	-1,036.90	-8,799.68	9,239.98	9,159.45	80.53	114.740							
6,000.00	5,993.52	3,135.00	3,134.64	21.56	62.54	-98.36	-1,036.90	-8,799.68	9,258.52	9,177.93	80.60	114.874							
6,100.00	6,093.52	3,135.00	3,134.64	21.91	62.54	-98.36	-1,036.90	-8,799.68	9,288.52	9,207.82	80.70	115.103							
6,200.00	6,193.52	3,135.00	3,134.64	22.27	62.54	-98.36	-1,036.90	-8,799.68	9,319.50	9,238.71	80.79	115.355							
6,300.00	6,293.52	3,135.00	3,134.64	22.62	62.54	-98.36	-1,036.90	-8,799.68	9,351.44	9,270.56	80.87	115.629							
6,358.48	6,352.00	3,135.00	3,134.64	22.83	62.54	-98.36	-1,036.90	-8,799.68	9,370.56	9,289.64	80.92	115.799							
6,400.00	6,393.49	3,135.00	3,134.64	22.97	62.54	-23.29	-1,036.90	-8,799.68	9,383.16	9,302.21	80.95	115.915							
6,450.00	6,443.20	3,135.00	3,134.64	23.15	62.54	-22.84	-1,036.90	-8,799.68	9,395.38	9,314.40	80.98	116.023							
6,500.00	6,492.36	3,135.00	3,134.64	23.33	62.54	-22.53	-1,036.90	-8,799.68	9,404.32	9,323.31	81.01	116.091							
6,550.00	6,540.64	3,135.00	3,134.64	23.51	62.54	-22.33	-1,036.90	-8,799.68	9,409.93	9,328.89	81.04	116.120							
6,600.00	6,587.77	3,135.00	3,134.64	23.69	62.54	-22.26	-1,036.90	-8,799.68	9,412.19	9,331.12	81.06	116.110							
6,650.00	6,633.44	3,135.00	3,134.64	23.88	62.54	-22.29	-1,036.90	-8,799.68	9,411.08	9,329.99	81.09	116.061							
6,700.00	6,677.37	3,135.00	3,134.64	24.07	62.54	-22.45	-1,036.90	-8,799.68	9,406.61	9,325.50	81.11	115.975							
6,750.00	6,719.30	3,135.00	3,134.64	24.26	62.54	-22.72	-1,036.90	-8,799.68	9,398.79	9,317.67	81.13	115.851							
6,800.00	6,758.97	3,135.00	3,134.64	24.46	62.54	-23.12	-1,036.90	-8,799.68	9,387.69	9,306.54	81.15	115.690							
6,850.00	6,796.12	3,135.00	3,134.64	24.67	62.54	-23.66	-1,036.90	-8,799.68	9,373.33	9,292.17	81.16	115.491							
6,900.00	6,830.54	3,135.00	3,134.64	24.88	62.54	-24.34	-1,036.90	-8,799.68	9,355.81	9,274.64	81.17	115.256							
6,950.00	6,862.00	3,135.00	3,134.64	25.11	62.54	-25.20	-1,036.90	-8,799.68	9,335.22	9,254.03	81.19	114.984							
7,000.00	6,890.33	3,135.00	3,134.64	25.34	62.54	-26.24	-1,036.90	-8,799.68	9,311.65	9,230.45	81.20	114.676							
7,050.00	6,915.33	3,135.00	3,134.64	25.59	62.54	-27.51	-1,036.90	-8,799.68	9,285.24	9,204.02	81.21	114.331							
7,100.00	6,936.86	3,135.00	3,134.64	25.85	62.54	-29.03	-1,036.90	-8,799.68	9,256.11	9,174.88	81.23	113.952							
7,150.00	6,954.79	3,135.00	3,134.64	26.12	62.54	-30.87	-1,036.90	-8,799.68	9,224.44	9,143.19	81.24	113.539							
7,200.00	6,968.99	3,135.00	3,134.64	26.40	62.54	-33.09	-1,036.90	-8,799.68	9,190.38	9,109.11	81.26	113.092							
7,250.00	6,979.40	3,135.00	3,134.64	26.69	62.54	-35.77	-1,036.90	-8,799.68	9,154.12	9,072.83	81.29	112.613							
7,300.00	6,985.94	3,135.00	3,134.64	27.00	62.54	-39.02	-1,036.90	-8,799.68	9,115.86	9,034.54	81.32	112.103							
7,350.00	6,988.56	3,135.00	3,134.64	27.31	62.54	-42.97	-1,036.90	-8,799.68	9,075.82	8,994.46	81.35	111.564							
7,358.93	6,988.62	3,135.00	3,134.64	27.36	62.54	-43.77	-1,036.90	-8,799.68	9,068.49	8,987.13	81.36	111.461							
7,400.00	6,988.59	3,135.00	3,134.64	27.63	62.54	-43.77	-1,036.90	-8,799.68	9,034.73	8,953.34	81.39	111.007							
7,500.00	6,988.52	3,135.00	3,134.64	28.33	62.54	-43.77	-1,036.90	-8,799.68	8,952.77	8,871.30	81.47	109.886							
7,600.00	6,988.45	3,135.00	3,134.64	29.10	62.54	-43.77	-1,036.90	-8,799.68	8,871.19	8,789.61	81.58	108.741							
7,658.93	6,988.41	3,135.00	3,134.64	29.59	62.54	-43.77	-1,036.90	-8,799.68	8,823.29	8,741.64	81.65	108.056							
7,700.00	6,988.38	3,135.00	3,134.64	29.94	62.54	-42.93	-1,036.90	-8,799.68	8,789.87	8,708.16	81.71	107.574							
7,800.00	6,988.31	3,135.00	3,134.64	30.84	62.54	-40.79	-1,036.90	-8,799.68	8,707.80	8,625.95	81.85	106.391							
7,900.00	6,988.24	3,135.00	3,134.64	31.79	62.54	-38.50	-1,036.90	-8,799.68	8,624.81	8,542.82	81.98	105.200							
8,000.00	6,988.16	3,135.00	3,134.64	32.78	62.54	-36.06	-1,036.90	-8,799.68	8,540.97	8,458.85	82.12	104.009							
8,100.00	6,988.09	3,135.00	3,134.64	33.82	62.54	-33.45	-1,036.90	-8,799.68	8,456.36	8,374.12	82.24	102.821							
8,200.00	6,988.01	3,135.00	3,134.64	34.88	62.54	-30.69	-1,036.90	-8,799.68	8,371.07	8,288.71	82.36	101.641							
8,300.00	6,987.94	3,135.00	3,134.64	35.98	62.54	-27.76	-1,036.90	-8,799.68	8,285.18	8,202.72	82.46	100.474							
8,400.00	6,987.86	3,135.00	3,134.64	37.11	62.54	-24.68	-1,036.90	-8,799.68	8,198.77	8,116.23	82.55	99.324							
8,416.35	6,987.85	3,135.00	3,134.64	37.29	62.54	-24.17	-1,036.90	-8,799.68	8,184.60	8,102.04	82.56	99.137							

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		406-A027Ua_INC-ONLY					Rule Assigned:			Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance			Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,500.00	6,987.78	3,135.00	3,134.64	38.25	62.54	-24.17	-1,036.90	-8,799.68	8,112.18	8,029.56	82.62	98.185		
8,600.00	6,987.70	3,135.00	3,134.64	39.43	62.54	-24.17	-1,036.90	-8,799.68	8,025.89	7,943.19	82.70	97.043		
8,700.00	6,987.62	3,135.00	3,134.64	40.64	62.54	-24.17	-1,036.90	-8,799.68	7,939.93	7,857.13	82.80	95.896		
8,800.00	6,987.55	3,135.00	3,134.64	41.88	62.54	-24.17	-1,036.90	-8,799.68	7,854.29	7,771.39	82.90	94.745		
8,900.00	6,987.47	3,135.00	3,134.64	43.14	62.54	-24.17	-1,036.90	-8,799.68	7,769.00	7,685.99	83.01	93.590		
9,000.00	6,987.39	3,135.00	3,134.64	44.42	62.54	-24.17	-1,036.90	-8,799.68	7,684.07	7,600.93	83.13	92.431		
9,100.00	6,987.31	3,135.00	3,134.64	45.72	62.54	-24.17	-1,036.90	-8,799.68	7,599.50	7,516.23	83.26	91.269		
9,200.00	6,987.23	3,135.00	3,134.64	47.04	62.54	-24.17	-1,036.90	-8,799.68	7,515.31	7,431.90	83.41	90.104		
9,300.00	6,987.15	3,135.00	3,134.64	48.38	62.54	-24.17	-1,036.90	-8,799.68	7,431.51	7,347.95	83.56	88.937		
9,400.00	6,987.08	3,135.00	3,134.64	49.73	62.54	-24.17	-1,036.90	-8,799.68	7,348.11	7,264.39	83.72	87.768		
9,500.00	6,987.00	3,135.00	3,134.64	51.10	62.54	-24.17	-1,036.90	-8,799.68	7,265.14	7,181.24	83.90	86.597		
9,600.00	6,986.92	3,135.00	3,134.64	52.48	62.54	-24.17	-1,036.90	-8,799.68	7,182.60	7,098.52	84.08	85.425		
9,700.00	6,986.84	3,135.00	3,134.64	53.87	62.54	-24.17	-1,036.90	-8,799.68	7,100.51	7,016.23	84.28	84.252		
9,800.00	6,986.76	3,135.00	3,134.64	55.28	62.54	-24.17	-1,036.90	-8,799.68	7,018.88	6,934.40	84.48	83.080		
9,900.00	6,986.68	3,135.00	3,134.64	56.69	62.54	-24.17	-1,036.90	-8,799.68	6,937.73	6,853.03	84.70	81.908		
10,000.00	6,986.61	3,135.00	3,134.64	58.12	62.54	-24.17	-1,036.90	-8,799.68	6,857.09	6,772.15	84.93	80.737		
10,100.00	6,986.53	3,135.00	3,134.64	59.55	62.54	-24.17	-1,036.90	-8,799.68	6,776.95	6,691.78	85.17	79.567		
10,200.00	6,986.45	3,135.00	3,134.64	61.00	62.54	-24.17	-1,036.90	-8,799.68	6,697.36	6,611.93	85.42	78.400		
10,300.00	6,986.37	3,135.00	3,134.64	62.45	62.54	-24.17	-1,036.90	-8,799.68	6,618.31	6,532.62	85.69	77.236		
10,400.00	6,986.29	3,135.00	3,134.64	63.90	62.54	-24.17	-1,036.90	-8,799.68	6,539.84	6,453.88	85.96	76.076		
10,500.00	6,986.21	3,135.00	3,134.64	65.37	62.54	-24.17	-1,036.90	-8,799.68	6,461.97	6,375.71	86.25	74.920		
10,600.00	6,986.14	3,135.00	3,134.64	66.84	62.54	-24.17	-1,036.90	-8,799.68	6,384.71	6,298.16	86.55	73.769		
10,700.00	6,986.06	3,135.00	3,134.64	68.32	62.54	-24.17	-1,036.90	-8,799.68	6,308.09	6,221.22	86.86	72.623		
10,800.00	6,985.98	3,135.00	3,134.64	69.80	62.54	-24.17	-1,036.90	-8,799.68	6,232.13	6,144.95	87.18	71.484		
10,900.00	6,985.90	3,135.00	3,134.64	71.29	62.54	-24.17	-1,036.90	-8,799.68	6,156.86	6,069.34	87.52	70.352		
11,000.00	6,985.82	3,135.00	3,134.64	72.78	62.54	-24.17	-1,036.90	-8,799.68	6,082.30	5,994.44	87.86	69.228		
11,100.00	6,985.75	3,135.00	3,134.64	74.28	62.54	-24.17	-1,036.90	-8,799.68	6,008.48	5,920.27	88.21	68.112		
11,200.00	6,985.67	3,135.00	3,134.64	75.78	62.54	-24.17	-1,036.90	-8,799.68	5,935.43	5,846.85	88.58	67.005		
11,300.00	6,985.59	3,135.00	3,134.64	77.29	62.54	-24.17	-1,036.90	-8,799.68	5,863.17	5,774.21	88.96	65.909		
11,400.00	6,985.51	3,135.00	3,134.64	78.80	62.54	-24.17	-1,036.90	-8,799.68	5,791.74	5,702.39	89.35	64.823		
11,500.00	6,985.43	3,135.00	3,134.64	80.31	62.54	-24.17	-1,036.90	-8,799.68	5,721.17	5,631.42	89.74	63.749		
11,600.00	6,985.35	3,135.00	3,134.64	81.83	62.54	-24.17	-1,036.90	-8,799.68	5,651.48	5,561.33	90.15	62.688		
11,700.00	6,985.28	3,135.00	3,134.64	83.35	62.54	-24.17	-1,036.90	-8,799.68	5,582.71	5,492.14	90.57	61.639		
11,800.00	6,985.20	3,135.00	3,134.64	84.87	62.54	-24.17	-1,036.90	-8,799.68	5,514.90	5,423.90	91.00	60.604		
11,900.00	6,985.12	3,135.00	3,134.64	86.40	62.54	-24.17	-1,036.90	-8,799.68	5,448.08	5,356.65	91.43	59.584		
12,000.00	6,985.04	3,135.00	3,134.64	87.93	62.54	-24.17	-1,036.90	-8,799.68	5,382.30	5,290.42	91.88	58.580		
12,100.00	6,984.96	3,135.00	3,134.64	89.46	62.54	-24.17	-1,036.90	-8,799.68	5,317.57	5,225.24	92.33	57.591		
12,200.00	6,984.88	3,135.00	3,134.64	90.99	62.54	-24.17	-1,036.90	-8,799.68	5,253.96	5,161.16	92.80	56.619		
12,300.00	6,984.81	3,135.00	3,134.64	92.53	62.54	-24.17	-1,036.90	-8,799.68	5,191.49	5,098.22	93.26	55.665		
12,400.00	6,984.73	3,135.00	3,134.64	94.07	62.54	-24.17	-1,036.90	-8,799.68	5,130.20	5,036.46	93.74	54.728		
12,500.00	6,984.65	3,135.00	3,134.64	95.61	62.54	-24.17	-1,036.90	-8,799.68	5,070.15	4,975.93	94.22	53.811		
12,600.00	6,984.57	3,135.00	3,134.64	97.15	62.54	-24.17	-1,036.90	-8,799.68	5,011.38	4,916.67	94.71	52.913		
12,700.00	6,984.49	3,135.00	3,134.64	98.70	62.54	-24.17	-1,036.90	-8,799.68	4,953.93	4,858.73	95.20	52.036		
12,800.00	6,984.41	3,135.00	3,134.64	100.25	62.54	-24.17	-1,036.90	-8,799.68	4,897.85	4,802.15	95.70	51.179		
12,900.00	6,984.34	3,135.00	3,134.64	101.80	62.54	-24.17	-1,036.90	-8,799.68	4,843.18	4,746.97	96.20	50.344		
13,000.00	6,984.26	3,135.00	3,134.64	103.35	62.54	-24.17	-1,036.90	-8,799.68	4,789.97	4,693.26	96.71	49.530		
13,100.00	6,984.18	3,135.00	3,134.64	104.90	62.54	-24.17	-1,036.90	-8,799.68	4,738.28	4,641.06	97.22	48.739		
13,200.00	6,984.10	3,135.00	3,134.64	106.45	62.54	-24.17	-1,036.90	-8,799.68	4,688.15	4,590.42	97.73	47.970		
13,300.00	6,984.02	3,135.00	3,134.64	108.01	62.54	-24.17	-1,036.90	-8,799.68	4,639.64	4,541.40	98.24	47.225		
13,400.00	6,983.94	3,135.00	3,134.64	109.56	62.54	-24.17	-1,036.90	-8,799.68	4,592.79	4,494.03	98.76	46.504		
13,500.00	6,983.87	3,135.00	3,134.64	111.12	62.54	-24.17	-1,036.90	-8,799.68	4,547.66	4,448.38	99.28	45.806		
13,600.00	6,983.79	3,135.00	3,134.64	112.68	62.54	-24.17	-1,036.90	-8,799.68	4,504.30	4,404.49	99.80	45.132		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		406-A027Ua_INC-ONLY							Rule Assigned:				Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,700.00	6,983.71	3,135.00	3,134.64	114.24	62.54	-24.17	-1,036.90	-8,799.68	4,462.75	4,362.43	100.33	44.483		
13,800.00	6,983.63	3,135.00	3,134.64	115.80	62.54	-24.17	-1,036.90	-8,799.68	4,423.08	4,322.23	100.85	43.857		
13,900.00	6,983.55	3,135.00	3,134.64	117.37	62.54	-24.17	-1,036.90	-8,799.68	4,385.33	4,283.95	101.38	43.256		
14,000.00	6,983.47	3,135.00	3,134.64	118.93	62.54	-24.17	-1,036.90	-8,799.68	4,349.55	4,247.64	101.91	42.679		
14,100.00	6,983.40	3,135.00	3,134.64	120.50	62.54	-24.17	-1,036.90	-8,799.68	4,315.79	4,213.34	102.45	42.126		
14,200.00	6,983.32	3,135.00	3,134.64	122.06	62.54	-24.17	-1,036.90	-8,799.68	4,284.10	4,181.11	102.99	41.596		
14,300.00	6,983.24	3,135.00	3,134.64	123.63	62.54	-24.17	-1,036.90	-8,799.68	4,254.53	4,150.98	103.54	41.089		
14,400.00	6,983.16	3,135.00	3,134.64	125.20	62.54	-24.17	-1,036.90	-8,799.68	4,227.11	4,123.01	104.10	40.605		
14,500.00	6,983.08	3,135.00	3,134.64	126.77	62.54	-24.17	-1,036.90	-8,799.68	4,201.90	4,097.23	104.67	40.143		
14,600.00	6,983.00	3,135.00	3,134.64	128.33	62.54	-24.17	-1,036.90	-8,799.68	4,178.93	4,073.67	105.26	39.702		
14,700.00	6,982.93	3,135.00	3,134.64	129.91	62.54	-24.17	-1,036.90	-8,799.68	4,158.23	4,052.38	105.86	39.282		
14,800.00	6,982.85	3,135.00	3,134.64	131.48	62.54	-24.17	-1,036.90	-8,799.68	4,139.85	4,033.38	106.47	38.882		
14,900.00	6,982.77	3,135.00	3,134.64	133.05	62.54	-24.17	-1,036.90	-8,799.68	4,123.81	4,016.71	107.11	38.501		
15,000.00	6,982.69	3,135.00	3,134.64	134.62	62.54	-24.17	-1,036.90	-8,799.68	4,110.15	4,002.38	107.77	38.139		
15,100.00	6,982.61	3,135.00	3,134.64	136.20	62.54	-24.17	-1,036.90	-8,799.68	4,098.88	3,990.43	108.45	37.795		
15,200.00	6,982.54	3,135.00	3,134.64	137.77	62.54	-24.17	-1,036.90	-8,799.68	4,090.02	3,980.86	109.16	37.468		
15,300.00	6,982.46	3,135.00	3,134.64	139.35	62.54	-24.17	-1,036.90	-8,799.68	4,083.59	3,973.70	109.90	37.158		
15,400.00	6,982.38	3,135.00	3,134.64	140.92	62.54	-24.17	-1,036.90	-8,799.68	4,079.61	3,968.95	110.66	36.866		
15,500.00	6,982.30	3,135.00	3,134.64	142.50	62.54	-24.17	-1,036.90	-8,799.68	4,078.07	3,966.62	111.45	36.590		
15,512.63	6,982.29	3,135.00	3,134.64	142.70	62.54	-24.17	-1,036.90	-8,799.68	4,078.05	3,966.50	111.55	36.557	CC, ES	
15,600.00	6,982.22	3,135.00	3,134.64	144.07	62.54	-24.17	-1,036.90	-8,799.68	4,078.99	3,966.72	112.27	36.332		
15,700.00	6,982.14	3,135.00	3,134.64	145.65	62.54	-24.17	-1,036.90	-8,799.68	4,082.36	3,969.25	113.11	36.092		
15,800.00	6,982.07	3,135.00	3,134.64	147.23	62.54	-24.17	-1,036.90	-8,799.68	4,088.17	3,974.19	113.97	35.870		
15,900.00	6,981.99	3,135.00	3,134.64	148.81	62.54	-24.17	-1,036.90	-8,799.68	4,096.41	3,981.56	114.85	35.666		
16,000.00	6,981.91	3,135.00	3,134.64	150.39	62.54	-24.17	-1,036.90	-8,799.68	4,107.07	3,991.33	115.75	35.483		
16,100.00	6,981.83	3,135.00	3,134.64	151.97	62.54	-24.17	-1,036.90	-8,799.68	4,120.14	4,003.48	116.65	35.319		
16,200.00	6,981.75	3,135.00	3,134.64	153.55	62.54	-24.17	-1,036.90	-8,799.68	4,135.58	4,018.01	117.57	35.177		
16,300.00	6,981.67	3,135.00	3,134.64	155.13	62.54	-24.17	-1,036.90	-8,799.68	4,153.37	4,034.89	118.48	35.056		
16,400.00	6,981.60	3,135.00	3,134.64	156.71	62.54	-24.17	-1,036.90	-8,799.68	4,173.48	4,054.10	119.38	34.958		
16,500.00	6,981.52	3,135.00	3,134.64	158.29	62.54	-24.17	-1,036.90	-8,799.68	4,195.88	4,075.60	120.28	34.883		
16,600.00	6,981.44	3,135.00	3,134.64	159.88	62.54	-24.17	-1,036.90	-8,799.68	4,220.53	4,099.37	121.17	34.832		
16,700.00	6,981.36	3,135.00	3,134.64	161.46	62.54	-24.17	-1,036.90	-8,799.68	4,247.40	4,125.36	122.04	34.804		
16,800.00	6,981.28	3,135.00	3,134.64	163.04	62.54	-24.17	-1,036.90	-8,799.68	4,276.43	4,153.55	122.88	34.800	SF	
16,900.00	6,981.20	3,135.00	3,134.64	164.62	62.54	-24.17	-1,036.90	-8,799.68	4,307.59	4,183.88	123.71	34.821		
17,000.00	6,981.13	3,135.00	3,134.64	166.21	62.54	-24.17	-1,036.90	-8,799.68	4,340.83	4,216.32	124.50	34.865		
17,100.00	6,981.05	3,135.00	3,134.64	167.79	62.54	-24.17	-1,036.90	-8,799.68	4,376.10	4,250.83	125.27	34.933		
17,200.00	6,980.97	3,135.00	3,134.64	169.38	62.54	-24.17	-1,036.90	-8,799.68	4,413.36	4,287.35	126.01	35.024		
17,300.00	6,980.89	3,135.00	3,134.64	170.96	62.54	-24.17	-1,036.90	-8,799.68	4,452.55	4,325.84	126.71	35.139		
17,400.00	6,980.81	3,135.00	3,134.64	172.55	62.54	-24.17	-1,036.90	-8,799.68	4,493.63	4,366.25	127.38	35.277		
17,500.00	6,980.73	3,135.00	3,134.64	174.13	62.54	-24.17	-1,036.90	-8,799.68	4,536.54	4,408.52	128.02	35.437		
17,600.00	6,980.66	3,135.00	3,134.64	175.72	62.54	-24.17	-1,036.90	-8,799.68	4,581.23	4,452.61	128.62	35.618		
17,700.00	6,980.58	3,135.00	3,134.64	177.31	62.54	-24.17	-1,036.90	-8,799.68	4,627.65	4,498.46	129.19	35.822		
17,800.00	6,980.50	3,135.00	3,134.64	178.89	62.54	-24.17	-1,036.90	-8,799.68	4,675.75	4,546.03	129.72	36.045		
17,900.00	6,980.42	3,135.00	3,134.64	180.48	62.54	-24.17	-1,036.90	-8,799.68	4,725.47	4,595.25	130.22	36.290		
18,000.00	6,980.34	3,135.00	3,134.64	182.07	62.54	-24.17	-1,036.90	-8,799.68	4,776.77	4,646.09	130.68	36.553		
18,100.00	6,980.26	3,135.00	3,134.64	183.66	62.54	-24.17	-1,036.90	-8,799.68	4,829.60	4,698.49	131.11	36.836		
18,200.00	6,980.19	3,135.00	3,134.64	185.24	62.54	-24.17	-1,036.90	-8,799.68	4,883.90	4,752.39	131.51	37.137		
18,300.00	6,980.11	3,135.00	3,134.64	186.83	62.54	-24.17	-1,036.90	-8,799.68	4,939.63	4,807.75	131.88	37.456		
18,400.00	6,980.03	3,135.00	3,134.64	188.42	62.54	-24.17	-1,036.90	-8,799.68	4,996.74	4,864.52	132.22	37.792		
18,500.00	6,979.95	3,135.00	3,134.64	190.01	62.54	-24.17	-1,036.90	-8,799.68	5,055.19	4,922.66	132.53	38.144		
18,600.00	6,979.87	3,135.00	3,134.64	191.60	62.54	-24.17	-1,036.90	-8,799.68	5,114.92	4,982.11	132.81	38.513		
18,700.00	6,979.79	3,135.00	3,134.64	193.19	62.54	-24.17	-1,036.90	-8,799.68	5,175.89	5,042.83	133.07	38.897		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		406-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
18,800.00	6,979.72	3,135.00	3,134.64	194.78	62.54	-24.17	-1,036.90	-8,799.68	5,238.07	5,104.77	133.30	39.296	
18,900.00	6,979.64	3,135.00	3,134.64	196.37	62.54	-24.17	-1,036.90	-8,799.68	5,301.40	5,167.89	133.51	39.709	
19,000.00	6,979.56	3,135.00	3,134.64	197.96	62.54	-24.17	-1,036.90	-8,799.68	5,365.84	5,232.15	133.69	40.136	
19,100.00	6,979.48	3,135.00	3,134.64	199.55	62.54	-24.17	-1,036.90	-8,799.68	5,431.37	5,297.51	133.85	40.577	
19,200.00	6,979.40	3,135.00	3,134.64	201.14	62.54	-24.17	-1,036.90	-8,799.68	5,497.93	5,363.93	134.00	41.030	
19,300.00	6,979.33	3,135.00	3,134.64	202.73	62.54	-24.17	-1,036.90	-8,799.68	5,565.49	5,431.37	134.12	41.495	
19,400.00	6,979.25	3,135.00	3,134.64	204.32	62.54	-24.17	-1,036.90	-8,799.68	5,634.02	5,499.79	134.23	41.973	
19,500.00	6,979.17	3,135.00	3,134.64	205.91	62.54	-24.17	-1,036.90	-8,799.68	5,703.48	5,569.16	134.32	42.461	
19,600.00	6,979.09	3,135.00	3,134.64	207.50	62.54	-24.17	-1,036.90	-8,799.68	5,773.83	5,639.43	134.40	42.961	
19,700.00	6,979.01	3,135.00	3,134.64	209.09	62.54	-24.17	-1,036.90	-8,799.68	5,845.05	5,710.59	134.46	43.471	
19,800.00	6,978.93	3,135.00	3,134.64	210.69	62.54	-24.17	-1,036.90	-8,799.68	5,917.10	5,782.60	134.50	43.992	
19,900.00	6,978.86	3,135.00	3,134.64	212.28	62.54	-24.17	-1,036.90	-8,799.68	5,989.95	5,855.41	134.54	44.522	
20,000.00	6,978.78	3,135.00	3,134.64	213.87	62.54	-24.17	-1,036.90	-8,799.68	6,063.58	5,929.02	134.56	45.062	
20,100.00	6,978.70	3,135.00	3,134.64	215.46	62.54	-24.17	-1,036.90	-8,799.68	6,137.96	6,003.38	134.57	45.610	
20,200.00	6,978.62	3,135.00	3,134.64	217.05	62.54	-24.17	-1,036.90	-8,799.68	6,213.05	6,078.47	134.58	46.168	
20,300.00	6,978.54	3,135.00	3,134.64	218.65	62.54	-24.17	-1,036.90	-8,799.68	6,288.83	6,154.27	134.57	46.733	
20,400.00	6,978.46	3,135.00	3,134.64	220.24	62.54	-24.17	-1,036.90	-8,799.68	6,365.29	6,230.74	134.55	47.307	
20,500.00	6,978.39	3,135.00	3,134.64	221.83	62.54	-24.17	-1,036.90	-8,799.68	6,442.39	6,307.86	134.53	47.888	
20,600.00	6,978.31	3,135.00	3,134.64	223.43	62.54	-24.17	-1,036.90	-8,799.68	6,520.11	6,385.61	134.50	48.477	
20,700.00	6,978.23	3,135.00	3,134.64	225.02	62.54	-24.17	-1,036.90	-8,799.68	6,598.43	6,463.97	134.46	49.073	
20,800.00	6,978.15	3,135.00	3,134.64	226.61	62.54	-24.17	-1,036.90	-8,799.68	6,677.34	6,542.92	134.42	49.676	
20,900.00	6,978.07	3,135.00	3,134.64	228.21	62.54	-24.17	-1,036.90	-8,799.68	6,756.80	6,622.43	134.37	50.285	
21,000.00	6,977.99	3,135.00	3,134.64	229.80	62.54	-24.17	-1,036.90	-8,799.68	6,836.79	6,702.48	134.32	50.901	
21,100.00	6,977.92	3,135.00	3,134.64	231.39	62.54	-24.17	-1,036.90	-8,799.68	6,917.31	6,783.06	134.26	51.523	
21,200.00	6,977.84	3,135.00	3,134.64	232.99	62.54	-24.17	-1,036.90	-8,799.68	6,998.34	6,864.14	134.19	52.151	
21,300.00	6,977.76	3,135.00	3,134.64	234.58	62.54	-24.17	-1,036.90	-8,799.68	7,079.84	6,945.71	134.13	52.784	
21,400.00	6,977.68	3,135.00	3,134.64	236.18	62.54	-24.17	-1,036.90	-8,799.68	7,161.82	7,027.76	134.06	53.423	
21,500.00	6,977.60	3,135.00	3,134.64	237.77	62.54	-24.17	-1,036.90	-8,799.68	7,244.25	7,110.26	133.99	54.067	
21,600.00	6,977.52	3,135.00	3,134.64	239.37	62.54	-24.17	-1,036.90	-8,799.68	7,327.11	7,193.20	133.91	54.716	
21,700.00	6,977.45	3,135.00	3,134.64	240.96	62.54	-24.17	-1,036.90	-8,799.68	7,410.40	7,276.57	133.84	55.369	
21,800.00	6,977.37	3,135.00	3,134.64	242.56	62.54	-24.17	-1,036.90	-8,799.68	7,494.10	7,360.34	133.76	56.028	
21,900.00	6,977.29	3,135.00	3,134.64	244.15	62.54	-24.17	-1,036.90	-8,799.68	7,578.19	7,444.52	133.68	56.690	
22,000.00	6,977.21	3,135.00	3,134.64	245.75	62.54	-24.17	-1,036.90	-8,799.68	7,662.67	7,529.07	133.59	57.357	
22,100.00	6,977.13	3,135.00	3,134.64	247.34	62.54	-24.17	-1,036.90	-8,799.68	7,747.51	7,614.00	133.51	58.029	
22,200.00	6,977.05	3,135.00	3,134.64	248.94	62.54	-24.17	-1,036.90	-8,799.68	7,832.72	7,699.29	133.43	58.704	
22,269.73	6,977.00	3,135.00	3,134.64	250.05	62.54	-24.17	-1,036.90	-8,799.68	7,892.33	7,758.96	133.37	59.176	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226A - OH - OH-SVY											Offset Site Error: 0.00 usft
Survey Program: 200-MWD OWSG Rev5											Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
0.00	0.00	5,392.00	3,078.35	0.00	62.35	-86.22	551.51	-8,347.75	8,927.17		
100.00	100.00	5,392.00	3,078.35	0.25	62.35	-86.22	551.51	-8,347.75	8,892.77	8,861.13	281.045
200.00	200.00	5,392.00	3,078.35	0.61	62.35	-86.22	551.51	-8,347.75	8,859.36	8,827.53	278.283
300.00	300.00	5,392.00	3,078.35	0.97	62.35	-86.22	551.51	-8,347.75	8,826.96	8,794.84	274.843
400.00	400.00	5,392.00	3,078.35	1.33	62.35	-86.22	551.51	-8,347.75	8,795.58	8,763.13	271.095
500.00	500.00	5,392.00	3,078.35	1.68	62.35	-86.22	551.51	-8,347.75	8,765.22	8,732.42	267.243
600.00	600.00	5,392.00	3,078.35	2.04	62.35	-86.22	551.51	-8,347.75	8,735.90	8,702.74	263.386
700.00	700.00	5,392.00	3,078.35	2.40	62.35	-86.22	551.51	-8,347.75	8,707.64	8,674.09	259.575
800.00	799.98	5,392.00	3,078.35	2.76	62.35	-76.02	551.51	-8,347.75	8,680.01	8,646.09	255.885
849.89	849.82	5,392.00	3,078.35	2.94	62.35	-76.30	551.51	-8,347.75	8,666.32	8,632.22	254.108
900.00	899.86	5,392.00	3,078.35	3.12	62.35	-76.30	551.51	-8,347.75	8,652.74	8,618.46	252.375
1,000.00	999.73	5,392.00	3,078.35	3.48	62.35	-76.30	551.51	-8,347.75	8,626.45	8,591.80	248.990
1,100.00	1,099.59	5,392.00	3,078.35	3.84	62.35	-76.30	551.51	-8,347.75	8,601.23	8,566.22	245.687
1,200.00	1,199.45	5,392.00	3,078.35	4.20	62.35	-76.30	551.51	-8,347.75	8,577.11	8,541.74	242.473
1,300.00	1,299.32	5,392.00	3,078.35	4.56	62.35	-76.30	551.51	-8,347.75	8,554.09	8,518.35	239.348
1,400.00	1,399.18	5,392.00	3,078.35	4.92	62.35	-76.30	551.51	-8,347.75	8,532.18	8,496.07	236.315
1,500.00	1,499.04	5,392.00	3,078.35	5.28	62.35	-76.30	551.51	-8,347.75	8,511.39	8,474.91	233.373
1,600.00	1,598.91	5,392.00	3,078.35	5.64	62.35	-76.30	551.51	-8,347.75	8,491.72	8,454.88	230.522
1,700.00	1,698.77	5,392.00	3,078.35	6.00	62.35	-76.30	551.51	-8,347.75	8,473.19	8,435.99	227.762
1,800.00	1,798.63	5,392.00	3,078.35	6.36	62.35	-76.30	551.51	-8,347.75	8,455.80	8,418.23	225.091
1,900.00	1,898.49	5,392.00	3,078.35	6.72	62.35	-76.30	551.51	-8,347.75	8,439.56	8,401.63	222.509
2,000.00	1,998.36	5,392.00	3,078.35	7.09	62.35	-76.30	551.51	-8,347.75	8,424.47	8,386.18	220.015
2,100.00	2,098.22	5,392.00	3,078.35	7.45	62.35	-76.30	551.51	-8,347.75	8,410.55	8,371.90	217.606
2,200.00	2,198.08	5,392.00	3,078.35	7.81	62.35	-76.30	551.51	-8,347.75	8,397.80	8,358.79	215.282
2,300.00	2,297.95	5,392.00	3,078.35	8.17	62.35	-76.30	551.51	-8,347.75	8,386.22	8,346.85	213.041
2,400.00	2,397.81	5,392.00	3,078.35	8.53	62.35	-76.30	551.51	-8,347.75	8,375.81	8,336.09	210.882
2,500.00	2,497.67	5,392.00	3,078.35	8.90	62.35	-76.30	551.51	-8,347.75	8,366.59	8,326.52	208.804
2,600.00	2,597.54	5,392.00	3,078.35	9.26	62.35	-76.30	551.51	-8,347.75	8,358.56	8,318.14	206.804
2,700.00	2,697.40	5,392.00	3,078.35	9.62	62.35	-76.30	551.51	-8,347.75	8,351.71	8,310.95	204.881
2,800.00	2,797.26	5,392.00	3,078.35	9.98	62.35	-76.30	551.51	-8,347.75	8,346.06	8,304.95	203.035
2,900.00	2,897.13	5,392.00	3,078.35	10.35	62.35	-76.30	551.51	-8,347.75	8,341.60	8,300.16	201.262
3,000.00	2,996.99	5,392.00	3,078.35	10.71	62.35	-76.30	551.51	-8,347.75	8,338.34	8,296.56	199.563
3,100.00	3,096.85	5,392.00	3,078.35	11.07	62.35	-76.30	551.51	-8,347.75	8,336.28	8,294.16	197.935
3,200.00	3,196.72	5,392.00	3,078.35	11.43	62.35	-76.30	551.51	-8,347.75	8,335.42	8,292.97	196.377
3,221.92	3,218.61	5,392.00	3,078.35	11.51	62.35	-76.30	551.51	-8,347.75	8,335.39	8,292.87	196.045
3,300.00	3,296.58	5,392.00	3,078.35	11.80	62.35	-76.30	551.51	-8,347.75	8,335.75	8,292.98	194.887
3,400.00	3,396.44	5,392.00	3,078.35	12.16	62.35	-76.30	551.51	-8,347.75	8,337.29	8,294.20	193.465
3,500.00	3,496.31	5,392.00	3,078.35	12.52	62.35	-76.30	551.51	-8,347.75	8,340.03	8,296.61	192.109
3,600.00	3,596.17	5,392.00	3,078.35	12.88	62.35	-76.30	551.51	-8,347.75	8,343.96	8,300.23	190.817
3,700.00	3,696.03	5,392.00	3,078.35	13.25	62.35	-76.30	551.51	-8,347.75	8,349.09	8,305.05	189.587
3,800.00	3,795.89	5,392.00	3,078.35	13.61	62.35	-76.30	551.51	-8,347.75	8,355.41	8,311.07	188.420
3,900.00	3,895.76	5,392.00	3,078.35	13.97	62.35	-76.30	551.51	-8,347.75	8,362.92	8,318.28	187.313
4,000.00	3,995.62	5,392.00	3,078.35	14.34	62.35	-76.30	551.51	-8,347.75	8,371.63	8,326.68	186.265
4,100.00	4,095.48	5,392.00	3,078.35	14.70	62.35	-76.30	551.51	-8,347.75	8,381.51	8,336.27	185.275
4,200.00	4,195.35	5,392.00	3,078.35	15.06	62.35	-76.30	551.51	-8,347.75	8,392.58	8,347.05	184.341
4,300.00	4,295.21	5,392.00	3,078.35	15.42	62.35	-76.30	551.51	-8,347.75	8,404.82	8,359.01	183.462
4,400.00	4,395.07	5,392.00	3,078.35	15.79	62.35	-76.30	551.51	-8,347.75	8,418.23	8,372.14	182.637
4,500.00	4,494.94	5,392.00	3,078.35	16.15	62.35	-76.30	551.51	-8,347.75	8,432.80	8,386.44	181.865
4,600.00	4,594.80	5,392.00	3,078.35	16.51	62.35	-76.30	551.51	-8,347.75	8,448.54	8,401.90	181.144
4,700.00	4,694.66	5,392.00	3,078.35	16.87	62.35	-76.30	551.51	-8,347.75	8,465.43	8,418.52	180.474
4,800.00	4,794.53	5,392.00	3,078.35	17.24	62.35	-76.30	551.51	-8,347.75	8,483.46	8,436.29	179.853
4,900.00	4,894.39	5,392.00	3,078.35	17.60	62.35	-76.30	551.51	-8,347.75	8,502.63	8,455.20	179.280

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226A - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		200-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
5,000.00	4,994.25	5,392.00	3,078.35	17.96	62.35	-76.30	551.51	-8,347.75	8,522.93	8,475.25	47.68	178.753	
5,100.00	5,094.12	5,392.00	3,078.35	18.33	62.35	-76.30	551.51	-8,347.75	8,544.35	8,496.42	47.93	178.272	
5,200.00	5,193.98	5,392.00	3,078.35	18.69	62.35	-76.30	551.51	-8,347.75	8,566.88	8,518.71	48.17	177.836	
5,300.00	5,293.84	5,392.00	3,078.35	19.05	62.35	-76.30	551.51	-8,347.75	8,590.53	8,542.11	48.41	177.443	
5,336.91	5,330.71	5,392.00	3,078.35	19.19	62.35	-76.30	551.51	-8,347.75	8,599.53	8,551.03	48.50	177.308	
5,400.00	5,393.71	5,392.00	3,078.35	19.41	62.35	-76.38	551.51	-8,347.75	8,615.30	8,566.65	48.65	177.090	
5,500.00	5,493.62	5,392.00	3,078.35	19.77	62.35	-76.51	551.51	-8,347.75	8,641.35	8,592.47	48.88	176.772	
5,600.00	5,593.57	5,392.00	3,078.35	20.13	62.35	-76.65	551.51	-8,347.75	8,668.67	8,619.55	49.12	176.487	
5,700.00	5,693.53	5,392.00	3,078.35	20.49	62.35	-76.79	551.51	-8,347.75	8,697.24	8,647.89	49.35	176.235	
5,800.00	5,793.52	5,392.00	3,078.35	20.85	62.35	-76.94	551.51	-8,347.75	8,727.06	8,677.48	49.58	176.014	
5,900.00	5,893.52	5,392.00	3,078.35	21.20	62.35	-77.10	551.51	-8,347.75	8,758.11	8,708.29	49.81	175.823	
5,936.48	5,930.00	5,392.00	3,078.35	21.33	62.35	-87.92	551.51	-8,347.75	8,769.73	8,719.84	49.90	175.761	
6,000.00	5,993.52	5,392.00	3,078.35	21.56	62.35	-87.92	551.51	-8,347.75	8,790.33	8,740.29	50.04	175.664	
6,100.00	6,093.52	5,392.00	3,078.35	21.91	62.35	-87.92	551.51	-8,347.75	8,823.57	8,773.31	50.27	175.541	
6,200.00	6,193.52	5,392.00	3,078.35	22.27	62.35	-87.92	551.51	-8,347.75	8,857.83	8,807.34	50.49	175.452	
6,300.00	6,293.52	5,392.00	3,078.35	22.62	62.35	-87.92	551.51	-8,347.75	8,893.07	8,842.37	50.70	175.396	
6,358.48	6,352.00	5,392.00	3,078.35	22.83	62.35	-87.92	551.51	-8,347.75	8,914.14	8,863.31	50.83	175.379	
6,400.00	6,393.49	5,392.00	3,078.35	22.97	62.35	-13.02	551.51	-8,347.75	8,928.06	8,877.15	50.91	175.366	
6,450.00	6,443.20	5,392.00	3,078.35	23.15	62.35	-12.73	551.51	-8,347.75	8,941.73	8,890.72	51.00	175.312	
6,500.00	6,492.36	5,392.00	3,078.35	23.33	62.35	-12.52	551.51	-8,347.75	8,951.94	8,900.84	51.09	175.204	
6,550.00	6,540.64	5,392.00	3,078.35	23.51	62.35	-12.39	551.51	-8,347.75	8,958.64	8,907.46	51.18	175.044	
6,600.00	6,587.77	5,392.00	3,078.35	23.69	62.35	-12.33	551.51	-8,347.75	8,961.81	8,910.55	51.26	174.835	
6,650.00	6,633.44	5,392.00	3,078.35	23.88	62.35	-12.34	551.51	-8,347.75	8,961.42	8,910.09	51.33	174.580	
6,700.00	6,677.37	5,392.00	3,078.35	24.07	62.35	-12.42	551.51	-8,347.75	8,957.48	8,906.08	51.40	174.280	
6,750.00	6,719.30	5,392.00	3,078.35	24.26	62.35	-12.56	551.51	-8,347.75	8,950.00	8,898.55	51.45	173.940	
6,800.00	6,758.97	5,392.00	3,078.35	24.46	62.35	-12.79	551.51	-8,347.75	8,939.03	8,887.53	51.50	173.560	
6,850.00	6,796.12	5,392.00	3,078.35	24.67	62.35	-13.09	551.51	-8,347.75	8,924.62	8,873.07	51.54	173.142	
6,900.00	6,830.54	5,392.00	3,078.35	24.88	62.35	-13.48	551.51	-8,347.75	8,906.84	8,855.26	51.58	172.689	
6,950.00	6,862.00	5,392.00	3,078.35	25.11	62.35	-13.98	551.51	-8,347.75	8,885.78	8,834.18	51.60	172.201	
7,000.00	6,890.33	5,392.00	3,078.35	25.34	62.35	-14.59	551.51	-8,347.75	8,861.55	8,809.93	51.62	171.679	
7,050.00	6,915.33	5,392.00	3,078.35	25.59	62.35	-15.35	551.51	-8,347.75	8,834.27	8,782.65	51.62	171.127	
7,100.00	6,936.86	5,392.00	3,078.35	25.85	62.35	-16.28	551.51	-8,347.75	8,804.09	8,752.46	51.62	170.544	
7,150.00	6,954.79	5,392.00	3,078.35	26.12	62.35	-17.42	551.51	-8,347.75	8,771.15	8,719.54	51.62	169.933	
7,200.00	6,968.99	5,392.00	3,078.35	26.40	62.35	-18.84	551.51	-8,347.75	8,735.64	8,684.04	51.60	169.295	
7,250.00	6,979.40	5,392.00	3,078.35	26.69	62.35	-20.60	551.51	-8,347.75	8,697.74	8,646.16	51.58	168.633	
7,300.00	6,985.94	5,392.00	3,078.35	27.00	62.35	-22.84	551.51	-8,347.75	8,657.65	8,606.10	51.55	167.947	
7,350.00	6,988.56	5,392.00	3,078.35	27.31	62.35	-25.72	551.51	-8,347.75	8,615.60	8,564.09	51.52	167.238	
7,358.93	6,988.62	5,392.00	3,078.35	27.36	62.35	-26.32	551.51	-8,347.75	8,607.91	8,556.39	51.51	167.099	
7,400.00	6,988.59	5,392.00	3,078.35	27.63	62.35	-26.32	551.51	-8,347.75	8,572.39	8,520.91	51.48	166.520	
7,500.00	6,988.52	5,392.00	3,078.35	28.33	62.35	-26.32	551.51	-8,347.75	8,486.14	8,434.73	51.40	165.092	
7,600.00	6,988.45	5,392.00	3,078.35	29.10	62.35	-26.32	551.51	-8,347.75	8,400.19	8,348.85	51.34	163.632	
7,658.93	6,988.41	5,392.00	3,078.35	29.59	62.35	-26.32	551.51	-8,347.75	8,349.68	8,298.38	51.30	162.757	
7,700.00	6,988.38	5,392.00	3,078.35	29.94	62.35	-25.09	551.51	-8,347.75	8,314.48	8,263.20	51.28	162.136	
7,800.00	6,988.31	5,392.00	3,078.35	30.84	62.35	-22.00	551.51	-8,347.75	8,228.48	8,177.24	51.24	160.582	
7,900.00	6,988.24	5,392.00	3,078.35	31.79	62.35	-18.79	551.51	-8,347.75	8,142.12	8,090.90	51.22	158.972	
8,000.00	6,988.16	5,392.00	3,078.35	32.78	62.35	-15.48	551.51	-8,347.75	8,055.51	8,004.30	51.21	157.317	
8,100.00	6,988.09	5,392.00	3,078.35	33.82	62.35	-12.10	551.51	-8,347.75	7,968.74	7,917.54	51.21	155.622	
8,200.00	6,988.01	5,392.00	3,078.35	34.88	62.35	-8.66	551.51	-8,347.75	7,881.92	7,830.70	51.22	153.893	
8,300.00	6,987.94	5,392.00	3,078.35	35.98	62.35	-5.19	551.51	-8,347.75	7,795.15	7,743.91	51.24	152.134	
8,400.00	6,987.86	5,392.00	3,078.35	37.11	62.35	-1.73	551.51	-8,347.75	7,708.54	7,657.27	51.27	150.347	
8,416.35	6,987.85	5,392.00	3,078.35	37.29	62.35	-1.17	551.51	-8,347.75	7,694.40	7,643.12	51.28	150.053	
8,500.00	6,987.78	5,392.00	3,078.35	38.25	62.35	-1.17	551.51	-8,347.75	7,622.21	7,570.89	51.31	148.539	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 34 - (O) Rosa Unit #226A - OH - OH-SVY											Offset Site Error:		0.00 usft	
Survey Program:		200-MWD OWSG Rev5						Rule Assigned:						Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)						
8,600.00	6,987.70	5,392.00	3,078.35	39.43	62.35	-1.17	551.51	-8,347.75	7,536.21	7,484.85	51.37	146.716				
8,700.00	6,987.62	5,392.00	3,078.35	40.64	62.35	-1.17	551.51	-8,347.75	7,450.57	7,399.14	51.43	144.876				
8,800.00	6,987.55	5,392.00	3,078.35	41.88	62.35	-1.17	551.51	-8,347.75	7,365.28	7,313.79	51.50	143.021				
8,900.00	6,987.47	5,392.00	3,078.35	43.14	62.35	-1.17	551.51	-8,347.75	7,280.37	7,228.79	51.58	141.150				
9,000.00	6,987.39	5,392.00	3,078.35	44.42	62.35	-1.17	551.51	-8,347.75	7,195.85	7,144.18	51.67	139.264				
9,100.00	6,987.31	5,392.00	3,078.35	45.72	62.35	-1.17	551.51	-8,347.75	7,111.73	7,059.96	51.77	137.363				
9,200.00	6,987.23	5,392.00	3,078.35	47.04	62.35	-1.17	551.51	-8,347.75	7,028.03	6,976.14	51.89	135.447				
9,300.00	6,987.15	5,392.00	3,078.35	48.38	62.35	-1.17	551.51	-8,347.75	6,944.75	6,892.74	52.01	133.517				
9,400.00	6,987.08	5,392.00	3,078.35	49.73	62.35	-1.17	551.51	-8,347.75	6,861.93	6,809.77	52.15	131.573				
9,500.00	6,987.00	5,392.00	3,078.35	51.10	62.35	-1.17	551.51	-8,347.75	6,779.56	6,727.26	52.30	129.616				
9,600.00	6,986.92	5,392.00	3,078.35	52.48	62.35	-1.17	551.51	-8,347.75	6,697.68	6,645.21	52.47	127.647				
9,700.00	6,986.84	5,392.00	3,078.35	53.87	62.35	-1.17	551.51	-8,347.75	6,616.30	6,563.65	52.65	125.666				
9,800.00	6,986.76	5,392.00	3,078.35	55.28	62.35	-1.17	551.51	-8,347.75	6,535.43	6,482.58	52.84	123.674				
9,900.00	6,986.68	5,392.00	3,078.35	56.69	62.35	-1.17	551.51	-8,347.75	6,455.10	6,402.04	53.05	121.672				
10,000.00	6,986.61	5,392.00	3,078.35	58.12	62.35	-1.17	551.51	-8,347.75	6,375.32	6,322.04	53.28	119.661				
10,100.00	6,986.53	5,392.00	3,078.35	59.55	62.35	-1.17	551.51	-8,347.75	6,296.12	6,242.60	53.52	117.643				
10,200.00	6,986.45	5,392.00	3,078.35	61.00	62.35	-1.17	551.51	-8,347.75	6,217.52	6,163.75	53.78	115.619				
10,300.00	6,986.37	5,392.00	3,078.35	62.45	62.35	-1.17	551.51	-8,347.75	6,139.55	6,085.50	54.05	113.589				
10,400.00	6,986.29	5,392.00	3,078.35	63.90	62.35	-1.17	551.51	-8,347.75	6,062.22	6,007.87	54.34	111.557				
10,500.00	6,986.21	5,392.00	3,078.35	65.37	62.35	-1.17	551.51	-8,347.75	5,985.56	5,930.91	54.65	109.522				
10,600.00	6,986.14	5,392.00	3,078.35	66.84	62.35	-1.17	551.51	-8,347.75	5,909.60	5,854.62	54.98	107.487				
10,700.00	6,986.06	5,392.00	3,078.35	68.32	62.35	-1.17	551.51	-8,347.75	5,834.36	5,779.04	55.33	105.454				
10,800.00	6,985.98	5,392.00	3,078.35	69.80	62.35	-1.17	551.51	-8,347.75	5,759.88	5,704.19	55.69	103.423				
10,900.00	6,985.90	5,392.00	3,078.35	71.29	62.35	-1.17	551.51	-8,347.75	5,686.18	5,630.10	56.08	101.398				
11,000.00	6,985.82	5,392.00	3,078.35	72.78	62.35	-1.17	551.51	-8,347.75	5,613.30	5,556.81	56.48	99.379				
11,100.00	6,985.75	5,392.00	3,078.35	74.28	62.35	-1.17	551.51	-8,347.75	5,541.26	5,484.35	56.91	97.370				
11,200.00	6,985.67	5,392.00	3,078.35	75.78	62.35	-1.17	551.51	-8,347.75	5,470.10	5,412.74	57.36	95.371				
11,300.00	6,985.59	5,392.00	3,078.35	77.29	62.35	-1.17	551.51	-8,347.75	5,399.86	5,342.03	57.82	93.386				
11,400.00	6,985.51	5,392.00	3,078.35	78.80	62.35	-1.17	551.51	-8,347.75	5,330.56	5,272.25	58.31	91.415				
11,500.00	6,985.43	5,392.00	3,078.35	80.31	62.35	-1.17	551.51	-8,347.75	5,262.26	5,203.43	58.82	89.461				
11,600.00	6,985.35	5,392.00	3,078.35	81.83	62.35	-1.17	551.51	-8,347.75	5,194.98	5,135.62	59.35	87.527				
11,700.00	6,985.28	5,392.00	3,078.35	83.35	62.35	-1.17	551.51	-8,347.75	5,128.76	5,068.86	59.91	85.613				
11,800.00	6,985.20	5,392.00	3,078.35	84.87	62.35	-1.17	551.51	-8,347.75	5,063.66	5,003.18	60.48	83.723				
11,900.00	6,985.12	5,392.00	3,078.35	86.40	62.35	-1.17	551.51	-8,347.75	4,999.71	4,938.63	61.08	81.859				
12,000.00	6,985.04	5,392.00	3,078.35	87.93	62.35	-1.17	551.51	-8,347.75	4,936.96	4,875.26	61.70	80.021				
12,100.00	6,984.96	5,392.00	3,078.35	89.46	62.35	-1.17	551.51	-8,347.75	4,875.45	4,813.11	62.34	78.213				
12,200.00	6,984.88	5,392.00	3,078.35	90.99	62.35	-1.17	551.51	-8,347.75	4,815.23	4,752.23	63.00	76.437				
12,300.00	6,984.81	5,392.00	3,078.35	92.53	62.35	-1.17	551.51	-8,347.75	4,756.35	4,692.67	63.68	74.693				
12,400.00	6,984.73	5,392.00	3,078.35	94.07	62.35	-1.17	551.51	-8,347.75	4,698.86	4,634.48	64.38	72.984				
12,500.00	6,984.65	5,392.00	3,078.35	95.61	62.35	-1.17	551.51	-8,347.75	4,642.82	4,577.71	65.11	71.313				
12,600.00	6,984.57	5,392.00	3,078.35	97.15	62.35	-1.17	551.51	-8,347.75	4,588.27	4,522.42	65.85	69.679				
12,700.00	6,984.49	5,392.00	3,078.35	98.70	62.35	-1.17	551.51	-8,347.75	4,535.27	4,468.65	66.61	68.085				
12,800.00	6,984.41	5,392.00	3,078.35	100.25	62.35	-1.17	551.51	-8,347.75	4,483.87	4,416.48	67.39	66.533				
12,900.00	6,984.34	5,392.00	3,078.35	101.80	62.35	-1.17	551.51	-8,347.75	4,434.13	4,365.94	68.19	65.024				
13,000.00	6,984.26	5,392.00	3,078.35	103.35	62.35	-1.17	551.51	-8,347.75	4,386.11	4,317.10	69.01	63.559				
13,100.00	6,984.18	5,392.00	3,078.35	104.90	62.35	-1.17	551.51	-8,347.75	4,339.86	4,270.02	69.84	62.140				
13,200.00	6,984.10	5,392.00	3,078.35	106.45	62.35	-1.17	551.51	-8,347.75	4,295.44	4,224.76	70.69	60.767				
13,300.00	6,984.02	5,392.00	3,078.35	108.01	62.35	-1.17	551.51	-8,347.75	4,252.91	4,181.37	71.55	59.441				
13,400.00	6,983.94	5,392.00	3,078.35	109.56	62.35	-1.17	551.51	-8,347.75	4,212.33	4,139.91	72.42	58.165				
13,500.00	6,983.87	5,392.00	3,078.35	111.12	62.35	-1.17	551.51	-8,347.75	4,173.75	4,100.44	73.30	56.937				
13,600.00	6,983.79	5,392.00	3,078.35	112.68	62.35	-1.17	551.51	-8,347.75	4,137.22	4,063.02	74.20	55.760				
13,700.00	6,983.71	5,392.00	3,078.35	114.24	62.35	-1.17	551.51	-8,347.75	4,102.81	4,027.71	75.10	54.633				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		200-MWD OWSG Rev5					Rule Assigned:			Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,800.00	6,983.63	5,392.00	3,078.35	115.80	62.35	-1.17	551.51	-8,347.75	4,070.56	3,994.56	76.00	53.557		
13,900.00	6,983.55	5,392.00	3,078.35	117.37	62.35	-1.17	551.51	-8,347.75	4,040.54	3,963.62	76.91	52.533		
14,000.00	6,983.47	5,392.00	3,078.35	118.93	62.35	-1.17	551.51	-8,347.75	4,012.78	3,934.95	77.83	51.561		
14,100.00	6,983.40	5,392.00	3,078.35	120.50	62.35	-1.17	551.51	-8,347.75	3,987.33	3,908.59	78.74	50.640		
14,200.00	6,983.32	5,392.00	3,078.35	122.06	62.35	-1.17	551.51	-8,347.75	3,964.25	3,884.60	79.65	49.772		
14,300.00	6,983.24	5,392.00	3,078.35	123.63	62.35	-1.17	551.51	-8,347.75	3,943.56	3,863.01	80.55	48.957		
14,400.00	6,983.16	5,392.00	3,078.35	125.20	62.35	-1.17	551.51	-8,347.75	3,925.32	3,843.87	81.45	48.193		
14,500.00	6,983.08	5,392.00	3,078.35	126.77	62.35	-1.17	551.51	-8,347.75	3,909.55	3,827.21	82.34	47.481		
14,600.00	6,983.00	5,392.00	3,078.35	128.33	62.35	-1.17	551.51	-8,347.75	3,896.28	3,813.07	83.22	46.821		
14,700.00	6,982.93	5,392.00	3,078.35	129.91	62.35	-1.17	551.51	-8,347.75	3,885.55	3,801.47	84.08	46.212		
14,800.00	6,982.85	5,392.00	3,078.35	131.48	62.35	-1.17	551.51	-8,347.75	3,877.36	3,792.43	84.93	45.654		
14,900.00	6,982.77	5,392.00	3,078.35	133.05	62.35	-1.17	551.51	-8,347.75	3,871.74	3,785.98	85.76	45.147		
15,000.00	6,982.69	5,318.84	3,081.64	134.62	60.76	-1.69	551.09	-8,412.22	3,867.88	3,781.84	86.04	44.952		
15,100.00	6,982.61	5,225.98	3,085.42	136.20	58.73	-2.33	474.42	-8,494.60	3,864.99	3,778.75	86.23	44.820		
15,200.00	6,982.54	5,108.50	3,091.44	137.77	56.18	-3.13	420.85	-8,598.99	3,861.58	3,775.27	86.32	44.738		
15,300.00	6,982.46	5,017.00	3,096.05	139.35	54.19	-3.75	380.15	-8,680.81	3,858.86	3,772.25	86.61	44.552		
15,400.00	6,982.38	4,938.47	3,100.06	140.92	52.49	-4.26	345.78	-8,751.31	3,856.58	3,769.55	87.02	44.316		
15,500.00	6,982.30	4,866.31	3,103.40	142.50	50.94	-4.75	313.72	-8,815.85	3,855.25	3,767.75	87.50	44.061		
15,600.00	6,982.22	4,787.95	3,106.80	144.07	49.27	-5.27	279.14	-8,886.10	3,854.70	3,766.74	87.97	43.820		
15,614.00	6,982.21	4,777.67	3,107.21	144.30	49.05	-5.33	274.67	-8,895.34	3,854.69	3,766.66	88.04	43.784 CC		
15,700.00	6,982.14	4,700.12	3,110.20	145.65	47.38	-5.83	241.97	-8,965.60	3,854.91	3,766.51	88.40	43.607 ES		
15,800.00	6,982.07	4,663.64	3,111.33	147.23	46.61	-6.05	227.00	-8,998.85	3,856.17	3,767.10	89.07	43.293		
15,900.00	6,981.99	4,621.46	3,112.04	148.81	45.71	-6.32	209.38	-9,037.16	3,859.17	3,769.46	89.71	43.018		
16,000.00	6,981.91	4,573.00	3,112.58	150.39	44.69	-6.63	188.65	-9,080.96	3,863.47	3,773.14	90.33	42.771		
16,100.00	6,981.83	4,509.00	3,112.58	151.97	43.35	-7.04	161.17	-9,138.75	3,869.15	3,778.27	90.88	42.572		
16,200.00	6,981.75	4,333.26	3,111.86	153.55	39.73	-8.12	88.16	-9,298.58	3,876.16	3,785.10	91.07	42.564		
16,300.00	6,981.67	4,227.36	3,113.83	155.13	37.60	-8.77	44.08	-9,394.85	3,880.86	3,789.26	91.60	42.367		
16,400.00	6,981.60	4,052.63	3,118.71	156.71	34.22	-9.87	-29.79	-9,553.10	3,885.64	3,793.57	92.07	42.205		
16,500.00	6,981.52	3,998.00	3,121.31	158.29	33.21	-10.24	-54.27	-9,601.86	3,889.40	3,796.62	92.78	41.922		
16,600.00	6,981.44	3,961.85	3,122.65	159.88	32.56	-10.48	-70.63	-9,634.08	3,894.76	3,801.28	93.48	41.663		
16,700.00	6,981.36	3,934.00	3,123.12	161.46	32.06	-10.66	-83.21	-9,658.91	3,902.12	3,807.95	94.17	41.436		
16,800.00	6,981.28	3,902.79	3,123.20	163.04	31.52	-10.87	-97.43	-9,686.70	3,911.35	3,816.50	94.85	41.236		
16,900.00	6,981.20	3,870.00	3,122.88	164.62	30.95	-11.09	-112.63	-9,715.74	3,922.37	3,826.86	95.51	41.066		
17,000.00	6,981.13	3,832.82	3,122.05	166.21	30.32	-11.34	-130.08	-9,748.57	3,935.12	3,838.96	96.16	40.923		
17,100.00	6,981.05	3,806.00	3,121.16	167.79	29.87	-11.53	-142.73	-9,772.20	3,949.56	3,852.80	96.77	40.815		
17,200.00	6,980.97	3,742.00	3,118.07	169.38	28.84	-11.95	-172.63	-9,828.70	3,965.54	3,868.10	97.44	40.698		
17,300.00	6,980.89	3,560.00	3,110.10	170.96	26.13	-13.11	-255.34	-9,990.59	3,981.32	3,883.03	98.29	40.505		
17,400.00	6,980.81	3,487.00	3,107.81	172.55	25.14	-13.55	-286.68	-10,056.47	3,995.92	3,897.21	98.71	40.480		
17,500.00	6,980.73	3,487.00	3,107.81	174.13	25.14	-13.55	-286.68	-10,056.47	4,012.83	3,913.62	99.21	40.448 SF		
17,600.00	6,980.66	3,427.00	3,103.68	175.72	24.41	-13.91	-312.60	-10,110.40	4,031.45	3,932.18	99.27	40.610		
17,700.00	6,980.58	3,427.00	3,103.68	177.31	24.41	-13.91	-312.60	-10,110.40	4,051.82	3,952.12	99.70	40.639		
17,800.00	6,980.50	3,427.00	3,103.68	178.89	24.41	-13.91	-312.60	-10,110.40	4,074.55	3,974.47	100.08	40.711		
17,900.00	6,980.42	3,427.00	3,103.68	180.48	24.41	-13.91	-312.60	-10,110.40	4,099.59	3,999.17	100.42	40.824		
18,000.00	6,980.34	3,427.00	3,103.68	182.07	24.41	-13.91	-312.60	-10,110.40	4,126.90	4,026.19	100.71	40.978		
18,100.00	6,980.26	3,395.00	3,098.47	183.66	24.05	-14.09	-326.73	-10,138.62	4,155.99	4,054.99	101.00	41.150		
18,200.00	6,980.19	3,395.00	3,098.47	185.24	24.05	-14.09	-326.73	-10,138.62	4,187.04	4,085.83	101.21	41.370		
18,300.00	6,980.11	3,395.00	3,098.47	186.83	24.05	-14.09	-326.73	-10,138.62	4,220.23	4,118.85	101.38	41.627		
18,400.00	6,980.03	3,395.00	3,098.47	188.42	24.05	-14.09	-326.73	-10,138.62	4,255.51	4,154.00	101.51	41.921		
18,500.00	6,979.95	3,363.00	3,090.64	190.01	23.72	-14.26	-340.83	-10,166.25	4,292.57	4,190.84	101.73	42.194		
18,600.00	6,979.87	3,363.00	3,090.64	191.60	23.72	-14.26	-340.83	-10,166.25	4,331.25	4,229.45	101.80	42.547		
18,700.00	6,979.79	3,363.00	3,090.64	193.19	23.72	-14.26	-340.83	-10,166.25	4,371.87	4,270.04	101.83	42.934		
18,800.00	6,979.72	3,346.73	3,085.81	194.78	23.56	-14.34	-347.88	-10,180.09	4,414.20	4,312.27	101.93	43.307		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #226A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		200-MWD OWSG Rev5					Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,900.00	6,979.64	3,330.00	3,080.46	196.37	23.39	-14.42	-354.96	-10,194.27	4,458.12	4,356.11	102.00	43.705		
19,000.00	6,979.56	3,316.64	3,075.93	197.96	23.27	-14.48	-360.50	-10,205.55	4,503.54	4,401.50	102.04	44.135		
19,100.00	6,979.48	3,298.00	3,069.30	199.55	23.10	-14.57	-368.07	-10,221.24	4,550.40	4,448.30	102.09	44.571		
19,200.00	6,979.40	3,298.00	3,069.30	201.14	23.10	-14.57	-368.07	-10,221.24	4,598.77	4,496.78	101.99	45.092		
19,300.00	6,979.33	3,266.00	3,057.05	202.73	22.84	-14.70	-381.00	-10,247.83	4,648.43	4,546.35	102.08	45.538		
19,400.00	6,979.25	3,266.00	3,057.05	204.32	22.84	-14.70	-381.00	-10,247.83	4,699.48	4,597.55	101.93	46.105		
19,500.00	6,979.17	3,266.00	3,057.05	205.91	22.84	-14.70	-381.00	-10,247.83	4,752.09	4,650.33	101.76	46.699		
19,600.00	6,979.09	3,249.55	3,050.18	207.50	22.71	-14.77	-387.64	-10,261.21	4,805.88	4,704.18	101.70	47.256		
19,700.00	6,979.01	3,235.00	3,043.62	209.09	22.60	-14.83	-393.47	-10,272.82	4,861.19	4,759.58	101.61	47.842		
19,800.00	6,978.93	3,235.00	3,043.62	210.69	22.60	-14.83	-393.47	-10,272.82	4,917.67	4,816.28	101.39	48.503		
19,900.00	6,978.86	3,235.00	3,043.62	212.28	22.60	-14.83	-393.47	-10,272.82	4,975.51	4,874.36	101.15	49.188		
20,000.00	6,978.78	3,203.00	3,028.14	213.87	22.38	-14.95	-406.28	-10,297.72	5,034.54	4,933.32	101.21	49.742		
20,100.00	6,978.70	3,203.00	3,028.14	215.46	22.38	-14.95	-406.28	-10,297.72	5,094.49	4,993.54	100.96	50.463		
20,200.00	6,978.62	3,203.00	3,028.14	217.05	22.38	-14.95	-406.28	-10,297.72	5,155.69	5,055.00	100.69	51.206		
20,300.00	6,978.54	3,171.00	3,011.69	218.65	22.19	-15.06	-419.11	-10,321.98	5,217.86	5,117.12	100.74	51.795		
20,400.00	6,978.46	3,171.00	3,011.69	220.24	22.19	-15.06	-419.11	-10,321.98	5,280.96	5,180.51	100.45	52.571		
20,500.00	6,978.39	3,156.58	3,003.98	221.83	22.11	-15.11	-424.85	-10,332.74	5,345.05	5,244.73	100.32	53.282		
20,600.00	6,978.31	3,139.00	2,994.31	223.43	22.01	-15.17	-431.76	-10,345.68	5,410.12	5,309.91	100.21	53.988		
20,700.00	6,978.23	3,139.00	2,994.31	225.02	22.01	-15.17	-431.76	-10,345.68	5,476.05	5,376.14	99.91	54.813		
20,800.00	6,978.15	3,122.25	2,984.82	226.61	21.93	-15.23	-438.27	-10,357.86	5,542.85	5,443.06	99.79	55.546		
20,900.00	6,978.07	3,107.00	2,975.98	228.21	21.85	-15.27	-444.12	-10,368.82	5,610.49	5,510.84	99.65	56.301		
21,000.00	6,977.99	3,107.00	2,975.98	229.80	21.85	-15.27	-444.12	-10,368.82	5,678.97	5,579.63	99.34	57.169		
21,100.00	6,977.92	3,075.00	2,956.89	231.39	21.71	-15.37	-456.13	-10,391.52	5,748.08	5,648.67	99.41	57.824		
21,200.00	6,977.84	3,058.89	2,947.08	232.99	21.64	-15.41	-462.07	-10,402.82	5,817.91	5,718.63	99.29	58.597		
21,300.00	6,977.76	3,043.00	2,937.31	234.58	21.58	-15.45	-467.91	-10,413.92	5,888.38	5,789.22	99.17	59.379		
21,400.00	6,977.68	3,026.14	2,926.81	236.18	21.52	-15.50	-474.06	-10,425.59	5,959.50	5,860.44	99.06	60.162		
21,500.00	6,977.60	3,011.00	2,917.24	237.77	21.46	-15.53	-479.55	-10,435.96	6,031.29	5,932.37	98.93	60.965		
21,600.00	6,977.52	2,996.94	2,908.25	239.37	21.42	-15.57	-484.60	-10,445.51	6,103.72	6,004.93	98.79	61.785		
21,700.00	6,977.45	2,979.00	2,896.61	240.96	21.36	-15.61	-490.95	-10,457.60	6,176.74	6,078.04	98.70	62.581		
21,800.00	6,977.37	2,979.00	2,896.61	242.56	21.36	-15.61	-490.95	-10,457.60	6,250.39	6,152.01	98.38	63.533		
21,900.00	6,977.29	2,962.06	2,885.44	244.15	21.31	-15.65	-496.88	-10,468.87	6,324.61	6,226.32	98.28	64.352		
22,000.00	6,977.21	2,948.00	2,876.00	245.75	21.28	-15.68	-501.79	-10,478.06	6,399.48	6,301.34	98.15	65.203		
22,100.00	6,977.13	2,948.00	2,876.00	247.34	21.28	-15.68	-501.79	-10,478.06	6,474.93	6,377.10	97.83	66.185		
22,200.00	6,977.05	2,948.00	2,876.00	248.94	21.28	-15.68	-501.79	-10,478.06	6,551.03	6,453.51	97.52	67.179		
22,269.73	6,977.00	2,931.52	2,864.73	250.05	21.23	-15.71	-507.51	-10,488.64	6,604.30	6,506.78	97.51	67.727		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #228A - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 352-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-105.48	-1,412.78	-5,099.62	5,292.93				
100.00	100.00	0.00	0.00	0.25	0.00	-105.48	-1,412.78	-5,099.62	5,291.72	5,291.47	0.25	N/A	
200.00	200.00	92.41	92.41	0.61	1.10	-105.49	-1,412.87	-5,099.54	5,291.65	5,289.95	1.70	3,108.787	
300.00	300.00	199.86	199.86	0.97	2.37	-105.49	-1,413.21	-5,099.23	5,291.46	5,288.13	3.33	1,588.532	
400.00	400.00	307.30	307.30	1.33	3.65	-105.50	-1,413.81	-5,098.70	5,291.13	5,286.17	4.96	1,066.788	
497.00	497.00	383.00	382.99	1.67	4.21	-105.50	-1,414.32	-5,098.28	5,290.82	5,284.95	5.87	902.059	
500.00	500.00	383.00	382.99	1.68	4.21	-105.50	-1,414.32	-5,098.28	5,290.82	5,284.94	5.88	900.407	
600.00	600.00	434.96	434.96	2.04	4.23	-105.50	-1,414.21	-5,098.56	5,291.30	5,285.05	6.26	845.903	
700.00	700.00	474.00	473.98	2.40	4.25	-105.49	-1,413.49	-5,099.31	5,292.78	5,286.15	6.63	798.328	
800.00	799.98	505.00	504.94	2.76	4.28	-94.67	-1,412.43	-5,100.45	5,295.64	5,288.64	7.00	756.136	
849.89	849.82	536.00	535.86	2.94	4.30	-94.63	-1,411.00	-5,102.00	5,297.61	5,290.42	7.20	735.899	
900.00	899.86	549.72	549.54	3.12	4.32	-94.62	-1,410.22	-5,102.80	5,299.89	5,292.50	7.39	717.642	
1,000.00	999.73	579.97	579.64	3.48	4.36	-94.61	-1,408.13	-5,105.00	5,305.45	5,297.69	7.76	683.742	
1,100.00	1,099.59	616.50	615.89	3.84	4.40	-94.59	-1,405.05	-5,108.26	5,312.25	5,304.11	8.14	652.682	
1,200.00	1,199.45	657.00	655.94	4.20	4.46	-94.56	-1,400.88	-5,112.56	5,320.19	5,311.67	8.52	624.205	
1,300.00	1,299.32	688.00	686.49	4.56	4.50	-94.53	-1,397.17	-5,116.28	5,329.25	5,320.35	8.90	598.731	
1,400.00	1,399.18	731.25	728.92	4.92	4.58	-94.47	-1,391.21	-5,122.21	5,339.47	5,330.17	9.30	574.285	
1,500.00	1,499.04	769.44	766.17	5.28	4.66	-94.41	-1,385.27	-5,128.14	5,350.88	5,341.19	9.69	552.084	
1,600.00	1,598.91	811.00	806.44	5.64	4.75	-94.34	-1,377.95	-5,135.33	5,363.46	5,353.36	10.10	531.094	
1,700.00	1,698.77	842.00	836.27	6.00	4.83	-94.28	-1,371.89	-5,141.22	5,377.21	5,366.72	10.49	512.368	
1,800.00	1,798.63	874.00	866.86	6.36	4.91	-94.21	-1,365.15	-5,147.75	5,392.16	5,381.26	10.90	494.795	
1,900.00	1,898.49	905.00	896.29	6.72	4.99	-94.13	-1,358.17	-5,154.54	5,408.34	5,397.04	11.30	478.481	
2,000.00	1,998.36	936.00	925.52	7.09	5.08	-94.05	-1,350.80	-5,161.76	5,425.72	5,414.01	11.71	463.220	
2,100.00	2,098.22	983.25	969.80	7.45	5.20	-93.92	-1,339.09	-5,173.37	5,444.20	5,432.02	12.18	447.045	
2,200.00	2,198.08	1,031.00	1,014.04	7.81	5.35	-93.78	-1,326.15	-5,185.84	5,463.71	5,451.05	12.66	431.404	
2,300.00	2,297.95	1,061.00	1,041.61	8.17	5.44	-93.69	-1,317.63	-5,194.06	5,484.30	5,471.21	13.10	418.753	
2,400.00	2,397.81	1,093.00	1,070.71	8.53	5.55	-93.58	-1,308.02	-5,203.24	5,506.07	5,492.52	13.55	406.373	
2,500.00	2,497.67	1,124.00	1,098.63	8.90	5.66	-93.47	-1,298.29	-5,212.56	5,529.06	5,515.05	14.01	394.767	
2,600.00	2,597.54	1,155.00	1,126.30	9.26	5.76	-93.36	-1,288.22	-5,222.26	5,553.22	5,538.76	14.47	383.824	
2,700.00	2,697.40	1,217.00	1,180.74	9.62	6.08	-93.11	-1,266.50	-5,242.46	5,578.41	5,563.24	15.17	367.776	
2,800.00	2,797.26	1,259.13	1,217.21	9.98	6.23	-92.93	-1,250.86	-5,256.59	5,604.42	5,588.69	15.73	356.304	
2,900.00	2,897.13	1,295.07	1,248.00	10.35	6.36	-92.78	-1,237.05	-5,268.96	5,631.41	5,615.14	16.26	346.275	
3,000.00	2,996.99	1,311.00	1,261.52	10.71	6.43	-92.71	-1,230.75	-5,274.56	5,659.58	5,642.92	16.66	339.753	
3,100.00	3,096.85	1,352.11	1,296.12	11.07	6.71	-92.52	-1,214.28	-5,289.46	5,688.83	5,671.58	17.25	329.738	
3,200.00	3,196.72	1,383.59	1,322.35	11.43	6.99	-92.38	-1,201.53	-5,301.28	5,719.33	5,701.54	17.79	321.434	
3,300.00	3,296.58	1,420.63	1,353.00	11.80	7.30	-92.20	-1,186.28	-5,315.45	5,750.82	5,732.45	18.36	313.185	
3,400.00	3,396.44	1,436.00	1,365.60	12.16	7.43	-92.13	-1,179.85	-5,321.46	5,783.48	5,764.73	18.76	308.345	
3,500.00	3,496.31	1,468.42	1,392.05	12.52	7.74	-91.98	-1,166.34	-5,334.44	5,817.29	5,797.99	19.31	301.276	
3,600.00	3,596.17	1,498.00	1,416.09	12.88	8.03	-91.84	-1,154.18	-5,346.66	5,852.32	5,832.49	19.83	295.061	
3,700.00	3,696.03	1,529.00	1,441.15	13.25	8.32	-91.69	-1,141.51	-5,359.79	5,888.49	5,868.13	20.36	289.179	
3,800.00	3,795.89	1,561.00	1,466.91	13.61	8.63	-91.54	-1,128.42	-5,373.54	5,925.62	5,904.72	20.90	283.575	
3,900.00	3,895.76	1,608.55	1,504.94	13.97	9.11	-91.32	-1,108.72	-5,394.20	5,963.58	5,942.00	21.58	276.332	
4,000.00	3,995.62	1,667.25	1,551.37	14.34	9.73	-91.03	-1,083.72	-5,419.98	6,002.26	5,979.87	22.39	268.094	
4,100.00	4,095.48	3,253.00	2,925.31	14.70	22.92	-85.74	-555.39	-5,926.85	6,032.15	5,997.02	35.13	171.717	
4,200.00	4,195.35	3,253.00	2,925.31	15.06	22.92	-85.74	-555.39	-5,926.85	6,050.10	6,014.65	35.45	170.662	
4,300.00	4,295.21	3,253.00	2,925.31	15.42	22.92	-85.74	-555.39	-5,926.85	6,069.65	6,033.89	35.76	169.716	
4,400.00	4,395.07	3,253.00	2,925.31	15.79	22.92	-85.74	-555.39	-5,926.85	6,090.78	6,054.71	36.07	168.875	
4,500.00	4,494.94	3,253.00	2,925.31	16.15	22.92	-85.74	-555.39	-5,926.85	6,113.47	6,077.11	36.36	168.135	
4,600.00	4,594.80	3,253.00	2,925.31	16.51	22.92	-85.74	-555.39	-5,926.85	6,137.70	6,101.06	36.64	167.492	
4,700.00	4,694.66	3,253.00	2,925.31	16.87	22.92	-85.74	-555.39	-5,926.85	6,163.46	6,126.54	36.92	166.942	
4,800.00	4,794.53	3,253.00	2,925.31	17.24	22.92	-85.74	-555.39	-5,926.85	6,190.73	6,153.55	37.19	166.483	
4,900.00	4,894.39	3,253.00	2,925.31	17.60	22.92	-85.74	-555.39	-5,926.85	6,219.49	6,182.05	37.44	166.111	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #228A - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program:		352-MWD OWSG Rev5					Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre			Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
5,000.00	4,994.25	3,253.00	2,925.31	17.96	22.92	-85.74	-555.39	-5,926.85	6,249.72	6,212.03	37.69	165.823			
5,100.00	5,094.12	3,253.00	2,925.31	18.33	22.92	-85.74	-555.39	-5,926.85	6,281.39	6,243.46	37.93	165.615			
5,200.00	5,193.98	3,253.00	2,925.31	18.69	22.92	-85.74	-555.39	-5,926.85	6,314.49	6,276.33	38.16	165.485			
5,300.00	5,293.84	3,253.00	2,925.31	19.05	22.92	-85.74	-555.39	-5,926.85	6,348.99	6,310.61	38.38	165.429			
5,336.91	5,330.71	3,253.00	2,925.31	19.19	22.92	-85.74	-555.39	-5,926.85	6,362.08	6,323.62	38.46	165.427			
5,400.00	5,393.71	3,253.00	2,925.31	19.41	22.92	-85.86	-555.39	-5,926.85	6,384.88	6,346.29	38.59	165.447			
5,500.00	5,493.62	3,253.00	2,925.31	19.77	22.92	-86.07	-555.39	-5,926.85	6,422.19	6,383.39	38.79	165.543			
5,600.00	5,593.57	3,253.00	2,925.31	20.13	22.92	-86.27	-555.39	-5,926.85	6,460.88	6,421.89	38.99	165.715			
5,700.00	5,693.53	3,253.00	2,925.31	20.49	22.92	-86.49	-555.39	-5,926.85	6,500.93	6,461.76	39.17	165.960			
5,800.00	5,793.52	3,253.00	2,925.31	20.85	22.92	-86.72	-555.39	-5,926.85	6,542.31	6,502.97	39.35	166.275			
5,900.00	5,893.52	3,253.00	2,925.31	21.20	22.92	-86.96	-555.39	-5,926.85	6,585.00	6,545.49	39.51	166.656			
5,936.48	5,930.00	3,253.00	2,925.31	21.33	22.92	-97.80	-555.39	-5,926.85	6,600.89	6,561.32	39.57	166.811			
6,000.00	5,993.52	3,253.00	2,925.31	21.56	22.92	-97.80	-555.39	-5,926.85	6,628.95	6,589.28	39.67	167.100			
6,100.00	6,093.52	3,253.00	2,925.31	21.91	22.92	-97.80	-555.39	-5,926.85	6,674.12	6,634.30	39.82	167.596			
6,200.00	6,193.52	3,253.00	2,925.31	22.27	22.92	-97.80	-555.39	-5,926.85	6,720.47	6,680.50	39.97	168.142			
6,300.00	6,293.52	3,253.00	2,925.31	22.62	22.92	-97.80	-555.39	-5,926.85	6,767.98	6,727.87	40.11	168.735			
6,358.48	6,352.00	3,253.00	2,925.31	22.83	22.92	-97.80	-555.39	-5,926.85	6,796.29	6,756.10	40.19	169.102			
6,400.00	6,393.49	3,253.00	2,925.31	22.97	22.92	-22.44	-555.39	-5,926.85	6,815.53	6,775.29	40.24	169.361			
6,450.00	6,443.20	3,253.00	2,925.31	23.15	22.92	-21.68	-555.39	-5,926.85	6,835.98	6,795.67	40.30	169.617			
6,500.00	6,492.36	3,253.00	2,925.31	23.33	22.92	-21.07	-555.39	-5,926.85	6,853.36	6,813.00	40.36	169.794			
6,550.00	6,540.64	3,253.00	2,925.31	23.51	22.92	-20.60	-555.39	-5,926.85	6,867.60	6,827.18	40.42	169.892			
6,600.00	6,587.77	3,253.00	2,925.31	23.69	22.92	-20.24	-555.39	-5,926.85	6,878.62	6,838.14	40.48	169.913			
6,650.00	6,633.44	3,253.00	2,925.31	23.88	22.92	-20.00	-555.39	-5,926.85	6,886.38	6,845.84	40.54	169.859			
6,700.00	6,677.37	3,253.00	2,925.31	24.07	22.92	-19.86	-555.39	-5,926.85	6,890.83	6,850.24	40.60	169.733			
6,750.00	6,719.30	3,253.00	2,925.31	24.26	22.92	-19.83	-555.39	-5,926.85	6,891.96	6,851.31	40.65	169.535			
6,800.00	6,758.97	3,253.00	2,925.31	24.46	22.92	-19.90	-555.39	-5,926.85	6,889.76	6,849.06	40.70	169.266			
6,850.00	6,796.12	3,253.00	2,925.31	24.67	22.92	-20.07	-555.39	-5,926.85	6,884.24	6,843.49	40.75	168.926			
6,900.00	6,830.54	3,253.00	2,925.31	24.88	22.92	-20.34	-555.39	-5,926.85	6,875.43	6,834.63	40.80	168.516			
6,950.00	6,862.00	3,253.00	2,925.31	25.11	22.92	-20.74	-555.39	-5,926.85	6,863.36	6,822.52	40.84	168.036			
7,000.00	6,890.33	3,253.00	2,925.31	25.34	22.92	-21.25	-555.39	-5,926.85	6,848.10	6,807.21	40.89	167.486			
7,050.00	6,915.33	3,253.00	2,925.31	25.59	22.92	-21.91	-555.39	-5,926.85	6,829.72	6,788.79	40.93	166.865			
7,100.00	6,936.86	3,253.00	2,925.31	25.85	22.92	-22.72	-555.39	-5,926.85	6,808.31	6,767.33	40.97	166.176			
7,150.00	6,954.79	3,253.00	2,925.31	26.12	22.92	-23.71	-555.39	-5,926.85	6,783.96	6,742.95	41.01	165.417			
7,200.00	6,968.99	3,253.00	2,925.31	26.40	22.92	-24.91	-555.39	-5,926.85	6,756.81	6,715.76	41.05	164.592			
7,250.00	6,979.40	3,253.00	2,925.31	26.69	22.92	-26.36	-555.39	-5,926.85	6,726.98	6,685.89	41.09	163.702			
7,300.00	6,985.94	3,253.00	2,925.31	27.00	22.92	-28.10	-555.39	-5,926.85	6,694.63	6,653.50	41.13	162.749			
7,350.00	6,988.56	3,253.00	2,925.31	27.31	22.92	-30.22	-555.39	-5,926.85	6,659.92	6,618.74	41.18	161.736			
7,358.93	6,988.62	3,253.00	2,925.31	27.36	22.92	-30.64	-555.39	-5,926.85	6,653.48	6,612.30	41.19	161.536			
7,400.00	6,988.59	3,253.00	2,925.31	27.63	22.92	-30.64	-555.39	-5,926.85	6,623.79	6,582.57	41.22	160.690			
7,500.00	6,988.52	3,253.00	2,925.31	28.33	22.92	-30.64	-555.39	-5,926.85	6,552.00	6,510.69	41.32	158.584			
7,600.00	6,988.45	3,253.00	2,925.31	29.10	22.92	-30.64	-555.39	-5,926.85	6,480.97	6,439.53	41.44	156.409			
7,658.93	6,988.41	3,253.00	2,925.31	29.59	22.92	-30.64	-555.39	-5,926.85	6,439.47	6,397.95	41.52	155.096			
7,700.00	6,988.38	3,253.00	2,925.31	29.94	22.92	-29.94	-555.39	-5,926.85	6,410.60	6,369.02	41.58	154.169			
7,800.00	6,988.31	3,253.00	2,925.31	30.84	22.92	-28.20	-555.39	-5,926.85	6,340.00	6,298.26	41.74	151.895			
7,900.00	6,988.24	3,253.00	2,925.31	31.79	22.92	-26.41	-555.39	-5,926.85	6,269.02	6,227.12	41.90	149.612			
8,000.00	6,988.16	3,253.00	2,925.31	32.78	22.92	-24.58	-555.39	-5,926.85	6,197.74	6,155.67	42.07	147.333			
8,100.00	6,988.09	3,253.00	2,925.31	33.82	22.92	-22.71	-555.39	-5,926.85	6,126.23	6,084.00	42.23	145.071			
8,200.00	6,988.01	3,253.00	2,925.31	34.88	22.92	-20.80	-555.39	-5,926.85	6,054.57	6,012.18	42.39	142.836			
8,300.00	6,987.94	3,253.00	2,925.31	35.98	22.92	-18.87	-555.39	-5,926.85	5,982.86	5,940.31	42.54	140.636			
8,400.00	6,987.86	3,253.00	2,925.31	37.11	22.92	-16.91	-555.39	-5,926.85	5,911.16	5,868.48	42.69	138.478			
8,416.35	6,987.85	3,253.00	2,925.31	37.29	22.92	-16.59	-555.39	-5,926.85	5,899.45	5,856.74	42.71	138.128			
8,500.00	6,987.78	3,253.00	2,925.31	38.25	22.92	-16.59	-555.39	-5,926.85	5,839.82	5,796.99	42.83	136.346			

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #228A - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		352-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,600.00	6,987.70	3,253.00	2,925.31	39.43	22.92	-16.59	-555.39	-5,926.85	5,769.33	5,726.33	42.99	134.198	
8,700.00	6,987.62	3,253.00	2,925.31	40.64	22.92	-16.59	-555.39	-5,926.85	5,699.71	5,656.54	43.17	132.034	
8,800.00	6,987.55	3,253.00	2,925.31	41.88	22.92	-16.59	-555.39	-5,926.85	5,631.01	5,587.65	43.36	129.857	
8,900.00	6,987.47	3,253.00	2,925.31	43.14	22.92	-16.59	-555.39	-5,926.85	5,563.26	5,519.68	43.58	127.669	
9,000.00	6,987.39	3,253.00	2,925.31	44.42	22.92	-16.59	-555.39	-5,926.85	5,496.49	5,452.69	43.81	125.473	
9,100.00	6,987.31	3,253.00	2,925.31	45.72	22.92	-16.59	-555.39	-5,926.85	5,430.75	5,386.69	44.05	123.273	
9,200.00	6,987.23	3,253.00	2,925.31	47.04	22.92	-16.59	-555.39	-5,926.85	5,366.06	5,321.74	44.32	121.072	
9,300.00	6,987.15	3,253.00	2,925.31	48.38	22.92	-16.59	-555.39	-5,926.85	5,302.47	5,257.86	44.61	118.873	
9,400.00	6,987.08	3,253.00	2,925.31	49.73	22.92	-16.59	-555.39	-5,926.85	5,240.01	5,195.10	44.91	116.681	
9,500.00	6,987.00	3,253.00	2,925.31	51.10	22.92	-16.59	-555.39	-5,926.85	5,178.74	5,133.51	45.23	114.499	
9,600.00	6,986.92	3,253.00	2,925.31	52.48	22.92	-16.59	-555.39	-5,926.85	5,118.68	5,073.11	45.57	112.331	
9,700.00	6,986.84	3,253.00	2,925.31	53.87	22.92	-16.59	-555.39	-5,926.85	5,059.89	5,013.96	45.92	110.181	
9,800.00	6,986.76	3,253.00	2,925.31	55.28	22.92	-16.59	-555.39	-5,926.85	5,002.40	4,956.11	46.30	108.053	
9,900.00	6,986.68	3,253.00	2,925.31	56.69	22.92	-16.59	-555.39	-5,926.85	4,946.27	4,899.59	46.68	105.952	
10,000.00	6,986.61	3,253.00	2,925.31	58.12	22.92	-16.59	-555.39	-5,926.85	4,891.54	4,844.45	47.09	103.880	
10,100.00	6,986.53	3,253.00	2,925.31	59.55	22.92	-16.59	-555.39	-5,926.85	4,838.26	4,790.75	47.51	101.842	
10,200.00	6,986.45	3,253.00	2,925.31	61.00	22.92	-16.59	-555.39	-5,926.85	4,786.47	4,738.53	47.94	99.841	
10,300.00	6,986.37	3,253.00	2,925.31	62.45	22.92	-16.59	-555.39	-5,926.85	4,736.23	4,687.85	48.39	97.882	
10,400.00	6,986.29	3,253.00	2,925.31	63.90	22.92	-16.59	-555.39	-5,926.85	4,687.59	4,638.74	48.85	95.966	
10,500.00	6,986.21	3,253.00	2,925.31	65.37	22.92	-16.59	-555.39	-5,926.85	4,640.59	4,591.27	49.32	94.099	
10,600.00	6,986.14	3,253.00	2,925.31	66.84	22.92	-16.59	-555.39	-5,926.85	4,595.28	4,545.49	49.80	92.282	
10,700.00	6,986.06	3,253.00	2,925.31	68.32	22.92	-16.59	-555.39	-5,926.85	4,551.73	4,501.44	50.28	90.519	
10,800.00	6,985.98	3,253.00	2,925.31	69.80	22.92	-16.59	-555.39	-5,926.85	4,509.97	4,459.19	50.78	88.813	
10,900.00	6,985.90	3,253.00	2,925.31	71.29	22.92	-16.59	-555.39	-5,926.85	4,470.05	4,418.77	51.28	87.165	
11,000.00	6,985.82	3,253.00	2,925.31	72.78	22.92	-16.59	-555.39	-5,926.85	4,432.04	4,380.25	51.79	85.578	
11,100.00	6,985.75	3,253.00	2,925.31	74.28	22.92	-16.59	-555.39	-5,926.85	4,395.97	4,343.67	52.30	84.054	
11,200.00	6,985.67	3,253.00	2,925.31	75.78	22.92	-16.59	-555.39	-5,926.85	4,361.89	4,309.08	52.81	82.595	
11,300.00	6,985.59	3,253.00	2,925.31	77.29	22.92	-16.59	-555.39	-5,926.85	4,329.86	4,276.54	53.32	81.203	
11,400.00	6,985.51	3,253.00	2,925.31	78.80	22.92	-16.59	-555.39	-5,926.85	4,299.91	4,246.08	53.83	79.877	
11,500.00	6,985.43	3,253.00	2,925.31	80.31	22.92	-16.59	-555.39	-5,926.85	4,272.10	4,217.76	54.34	78.621	
11,600.00	6,985.35	3,253.00	2,925.31	81.83	22.92	-16.59	-555.39	-5,926.85	4,246.46	4,191.62	54.84	77.434	
11,700.00	6,985.28	3,253.00	2,925.31	83.35	22.92	-16.59	-555.39	-5,926.85	4,223.03	4,167.69	55.34	76.317	
11,800.00	6,985.20	3,253.00	2,925.31	84.87	22.92	-16.59	-555.39	-5,926.85	4,201.85	4,146.03	55.82	75.270	
11,900.00	6,985.12	3,253.00	2,925.31	86.40	22.92	-16.59	-555.39	-5,926.85	4,182.96	4,126.65	56.30	74.294	
12,000.00	6,985.04	3,253.00	2,925.31	87.93	22.92	-16.59	-555.39	-5,926.85	4,166.38	4,109.61	56.77	73.388	
12,100.00	6,984.96	3,253.00	2,925.31	89.46	22.92	-16.59	-555.39	-5,926.85	4,152.14	4,094.91	57.23	72.552	
12,200.00	6,984.88	3,253.00	2,925.31	90.99	22.92	-16.59	-555.39	-5,926.85	4,140.27	4,082.60	57.68	71.785	
12,300.00	6,984.81	3,253.00	2,925.31	92.53	22.92	-16.59	-555.39	-5,926.85	4,130.79	4,072.68	58.11	71.086	
12,400.00	6,984.73	3,253.00	2,925.31	94.07	22.92	-16.59	-555.39	-5,926.85	4,123.71	4,065.18	58.53	70.455	
12,500.00	6,984.65	3,253.00	2,925.31	95.61	22.92	-16.59	-555.39	-5,926.85	4,119.05	4,060.12	58.94	69.890	
12,600.00	6,984.57	3,253.00	2,925.31	97.15	22.92	-16.59	-555.39	-5,926.85	4,116.82	4,057.48	59.33	69.388	
12,642.12	6,984.54	3,253.00	2,925.31	97.81	22.92	-16.59	-555.39	-5,926.85	4,116.60	4,057.11	59.49	69.195 CC, ES	
12,700.00	6,984.49	3,253.00	2,925.31	98.70	22.92	-16.59	-555.39	-5,926.85	4,117.01	4,057.29	59.71	68.948	
12,800.00	6,984.41	3,253.00	2,925.31	100.25	22.92	-16.59	-555.39	-5,926.85	4,119.63	4,059.54	60.08	68.568	
12,900.00	6,984.34	3,253.00	2,925.31	101.80	22.92	-16.59	-555.39	-5,926.85	4,124.67	4,064.23	60.44	68.244	
13,000.00	6,984.26	3,253.00	2,925.31	103.35	22.92	-16.59	-555.39	-5,926.85	4,132.13	4,071.34	60.79	67.974	
13,100.00	6,984.18	3,253.00	2,925.31	104.90	22.92	-16.59	-555.39	-5,926.85	4,141.99	4,080.85	61.13	67.753	
13,200.00	6,984.10	3,253.00	2,925.31	106.45	22.92	-16.59	-555.39	-5,926.85	4,154.23	4,092.76	61.47	67.579	
13,300.00	6,984.02	3,253.00	2,925.31	108.01	22.92	-16.59	-555.39	-5,926.85	4,168.84	4,107.03	61.81	67.447	
13,400.00	6,983.94	3,253.00	2,925.31	109.56	22.92	-16.59	-555.39	-5,926.85	4,185.78	4,123.64	62.15	67.352	
13,500.00	6,983.87	3,253.00	2,925.31	111.12	22.92	-16.59	-555.39	-5,926.85	4,205.04	4,142.55	62.49	67.292	
13,600.00	6,983.79	3,253.00	2,925.31	112.68	22.92	-16.59	-555.39	-5,926.85	4,226.57	4,163.74	62.84	67.262	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #228A - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		352-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,700.00	6,983.71	3,253.00	2,925.31	114.24	22.92	-16.59	-555.39	-5,926.85	4,250.35	4,187.16	63.19	67.258 SF	
13,800.00	6,983.63	3,253.00	2,925.31	115.80	22.92	-16.59	-555.39	-5,926.85	4,276.34	4,212.78	63.56	67.278	
13,900.00	6,983.55	3,253.00	2,925.31	117.37	22.92	-16.59	-555.39	-5,926.85	4,304.49	4,240.55	63.94	67.321	
14,000.00	6,983.47	3,253.00	2,925.31	118.93	22.92	-16.59	-555.39	-5,926.85	4,334.77	4,270.44	64.33	67.386	
14,100.00	6,983.40	3,253.00	2,925.31	120.50	22.92	-16.59	-555.39	-5,926.85	4,367.13	4,302.40	64.72	67.473	
14,200.00	6,983.32	3,253.00	2,925.31	122.06	22.92	-16.59	-555.39	-5,926.85	4,401.52	4,336.39	65.13	67.583	
14,300.00	6,983.24	3,253.00	2,925.31	123.63	22.92	-16.59	-555.39	-5,926.85	4,437.90	4,372.37	65.54	67.718	
14,400.00	6,983.16	3,253.00	2,925.31	125.20	22.92	-16.59	-555.39	-5,926.85	4,476.22	4,410.27	65.94	67.879	
14,500.00	6,983.08	3,253.00	2,925.31	126.77	22.92	-16.59	-555.39	-5,926.85	4,516.43	4,450.08	66.35	68.068	
14,600.00	6,983.00	3,253.00	2,925.31	128.33	22.92	-16.59	-555.39	-5,926.85	4,558.47	4,491.72	66.75	68.287	
14,700.00	6,982.93	3,253.00	2,925.31	129.91	22.92	-16.59	-555.39	-5,926.85	4,602.31	4,535.16	67.15	68.537	
14,800.00	6,982.85	3,253.00	2,925.31	131.48	22.92	-16.59	-555.39	-5,926.85	4,647.89	4,580.35	67.54	68.819	
14,900.00	6,982.77	3,253.00	2,925.31	133.05	22.92	-16.59	-555.39	-5,926.85	4,695.15	4,627.23	67.91	69.134	
15,000.00	6,982.69	3,253.00	2,925.31	134.62	22.92	-16.59	-555.39	-5,926.85	4,744.05	4,675.77	68.28	69.482	
15,100.00	6,982.61	3,253.00	2,925.31	136.20	22.92	-16.59	-555.39	-5,926.85	4,794.54	4,725.91	68.63	69.863	
15,200.00	6,982.54	3,253.00	2,925.31	137.77	22.92	-16.59	-555.39	-5,926.85	4,846.56	4,777.60	68.96	70.277	
15,300.00	6,982.46	3,253.00	2,925.31	139.35	22.92	-16.59	-555.39	-5,926.85	4,900.07	4,830.79	69.29	70.723	
15,400.00	6,982.38	3,253.00	2,925.31	140.92	22.92	-16.59	-555.39	-5,926.85	4,955.03	4,885.44	69.59	71.201	
15,500.00	6,982.30	3,253.00	2,925.31	142.50	22.92	-16.59	-555.39	-5,926.85	5,011.37	4,941.49	69.88	71.711	
15,600.00	6,982.22	3,253.00	2,925.31	144.07	22.92	-16.59	-555.39	-5,926.85	5,069.07	4,998.91	70.16	72.251	
15,700.00	6,982.14	3,253.00	2,925.31	145.65	22.92	-16.59	-555.39	-5,926.85	5,128.06	5,057.64	70.42	72.820	
15,800.00	6,982.07	3,253.00	2,925.31	147.23	22.92	-16.59	-555.39	-5,926.85	5,188.31	5,117.65	70.67	73.418	
15,900.00	6,981.99	3,253.00	2,925.31	148.81	22.92	-16.59	-555.39	-5,926.85	5,249.78	5,178.88	70.90	74.044	
16,000.00	6,981.91	3,253.00	2,925.31	150.39	22.92	-16.59	-555.39	-5,926.85	5,312.42	5,241.30	71.12	74.697	
16,100.00	6,981.83	3,253.00	2,925.31	151.97	22.92	-16.59	-555.39	-5,926.85	5,376.18	5,304.86	71.33	75.376	
16,200.00	6,981.75	3,253.00	2,925.31	153.55	22.92	-16.59	-555.39	-5,926.85	5,441.04	5,369.52	71.52	76.079	
16,300.00	6,981.67	3,253.00	2,925.31	155.13	22.92	-16.59	-555.39	-5,926.85	5,506.95	5,435.25	71.70	76.807	
16,400.00	6,981.60	3,253.00	2,925.31	156.71	22.92	-16.59	-555.39	-5,926.85	5,573.87	5,502.01	71.87	77.557	
16,500.00	6,981.52	3,253.00	2,925.31	158.29	22.92	-16.59	-555.39	-5,926.85	5,641.78	5,569.75	72.03	78.330	
16,600.00	6,981.44	3,253.00	2,925.31	159.88	22.92	-16.59	-555.39	-5,926.85	5,710.62	5,638.45	72.17	79.124	
16,700.00	6,981.36	3,253.00	2,925.31	161.46	22.92	-16.59	-555.39	-5,926.85	5,780.38	5,708.07	72.31	79.938	
16,800.00	6,981.28	3,253.00	2,925.31	163.04	22.92	-16.59	-555.39	-5,926.85	5,851.01	5,778.58	72.44	80.772	
16,900.00	6,981.20	3,253.00	2,925.31	164.62	22.92	-16.59	-555.39	-5,926.85	5,922.49	5,849.94	72.56	81.625	
17,000.00	6,981.13	3,253.00	2,925.31	166.21	22.92	-16.59	-555.39	-5,926.85	5,994.79	5,922.12	72.67	82.495	
17,100.00	6,981.05	3,253.00	2,925.31	167.79	22.92	-16.59	-555.39	-5,926.85	6,067.87	5,995.10	72.77	83.383	
17,200.00	6,980.97	3,253.00	2,925.31	169.38	22.92	-16.59	-555.39	-5,926.85	6,141.72	6,068.85	72.87	84.287	
17,300.00	6,980.89	3,253.00	2,925.31	170.96	22.92	-16.59	-555.39	-5,926.85	6,216.29	6,143.33	72.96	85.207	
17,400.00	6,980.81	3,253.00	2,925.31	172.55	22.92	-16.59	-555.39	-5,926.85	6,291.57	6,218.53	73.04	86.142	
17,500.00	6,980.73	3,253.00	2,925.31	174.13	22.92	-16.59	-555.39	-5,926.85	6,367.53	6,294.41	73.11	87.091	
17,600.00	6,980.66	3,253.00	2,925.31	175.72	22.92	-16.59	-555.39	-5,926.85	6,444.14	6,370.96	73.18	88.055	
17,700.00	6,980.58	3,253.00	2,925.31	177.31	22.92	-16.59	-555.39	-5,926.85	6,521.39	6,448.14	73.25	89.031	
17,800.00	6,980.50	3,253.00	2,925.31	178.89	22.92	-16.59	-555.39	-5,926.85	6,599.25	6,525.94	73.31	90.020	
17,900.00	6,980.42	3,253.00	2,925.31	180.48	22.92	-16.59	-555.39	-5,926.85	6,677.70	6,604.34	73.36	91.021	
18,000.00	6,980.34	3,253.00	2,925.31	182.07	22.92	-16.59	-555.39	-5,926.85	6,756.72	6,683.31	73.42	92.034	
18,100.00	6,980.26	3,253.00	2,925.31	183.66	22.92	-16.59	-555.39	-5,926.85	6,836.29	6,762.83	73.46	93.058	
18,200.00	6,980.19	3,253.00	2,925.31	185.24	22.92	-16.59	-555.39	-5,926.85	6,916.39	6,842.88	73.51	94.092	
18,300.00	6,980.11	3,253.00	2,925.31	186.83	22.92	-16.59	-555.39	-5,926.85	6,997.00	6,923.45	73.55	95.136	
18,400.00	6,980.03	3,253.00	2,925.31	188.42	22.92	-16.59	-555.39	-5,926.85	7,078.11	7,004.52	73.58	96.190	
18,500.00	6,979.95	3,253.00	2,925.31	190.01	22.92	-16.59	-555.39	-5,926.85	7,159.69	7,086.07	73.62	97.253	
18,600.00	6,979.87	3,253.00	2,925.31	191.60	22.92	-16.59	-555.39	-5,926.85	7,241.74	7,168.08	73.65	98.325	
18,700.00	6,979.79	3,253.00	2,925.31	193.19	22.92	-16.59	-555.39	-5,926.85	7,324.23	7,250.55	73.68	99.405	
18,800.00	6,979.72	3,253.00	2,925.31	194.78	22.92	-16.59	-555.39	-5,926.85	7,407.15	7,333.44	73.71	100.493	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #228A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		352-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,900.00	6,979.64	3,253.00	2,925.31	196.37	22.92	-16.59	-555.39	-5,926.85	7,490.49	7,416.76	73.73	101.588		
19,000.00	6,979.56	3,253.00	2,925.31	197.96	22.92	-16.59	-555.39	-5,926.85	7,574.24	7,500.48	73.76	102.691		
19,100.00	6,979.48	3,253.00	2,925.31	199.55	22.92	-16.59	-555.39	-5,926.85	7,658.37	7,584.59	73.78	103.800		
19,200.00	6,979.40	3,253.00	2,925.31	201.14	22.92	-16.59	-555.39	-5,926.85	7,742.88	7,669.08	73.80	104.916		
19,300.00	6,979.33	3,253.00	2,925.31	202.73	22.92	-16.59	-555.39	-5,926.85	7,827.76	7,753.94	73.82	106.039		
19,400.00	6,979.25	3,253.00	2,925.31	204.32	22.92	-16.59	-555.39	-5,926.85	7,912.99	7,839.15	73.84	107.166		
19,500.00	6,979.17	3,253.00	2,925.31	205.91	22.92	-16.59	-555.39	-5,926.85	7,998.56	7,924.70	73.86	108.300		
19,600.00	6,979.09	3,253.00	2,925.31	207.50	22.92	-16.59	-555.39	-5,926.85	8,084.46	8,010.59	73.87	109.439		
19,700.00	6,979.01	3,253.00	2,925.31	209.09	22.92	-16.59	-555.39	-5,926.85	8,170.68	8,096.80	73.89	110.582		
19,800.00	6,978.93	3,253.00	2,925.31	210.69	22.92	-16.59	-555.39	-5,926.85	8,257.22	8,183.32	73.90	111.731		
19,900.00	6,978.86	3,253.00	2,925.31	212.28	22.92	-16.59	-555.39	-5,926.85	8,344.05	8,270.14	73.92	112.884		
20,000.00	6,978.78	3,253.00	2,925.31	213.87	22.92	-16.59	-555.39	-5,926.85	8,431.18	8,357.25	73.93	114.041		
20,100.00	6,978.70	3,253.00	2,925.31	215.46	22.92	-16.59	-555.39	-5,926.85	8,518.59	8,444.65	73.95	115.202		
20,200.00	6,978.62	3,253.00	2,925.31	217.05	22.92	-16.59	-555.39	-5,926.85	8,606.27	8,532.32	73.96	116.366		
20,300.00	6,978.54	3,253.00	2,925.31	218.65	22.92	-16.59	-555.39	-5,926.85	8,694.22	8,620.25	73.97	117.534		
20,400.00	6,978.46	3,253.00	2,925.31	220.24	22.92	-16.59	-555.39	-5,926.85	8,782.43	8,708.45	73.98	118.706		
20,500.00	6,978.39	3,253.00	2,925.31	221.83	22.92	-16.59	-555.39	-5,926.85	8,870.89	8,796.89	74.00	119.880		
20,600.00	6,978.31	3,253.00	2,925.31	223.43	22.92	-16.59	-555.39	-5,926.85	8,959.59	8,885.58	74.01	121.057		
20,700.00	6,978.23	3,253.00	2,925.31	225.02	22.92	-16.59	-555.39	-5,926.85	9,048.53	8,974.50	74.02	122.237		
20,800.00	6,978.15	3,253.00	2,925.31	226.61	22.92	-16.59	-555.39	-5,926.85	9,137.69	9,063.65	74.04	123.420		
20,900.00	6,978.07	3,253.00	2,925.31	228.21	22.92	-16.59	-555.39	-5,926.85	9,227.08	9,153.03	74.05	124.604		
21,000.00	6,977.99	3,253.00	2,925.31	229.80	22.92	-16.59	-555.39	-5,926.85	9,316.68	9,242.62	74.06	125.791		
21,100.00	6,977.92	3,253.00	2,925.31	231.39	22.92	-16.59	-555.39	-5,926.85	9,406.50	9,332.42	74.08	126.980		
21,200.00	6,977.84	3,253.00	2,925.31	232.99	22.92	-16.59	-555.39	-5,926.85	9,496.51	9,422.42	74.09	128.170		
21,300.00	6,977.76	3,253.00	2,925.31	234.58	22.92	-16.59	-555.39	-5,926.85	9,586.73	9,512.62	74.11	129.362		
21,400.00	6,977.68	3,253.00	2,925.31	236.18	22.92	-16.59	-555.39	-5,926.85	9,677.13	9,603.01	74.12	130.555		
21,500.00	6,977.60	3,253.00	2,925.31	237.77	22.92	-16.59	-555.39	-5,926.85	9,767.73	9,693.59	74.14	131.750		
21,600.00	6,977.52	3,253.00	2,925.31	239.37	22.92	-16.59	-555.39	-5,926.85	9,858.50	9,784.35	74.15	132.946		
21,700.00	6,977.45	3,253.00	2,925.31	240.96	22.92	-16.59	-555.39	-5,926.85	9,949.45	9,875.28	74.17	134.143		
21,800.00	6,977.37	3,253.00	2,925.31	242.56	22.92	-16.59	-555.39	-5,926.85	10,040.58	9,966.39	74.19	135.341		
21,900.00	6,977.29	3,253.00	2,925.31	244.15	22.92	-16.59	-555.39	-5,926.85	10,131.87	10,057.66	74.20	136.539		
22,000.00	6,977.21	3,253.00	2,925.31	245.75	22.92	-16.59	-555.39	-5,926.85	10,223.32	10,149.10	74.22	137.738		
22,100.00	6,977.13	3,253.00	2,925.31	247.34	22.92	-16.59	-555.39	-5,926.85	10,314.94	10,240.69	74.24	138.937		
22,200.00	6,977.05	3,253.00	2,925.31	248.94	22.92	-16.59	-555.39	-5,926.85	10,406.70	10,332.44	74.26	140.137		
22,269.73	6,977.00	3,253.00	2,925.31	250.05	22.92	-16.59	-555.39	-5,926.85	10,470.78	10,396.50	74.27	140.974		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 359-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-162.94	-114.32	-35.08	122.81				
100.00	100.00	72.00	72.00	0.25	1.33	-162.94	-114.32	-35.08	119.58	118.00	1.58	75.586	
200.00	200.00	172.00	172.00	0.61	3.18	-162.94	-114.32	-35.08	119.58	115.79	3.79	31.560	
300.00	300.00	272.00	272.00	0.97	5.03	-162.94	-114.32	-35.08	119.58	113.58	6.00	19.943	
400.00	400.00	372.00	372.00	1.33	6.88	-162.94	-114.32	-35.08	119.58	111.37	8.21	14.565	
500.00	500.00	472.00	472.00	1.68	8.79	-162.94	-114.32	-35.08	119.58	109.11	10.47	11.421	
600.00	600.00	572.00	572.00	2.04	10.69	-162.94	-114.32	-35.08	119.58	106.85	12.73	9.393	
641.12	641.12	613.12	613.11	2.19	11.47	-162.86	-113.78	-35.08	119.06	105.40	13.66	8.716	CC
700.00	700.00	671.88	671.87	2.40	12.59	-162.87	-113.81	-35.08	119.09	104.11	14.99	7.946	
800.00	799.98	771.66	771.65	2.76	14.48	-152.51	-114.01	-35.08	120.83	103.59	17.25	7.007	ES
849.89	849.82	821.40	821.39	2.94	15.43	-152.98	-114.17	-35.08	122.92	104.55	18.37	6.691	
900.00	899.86	871.90	871.86	3.12	16.41	-153.55	-114.32	-35.08	125.40	105.87	19.53	6.421	
1,000.00	999.73	971.76	971.73	3.48	18.44	-154.58	-114.32	-35.08	130.11	108.19	21.91	5.937	
1,100.00	1,099.59	1,071.62	1,071.59	3.84	20.46	-155.53	-114.32	-35.08	134.85	110.55	24.30	5.550	
1,200.00	1,199.45	1,171.37	1,171.33	4.20	22.48	-156.34	-113.43	-35.08	138.76	112.08	26.68	5.201	
1,300.00	1,299.32	1,270.91	1,270.87	4.56	24.50	-157.19	-113.63	-35.08	143.76	114.71	29.06	4.948	
1,400.00	1,399.18	1,370.43	1,370.38	4.92	26.52	-158.00	-114.07	-35.08	149.03	117.59	31.43	4.741	
1,500.00	1,499.04	1,471.14	1,471.04	5.28	28.75	-158.75	-114.32	-35.08	154.14	120.12	34.02	4.531	
1,600.00	1,598.91	1,571.00	1,570.91	5.64	31.08	-159.43	-114.32	-35.08	159.02	122.31	36.72	4.331	
1,700.00	1,698.77	1,670.87	1,670.77	6.00	33.42	-160.08	-114.32	-35.08	163.93	124.52	39.41	4.159	
1,800.00	1,798.63	1,770.41	1,770.30	6.36	35.75	-160.62	-113.11	-35.08	167.66	125.56	42.10	3.982	
1,900.00	1,898.49	1,869.78	1,869.66	6.72	38.07	-161.21	-113.45	-35.08	172.95	128.16	44.79	3.862	
2,000.00	1,998.36	1,969.12	1,969.00	7.09	40.40	-161.77	-114.09	-35.08	178.54	131.07	47.47	3.761	
2,100.00	2,098.22	2,070.49	2,070.22	7.45	43.05	-162.30	-114.32	-35.08	183.74	133.26	50.48	3.640	
2,200.00	2,198.08	2,168.97	2,168.68	7.81	45.72	-162.75	-113.66	-35.08	188.08	134.57	53.51	3.515	
2,300.00	2,297.95	2,270.34	2,269.95	8.17	48.58	-163.24	-114.32	-35.08	193.73	137.00	56.73	3.415	
2,400.00	2,397.81	2,370.21	2,369.81	8.53	51.54	-163.67	-114.32	-35.08	198.75	138.69	60.05	3.309	
2,500.00	2,497.67	2,470.07	2,469.67	8.90	54.51	-164.09	-114.32	-35.08	203.77	140.39	63.38	3.215	
2,600.00	2,597.54	2,569.46	2,569.01	9.26	57.46	-164.42	-111.74	-35.08	206.24	139.55	66.69	3.093	
2,700.00	2,697.40	2,668.18	2,667.71	9.62	60.39	-164.81	-112.27	-35.08	211.81	141.84	69.97	3.027	
2,800.00	2,797.26	2,766.86	2,766.36	9.98	63.31	-165.19	-113.35	-35.08	217.96	144.70	73.26	2.975	
2,900.00	2,897.13	2,869.94	2,869.13	10.35	66.48	-165.56	-114.32	-35.08	223.96	147.17	76.79	2.917	
3,000.00	2,996.99	2,969.80	2,968.99	10.71	69.69	-165.88	-114.32	-35.08	229.03	148.67	80.37	2.850	SF
3,100.00	3,096.85	2,977.00	2,976.06	11.07	69.93	-165.90	-114.32	-35.08	251.83	176.47	75.35	3.342	
3,200.00	3,196.72	2,977.00	2,976.06	11.43	69.93	-165.90	-114.32	-35.08	307.13	243.26	63.87	4.809	
3,300.00	3,296.58	2,977.00	2,976.06	11.80	69.93	-165.90	-114.32	-35.08	381.10	327.64	53.46	7.128	
3,400.00	3,396.44	2,977.00	2,976.06	12.16	69.93	-165.90	-114.32	-35.08	464.92	419.23	45.69	10.176	
3,500.00	3,496.31	2,977.00	2,976.06	12.52	69.93	-165.90	-114.32	-35.08	554.13	514.06	40.07	13.828	
3,600.00	3,596.17	2,977.00	2,976.06	12.88	69.93	-165.90	-114.32	-35.08	646.51	610.53	35.98	17.971	
3,700.00	3,696.03	2,977.00	2,976.06	13.25	69.93	-165.90	-114.32	-35.08	740.86	707.94	32.92	22.503	
3,800.00	3,795.89	2,977.00	2,976.06	13.61	69.93	-165.90	-114.32	-35.08	836.54	805.93	30.60	27.337	
3,900.00	3,895.76	2,977.00	2,976.06	13.97	69.93	-165.90	-114.32	-35.08	933.11	904.31	28.80	32.398	
4,000.00	3,995.62	2,977.00	2,976.06	14.34	69.93	-165.90	-114.32	-35.08	1,030.35	1,002.96	27.38	37.625	
4,100.00	4,095.48	2,977.00	2,976.06	14.70	69.93	-165.90	-114.32	-35.08	1,128.06	1,101.81	26.26	42.965	
4,200.00	4,195.35	2,977.00	2,976.06	15.06	69.93	-165.90	-114.32	-35.08	1,226.15	1,200.80	25.35	48.377	
4,300.00	4,295.21	2,977.00	2,976.06	15.42	69.93	-165.90	-114.32	-35.08	1,324.52	1,299.91	24.61	53.826	
4,400.00	4,395.07	2,977.00	2,976.06	15.79	69.93	-165.90	-114.32	-35.08	1,423.11	1,399.11	24.01	59.282	
4,500.00	4,494.94	2,977.00	2,976.06	16.15	69.93	-165.90	-114.32	-35.08	1,521.90	1,498.38	23.51	64.723	
4,600.00	4,594.80	2,977.00	2,976.06	16.51	69.93	-165.90	-114.32	-35.08	1,620.83	1,597.71	23.11	70.130	
4,700.00	4,694.66	2,977.00	2,976.06	16.87	69.93	-165.90	-114.32	-35.08	1,719.88	1,697.10	22.78	75.488	
4,800.00	4,794.53	2,977.00	2,976.06	17.24	69.93	-165.90	-114.32	-35.08	1,819.04	1,796.52	22.52	80.784	
4,900.00	4,894.39	2,977.00	2,976.06	17.60	69.93	-165.90	-114.32	-35.08	1,918.28	1,895.98	22.30	86.008	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 359-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,994.25	2,977.00	2,976.06	17.96	69.93	-165.90	-114.32	-35.08	2,017.60	1,995.47	22.13	91.152	
5,100.00	5,094.12	2,977.00	2,976.06	18.33	69.93	-165.90	-114.32	-35.08	2,116.99	2,094.98	22.00	96.211	
5,200.00	5,193.98	2,977.00	2,976.06	18.69	69.93	-165.90	-114.32	-35.08	2,216.43	2,194.52	21.91	101.179	
5,300.00	5,293.84	2,977.00	2,976.06	19.05	69.93	-165.90	-114.32	-35.08	2,315.91	2,294.08	21.84	106.052	
5,336.91	5,330.71	2,977.00	2,976.06	19.19	69.93	-165.90	-114.32	-35.08	2,352.65	2,330.83	21.82	107.826	
5,400.00	5,393.71	2,977.00	2,976.06	19.41	69.93	-166.66	-114.32	-35.08	2,415.43	2,393.64	21.79	110.846	
5,500.00	5,493.62	2,977.00	2,976.06	19.77	69.93	-167.74	-114.32	-35.08	2,514.90	2,493.15	21.75	115.626	
5,600.00	5,593.57	2,977.00	2,976.06	20.13	69.93	-168.69	-114.32	-35.08	2,614.33	2,592.62	21.72	120.392	
5,700.00	5,693.53	2,977.00	2,976.06	20.49	69.93	-169.53	-114.32	-35.08	2,713.71	2,692.03	21.69	125.139	
5,800.00	5,793.52	2,977.00	2,976.06	20.85	69.93	-170.29	-114.32	-35.08	2,813.05	2,791.38	21.66	129.861	
5,900.00	5,893.52	2,977.00	2,976.06	21.20	69.93	-170.96	-114.32	-35.08	2,912.33	2,890.68	21.64	134.554	
5,936.48	5,930.00	2,977.00	2,976.06	21.33	69.93	178.05	-114.32	-35.08	2,948.53	2,926.89	21.64	136.259	
6,000.00	5,993.52	2,977.00	2,976.06	21.56	69.93	178.05	-114.32	-35.08	3,011.57	2,989.94	21.64	139.195	
6,100.00	6,093.52	2,977.00	2,976.06	21.91	69.93	178.05	-114.32	-35.08	3,110.86	3,089.22	21.65	143.717	
6,200.00	6,193.52	2,977.00	2,976.06	22.27	69.93	178.05	-114.32	-35.08	3,210.20	3,188.52	21.67	148.117	
6,300.00	6,293.52	2,977.00	2,976.06	22.62	69.93	178.05	-114.32	-35.08	3,309.57	3,287.85	21.72	152.395	
6,358.48	6,352.00	2,977.00	2,976.06	22.83	69.93	178.05	-114.32	-35.08	3,367.70	3,345.95	21.75	154.841	
6,400.00	6,393.49	2,977.00	2,976.06	22.97	69.93	-72.28	-114.32	-35.08	3,408.99	3,387.21	21.78	156.516	
6,450.00	6,443.20	2,977.00	2,976.06	23.15	69.93	-42.56	-114.32	-35.08	3,458.60	3,436.76	21.83	158.412	
6,500.00	6,492.36	2,977.00	2,976.06	23.33	69.93	-28.23	-114.32	-35.08	3,507.79	3,485.89	21.90	160.165	
6,550.00	6,540.64	2,977.00	2,976.06	23.51	69.93	-20.77	-114.32	-35.08	3,556.28	3,534.30	21.99	161.750	
6,600.00	6,587.77	2,977.00	2,976.06	23.69	69.93	-16.37	-114.32	-35.08	3,603.82	3,581.73	22.09	163.132	
6,650.00	6,633.44	2,977.00	2,976.06	23.88	69.93	-13.50	-114.32	-35.08	3,650.16	3,627.94	22.22	164.272	
6,700.00	6,677.37	2,977.00	2,976.06	24.07	69.93	-11.51	-114.32	-35.08	3,695.04	3,672.67	22.38	165.130	
6,750.00	6,719.30	2,977.00	2,976.06	24.26	69.93	-10.06	-114.32	-35.08	3,738.27	3,715.71	22.56	165.667	
6,800.00	6,758.97	2,977.00	2,976.06	24.46	69.93	-8.97	-114.32	-35.08	3,779.63	3,756.84	22.79	165.849	
6,850.00	6,796.12	2,977.00	2,976.06	24.67	69.93	-8.12	-114.32	-35.08	3,818.93	3,795.88	23.05	165.645	
6,900.00	6,830.54	2,977.00	2,976.06	24.88	69.93	-7.44	-114.32	-35.08	3,856.00	3,832.63	23.36	165.037	
6,950.00	6,862.00	2,977.00	2,976.06	25.11	69.93	-6.90	-114.32	-35.08	3,890.67	3,866.95	23.72	164.014	
7,000.00	6,890.33	2,977.00	2,976.06	25.34	69.93	-6.46	-114.32	-35.08	3,922.80	3,898.67	24.13	162.579	
7,050.00	6,915.33	2,977.00	2,976.06	25.59	69.93	-6.10	-114.32	-35.08	3,952.25	3,927.66	24.59	160.745	
7,100.00	6,936.86	2,977.00	2,976.06	25.85	69.93	-5.81	-114.32	-35.08	3,978.90	3,953.81	25.10	158.535	
7,150.00	6,954.79	2,977.00	2,976.06	26.12	69.93	-5.57	-114.32	-35.08	4,002.66	3,977.00	25.66	155.982	
7,200.00	6,968.99	2,977.00	2,976.06	26.40	69.93	-5.37	-114.32	-35.08	4,023.41	3,997.13	26.28	153.123	
7,250.00	6,979.40	2,977.00	2,976.06	26.69	69.93	-5.22	-114.32	-35.08	4,041.08	4,014.14	26.94	150.004	
7,300.00	6,985.94	2,977.00	2,976.06	27.00	69.93	-5.09	-114.32	-35.08	4,055.61	4,027.96	27.65	146.669	
7,350.00	6,988.56	2,977.00	2,976.06	27.31	69.93	-5.00	-114.32	-35.08	4,066.94	4,038.53	28.41	143.165	
7,358.93	6,988.62	2,977.00	2,976.06	27.36	69.93	-4.99	-114.32	-35.08	4,068.62	4,040.08	28.54	142.539	
7,400.00	6,988.59	2,977.00	2,976.06	27.63	69.93	-4.99	-114.32	-35.08	4,076.32	4,047.12	29.20	139.594	
7,500.00	6,988.52	2,977.00	2,976.06	28.33	69.93	-4.99	-114.32	-35.08	4,096.73	4,065.86	30.87	132.719	
7,600.00	6,988.45	2,977.00	2,976.06	29.10	69.93	-4.99	-114.32	-35.08	4,119.46	4,086.86	32.61	126.334	
7,658.93	6,988.41	2,977.00	2,976.06	29.59	69.93	-4.99	-114.32	-35.08	4,133.93	4,100.28	33.66	122.818	
7,700.00	6,988.38	2,977.00	2,976.06	29.94	69.93	-5.20	-114.32	-35.08	4,144.46	4,110.06	34.40	120.481	
7,800.00	6,988.31	2,977.00	2,976.06	30.84	69.93	-5.76	-114.32	-35.08	4,171.45	4,135.24	36.21	115.189	
7,900.00	6,988.24	2,977.00	2,976.06	31.79	69.93	-6.37	-114.32	-35.08	4,200.32	4,162.28	38.04	110.427	
8,000.00	6,988.16	2,977.00	2,976.06	32.78	69.93	-7.01	-114.32	-35.08	4,230.98	4,191.12	39.86	106.151	
8,100.00	6,988.09	2,977.00	2,976.06	33.82	69.93	-7.69	-114.32	-35.08	4,263.36	4,221.69	41.67	102.314	
8,200.00	6,988.01	2,977.00	2,976.06	34.88	69.93	-8.41	-114.32	-35.08	4,297.39	4,253.93	43.46	98.875	
8,300.00	6,987.94	2,977.00	2,976.06	35.98	69.93	-9.16	-114.32	-35.08	4,332.99	4,287.75	45.23	95.791	
8,400.00	6,987.86	2,977.00	2,976.06	37.11	69.93	-9.95	-114.32	-35.08	4,370.07	4,323.09	46.98	93.026	
8,416.35	6,987.85	2,977.00	2,976.06	37.29	69.93	-10.08	-114.32	-35.08	4,376.27	4,329.01	47.26	92.603	
8,500.00	6,987.78	2,977.00	2,976.06	38.25	69.93	-10.08	-114.32	-35.08	4,408.75	4,360.06	48.69	90.540	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336 - OH - OH-INC											Offset Site Error: 0.00 usft			
Survey Program: Reference		359-A027Ua_INC-ONLY Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned: Distance				Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,600.00	6,987.70	2,977.00	2,976.06	39.43	69.93	-10.08	-114.32	-35.08	4,449.34	4,398.94	50.39	88.293		
8,700.00	6,987.62	2,977.00	2,976.06	40.64	69.93	-10.08	-114.32	-35.08	4,491.78	4,439.72	52.07	86.267		
8,800.00	6,987.55	2,977.00	2,976.06	41.88	69.93	-10.08	-114.32	-35.08	4,536.04	4,482.32	53.72	84.445		
8,900.00	6,987.47	2,977.00	2,976.06	43.14	69.93	-10.08	-114.32	-35.08	4,582.05	4,526.72	55.33	82.809		
9,000.00	6,987.39	2,977.00	2,976.06	44.42	69.93	-10.08	-114.32	-35.08	4,629.76	4,572.85	56.92	81.343		
9,100.00	6,987.31	2,977.00	2,976.06	45.72	69.93	-10.08	-114.32	-35.08	4,679.13	4,620.66	58.46	80.034		
9,200.00	6,987.23	2,977.00	2,976.06	47.04	69.93	-10.08	-114.32	-35.08	4,730.09	4,670.12	59.98	78.867		
9,300.00	6,987.15	2,977.00	2,976.06	48.38	69.93	-10.08	-114.32	-35.08	4,782.60	4,721.15	61.45	77.832		
9,400.00	6,987.08	2,977.00	2,976.06	49.73	69.93	-10.08	-114.32	-35.08	4,836.61	4,773.73	62.88	76.916		
9,500.00	6,987.00	2,977.00	2,976.06	51.10	69.93	-10.08	-114.32	-35.08	4,892.07	4,827.79	64.28	76.110		
9,600.00	6,986.92	2,977.00	2,976.06	52.48	69.93	-10.08	-114.32	-35.08	4,948.93	4,883.29	65.63	75.405		
9,700.00	6,986.84	2,977.00	2,976.06	53.87	69.93	-10.08	-114.32	-35.08	5,007.13	4,940.19	66.95	74.792		
9,800.00	6,986.76	2,977.00	2,976.06	55.28	69.93	-10.08	-114.32	-35.08	5,066.65	4,998.42	68.22	74.265		
9,900.00	6,986.68	2,977.00	2,976.06	56.69	69.93	-10.08	-114.32	-35.08	5,127.42	5,057.96	69.46	73.817		
10,000.00	6,986.61	2,977.00	2,976.06	58.12	69.93	-10.08	-114.32	-35.08	5,189.41	5,118.75	70.66	73.442		
10,100.00	6,986.53	2,977.00	2,976.06	59.55	69.93	-10.08	-114.32	-35.08	5,252.57	5,180.75	71.82	73.134		
10,200.00	6,986.45	2,977.00	2,976.06	61.00	69.93	-10.08	-114.32	-35.08	5,316.86	5,243.92	72.95	72.888		
10,300.00	6,986.37	2,977.00	2,976.06	62.45	69.93	-10.08	-114.32	-35.08	5,382.24	5,308.21	74.03	72.699		
10,400.00	6,986.29	2,977.00	2,976.06	63.90	69.93	-10.08	-114.32	-35.08	5,448.68	5,373.59	75.09	72.564		
10,500.00	6,986.21	2,977.00	2,976.06	65.37	69.93	-10.08	-114.32	-35.08	5,516.12	5,440.01	76.11	72.479		
10,600.00	6,986.14	2,977.00	2,976.06	66.84	69.93	-10.08	-114.32	-35.08	5,584.54	5,507.45	77.09	72.440		
10,700.00	6,986.06	2,977.00	2,976.06	68.32	69.93	-10.08	-114.32	-35.08	5,653.91	5,575.86	78.05	72.444		
10,800.00	6,985.98	2,977.00	2,976.06	69.80	69.93	-10.08	-114.32	-35.08	5,724.17	5,645.21	78.97	72.488		
10,900.00	6,985.90	2,977.00	2,976.06	71.29	69.93	-10.08	-114.32	-35.08	5,795.32	5,715.46	79.86	72.570		
11,000.00	6,985.82	2,977.00	2,976.06	72.78	69.93	-10.08	-114.32	-35.08	5,867.30	5,786.58	80.72	72.687		
11,100.00	6,985.75	2,977.00	2,976.06	74.28	69.93	-10.08	-114.32	-35.08	5,940.10	5,858.54	81.55	72.837		
11,200.00	6,985.67	2,977.00	2,976.06	75.78	69.93	-10.08	-114.32	-35.08	6,013.67	5,931.32	82.36	73.018		
11,300.00	6,985.59	2,977.00	2,976.06	77.29	69.93	-10.08	-114.32	-35.08	6,088.00	6,004.87	83.14	73.227		
11,400.00	6,985.51	2,977.00	2,976.06	78.80	69.93	-10.08	-114.32	-35.08	6,163.06	6,079.17	83.89	73.464		
11,500.00	6,985.43	2,977.00	2,976.06	80.31	69.93	-10.08	-114.32	-35.08	6,238.82	6,154.20	84.62	73.726		
11,600.00	6,985.35	2,977.00	2,976.06	81.83	69.93	-10.08	-114.32	-35.08	6,315.25	6,229.92	85.33	74.012		
11,700.00	6,985.28	2,977.00	2,976.06	83.35	69.93	-10.08	-114.32	-35.08	6,392.33	6,306.32	86.01	74.321		
11,800.00	6,985.20	2,977.00	2,976.06	84.87	69.93	-10.08	-114.32	-35.08	6,470.04	6,383.37	86.67	74.651		
11,900.00	6,985.12	2,977.00	2,976.06	86.40	69.93	-10.08	-114.32	-35.08	6,548.36	6,461.05	87.31	75.001		
12,000.00	6,985.04	2,977.00	2,976.06	87.93	69.93	-10.08	-114.32	-35.08	6,627.25	6,539.32	87.93	75.370		
12,100.00	6,984.96	2,977.00	2,976.06	89.46	69.93	-10.08	-114.32	-35.08	6,706.71	6,618.18	88.53	75.757		
12,200.00	6,984.88	2,977.00	2,976.06	90.99	69.93	-10.08	-114.32	-35.08	6,786.72	6,697.61	89.11	76.160		
12,300.00	6,984.81	2,977.00	2,976.06	92.53	69.93	-10.08	-114.32	-35.08	6,867.25	6,777.57	89.67	76.580		
12,400.00	6,984.73	2,977.00	2,976.06	94.07	69.93	-10.08	-114.32	-35.08	6,948.28	6,858.06	90.22	77.015		
12,500.00	6,984.65	2,977.00	2,976.06	95.61	69.93	-10.08	-114.32	-35.08	7,029.80	6,939.05	90.75	77.464		
12,600.00	6,984.57	2,977.00	2,976.06	97.15	69.93	-10.08	-114.32	-35.08	7,111.80	7,020.53	91.26	77.927		
12,700.00	6,984.49	2,977.00	2,976.06	98.70	69.93	-10.08	-114.32	-35.08	7,194.25	7,102.49	91.76	78.403		
12,800.00	6,984.41	2,977.00	2,976.06	100.25	69.93	-10.08	-114.32	-35.08	7,277.13	7,184.89	92.24	78.891		
12,900.00	6,984.34	2,977.00	2,976.06	101.80	69.93	-10.08	-114.32	-35.08	7,360.45	7,267.74	92.71	79.390		
13,000.00	6,984.26	2,977.00	2,976.06	103.35	69.93	-10.08	-114.32	-35.08	7,444.18	7,351.01	93.17	79.901		
13,100.00	6,984.18	2,977.00	2,976.06	104.90	69.93	-10.08	-114.32	-35.08	7,528.30	7,434.69	93.61	80.421		
13,200.00	6,984.10	2,977.00	2,976.06	106.45	69.93	-10.08	-114.32	-35.08	7,612.80	7,518.76	94.04	80.952		
13,300.00	6,984.02	2,977.00	2,976.06	108.01	69.93	-10.08	-114.32	-35.08	7,697.68	7,603.22	94.46	81.493		
13,400.00	6,983.94	2,977.00	2,976.06	109.56	69.93	-10.08	-114.32	-35.08	7,782.92	7,688.06	94.87	82.042		
13,500.00	6,983.87	2,977.00	2,976.06	111.12	69.93	-10.08	-114.32	-35.08	7,868.51	7,773.24	95.26	82.600		
13,600.00	6,983.79	2,977.00	2,976.06	112.68	69.93	-10.08	-114.32	-35.08	7,954.43	7,858.78	95.65	83.166		
13,700.00	6,983.71	2,977.00	2,976.06	114.24	69.93	-10.08	-114.32	-35.08	8,040.67	7,944.65	96.02	83.740		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		359-A027Ua_INC-ONLY					Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,800.00	6,983.63	2,977.00	2,976.06	115.80	69.93	-10.08	-114.32	-35.08	8,127.24	8,030.85	96.38	84.321	
13,900.00	6,983.55	2,977.00	2,976.06	117.37	69.93	-10.08	-114.32	-35.08	8,214.10	8,117.36	96.74	84.909	
14,000.00	6,983.47	2,977.00	2,976.06	118.93	69.93	-10.08	-114.32	-35.08	8,301.27	8,204.18	97.09	85.504	
14,100.00	6,983.40	2,977.00	2,976.06	120.50	69.93	-10.08	-114.32	-35.08	8,388.71	8,291.29	97.42	86.105	
14,200.00	6,983.32	2,977.00	2,976.06	122.06	69.93	-10.08	-114.32	-35.08	8,476.44	8,378.69	97.75	86.713	
14,300.00	6,983.24	2,977.00	2,976.06	123.63	69.93	-10.08	-114.32	-35.08	8,564.44	8,466.36	98.07	87.326	
14,400.00	6,983.16	2,977.00	2,976.06	125.20	69.93	-10.08	-114.32	-35.08	8,652.69	8,554.31	98.39	87.945	
14,500.00	6,983.08	2,977.00	2,976.06	126.77	69.93	-10.08	-114.32	-35.08	8,741.20	8,642.51	98.69	88.569	
14,600.00	6,983.00	2,977.00	2,976.06	128.33	69.93	-10.08	-114.32	-35.08	8,829.96	8,730.97	98.99	89.198	
14,700.00	6,982.93	2,977.00	2,976.06	129.91	69.93	-10.08	-114.32	-35.08	8,918.95	8,819.67	99.29	89.832	
14,800.00	6,982.85	2,977.00	2,976.06	131.48	69.93	-10.08	-114.32	-35.08	9,008.17	8,908.60	99.57	90.470	
14,900.00	6,982.77	2,977.00	2,976.06	133.05	69.93	-10.08	-114.32	-35.08	9,097.62	8,997.77	99.85	91.113	
15,000.00	6,982.69	2,977.00	2,976.06	134.62	69.93	-10.08	-114.32	-35.08	9,187.29	9,087.17	100.12	91.760	
15,100.00	6,982.61	2,977.00	2,976.06	136.20	69.93	-10.08	-114.32	-35.08	9,277.16	9,176.77	100.39	92.411	
15,200.00	6,982.54	2,977.00	2,976.06	137.77	69.93	-10.08	-114.32	-35.08	9,367.25	9,266.59	100.65	93.066	
15,300.00	6,982.46	2,977.00	2,976.06	139.35	69.93	-10.08	-114.32	-35.08	9,457.53	9,356.62	100.91	93.724	
15,400.00	6,982.38	2,977.00	2,976.06	140.92	69.93	-10.08	-114.32	-35.08	9,548.00	9,446.84	101.16	94.386	
15,500.00	6,982.30	2,977.00	2,976.06	142.50	69.93	-10.08	-114.32	-35.08	9,638.67	9,537.26	101.41	95.051	
15,600.00	6,982.22	2,977.00	2,976.06	144.07	69.93	-10.08	-114.32	-35.08	9,729.51	9,627.87	101.65	95.719	
15,700.00	6,982.14	2,977.00	2,976.06	145.65	69.93	-10.08	-114.32	-35.08	9,820.54	9,718.65	101.88	96.390	
15,800.00	6,982.07	2,977.00	2,976.06	147.23	69.93	-10.08	-114.32	-35.08	9,911.73	9,809.62	102.12	97.064	
15,900.00	6,981.99	2,977.00	2,976.06	148.81	69.93	-10.08	-114.32	-35.08	10,003.10	9,900.76	102.34	97.741	
16,000.00	6,981.91	2,977.00	2,976.06	150.39	69.93	-10.08	-114.32	-35.08	10,094.63	9,992.06	102.57	98.420	
16,100.00	6,981.83	2,977.00	2,976.06	151.97	69.93	-10.08	-114.32	-35.08	10,186.32	10,083.53	102.79	99.102	
16,200.00	6,981.75	2,977.00	2,976.06	153.55	69.93	-10.08	-114.32	-35.08	10,278.16	10,175.16	103.00	99.786	
16,300.00	6,981.67	2,977.00	2,976.06	155.13	69.93	-10.08	-114.32	-35.08	10,370.15	10,266.94	103.21	100.472	
16,400.00	6,981.60	2,977.00	2,976.06	156.71	69.93	-10.08	-114.32	-35.08	10,462.30	10,358.87	103.42	101.160	
16,500.00	6,981.52	2,977.00	2,976.06	158.29	69.93	-10.08	-114.32	-35.08	10,554.58	10,450.95	103.63	101.851	
16,600.00	6,981.44	2,977.00	2,976.06	159.88	69.93	-10.08	-114.32	-35.08	10,647.00	10,543.17	103.83	102.543	
16,700.00	6,981.36	2,977.00	2,976.06	161.46	69.93	-10.08	-114.32	-35.08	10,739.56	10,635.53	104.03	103.237	
16,800.00	6,981.28	2,977.00	2,976.06	163.04	69.93	-10.08	-114.32	-35.08	10,832.25	10,728.03	104.22	103.932	
16,900.00	6,981.20	2,977.00	2,976.06	164.62	69.93	-10.08	-114.32	-35.08	10,925.07	10,820.66	104.42	104.629	
17,000.00	6,981.13	2,977.00	2,976.06	166.21	69.93	-10.08	-114.32	-35.08	11,018.02	10,913.41	104.61	105.328	
17,100.00	6,981.05	2,977.00	2,976.06	167.79	69.93	-10.08	-114.32	-35.08	11,111.09	11,006.30	104.79	106.028	
17,200.00	6,980.97	2,977.00	2,976.06	169.38	69.93	-10.08	-114.32	-35.08	11,204.28	11,099.30	104.98	106.730	
17,300.00	6,980.89	2,977.00	2,976.06	170.96	69.93	-10.08	-114.32	-35.08	11,297.58	11,192.42	105.16	107.432	
17,400.00	6,980.81	2,977.00	2,976.06	172.55	69.93	-10.08	-114.32	-35.08	11,391.00	11,285.66	105.34	108.136	
17,500.00	6,980.73	2,977.00	2,976.06	174.13	69.93	-10.08	-114.32	-35.08	11,484.53	11,379.01	105.52	108.841	
17,600.00	6,980.66	2,977.00	2,976.06	175.72	69.93	-10.08	-114.32	-35.08	11,578.17	11,472.48	105.69	109.547	
17,700.00	6,980.58	2,977.00	2,976.06	177.31	69.93	-10.08	-114.32	-35.08	11,671.91	11,566.05	105.86	110.254	
17,800.00	6,980.50	2,977.00	2,976.06	178.89	69.93	-10.08	-114.32	-35.08	11,765.75	11,659.72	106.03	110.962	
17,900.00	6,980.42	2,977.00	2,976.06	180.48	69.93	-10.08	-114.32	-35.08	11,859.70	11,753.50	106.20	111.671	
18,000.00	6,980.34	2,977.00	2,976.06	182.07	69.93	-10.08	-114.32	-35.08	11,953.75	11,847.38	106.37	112.380	
18,100.00	6,980.26	2,977.00	2,976.06	183.66	69.93	-10.08	-114.32	-35.08	12,047.89	11,941.35	106.53	113.090	
18,200.00	6,980.19	2,977.00	2,976.06	185.24	69.93	-10.08	-114.32	-35.08	12,142.12	12,035.42	106.70	113.801	
18,300.00	6,980.11	2,977.00	2,976.06	186.83	69.93	-10.08	-114.32	-35.08	12,236.45	12,129.59	106.86	114.513	
18,400.00	6,980.03	2,977.00	2,976.06	188.42	69.93	-10.08	-114.32	-35.08	12,330.86	12,223.85	107.02	115.225	
18,500.00	6,979.95	2,977.00	2,976.06	190.01	69.93	-10.08	-114.32	-35.08	12,425.36	12,318.19	107.17	115.937	
18,600.00	6,979.87	2,977.00	2,976.06	191.60	69.93	-10.08	-114.32	-35.08	12,519.95	12,412.62	107.33	116.650	
18,700.00	6,979.79	2,977.00	2,976.06	193.19	69.93	-10.08	-114.32	-35.08	12,614.62	12,507.14	107.48	117.363	
18,800.00	6,979.72	2,977.00	2,976.06	194.78	69.93	-10.08	-114.32	-35.08	12,709.38	12,601.74	107.64	118.077	
18,900.00	6,979.64	2,977.00	2,976.06	196.37	69.93	-10.08	-114.32	-35.08	12,804.21	12,696.42	107.79	118.791	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336 - OH - OH-INC													Offset Site Error:	0.00 usft	
Survey Program:		359-A027Ua_INC-ONLY		Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
19,000.00	6,979.56	2,977.00	2,976.06	197.96	69.93	-10.08	-114.32	-35.08	12,899.12	12,791.18	107.94	119.505			
19,100.00	6,979.48	2,977.00	2,976.06	199.55	69.93	-10.08	-114.32	-35.08	12,994.11	12,886.02	108.09	120.219			
19,200.00	6,979.40	2,977.00	2,976.06	201.14	69.93	-10.08	-114.32	-35.08	13,089.17	12,980.93	108.23	120.934			
19,300.00	6,979.33	2,977.00	2,976.06	202.73	69.93	-10.08	-114.32	-35.08	13,184.30	13,075.92	108.38	121.648			
19,400.00	6,979.25	2,977.00	2,976.06	204.32	69.93	-10.08	-114.32	-35.08	13,279.51	13,170.99	108.53	122.363			
19,500.00	6,979.17	2,977.00	2,976.06	205.91	69.93	-10.08	-114.32	-35.08	13,374.79	13,266.12	108.67	123.078			
19,600.00	6,979.09	2,977.00	2,976.06	207.50	69.93	-10.08	-114.32	-35.08	13,470.13	13,361.32	108.81	123.792			
19,700.00	6,979.01	2,977.00	2,976.06	209.09	69.93	-10.08	-114.32	-35.08	13,565.54	13,456.59	108.95	124.507			
19,800.00	6,978.93	2,977.00	2,976.06	210.69	69.93	-10.08	-114.32	-35.08	13,661.02	13,551.93	109.09	125.222			
19,900.00	6,978.86	2,977.00	2,976.06	212.28	69.93	-10.08	-114.32	-35.08	13,756.56	13,647.33	109.23	125.936			
20,000.00	6,978.78	2,977.00	2,976.06	213.87	69.93	-10.08	-114.32	-35.08	13,852.17	13,742.79	109.37	126.650			
20,100.00	6,978.70	2,977.00	2,976.06	215.46	69.93	-10.08	-114.32	-35.08	13,947.83	13,838.32	109.51	127.365			
20,200.00	6,978.62	2,977.00	2,976.06	217.05	69.93	-10.08	-114.32	-35.08	14,043.56	13,933.91	109.65	128.079			
20,300.00	6,978.54	2,977.00	2,976.06	218.65	69.93	-10.08	-114.32	-35.08	14,139.35	14,029.56	109.78	128.792			
20,400.00	6,978.46	2,977.00	2,976.06	220.24	69.93	-10.08	-114.32	-35.08	14,235.19	14,125.27	109.92	129.506			
20,500.00	6,978.39	2,977.00	2,976.06	221.83	69.93	-10.08	-114.32	-35.08	14,331.09	14,221.04	110.05	130.219			
20,600.00	6,978.31	2,977.00	2,976.06	223.43	69.93	-10.08	-114.32	-35.08	14,427.05	14,316.86	110.19	130.932			
20,700.00	6,978.23	2,977.00	2,976.06	225.02	69.93	-10.08	-114.32	-35.08	14,523.06	14,412.74	110.32	131.644			
20,800.00	6,978.15	2,977.00	2,976.06	226.61	69.93	-10.08	-114.32	-35.08	14,619.12	14,508.67	110.45	132.357			
20,900.00	6,978.07	2,977.00	2,976.06	228.21	69.93	-10.08	-114.32	-35.08	14,715.24	14,604.66	110.58	133.068			
21,000.00	6,977.99	2,977.00	2,976.06	229.80	69.93	-10.08	-114.32	-35.08	14,811.41	14,700.69	110.71	133.780			
21,100.00	6,977.92	2,977.00	2,976.06	231.39	69.93	-10.08	-114.32	-35.08	14,907.63	14,796.78	110.85	134.491			
21,200.00	6,977.84	2,977.00	2,976.06	232.99	69.93	-10.08	-114.32	-35.08	15,003.90	14,892.92	110.97	135.201			
21,300.00	6,977.76	2,977.00	2,976.06	234.58	69.93	-10.08	-114.32	-35.08	15,100.21	14,989.11	111.10	135.911			
21,400.00	6,977.68	2,977.00	2,976.06	236.18	69.93	-10.08	-114.32	-35.08	15,196.58	15,085.34	111.23	136.620			
21,500.00	6,977.60	2,977.00	2,976.06	237.77	69.93	-10.08	-114.32	-35.08	15,292.99	15,181.63	111.36	137.329			
21,600.00	6,977.52	2,977.00	2,976.06	239.37	69.93	-10.08	-114.32	-35.08	15,389.44	15,277.96	111.49	138.037			
21,700.00	6,977.45	2,977.00	2,976.06	240.96	69.93	-10.08	-114.32	-35.08	15,485.95	15,374.33	111.61	138.745			
21,800.00	6,977.37	2,977.00	2,976.06	242.56	69.93	-10.08	-114.32	-35.08	15,582.49	15,470.75	111.74	139.452			
21,900.00	6,977.29	2,977.00	2,976.06	244.15	69.93	-10.08	-114.32	-35.08	15,679.08	15,567.21	111.87	140.159			
22,000.00	6,977.21	2,977.00	2,976.06	245.75	69.93	-10.08	-114.32	-35.08	15,775.71	15,663.72	111.99	140.865			
22,100.00	6,977.13	2,977.00	2,976.06	247.34	69.93	-10.08	-114.32	-35.08	15,872.38	15,760.27	112.12	141.570			
22,200.00	6,977.05	2,977.00	2,976.06	248.94	69.93	-10.08	-114.32	-35.08	15,969.10	15,856.86	112.24	142.274			
22,269.73	6,977.00	2,977.00	2,976.06	250.05	69.93	-10.08	-114.32	-35.08	16,036.56	15,924.23	112.33	142.765			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336A - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 343-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-109.42	-835.40	-2,369.61	2,513.77				
100.00	100.00	22.00	22.00	0.25	0.41	-109.42	-835.40	-2,369.61	2,512.56	2,511.90	0.66	3,819.662	
200.00	200.00	122.00	122.00	0.61	2.26	-109.42	-835.40	-2,369.61	2,512.56	2,509.70	2.86	877.061	
300.00	300.00	222.00	222.00	0.97	4.10	-109.42	-835.40	-2,369.61	2,512.56	2,507.49	5.07	495.408	
400.00	400.00	322.00	322.00	1.33	5.95	-109.42	-835.40	-2,369.61	2,512.56	2,505.28	7.28	345.196	
500.00	500.00	422.00	422.00	1.68	7.94	-109.42	-835.40	-2,369.61	2,512.56	2,502.93	9.63	260.993	
600.00	600.00	522.00	522.00	2.04	9.97	-109.42	-835.40	-2,369.61	2,512.56	2,500.55	12.01	209.160	
672.87	672.87	594.83	594.82	2.30	11.45	-109.41	-834.86	-2,369.61	2,512.38	2,498.63	13.75	182.716 CC	
700.00	700.00	621.56	621.56	2.40	11.99	-109.41	-834.87	-2,369.61	2,512.38	2,497.99	14.39	174.599	
800.00	799.98	720.10	720.09	2.76	13.99	-98.69	-835.01	-2,369.61	2,512.69	2,495.95	16.74	150.058	
849.89	849.82	769.22	769.21	2.94	14.98	-98.73	-835.14	-2,369.61	2,513.07	2,495.15	17.92	140.247	
900.00	899.86	818.52	818.51	3.12	15.98	-98.79	-835.32	-2,369.61	2,513.53	2,494.43	19.10	131.614	
1,000.00	999.73	921.79	921.73	3.48	18.34	-98.92	-835.40	-2,369.61	2,514.36	2,492.54	21.82	115.239	
1,100.00	1,099.59	1,021.66	1,021.59	3.84	20.70	-99.04	-835.40	-2,369.61	2,515.18	2,490.65	24.53	102.531	
1,200.00	1,199.45	1,119.97	1,119.89	4.20	23.01	-99.12	-834.13	-2,369.61	2,515.57	2,488.37	27.21	92.460	
1,300.00	1,299.32	1,216.09	1,216.00	4.56	25.28	-99.25	-834.52	-2,369.61	2,516.55	2,486.71	29.83	84.357	
1,400.00	1,399.18	1,321.38	1,321.18	4.92	27.76	-99.39	-835.40	-2,369.61	2,517.69	2,485.02	32.67	77.060	
1,500.00	1,499.04	1,421.25	1,421.04	5.28	29.97	-99.51	-835.40	-2,369.61	2,518.55	2,483.31	35.24	71.460	
1,600.00	1,598.91	1,521.11	1,520.91	5.64	32.18	-99.62	-835.40	-2,369.61	2,519.42	2,481.61	37.82	66.621	
1,700.00	1,698.77	1,618.74	1,618.51	6.00	34.34	-99.70	-833.83	-2,369.61	2,519.75	2,479.41	40.34	62.462	
1,800.00	1,798.63	1,714.20	1,713.96	6.36	36.45	-99.83	-834.31	-2,369.61	2,520.82	2,478.00	42.82	58.876	
1,900.00	1,898.49	1,820.80	1,820.49	6.72	38.81	-99.97	-835.40	-2,369.61	2,522.10	2,476.56	45.54	55.387	
2,000.00	1,998.36	1,920.66	1,920.36	7.09	40.68	-100.09	-835.40	-2,369.61	2,523.01	2,475.24	47.77	52.816	
2,100.00	2,098.22	2,020.53	2,020.22	7.45	42.56	-100.21	-835.40	-2,369.61	2,523.93	2,473.93	50.00	50.475	
2,200.00	2,198.08	2,120.18	2,119.87	7.81	44.42	-100.30	-834.46	-2,369.61	2,524.52	2,472.29	52.23	48.332	
2,300.00	2,297.95	2,218.03	2,217.72	8.17	46.26	-100.42	-834.59	-2,369.61	2,525.51	2,471.08	54.43	46.399	
2,400.00	2,397.81	2,315.87	2,315.55	8.53	48.09	-100.54	-834.93	-2,369.61	2,526.59	2,469.97	56.63	44.619	
2,500.00	2,497.67	2,420.01	2,419.67	8.90	50.06	-100.67	-835.40	-2,369.61	2,527.73	2,468.77	58.96	42.873	
2,600.00	2,597.54	2,519.69	2,519.35	9.26	52.02	-100.78	-835.16	-2,369.61	2,528.61	2,467.33	61.28	41.265	
2,700.00	2,697.40	2,616.13	2,615.78	9.62	53.91	-100.90	-835.35	-2,369.61	2,529.67	2,466.14	63.53	39.817	
2,800.00	2,797.26	2,719.62	2,719.26	9.98	56.24	-101.02	-835.40	-2,369.61	2,530.68	2,464.46	66.22	38.214	
2,900.00	2,897.13	2,809.00	2,808.60	10.35	58.29	-101.13	-835.40	-2,369.61	2,531.71	2,463.08	68.63	36.889 ES	
3,000.00	2,996.99	2,809.00	2,808.60	10.71	58.29	-101.13	-835.40	-2,369.61	2,535.11	2,466.18	68.93	36.778 SF	
3,100.00	3,096.85	2,809.00	2,808.60	11.07	58.29	-101.13	-835.40	-2,369.61	2,542.44	2,473.32	69.12	36.781	
3,200.00	3,196.72	2,809.00	2,808.60	11.43	58.29	-101.13	-835.40	-2,369.61	2,553.67	2,484.45	69.22	36.893	
3,300.00	3,296.58	2,809.00	2,808.60	11.80	58.29	-101.13	-835.40	-2,369.61	2,568.75	2,499.53	69.21	37.114	
3,400.00	3,396.44	2,809.00	2,808.60	12.16	58.29	-101.13	-835.40	-2,369.61	2,587.60	2,518.49	69.11	37.441	
3,500.00	3,496.31	2,809.00	2,808.60	12.52	58.29	-101.13	-835.40	-2,369.61	2,610.16	2,541.24	68.92	37.872	
3,600.00	3,596.17	2,809.00	2,808.60	12.88	58.29	-101.13	-835.40	-2,369.61	2,636.31	2,567.67	68.64	38.406	
3,700.00	3,696.03	2,809.00	2,808.60	13.25	58.29	-101.13	-835.40	-2,369.61	2,665.96	2,597.67	68.29	39.039	
3,800.00	3,795.89	2,809.00	2,808.60	13.61	58.29	-101.13	-835.40	-2,369.61	2,699.00	2,631.13	67.86	39.771	
3,900.00	3,895.76	2,809.00	2,808.60	13.97	58.29	-101.13	-835.40	-2,369.61	2,735.29	2,667.91	67.38	40.598	
4,000.00	3,995.62	2,809.00	2,808.60	14.34	58.29	-101.13	-835.40	-2,369.61	2,774.71	2,707.88	66.83	41.519	
4,100.00	4,095.48	2,809.00	2,808.60	14.70	58.29	-101.13	-835.40	-2,369.61	2,817.14	2,750.90	66.24	42.531	
4,200.00	4,195.35	2,809.00	2,808.60	15.06	58.29	-101.13	-835.40	-2,369.61	2,862.43	2,796.82	65.60	43.632	
4,300.00	4,295.21	2,809.00	2,808.60	15.42	58.29	-101.13	-835.40	-2,369.61	2,910.45	2,845.51	64.94	44.821	
4,400.00	4,395.07	2,809.00	2,808.60	15.79	58.29	-101.13	-835.40	-2,369.61	2,961.07	2,896.83	64.24	46.094	
4,500.00	4,494.94	2,809.00	2,808.60	16.15	58.29	-101.13	-835.40	-2,369.61	3,014.16	2,950.64	63.52	47.450	
4,600.00	4,594.80	2,809.00	2,808.60	16.51	58.29	-101.13	-835.40	-2,369.61	3,069.59	3,006.80	62.79	48.886	
4,700.00	4,694.66	2,809.00	2,808.60	16.87	58.29	-101.13	-835.40	-2,369.61	3,127.24	3,065.19	62.05	50.399	
4,800.00	4,794.53	2,809.00	2,808.60	17.24	58.29	-101.13	-835.40	-2,369.61	3,186.98	3,125.68	61.30	51.988	
4,900.00	4,894.39	2,809.00	2,808.60	17.60	58.29	-101.13	-835.40	-2,369.61	3,248.70	3,188.15	60.55	53.650	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336A - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		343-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
5,000.00	4,994.25	2,809.00	2,808.60	17.96	58.29	-101.13	-835.40	-2,369.61	3,312.29	3,252.48	59.81	55.382	
5,100.00	5,094.12	2,809.00	2,808.60	18.33	58.29	-101.13	-835.40	-2,369.61	3,377.65	3,318.58	59.07	57.182	
5,200.00	5,193.98	2,809.00	2,808.60	18.69	58.29	-101.13	-835.40	-2,369.61	3,444.67	3,386.33	58.34	59.048	
5,300.00	5,293.84	2,809.00	2,808.60	19.05	58.29	-101.13	-835.40	-2,369.61	3,513.25	3,455.64	57.62	60.976	
5,336.91	5,330.71	2,809.00	2,808.60	19.19	58.29	-101.13	-835.40	-2,369.61	3,538.95	3,481.60	57.35	61.703	
5,400.00	5,393.71	2,809.00	2,808.60	19.41	58.29	-101.43	-835.40	-2,369.61	3,583.30	3,526.39	56.91	62.965	
5,500.00	5,493.62	2,809.00	2,808.60	19.77	58.29	-101.93	-835.40	-2,369.61	3,654.62	3,598.41	56.21	65.013	
5,600.00	5,593.57	2,809.00	2,808.60	20.13	58.29	-102.44	-835.40	-2,369.61	3,727.14	3,671.61	55.53	67.118	
5,700.00	5,693.53	2,809.00	2,808.60	20.49	58.29	-102.98	-835.40	-2,369.61	3,800.78	3,745.92	54.86	69.277	
5,800.00	5,793.52	2,809.00	2,808.60	20.85	58.29	-103.52	-835.40	-2,369.61	3,875.47	3,821.26	54.21	71.489	
5,900.00	5,893.52	2,809.00	2,808.60	21.20	58.29	-104.08	-835.40	-2,369.61	3,951.15	3,897.58	53.58	73.749	
5,936.48	5,930.00	2,809.00	2,808.60	21.33	58.29	-115.05	-835.40	-2,369.61	3,979.00	3,925.65	53.35	74.586	
6,000.00	5,993.52	2,809.00	2,808.60	21.56	58.29	-115.05	-835.40	-2,369.61	4,027.79	3,974.83	52.96	76.057	
6,100.00	6,093.52	2,809.00	2,808.60	21.91	58.29	-115.05	-835.40	-2,369.61	4,105.42	4,053.06	52.36	78.408	
6,200.00	6,193.52	2,809.00	2,808.60	22.27	58.29	-115.05	-835.40	-2,369.61	4,184.00	4,132.22	51.78	80.800	
6,300.00	6,293.52	2,809.00	2,808.60	22.62	58.29	-115.05	-835.40	-2,369.61	4,263.48	4,212.25	51.23	83.229	
6,358.48	6,352.00	2,809.00	2,808.60	22.83	58.29	-115.05	-835.40	-2,369.61	4,310.35	4,259.44	50.91	84.666	
6,400.00	6,393.49	2,809.00	2,808.60	22.97	58.29	-37.42	-835.40	-2,369.61	4,343.17	4,292.49	50.68	85.704	
6,450.00	6,443.20	2,809.00	2,808.60	23.15	58.29	-34.35	-835.40	-2,369.61	4,381.09	4,330.72	50.37	86.975	
6,500.00	6,492.36	2,809.00	2,808.60	23.33	58.29	-31.80	-835.40	-2,369.61	4,417.10	4,367.05	50.05	88.256	
6,550.00	6,540.64	2,809.00	2,808.60	23.51	58.29	-29.67	-835.40	-2,369.61	4,451.00	4,401.30	49.71	89.543	
6,600.00	6,587.77	2,809.00	2,808.60	23.69	58.29	-27.90	-835.40	-2,369.61	4,482.66	4,433.31	49.35	90.829	
6,650.00	6,633.44	2,809.00	2,808.60	23.88	58.29	-26.42	-835.40	-2,369.61	4,511.91	4,462.93	48.98	92.111	
6,700.00	6,677.37	2,809.00	2,808.60	24.07	58.29	-25.18	-835.40	-2,369.61	4,538.63	4,490.03	48.60	93.382	
6,750.00	6,719.30	2,809.00	2,808.60	24.26	58.29	-24.15	-835.40	-2,369.61	4,562.71	4,514.49	48.21	94.635	
6,800.00	6,758.97	2,809.00	2,808.60	24.46	58.29	-23.29	-835.40	-2,369.61	4,584.02	4,536.20	47.82	95.864	
6,850.00	6,796.12	2,809.00	2,808.60	24.67	58.29	-22.60	-835.40	-2,369.61	4,602.49	4,555.07	47.42	97.060	
6,900.00	6,830.54	2,809.00	2,808.60	24.88	58.29	-22.04	-835.40	-2,369.61	4,618.03	4,571.01	47.02	98.214	
6,950.00	6,862.00	2,809.00	2,808.60	25.11	58.29	-21.60	-835.40	-2,369.61	4,630.57	4,583.95	46.62	99.316	
7,000.00	6,890.33	2,809.00	2,808.60	25.34	58.29	-21.29	-835.40	-2,369.61	4,640.07	4,593.83	46.24	100.356	
7,050.00	6,915.33	2,809.00	2,808.60	25.59	58.29	-21.07	-835.40	-2,369.61	4,646.48	4,600.62	45.86	101.324	
7,100.00	6,936.86	2,809.00	2,808.60	25.85	58.29	-20.97	-835.40	-2,369.61	4,649.78	4,604.29	45.49	102.208	
7,150.00	6,954.79	2,809.00	2,808.60	26.12	58.29	-20.96	-835.40	-2,369.61	4,649.95	4,604.81	45.15	102.997	
7,200.00	6,968.99	2,809.00	2,808.60	26.40	58.29	-21.06	-835.40	-2,369.61	4,647.00	4,602.18	44.82	103.681	
7,250.00	6,979.40	2,809.00	2,808.60	26.69	58.29	-21.26	-835.40	-2,369.61	4,640.93	4,596.41	44.52	104.249	
7,300.00	6,985.94	2,809.00	2,808.60	27.00	58.29	-21.56	-835.40	-2,369.61	4,631.77	4,587.53	44.24	104.693	
7,350.00	6,988.56	2,809.00	2,808.60	27.31	58.29	-21.98	-835.40	-2,369.61	4,619.56	4,575.56	43.99	105.005	
7,358.93	6,988.62	2,809.00	2,808.60	27.36	58.29	-22.07	-835.40	-2,369.61	4,617.06	4,573.10	43.96	105.040	
7,400.00	6,988.59	2,809.00	2,808.60	27.63	58.29	-22.07	-835.40	-2,369.61	4,605.52	4,561.75	43.77	105.221	
7,500.00	6,988.52	2,809.00	2,808.60	28.33	58.29	-22.07	-835.40	-2,369.61	4,578.83	4,535.46	43.37	105.568	
7,600.00	6,988.45	2,809.00	2,808.60	29.10	58.29	-22.07	-835.40	-2,369.61	4,554.19	4,511.13	43.06	105.772	
7,658.93	6,988.41	2,809.00	2,808.60	29.59	58.29	-22.07	-835.40	-2,369.61	4,540.64	4,497.73	42.91	105.821	
7,700.00	6,988.38	2,809.00	2,808.60	29.94	58.29	-21.90	-835.40	-2,369.61	4,531.51	4,488.69	42.82	105.829	
7,800.00	6,988.31	2,809.00	2,808.60	30.84	58.29	-21.49	-835.40	-2,369.61	4,509.89	4,467.25	42.63	105.788	
7,900.00	6,988.24	2,809.00	2,808.60	31.79	58.29	-21.09	-835.40	-2,369.61	4,489.13	4,446.64	42.48	105.669	
8,000.00	6,988.16	2,809.00	2,808.60	32.78	58.29	-20.72	-835.40	-2,369.61	4,469.27	4,426.90	42.37	105.476	
8,100.00	6,988.09	2,809.00	2,808.60	33.82	58.29	-20.36	-835.40	-2,369.61	4,450.35	4,408.06	42.30	105.215	
8,200.00	6,988.01	2,809.00	2,808.60	34.88	58.29	-20.02	-835.40	-2,369.61	4,432.42	4,390.16	42.26	104.889	
8,300.00	6,987.94	2,809.00	2,808.60	35.98	58.29	-19.70	-835.40	-2,369.61	4,415.49	4,373.23	42.25	104.502	
8,400.00	6,987.86	2,809.00	2,808.60	37.11	58.29	-19.39	-835.40	-2,369.61	4,399.60	4,357.32	42.28	104.057	
8,416.35	6,987.85	2,809.00	2,808.60	37.29	58.29	-19.35	-835.40	-2,369.61	4,397.10	4,354.81	42.29	103.978	
8,500.00	6,987.78	2,809.00	2,808.60	38.25	58.29	-19.35	-835.40	-2,369.61	4,385.18	4,342.83	42.36	103.522	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336A - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		343-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,600.00	6,987.70	2,809.00	2,808.60	39.43	58.29	-19.35	-835.40	-2,369.61	4,373.00	4,330.47	42.52	102.836	
8,700.00	6,987.62	2,809.00	2,808.60	40.64	58.29	-19.35	-835.40	-2,369.61	4,363.06	4,320.29	42.78	101.998	
8,800.00	6,987.55	2,809.00	2,808.60	41.88	58.29	-19.35	-835.40	-2,369.61	4,355.41	4,312.29	43.12	101.013	
8,900.00	6,987.47	2,809.00	2,808.60	43.14	58.29	-19.35	-835.40	-2,369.61	4,350.03	4,306.49	43.55	99.889	
9,000.00	6,987.39	2,809.00	2,808.60	44.42	58.29	-19.35	-835.40	-2,369.61	4,346.96	4,302.89	44.07	98.639	
9,083.81	6,987.32	2,809.00	2,808.60	45.51	58.29	-19.35	-835.40	-2,369.61	4,346.15	4,301.58	44.57	97.503	
9,100.00	6,987.31	2,809.00	2,808.60	45.72	58.29	-19.35	-835.40	-2,369.61	4,346.18	4,301.50	44.68	97.278	
9,200.00	6,987.23	2,809.00	2,808.60	47.04	58.29	-19.35	-835.40	-2,369.61	4,347.70	4,302.33	45.37	95.822	
9,300.00	6,987.15	2,809.00	2,808.60	48.38	58.29	-19.35	-835.40	-2,369.61	4,351.52	4,305.37	46.15	94.293	
9,400.00	6,987.08	2,809.00	2,808.60	49.73	58.29	-19.35	-835.40	-2,369.61	4,357.64	4,310.63	47.00	92.711	
9,500.00	6,987.00	2,809.00	2,808.60	51.10	58.29	-19.35	-835.40	-2,369.61	4,366.03	4,318.10	47.93	91.097	
9,600.00	6,986.92	2,809.00	2,808.60	52.48	58.29	-19.35	-835.40	-2,369.61	4,376.70	4,327.78	48.92	89.471	
9,700.00	6,986.84	2,809.00	2,808.60	53.87	58.29	-19.35	-835.40	-2,369.61	4,389.61	4,339.65	49.97	87.853	
9,800.00	6,986.76	2,809.00	2,808.60	55.28	58.29	-19.35	-835.40	-2,369.61	4,404.76	4,353.70	51.06	86.259	
9,900.00	6,986.68	2,809.00	2,808.60	56.69	58.29	-19.35	-835.40	-2,369.61	4,422.12	4,369.92	52.21	84.704	
10,000.00	6,986.61	2,809.00	2,808.60	58.12	58.29	-19.35	-835.40	-2,369.61	4,441.67	4,388.28	53.39	83.201	
10,100.00	6,986.53	2,809.00	2,808.60	59.55	58.29	-19.35	-835.40	-2,369.61	4,463.37	4,408.78	54.59	81.759	
10,200.00	6,986.45	2,809.00	2,808.60	61.00	58.29	-19.35	-835.40	-2,369.61	4,487.19	4,431.37	55.82	80.386	
10,300.00	6,986.37	2,809.00	2,808.60	62.45	58.29	-19.35	-835.40	-2,369.61	4,513.11	4,456.04	57.06	79.089	
10,400.00	6,986.29	2,809.00	2,808.60	63.90	58.29	-19.35	-835.40	-2,369.61	4,541.08	4,482.76	58.32	77.869	
10,500.00	6,986.21	2,809.00	2,808.60	65.37	58.29	-19.35	-835.40	-2,369.61	4,571.06	4,511.49	59.57	76.730	
10,600.00	6,986.14	2,809.00	2,808.60	66.84	58.29	-19.35	-835.40	-2,369.61	4,603.03	4,542.20	60.83	75.672	
10,700.00	6,986.06	2,809.00	2,808.60	68.32	58.29	-19.35	-835.40	-2,369.61	4,636.93	4,574.85	62.08	74.695	
10,800.00	6,985.98	2,809.00	2,808.60	69.80	58.29	-19.35	-835.40	-2,369.61	4,672.72	4,609.40	63.32	73.798	
10,900.00	6,985.90	2,809.00	2,808.60	71.29	58.29	-19.35	-835.40	-2,369.61	4,710.37	4,645.82	64.54	72.979	
11,000.00	6,985.82	2,809.00	2,808.60	72.78	58.29	-19.35	-835.40	-2,369.61	4,749.82	4,684.07	65.75	72.236	
11,100.00	6,985.75	2,809.00	2,808.60	74.28	58.29	-19.35	-835.40	-2,369.61	4,791.04	4,724.09	66.95	71.566	
11,200.00	6,985.67	2,809.00	2,808.60	75.78	58.29	-19.35	-835.40	-2,369.61	4,833.97	4,765.86	68.12	70.967	
11,300.00	6,985.59	2,809.00	2,808.60	77.29	58.29	-19.35	-835.40	-2,369.61	4,878.58	4,809.32	69.26	70.435	
11,400.00	6,985.51	2,809.00	2,808.60	78.80	58.29	-19.35	-835.40	-2,369.61	4,924.81	4,854.43	70.39	69.968	
11,500.00	6,985.43	2,809.00	2,808.60	80.31	58.29	-19.35	-835.40	-2,369.61	4,972.63	4,901.14	71.48	69.563	
11,600.00	6,985.35	2,809.00	2,808.60	81.83	58.29	-19.35	-835.40	-2,369.61	5,021.98	4,949.42	72.55	69.217	
11,700.00	6,985.28	2,809.00	2,808.60	83.35	58.29	-19.35	-835.40	-2,369.61	5,072.82	4,999.22	73.60	68.927	
11,800.00	6,985.20	2,809.00	2,808.60	84.87	58.29	-19.35	-835.40	-2,369.61	5,125.11	5,050.49	74.61	68.689	
11,900.00	6,985.12	2,809.00	2,808.60	86.40	58.29	-19.35	-835.40	-2,369.61	5,178.80	5,103.20	75.60	68.502	
12,000.00	6,985.04	2,809.00	2,808.60	87.93	58.29	-19.35	-835.40	-2,369.61	5,233.85	5,157.29	76.56	68.363	
12,100.00	6,984.96	2,809.00	2,808.60	89.46	58.29	-19.35	-835.40	-2,369.61	5,290.22	5,212.73	77.49	68.269	
12,200.00	6,984.88	2,809.00	2,808.60	90.99	58.29	-19.35	-835.40	-2,369.61	5,347.87	5,269.47	78.39	68.218	
12,300.00	6,984.81	2,809.00	2,808.60	92.53	58.29	-19.35	-835.40	-2,369.61	5,406.75	5,327.48	79.27	68.207	
12,400.00	6,984.73	2,809.00	2,808.60	94.07	58.29	-19.35	-835.40	-2,369.61	5,466.82	5,386.71	80.12	68.235	
12,500.00	6,984.65	2,809.00	2,808.60	95.61	58.29	-19.35	-835.40	-2,369.61	5,528.06	5,447.12	80.94	68.299	
12,600.00	6,984.57	2,809.00	2,808.60	97.15	58.29	-19.35	-835.40	-2,369.61	5,590.41	5,508.67	81.73	68.398	
12,700.00	6,984.49	2,809.00	2,808.60	98.70	58.29	-19.35	-835.40	-2,369.61	5,653.84	5,571.33	82.50	68.530	
12,800.00	6,984.41	2,809.00	2,808.60	100.25	58.29	-19.35	-835.40	-2,369.61	5,718.31	5,635.07	83.25	68.692	
12,900.00	6,984.34	2,809.00	2,808.60	101.80	58.29	-19.35	-835.40	-2,369.61	5,783.80	5,699.84	83.96	68.884	
13,000.00	6,984.26	2,809.00	2,808.60	103.35	58.29	-19.35	-835.40	-2,369.61	5,850.26	5,765.60	84.66	69.104	
13,100.00	6,984.18	2,809.00	2,808.60	104.90	58.29	-19.35	-835.40	-2,369.61	5,917.67	5,832.34	85.33	69.350	
13,200.00	6,984.10	2,809.00	2,808.60	106.45	58.29	-19.35	-835.40	-2,369.61	5,985.99	5,900.01	85.98	69.622	
13,300.00	6,984.02	2,809.00	2,808.60	108.01	58.29	-19.35	-835.40	-2,369.61	6,055.19	5,968.58	86.61	69.917	
13,400.00	6,983.94	2,809.00	2,808.60	109.56	58.29	-19.35	-835.40	-2,369.61	6,125.24	6,038.03	87.21	70.234	
13,500.00	6,983.87	2,809.00	2,808.60	111.12	58.29	-19.35	-835.40	-2,369.61	6,196.11	6,108.31	87.80	70.574	
13,600.00	6,983.79	2,809.00	2,808.60	112.68	58.29	-19.35	-835.40	-2,369.61	6,267.78	6,179.41	88.36	70.933	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336A - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		343-A027Ua_INC-ONLY					Rule Assigned:						Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,700.00	6,983.71	2,809.00	2,808.60	114.24	58.29	-19.35	-835.40	-2,369.61	6,340.21	6,251.30	88.91	71.312		
13,800.00	6,983.63	2,809.00	2,808.60	115.80	58.29	-19.35	-835.40	-2,369.61	6,413.38	6,323.95	89.44	71.710		
13,900.00	6,983.55	2,809.00	2,808.60	117.37	58.29	-19.35	-835.40	-2,369.61	6,487.27	6,397.33	89.95	72.125		
14,000.00	6,983.47	2,809.00	2,808.60	118.93	58.29	-19.35	-835.40	-2,369.61	6,561.86	6,471.42	90.44	72.556		
14,100.00	6,983.40	2,809.00	2,808.60	120.50	58.29	-19.35	-835.40	-2,369.61	6,637.11	6,546.19	90.91	73.004		
14,200.00	6,983.32	2,809.00	2,808.60	122.06	58.29	-19.35	-835.40	-2,369.61	6,713.01	6,621.63	91.37	73.467		
14,300.00	6,983.24	2,809.00	2,808.60	123.63	58.29	-19.35	-835.40	-2,369.61	6,789.53	6,697.71	91.82	73.944		
14,400.00	6,983.16	2,809.00	2,808.60	125.20	58.29	-19.35	-835.40	-2,369.61	6,866.65	6,774.40	92.25	74.435		
14,500.00	6,983.08	2,809.00	2,808.60	126.77	58.29	-19.35	-835.40	-2,369.61	6,944.36	6,851.69	92.67	74.939		
14,600.00	6,983.00	2,809.00	2,808.60	128.33	58.29	-19.35	-835.40	-2,369.61	7,022.64	6,929.56	93.07	75.455		
14,700.00	6,982.93	2,809.00	2,808.60	129.91	58.29	-19.35	-835.40	-2,369.61	7,101.45	7,007.99	93.46	75.984		
14,800.00	6,982.85	2,809.00	2,808.60	131.48	58.29	-19.35	-835.40	-2,369.61	7,180.80	7,086.96	93.84	76.524		
14,900.00	6,982.77	2,809.00	2,808.60	133.05	58.29	-19.35	-835.40	-2,369.61	7,260.66	7,166.45	94.20	77.074		
15,000.00	6,982.69	2,809.00	2,808.60	134.62	58.29	-19.35	-835.40	-2,369.61	7,341.01	7,246.45	94.56	77.635		
15,100.00	6,982.61	2,809.00	2,808.60	136.20	58.29	-19.35	-835.40	-2,369.61	7,421.83	7,326.93	94.90	78.206		
15,200.00	6,982.54	2,809.00	2,808.60	137.77	58.29	-19.35	-835.40	-2,369.61	7,503.12	7,407.89	95.23	78.787		
15,300.00	6,982.46	2,809.00	2,808.60	139.35	58.29	-19.35	-835.40	-2,369.61	7,584.86	7,489.30	95.56	79.376		
15,400.00	6,982.38	2,809.00	2,808.60	140.92	58.29	-19.35	-835.40	-2,369.61	7,667.03	7,571.16	95.87	79.974		
15,500.00	6,982.30	2,809.00	2,808.60	142.50	58.29	-19.35	-835.40	-2,369.61	7,749.62	7,653.44	96.17	80.581		
15,600.00	6,982.22	2,809.00	2,808.60	144.07	58.29	-19.35	-835.40	-2,369.61	7,832.61	7,736.14	96.47	81.195		
15,700.00	6,982.14	2,809.00	2,808.60	145.65	58.29	-19.35	-835.40	-2,369.61	7,916.00	7,819.25	96.75	81.817		
15,800.00	6,982.07	2,809.00	2,808.60	147.23	58.29	-19.35	-835.40	-2,369.61	7,999.77	7,902.74	97.03	82.445		
15,900.00	6,981.99	2,809.00	2,808.60	148.81	58.29	-19.35	-835.40	-2,369.61	8,083.90	7,986.60	97.30	83.081		
16,000.00	6,981.91	2,809.00	2,808.60	150.39	58.29	-19.35	-835.40	-2,369.61	8,168.40	8,070.84	97.56	83.724		
16,100.00	6,981.83	2,809.00	2,808.60	151.97	58.29	-19.35	-835.40	-2,369.61	8,253.24	8,155.42	97.82	84.373		
16,200.00	6,981.75	2,809.00	2,808.60	153.55	58.29	-19.35	-835.40	-2,369.61	8,338.42	8,240.35	98.07	85.027		
16,300.00	6,981.67	2,809.00	2,808.60	155.13	58.29	-19.35	-835.40	-2,369.61	8,423.92	8,325.61	98.31	85.688		
16,400.00	6,981.60	2,809.00	2,808.60	156.71	58.29	-19.35	-835.40	-2,369.61	8,509.74	8,411.20	98.55	86.354		
16,500.00	6,981.52	2,809.00	2,808.60	158.29	58.29	-19.35	-835.40	-2,369.61	8,595.87	8,497.09	98.77	87.025		
16,600.00	6,981.44	2,809.00	2,808.60	159.88	58.29	-19.35	-835.40	-2,369.61	8,682.29	8,583.29	99.00	87.701		
16,700.00	6,981.36	2,809.00	2,808.60	161.46	58.29	-19.35	-835.40	-2,369.61	8,769.00	8,669.79	99.22	88.383		
16,800.00	6,981.28	2,809.00	2,808.60	163.04	58.29	-19.35	-835.40	-2,369.61	8,856.00	8,756.57	99.43	89.068		
16,900.00	6,981.20	2,809.00	2,808.60	164.62	58.29	-19.35	-835.40	-2,369.61	8,943.26	8,843.62	99.64	89.759		
17,000.00	6,981.13	2,809.00	2,808.60	166.21	58.29	-19.35	-835.40	-2,369.61	9,030.79	8,930.95	99.84	90.453		
17,100.00	6,981.05	2,809.00	2,808.60	167.79	58.29	-19.35	-835.40	-2,369.61	9,118.57	9,018.54	100.04	91.151		
17,200.00	6,980.97	2,809.00	2,808.60	169.38	58.29	-19.35	-835.40	-2,369.61	9,206.61	9,106.38	100.23	91.854		
17,300.00	6,980.89	2,809.00	2,808.60	170.96	58.29	-19.35	-835.40	-2,369.61	9,294.88	9,194.46	100.42	92.560		
17,400.00	6,980.81	2,809.00	2,808.60	172.55	58.29	-19.35	-835.40	-2,369.61	9,383.39	9,282.79	100.61	93.269		
17,500.00	6,980.73	2,809.00	2,808.60	174.13	58.29	-19.35	-835.40	-2,369.61	9,472.13	9,371.35	100.79	93.982		
17,600.00	6,980.66	2,809.00	2,808.60	175.72	58.29	-19.35	-835.40	-2,369.61	9,561.10	9,460.13	100.96	94.698		
17,700.00	6,980.58	2,809.00	2,808.60	177.31	58.29	-19.35	-835.40	-2,369.61	9,650.27	9,549.14	101.14	95.417		
17,800.00	6,980.50	2,809.00	2,808.60	178.89	58.29	-19.35	-835.40	-2,369.61	9,739.66	9,638.36	101.31	96.139		
17,900.00	6,980.42	2,809.00	2,808.60	180.48	58.29	-19.35	-835.40	-2,369.61	9,829.26	9,727.78	101.47	96.864		
18,000.00	6,980.34	2,809.00	2,808.60	182.07	58.29	-19.35	-835.40	-2,369.61	9,919.05	9,817.41	101.64	97.591		
18,100.00	6,980.26	2,809.00	2,808.60	183.66	58.29	-19.35	-835.40	-2,369.61	10,009.03	9,907.23	101.80	98.321		
18,200.00	6,980.19	2,809.00	2,808.60	185.24	58.29	-19.35	-835.40	-2,369.61	10,099.21	9,997.25	101.96	99.054		
18,300.00	6,980.11	2,809.00	2,808.60	186.83	58.29	-19.35	-835.40	-2,369.61	10,189.57	10,087.45	102.11	99.788		
18,400.00	6,980.03	2,809.00	2,808.60	188.42	58.29	-19.35	-835.40	-2,369.61	10,280.10	10,177.84	102.26	100.525		
18,500.00	6,979.95	2,809.00	2,808.60	190.01	58.29	-19.35	-835.40	-2,369.61	10,370.81	10,268.40	102.41	101.264		
18,600.00	6,979.87	2,809.00	2,808.60	191.60	58.29	-19.35	-835.40	-2,369.61	10,461.69	10,359.13	102.56	102.005		
18,700.00	6,979.79	2,809.00	2,808.60	193.19	58.29	-19.35	-835.40	-2,369.61	10,552.73	10,450.03	102.71	102.748		
18,800.00	6,979.72	2,809.00	2,808.60	194.78	58.29	-19.35	-835.40	-2,369.61	10,643.94	10,541.09	102.85	103.492		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336A - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 343-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,900.00	6,979.64	2,809.00	2,808.60	196.37	58.29	-19.35	-835.40	-2,369.61	10,735.30	10,632.31	102.99	104.238	
19,000.00	6,979.56	2,809.00	2,808.60	197.96	58.29	-19.35	-835.40	-2,369.61	10,826.81	10,723.69	103.13	104.986	
19,100.00	6,979.48	2,809.00	2,808.60	199.55	58.29	-19.35	-835.40	-2,369.61	10,918.48	10,815.21	103.26	105.735	
19,200.00	6,979.40	2,809.00	2,808.60	201.14	58.29	-19.35	-835.40	-2,369.61	11,010.29	10,906.89	103.40	106.486	
19,300.00	6,979.33	2,809.00	2,808.60	202.73	58.29	-19.35	-835.40	-2,369.61	11,102.24	10,998.71	103.53	107.238	
19,400.00	6,979.25	2,809.00	2,808.60	204.32	58.29	-19.35	-835.40	-2,369.61	11,194.32	11,090.66	103.66	107.991	
19,500.00	6,979.17	2,809.00	2,808.60	205.91	58.29	-19.35	-835.40	-2,369.61	11,286.55	11,182.76	103.79	108.745	
19,600.00	6,979.09	2,809.00	2,808.60	207.50	58.29	-19.35	-835.40	-2,369.61	11,378.90	11,274.98	103.92	109.501	
19,700.00	6,979.01	2,809.00	2,808.60	209.09	58.29	-19.35	-835.40	-2,369.61	11,471.38	11,367.34	104.04	110.257	
19,800.00	6,978.93	2,809.00	2,808.60	210.69	58.29	-19.35	-835.40	-2,369.61	11,563.99	11,459.82	104.17	111.014	
19,900.00	6,978.86	2,809.00	2,808.60	212.28	58.29	-19.35	-835.40	-2,369.61	11,656.72	11,552.43	104.29	111.773	
20,000.00	6,978.78	2,809.00	2,808.60	213.87	58.29	-19.35	-835.40	-2,369.61	11,749.57	11,645.15	104.41	112.532	
20,100.00	6,978.70	2,809.00	2,808.60	215.46	58.29	-19.35	-835.40	-2,369.61	11,842.53	11,738.00	104.53	113.292	
20,200.00	6,978.62	2,809.00	2,808.60	217.05	58.29	-19.35	-835.40	-2,369.61	11,935.61	11,830.96	104.65	114.052	
20,300.00	6,978.54	2,809.00	2,808.60	218.65	58.29	-19.35	-835.40	-2,369.61	12,028.80	11,924.03	104.77	114.814	
20,400.00	6,978.46	2,809.00	2,808.60	220.24	58.29	-19.35	-835.40	-2,369.61	12,122.10	12,017.21	104.88	115.575	
20,500.00	6,978.39	2,809.00	2,808.60	221.83	58.29	-19.35	-835.40	-2,369.61	12,215.50	12,110.50	105.00	116.338	
20,600.00	6,978.31	2,809.00	2,808.60	223.43	58.29	-19.35	-835.40	-2,369.61	12,309.01	12,203.89	105.12	117.100	
20,700.00	6,978.23	2,809.00	2,808.60	225.02	58.29	-19.35	-835.40	-2,369.61	12,402.62	12,297.39	105.23	117.864	
20,800.00	6,978.15	2,809.00	2,808.60	226.61	58.29	-19.35	-835.40	-2,369.61	12,496.33	12,390.99	105.34	118.627	
20,900.00	6,978.07	2,809.00	2,808.60	228.21	58.29	-19.35	-835.40	-2,369.61	12,590.13	12,484.68	105.45	119.391	
21,000.00	6,977.99	2,809.00	2,808.60	229.80	58.29	-19.35	-835.40	-2,369.61	12,684.03	12,578.47	105.56	120.155	
21,100.00	6,977.92	2,809.00	2,808.60	231.39	58.29	-19.35	-835.40	-2,369.61	12,778.02	12,672.35	105.67	120.919	
21,200.00	6,977.84	2,809.00	2,808.60	232.99	58.29	-19.35	-835.40	-2,369.61	12,872.11	12,766.32	105.78	121.684	
21,300.00	6,977.76	2,809.00	2,808.60	234.58	58.29	-19.35	-835.40	-2,369.61	12,966.28	12,860.39	105.89	122.449	
21,400.00	6,977.68	2,809.00	2,808.60	236.18	58.29	-19.35	-835.40	-2,369.61	13,060.54	12,954.54	106.00	123.213	
21,500.00	6,977.60	2,809.00	2,808.60	237.77	58.29	-19.35	-835.40	-2,369.61	13,154.88	13,048.77	106.11	123.978	
21,600.00	6,977.52	2,809.00	2,808.60	239.37	58.29	-19.35	-835.40	-2,369.61	13,249.31	13,143.09	106.21	124.743	
21,700.00	6,977.45	2,809.00	2,808.60	240.96	58.29	-19.35	-835.40	-2,369.61	13,343.81	13,237.49	106.32	125.508	
21,800.00	6,977.37	2,809.00	2,808.60	242.56	58.29	-19.35	-835.40	-2,369.61	13,438.40	13,331.98	106.42	126.272	
21,900.00	6,977.29	2,809.00	2,808.60	244.15	58.29	-19.35	-835.40	-2,369.61	13,533.06	13,426.54	106.53	127.037	
22,000.00	6,977.21	2,809.00	2,808.60	245.75	58.29	-19.35	-835.40	-2,369.61	13,627.81	13,521.17	106.63	127.801	
22,100.00	6,977.13	2,809.00	2,808.60	247.34	58.29	-19.35	-835.40	-2,369.61	13,722.62	13,615.88	106.74	128.566	
22,200.00	6,977.05	2,809.00	2,808.60	248.94	58.29	-19.35	-835.40	-2,369.61	13,817.51	13,710.67	106.84	129.330	
22,269.73	6,977.00	2,809.00	2,808.60	250.05	58.29	-19.35	-835.40	-2,369.61	13,883.71	13,776.80	106.91	129.862	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #350A - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 100-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	283.89	283.88	0.00	1.81	89.01	125.66	7,278.68	7,279.80				
100.00	100.00	365.12	365.12	0.25	2.14	89.01	126.07	7,279.03	7,280.23	7,277.92	2.31	3,152.172	ES
200.00	200.00	428.15	428.14	0.61	2.37	89.01	126.20	7,279.48	7,280.99	7,278.10	2.89	2,515.778	
300.00	300.00	500.00	499.98	0.97	2.61	89.01	126.13	7,280.62	7,282.48	7,278.99	3.50	2,081.037	
400.00	400.00	541.73	541.69	1.33	2.74	89.01	126.07	7,281.53	7,284.47	7,280.47	4.00	1,822.232	
500.00	500.00	600.00	599.95	1.68	2.93	89.01	126.13	7,282.91	7,286.91	7,282.36	4.55	1,601.273	
600.00	600.00	669.04	668.97	2.04	3.16	89.01	126.25	7,284.89	7,289.84	7,284.70	5.14	1,418.856	
700.00	700.00	700.00	699.91	2.40	3.26	89.01	126.26	7,285.95	7,293.47	7,287.87	5.60	1,302.852	
800.00	799.98	765.28	765.13	2.76	3.47	99.68	126.15	7,288.65	7,298.00	7,291.82	6.17	1,181.983	
849.89	849.82	800.00	799.81	2.94	3.59	99.64	125.98	7,290.37	7,300.81	7,294.34	6.47	1,128.600	
900.00	899.86	800.00	799.81	3.12	3.59	99.64	125.98	7,290.37	7,303.87	7,297.22	6.65	1,098.876	
1,000.00	999.73	844.46	844.19	3.48	3.77	99.66	125.66	7,292.95	7,310.62	7,303.41	7.21	1,014.451	
1,100.00	1,099.59	900.00	899.59	3.84	4.02	99.69	125.09	7,296.83	7,318.32	7,310.50	7.82	936.024	
1,200.00	1,199.45	932.41	931.90	4.20	4.16	99.70	124.68	7,299.35	7,326.70	7,318.38	8.32	880.712	
1,300.00	1,299.32	1,000.00	999.27	4.56	4.45	99.74	123.71	7,304.78	7,335.62	7,326.64	8.98	816.931	
1,400.00	1,399.18	1,045.19	1,044.28	4.92	4.61	99.76	123.04	7,308.67	7,345.13	7,335.64	9.49	773.694	
1,500.00	1,499.04	1,100.00	1,098.84	5.28	4.80	99.79	122.32	7,313.88	7,355.43	7,345.38	10.04	732.476	
1,600.00	1,598.91	1,100.00	1,098.84	5.64	4.80	99.79	122.32	7,313.88	7,366.60	7,356.21	10.39	708.908	
1,700.00	1,698.77	1,169.43	1,167.86	6.00	5.09	99.83	121.30	7,321.28	7,378.30	7,367.26	11.04	668.138	
1,800.00	1,798.63	1,216.83	1,214.93	6.36	5.29	99.85	120.42	7,326.87	7,390.93	7,379.33	11.60	637.240	
1,900.00	1,898.49	1,300.00	1,297.45	6.72	5.64	99.90	118.76	7,337.07	7,404.08	7,391.76	12.31	601.339	
2,000.00	1,998.36	1,333.74	1,330.90	7.09	5.79	99.92	118.06	7,341.40	7,417.71	7,404.91	12.81	579.241	
2,100.00	2,098.22	1,400.00	1,396.52	7.45	6.07	99.96	116.65	7,350.52	7,432.25	7,418.80	13.44	552.889	
2,200.00	2,198.08	1,400.00	1,396.52	7.81	6.07	99.96	116.65	7,350.52	7,447.38	7,433.59	13.78	540.333	
2,300.00	2,297.95	1,469.48	1,465.21	8.17	6.37	100.00	115.34	7,360.83	7,463.19	7,448.76	14.44	516.904	
2,400.00	2,397.81	1,500.00	1,495.37	8.53	6.50	100.01	114.89	7,365.55	7,479.74	7,464.82	14.91	501.510	
2,500.00	2,497.67	1,556.34	1,550.96	8.90	6.74	100.04	114.16	7,374.66	7,496.94	7,481.43	15.51	483.282	
2,600.00	2,597.54	1,600.00	1,593.97	9.26	6.94	100.06	113.60	7,382.14	7,514.96	7,498.91	16.05	468.218	
2,700.00	2,697.40	1,647.16	1,640.37	9.62	7.15	100.09	112.89	7,390.54	7,533.67	7,517.07	16.61	453.659	
2,800.00	2,797.26	1,700.00	1,692.30	9.98	7.38	100.12	111.79	7,400.27	7,552.99	7,535.80	17.19	439.406	
2,900.00	2,897.13	1,756.06	1,747.32	10.35	7.61	100.15	110.33	7,410.90	7,572.88	7,555.11	17.77	426.150	
3,000.00	2,996.99	1,800.00	1,790.40	10.71	7.80	100.18	109.01	7,419.43	7,593.32	7,575.03	18.30	415.043	
3,100.00	3,096.85	1,845.55	1,835.00	11.07	8.01	100.21	107.51	7,428.58	7,614.44	7,595.59	18.85	403.941	
3,200.00	3,196.72	1,900.00	1,888.18	11.43	8.26	100.25	105.56	7,440.09	7,636.41	7,616.96	19.45	392.610	
3,300.00	3,296.58	1,928.72	1,916.19	11.80	8.40	100.27	104.50	7,446.37	7,659.02	7,639.10	19.92	384.541	
3,400.00	3,396.44	2,000.00	1,985.62	12.16	8.74	100.32	101.97	7,462.29	7,682.27	7,661.67	20.61	372.791	
3,500.00	3,496.31	2,000.00	1,985.62	12.52	8.74	100.32	101.97	7,462.29	7,706.18	7,685.26	20.92	368.399	
3,600.00	3,596.17	2,057.10	2,041.10	12.88	9.02	100.35	99.84	7,475.63	7,730.69	7,709.15	21.54	358.859	
3,700.00	3,696.03	2,100.00	2,082.65	13.25	9.23	100.39	98.01	7,486.15	7,756.12	7,734.04	22.09	351.169	
3,800.00	3,795.89	2,137.28	2,118.69	13.61	9.41	100.41	96.44	7,495.56	7,782.26	7,759.66	22.60	344.352	
3,900.00	3,895.76	2,200.00	2,179.25	13.97	9.72	100.45	94.24	7,511.72	7,808.97	7,785.71	23.26	335.779	
4,000.00	3,995.62	2,200.00	2,179.25	14.34	9.72	100.45	94.24	7,511.72	7,836.41	7,812.86	23.55	332.721	
4,100.00	4,095.48	2,266.83	2,243.61	14.70	10.05	100.50	92.14	7,529.59	7,864.29	7,840.07	24.22	324.683	
4,200.00	4,195.35	2,300.00	2,275.46	15.06	10.21	100.52	91.05	7,538.79	7,893.05	7,868.35	24.70	319.565	
4,300.00	4,295.21	2,358.65	2,331.68	15.42	10.49	100.55	89.32	7,555.40	7,922.39	7,897.07	25.32	312.842	
4,400.00	4,395.07	2,400.00	2,371.27	15.79	10.69	100.57	88.35	7,567.31	7,952.26	7,926.42	25.85	307.657	
4,500.00	4,494.94	2,468.09	2,436.36	16.15	11.01	100.61	87.00	7,587.27	7,982.59	7,956.08	26.51	301.116	
4,600.00	4,594.80	2,500.00	2,466.82	16.51	11.16	100.63	86.43	7,596.75	8,013.47	7,986.50	26.97	297.138	
4,700.00	4,694.66	2,566.74	2,530.40	16.87	11.47	100.66	85.04	7,616.95	8,044.80	8,017.17	27.63	291.197	
4,800.00	4,794.53	2,600.00	2,562.03	17.24	11.63	100.68	84.18	7,627.22	8,076.77	8,048.68	28.09	287.511	
4,900.00	4,894.39	2,664.54	2,623.28	17.60	11.94	100.72	81.97	7,647.47	8,109.23	8,080.49	28.74	282.152	
5,000.00	4,994.25	2,700.00	2,656.85	17.96	12.11	100.75	80.37	7,658.77	8,142.26	8,113.04	29.22	278.671	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #350A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		100-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,100.00	5,094.12	2,751.04	2,705.05	18.33	12.36	100.79	77.57	7,675.32	8,175.85	8,146.05	29.80	274.344		
5,200.00	5,193.98	2,800.00	2,751.12	18.69	12.61	100.83	74.29	7,691.56	8,210.11	8,179.74	30.37	270.330		
5,300.00	5,293.84	2,800.00	2,751.12	19.05	12.61	100.83	74.29	7,691.56	8,245.10	8,214.47	30.63	269.169		
5,336.91	5,330.71	2,800.00	2,751.12	19.19	12.61	100.83	74.29	7,691.56	8,258.28	8,227.56	30.73	268.764		
5,400.00	5,393.71	2,846.38	2,794.57	19.41	12.88	100.99	70.80	7,707.42	8,280.66	8,249.44	31.22	265.245		
5,500.00	5,493.62	2,900.00	2,844.49	19.77	13.18	101.22	66.51	7,726.50	8,317.07	8,285.21	31.86	261.086		
5,600.00	5,593.57	2,900.00	2,844.49	20.13	13.18	101.42	66.51	7,726.50	8,353.76	8,321.65	32.10	260.203		
5,700.00	5,693.53	2,900.00	2,844.49	20.49	13.18	101.62	66.51	7,726.50	8,391.32	8,358.97	32.35	259.406		
5,800.00	5,793.52	2,964.44	2,904.15	20.85	13.53	101.86	61.65	7,750.35	8,429.05	8,396.02	33.03	255.187		
5,900.00	5,893.52	3,645.00	3,540.64	21.20	17.80	102.27	28.56	7,985.89	8,464.81	8,426.28	38.52	219.740		
5,936.48	5,930.00	3,645.00	3,540.64	21.33	17.80	91.58	28.56	7,985.89	8,476.35	8,437.73	38.62	219.491		
6,000.00	5,993.52	3,645.00	3,540.64	21.56	17.80	91.58	28.56	7,985.89	8,496.76	8,457.98	38.78	219.080		
6,100.00	6,093.52	3,645.00	3,540.64	21.91	17.80	91.58	28.56	7,985.89	8,529.75	8,490.71	39.04	218.483		
6,200.00	6,193.52	3,645.00	3,540.64	22.27	17.80	91.58	28.56	7,985.89	8,563.79	8,524.50	39.29	217.948		
6,300.00	6,293.52	3,645.00	3,540.64	22.62	17.80	91.58	28.56	7,985.89	8,598.85	8,559.31	39.54	217.472		
6,358.48	6,352.00	3,645.00	3,540.64	22.83	17.80	91.58	28.56	7,985.89	8,619.83	8,580.15	39.68	217.221		
6,400.00	6,393.49	3,645.00	3,540.64	22.97	17.80	165.79	28.56	7,985.89	8,636.14	8,596.36	39.78	217.081		
6,450.00	6,443.20	3,645.00	3,540.64	23.15	17.80	165.21	28.56	7,985.89	8,659.15	8,619.25	39.90	217.003 SF		
6,500.00	6,492.36	3,645.00	3,540.64	23.33	17.80	164.47	28.56	7,985.89	8,685.67	8,645.65	40.02	217.026		
6,550.00	6,540.64	3,645.00	3,540.64	23.51	17.80	163.55	28.56	7,985.89	8,715.52	8,675.38	40.13	217.155		
6,600.00	6,587.77	3,645.00	3,540.64	23.69	17.80	162.39	28.56	7,985.89	8,748.46	8,708.21	40.24	217.389		
6,650.00	6,633.44	3,645.00	3,540.64	23.88	17.80	160.94	28.56	7,985.89	8,784.26	8,743.92	40.35	217.726		
6,700.00	6,677.37	3,645.00	3,540.64	24.07	17.80	159.09	28.56	7,985.89	8,822.68	8,782.24	40.44	218.163		
6,750.00	6,719.30	3,645.00	3,540.64	24.26	17.80	156.70	28.56	7,985.89	8,863.43	8,822.91	40.53	218.694		
6,800.00	6,758.97	3,645.00	3,540.64	24.46	17.80	153.56	28.56	7,985.89	8,906.25	8,865.64	40.61	219.313		
6,850.00	6,796.12	3,645.00	3,540.64	24.67	17.80	149.32	28.56	7,985.89	8,950.83	8,910.15	40.68	220.013		
6,900.00	6,830.54	3,645.00	3,540.64	24.88	17.80	143.41	28.56	7,985.89	8,996.88	8,956.14	40.75	220.784		
6,950.00	6,862.00	3,645.00	3,540.64	25.11	17.80	134.96	28.56	7,985.89	9,044.10	9,003.29	40.81	221.616		
7,000.00	6,890.33	3,645.00	3,540.64	25.34	17.80	122.71	28.56	7,985.89	9,092.17	9,051.31	40.86	222.499		
7,050.00	6,915.33	3,645.00	3,540.64	25.59	17.80	105.61	28.56	7,985.89	9,140.80	9,099.89	40.91	223.420		
7,100.00	6,936.86	3,645.00	3,540.64	25.85	17.80	85.03	28.56	7,985.89	9,189.67	9,148.71	40.96	224.364		
7,150.00	6,954.79	3,645.00	3,540.64	26.12	17.80	65.54	28.56	7,985.89	9,238.47	9,197.47	41.00	225.319		
7,200.00	6,968.99	3,645.00	3,540.64	26.40	17.80	50.58	28.56	7,985.89	9,286.93	9,245.88	41.04	226.267		
7,250.00	6,979.40	3,645.00	3,540.64	26.69	17.80	40.13	28.56	7,985.89	9,334.73	9,293.64	41.09	227.194		
7,300.00	6,985.94	3,645.00	3,540.64	27.00	17.80	32.91	28.56	7,985.89	9,381.61	9,340.47	41.13	228.081		
7,350.00	6,988.56	3,645.00	3,540.64	27.31	17.80	27.80	28.56	7,985.89	9,427.28	9,386.09	41.18	228.912		
7,358.93	6,988.62	3,645.00	3,540.64	27.36	17.80	27.05	28.56	7,985.89	9,435.28	9,394.09	41.19	229.066		
7,400.00	6,988.59	3,645.00	3,540.64	27.63	17.80	27.05	28.56	7,985.89	9,472.03	9,430.79	41.24	229.685		
7,500.00	6,988.52	3,645.00	3,540.64	28.33	17.80	27.05	28.56	7,985.89	9,561.66	9,520.29	41.36	231.159		
7,600.00	6,988.45	3,645.00	3,540.64	29.10	17.80	27.05	28.56	7,985.89	9,651.48	9,609.99	41.49	232.600		
7,658.93	6,988.41	3,645.00	3,540.64	29.59	17.80	27.05	28.56	7,985.89	9,704.51	9,662.93	41.57	233.435		
7,700.00	6,988.38	3,645.00	3,540.64	29.94	17.80	25.51	28.56	7,985.89	9,741.56	9,699.93	41.63	234.016		
7,800.00	6,988.31	3,645.00	3,540.64	30.84	17.80	21.54	28.56	7,985.89	9,832.35	9,790.59	41.76	235.456		
7,900.00	6,988.24	3,645.00	3,540.64	31.79	17.80	17.26	28.56	7,985.89	9,923.83	9,881.95	41.88	236.942		
8,000.00	6,988.16	3,645.00	3,540.64	32.78	17.80	12.71	28.56	7,985.89	10,015.89	9,973.89	42.00	238.480		
8,100.00	6,988.09	3,645.00	3,540.64	33.82	17.80	7.92	28.56	7,985.89	10,108.39	10,066.28	42.11	240.070		
8,200.00	6,988.01	3,645.00	3,540.64	34.88	17.80	2.95	28.56	7,985.89	10,201.21	10,159.00	42.20	241.715		
8,300.00	6,987.94	3,645.00	3,540.64	35.98	17.80	-2.12	28.56	7,985.89	10,294.22	10,251.93	42.29	243.411		
8,400.00	6,987.86	3,645.00	3,540.64	37.11	17.80	-7.20	28.56	7,985.89	10,387.32	10,344.95	42.37	245.156		
8,416.35	6,987.85	3,645.00	3,540.64	37.29	17.80	-8.03	28.56	7,985.89	10,402.55	10,360.17	42.38	245.446		
8,500.00	6,987.78	3,645.00	3,540.64	38.25	17.80	-8.03	28.56	7,985.89	10,480.47	10,438.02	42.44	246.926		
8,600.00	6,987.70	3,645.00	3,540.64	39.43	17.80	-8.03	28.56	7,985.89	10,573.73	10,531.21	42.52	248.682		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #350A - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		100-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,700.00	6,987.62	3,645.00	3,540.64	40.64	17.80	-8.03	28.56	7,985.89	10,667.12	10,624.52	42.60	250.424	
8,800.00	6,987.55	3,645.00	3,540.64	41.88	17.80	-8.03	28.56	7,985.89	10,760.62	10,717.95	42.67	252.153	
8,900.00	6,987.47	3,645.00	3,540.64	43.14	17.80	-8.03	28.56	7,985.89	10,854.24	10,811.49	42.76	253.869	
9,000.00	6,987.39	3,645.00	3,540.64	44.42	17.80	-8.03	28.56	7,985.89	10,947.98	10,905.14	42.84	255.573	
9,100.00	6,987.31	3,645.00	3,540.64	45.72	17.80	-8.03	28.56	7,985.89	11,041.82	10,998.90	42.92	257.264	
9,200.00	6,987.23	3,645.00	3,540.64	47.04	17.80	-8.03	28.56	7,985.89	11,135.77	11,092.77	43.00	258.943	
9,300.00	6,987.15	3,645.00	3,540.64	48.38	17.80	-8.03	28.56	7,985.89	11,229.83	11,186.74	43.09	260.611	
9,400.00	6,987.08	3,645.00	3,540.64	49.73	17.80	-8.03	28.56	7,985.89	11,323.99	11,280.81	43.18	262.267	
9,500.00	6,987.00	3,645.00	3,540.64	51.10	17.80	-8.03	28.56	7,985.89	11,418.24	11,374.98	43.27	263.912	
9,600.00	6,986.92	3,645.00	3,540.64	52.48	17.80	-8.03	28.56	7,985.89	11,512.60	11,469.24	43.35	265.546	
9,700.00	6,986.84	3,645.00	3,540.64	53.87	17.80	-8.03	28.56	7,985.89	11,607.05	11,563.60	43.44	267.169	
9,800.00	6,986.76	2,945.18	2,886.35	55.28	13.43	-6.42	63.01	7,743.13	11,700.92	11,662.28	38.64	302.841	
9,900.00	6,986.68	2,900.00	2,844.49	56.69	13.18	-6.32	66.51	7,726.50	11,793.64	11,755.16	38.49	306.430	
10,000.00	6,986.61	2,900.00	2,844.49	58.12	13.18	-6.32	66.51	7,726.50	11,886.20	11,847.58	38.61	307.828	
10,100.00	6,986.53	2,900.00	2,844.49	59.55	13.18	-6.32	66.51	7,726.50	11,978.87	11,940.13	38.74	309.215	
10,200.00	6,986.45	2,900.00	2,844.49	61.00	13.18	-6.32	66.51	7,726.50	12,071.65	12,032.79	38.87	310.592	
10,300.00	6,986.37	2,900.00	2,844.49	62.45	13.18	-6.32	66.51	7,726.50	12,164.56	12,125.56	38.99	311.959	
10,400.00	6,986.29	2,900.00	2,844.49	63.90	13.18	-6.32	66.51	7,726.50	12,257.57	12,218.45	39.12	313.318	
10,500.00	6,986.21	2,900.00	2,844.49	65.37	13.18	-6.32	66.51	7,726.50	12,350.69	12,311.44	39.25	314.667	
10,600.00	6,986.14	2,900.00	2,844.49	66.84	13.18	-6.32	66.51	7,726.50	12,443.92	12,404.54	39.38	316.008	
10,700.00	6,986.06	2,900.00	2,844.49	68.32	13.18	-6.32	66.51	7,726.50	12,537.26	12,497.75	39.51	317.341	
10,800.00	6,985.98	2,857.02	2,804.49	69.80	12.94	-6.22	69.97	7,711.14	12,630.34	12,590.96	39.38	320.749	
10,900.00	6,985.90	2,849.82	2,797.77	71.29	12.90	-6.21	70.54	7,708.62	12,723.74	12,684.28	39.47	322.400	
11,000.00	6,985.82	2,842.70	2,791.12	72.78	12.86	-6.19	71.09	7,706.14	12,817.23	12,777.68	39.56	324.035	
11,100.00	6,985.75	2,800.00	2,751.12	74.28	12.61	-6.10	74.29	7,691.56	12,911.04	12,871.61	39.44	327.394	
11,200.00	6,985.67	2,800.00	2,751.12	75.78	12.61	-6.10	74.29	7,691.56	13,004.60	12,965.03	39.57	328.652	
11,300.00	6,985.59	2,800.00	2,751.12	77.29	12.61	-6.10	74.29	7,691.56	13,098.25	13,058.55	39.70	329.903	
11,400.00	6,985.51	2,800.00	2,751.12	78.80	12.61	-6.10	74.29	7,691.56	13,192.00	13,152.16	39.84	331.148	
11,500.00	6,985.43	2,800.00	2,751.12	80.31	12.61	-6.10	74.29	7,691.56	13,285.83	13,245.86	39.97	332.387	
11,600.00	6,985.35	2,800.00	2,751.12	81.83	12.61	-6.10	74.29	7,691.56	13,379.76	13,339.65	40.10	333.620	
11,700.00	6,985.28	2,800.00	2,751.12	83.35	12.61	-6.10	74.29	7,691.56	13,473.77	13,433.53	40.24	334.848	
11,800.00	6,985.20	2,800.00	2,751.12	84.87	12.61	-6.10	74.29	7,691.56	13,567.87	13,527.50	40.37	336.070	
11,900.00	6,985.12	2,800.00	2,751.12	86.40	12.61	-6.10	74.29	7,691.56	13,662.05	13,621.55	40.51	337.287	
12,000.00	6,985.04	2,762.66	2,715.99	87.93	12.42	-6.02	76.84	7,679.14	13,756.15	13,715.68	40.46	339.962	
12,100.00	6,984.96	2,752.91	2,706.81	89.46	12.37	-6.00	77.45	7,675.94	13,850.39	13,809.84	40.55	341.537	
12,200.00	6,984.88	2,743.25	2,697.70	90.99	12.33	-5.98	78.04	7,672.77	13,944.69	13,904.05	40.64	343.099	
12,300.00	6,984.81	2,700.00	2,656.85	92.53	12.11	-5.90	80.37	7,658.77	14,039.19	13,998.61	40.58	345.964	
12,400.00	6,984.73	2,700.00	2,656.85	94.07	12.11	-5.90	80.37	7,658.77	14,133.54	14,092.82	40.72	347.121	
12,500.00	6,984.65	2,700.00	2,656.85	95.61	12.11	-5.90	80.37	7,658.77	14,227.96	14,187.11	40.85	348.274	
12,600.00	6,984.57	2,700.00	2,656.85	97.15	12.11	-5.90	80.37	7,658.77	14,322.46	14,281.47	40.99	349.423	
12,700.00	6,984.49	2,700.00	2,656.85	98.70	12.11	-5.90	80.37	7,658.77	14,417.03	14,375.91	41.12	350.568	
12,800.00	6,984.41	2,700.00	2,656.85	100.25	12.11	-5.90	80.37	7,658.77	14,511.68	14,470.42	41.26	351.709	
12,900.00	6,984.34	2,700.00	2,656.85	101.80	12.11	-5.90	80.37	7,658.77	14,606.40	14,565.00	41.40	352.847	
13,000.00	6,984.26	2,658.86	2,617.89	103.35	11.91	-5.83	82.20	7,645.68	14,701.03	14,659.67	41.36	355.398	
13,100.00	6,984.18	2,647.00	2,606.64	104.90	11.85	-5.81	82.66	7,641.93	14,795.79	14,754.34	41.45	356.923	
13,200.00	6,984.10	2,635.22	2,595.47	106.45	11.80	-5.79	83.09	7,638.22	14,890.59	14,849.05	41.54	358.435	
13,300.00	6,984.02	2,600.00	2,562.03	108.01	11.63	-5.74	84.18	7,627.22	14,985.48	14,943.94	41.54	360.740	
13,400.00	6,983.94	2,600.00	2,562.03	109.56	11.63	-5.74	84.18	7,627.22	15,080.33	15,038.65	41.68	361.826	
13,500.00	6,983.87	2,600.00	2,562.03	111.12	11.63	-5.74	84.18	7,627.22	15,175.24	15,133.43	41.82	362.910	
13,600.00	6,983.79	2,600.00	2,562.03	112.68	11.63	-5.74	84.18	7,627.22	15,270.22	15,228.27	41.95	363.990	
13,700.00	6,983.71	2,600.00	2,562.03	114.24	11.63	-5.74	84.18	7,627.22	15,365.27	15,323.18	42.09	365.068	
13,800.00	6,983.63	2,600.00	2,562.03	115.80	11.63	-5.74	84.18	7,627.22	15,460.37	15,418.15	42.23	366.142	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #350A - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 100-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,900.00	6,983.55	2,559.01	2,523.05	117.37	11.44	-5.68	85.22	7,614.59	15,555.37	15,513.16	42.21	368.523	
14,000.00	6,983.47	2,548.88	2,513.41	118.93	11.39	-5.67	85.45	7,611.50	15,650.51	15,608.20	42.31	369.901	
14,100.00	6,983.40	2,538.82	2,503.83	120.50	11.34	-5.65	85.67	7,608.44	15,745.69	15,703.28	42.41	371.270	
14,200.00	6,983.32	2,500.00	2,466.82	122.06	11.16	-5.60	86.43	7,596.75	15,840.99	15,798.58	42.41	373.539	
14,300.00	6,983.24	2,500.00	2,466.82	123.63	11.16	-5.60	86.43	7,596.75	15,936.20	15,893.65	42.55	374.569	
14,400.00	6,983.16	2,500.00	2,466.82	125.20	11.16	-5.60	86.43	7,596.75	16,031.47	15,988.79	42.68	375.596	
14,500.00	6,983.08	2,500.00	2,466.82	126.77	11.16	-5.60	86.43	7,596.75	16,126.80	16,083.98	42.82	376.622	
14,600.00	6,983.00	2,500.00	2,466.82	128.33	11.16	-5.60	86.43	7,596.75	16,222.18	16,179.22	42.96	377.644	
14,700.00	6,982.93	2,500.00	2,466.82	129.91	11.16	-5.60	86.43	7,596.75	16,317.62	16,274.53	43.09	378.665	
14,800.00	6,982.85	2,462.58	2,431.09	131.48	10.98	-5.55	87.11	7,585.64	16,413.01	16,369.91	43.10	380.783	
14,900.00	6,982.77	2,450.53	2,419.58	133.05	10.93	-5.54	87.33	7,582.08	16,508.48	16,465.28	43.20	382.141	
15,000.00	6,982.69	2,438.57	2,408.15	134.62	10.87	-5.52	87.57	7,578.57	16,603.98	16,560.68	43.30	383.488	
15,100.00	6,982.61	2,400.00	2,371.27	136.20	10.69	-5.47	88.35	7,567.31	16,699.56	16,656.26	43.31	385.596	
15,200.00	6,982.54	2,400.00	2,371.27	137.77	10.69	-5.47	88.35	7,567.31	16,795.09	16,751.65	43.45	386.577	
15,300.00	6,982.46	2,400.00	2,371.27	139.35	10.69	-5.47	88.35	7,567.31	16,890.67	16,847.09	43.58	387.555	
15,400.00	6,982.38	2,400.00	2,371.27	140.92	10.69	-5.47	88.35	7,567.31	16,986.30	16,942.58	43.72	388.532	
15,500.00	6,982.30	2,400.00	2,371.27	142.50	10.69	-5.47	88.35	7,567.31	17,081.98	17,038.13	43.86	389.506	
15,600.00	6,982.22	2,400.00	2,371.27	144.07	10.69	-5.47	88.35	7,567.31	17,177.71	17,133.72	43.99	390.479	
15,700.00	6,982.14	2,359.32	2,332.32	145.65	10.49	-5.42	89.31	7,555.59	17,273.36	17,229.37	43.99	392.650	
15,800.00	6,982.07	2,348.59	2,322.05	147.23	10.44	-5.41	89.59	7,552.53	17,369.11	17,325.02	44.09	393.923	
15,900.00	6,981.99	2,337.94	2,311.84	148.81	10.39	-5.39	89.89	7,549.50	17,464.89	17,420.70	44.19	395.186	
16,000.00	6,981.91	2,300.00	2,275.46	150.39	10.21	-5.34	91.05	7,538.79	17,560.76	17,516.55	44.21	397.235	
16,100.00	6,981.83	2,300.00	2,275.46	151.97	10.21	-5.34	91.05	7,538.79	17,656.56	17,612.22	44.34	398.172	
16,200.00	6,981.75	2,300.00	2,275.46	153.55	10.21	-5.34	91.05	7,538.79	17,752.41	17,707.93	44.48	399.107	
16,300.00	6,981.67	2,300.00	2,275.46	155.13	10.21	-5.34	91.05	7,538.79	17,848.31	17,803.69	44.62	400.040	
16,400.00	6,981.60	2,300.00	2,275.46	156.71	10.21	-5.34	91.05	7,538.79	17,944.25	17,899.49	44.75	400.971	
16,500.00	6,981.52	2,300.00	2,275.46	158.29	10.21	-5.34	91.05	7,538.79	18,040.23	17,995.34	44.89	401.900	
16,600.00	6,981.44	2,300.00	2,275.46	159.88	10.21	-5.34	91.05	7,538.79	18,136.26	18,091.24	45.02	402.827	
16,700.00	6,981.36	2,300.00	2,275.46	161.46	10.21	-5.34	91.05	7,538.79	18,232.33	18,187.17	45.16	403.752	
16,800.00	6,981.28	2,300.00	2,275.46	163.04	10.21	-5.34	91.05	7,538.79	18,328.44	18,283.15	45.29	404.675	
16,900.00	6,981.20	2,300.00	2,275.46	164.62	10.21	-5.34	91.05	7,538.79	18,424.60	18,379.17	45.43	405.596	
17,000.00	6,981.13	2,256.47	2,233.65	166.21	10.00	-5.28	92.47	7,526.77	18,520.55	18,475.11	45.43	407.661	
17,100.00	6,981.05	2,250.77	2,228.16	167.79	9.97	-5.27	92.65	7,525.22	18,616.71	18,571.16	45.55	408.718	
17,200.00	6,980.97	2,245.11	2,222.72	169.38	9.94	-5.27	92.83	7,523.69	18,712.91	18,667.24	45.67	409.770	
17,300.00	6,980.89	2,200.00	2,179.25	170.96	9.72	-5.21	94.24	7,511.72	18,809.34	18,763.67	45.67	411.846	
17,400.00	6,980.81	2,200.00	2,179.25	172.55	9.72	-5.21	94.24	7,511.72	18,905.55	18,859.75	45.81	412.735	
17,500.00	6,980.73	2,200.00	2,179.25	174.13	9.72	-5.21	94.24	7,511.72	19,001.80	18,955.86	45.94	413.623	
17,600.00	6,980.66	2,200.00	2,179.25	175.72	9.72	-5.21	94.24	7,511.72	19,098.09	19,052.01	46.07	414.509	
17,700.00	6,980.58	2,200.00	2,179.25	177.31	9.72	-5.21	94.24	7,511.72	19,194.41	19,148.20	46.21	415.392	
17,800.00	6,980.50	2,200.00	2,179.25	178.89	9.72	-5.21	94.24	7,511.72	19,290.77	19,244.43	46.34	416.274	
17,900.00	6,980.42	2,200.00	2,179.25	180.48	9.72	-5.21	94.24	7,511.72	19,387.17	19,340.70	46.47	417.154	
18,000.00	6,980.34	2,200.00	2,179.25	182.07	9.72	-5.21	94.24	7,511.72	19,483.61	19,437.00	46.61	418.031	
18,100.00	6,980.26	2,200.00	2,179.25	183.66	9.72	-5.21	94.24	7,511.72	19,580.08	19,533.34	46.74	418.907	
18,200.00	6,980.19	2,200.00	2,179.25	185.24	9.72	-5.21	94.24	7,511.72	19,676.58	19,629.71	46.87	419.781	
18,300.00	6,980.11	2,200.00	2,179.25	186.83	9.72	-5.21	94.24	7,511.72	19,773.12	19,726.12	47.01	420.652	
18,400.00	6,980.03	2,200.00	2,179.25	188.42	9.72	-5.21	94.24	7,511.72	19,869.70	19,822.56	47.14	421.521	
18,500.00	6,979.95	2,159.54	2,140.19	190.01	9.52	-5.15	95.59	7,501.25	19,966.18	19,919.03	47.16	423.405	
18,600.00	6,979.87	2,151.12	2,132.06	191.60	9.48	-5.14	95.90	7,499.09	20,062.77	20,015.50	47.27	424.473	
18,700.00	6,979.79	2,142.77	2,123.99	193.19	9.44	-5.13	96.22	7,496.96	20,159.38	20,112.00	47.37	425.534	
18,800.00	6,979.72	2,134.47	2,115.97	194.78	9.40	-5.12	96.55	7,494.85	20,256.01	20,208.52	47.48	426.589	
18,900.00	6,979.64	2,100.00	2,082.65	196.37	9.23	-5.07	98.01	7,486.15	20,352.71	20,305.19	47.52	428.280	
19,000.00	6,979.56	2,100.00	2,082.65	197.96	9.23	-5.07	98.01	7,486.15	20,449.36	20,401.70	47.65	429.119	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #350A - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program:		100-MWD OWSG Rev5					Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
19,100.00	6,979.48	2,100.00	2,082.65	199.55	9.23	-5.07	98.01	7,486.15	20,546.04	20,498.25	47.79	429.956			
19,200.00	6,979.40	2,100.00	2,082.65	201.14	9.23	-5.07	98.01	7,486.15	20,642.75	20,594.83	47.92	430.791			
19,300.00	6,979.33	2,100.00	2,082.65	202.73	9.23	-5.07	98.01	7,486.15	20,739.49	20,691.44	48.05	431.624			
19,400.00	6,979.25	2,100.00	2,082.65	204.32	9.23	-5.07	98.01	7,486.15	20,836.26	20,788.08	48.18	432.455			
19,500.00	6,979.17	2,100.00	2,082.65	205.91	9.23	-5.07	98.01	7,486.15	20,933.06	20,884.75	48.31	433.284			
19,600.00	6,979.09	2,100.00	2,082.65	207.50	9.23	-5.07	98.01	7,486.15	21,029.89	20,981.45	48.44	434.110			
19,700.00	6,979.01	2,100.00	2,082.65	209.09	9.23	-5.07	98.01	7,486.15	21,126.76	21,078.18	48.57	434.934			
19,800.00	6,978.93	2,100.00	2,082.65	210.69	9.23	-5.07	98.01	7,486.15	21,223.65	21,174.94	48.71	435.756			
19,900.00	6,978.86	2,100.00	2,082.65	212.28	9.23	-5.07	98.01	7,486.15	21,320.57	21,271.73	48.84	436.576			
20,000.00	6,978.78	2,100.00	2,082.65	213.87	9.23	-5.07	98.01	7,486.15	21,417.52	21,368.55	48.97	437.393			
20,100.00	6,978.70	2,100.00	2,082.65	215.46	9.23	-5.07	98.01	7,486.15	21,514.49	21,465.40	49.10	438.209			
20,200.00	6,978.62	2,100.00	2,082.65	217.05	9.23	-5.07	98.01	7,486.15	21,611.50	21,562.27	49.23	439.022			
20,300.00	6,978.54	2,057.48	2,041.47	218.65	9.02	-5.01	99.82	7,475.72	21,708.26	21,659.01	49.25	440.768			
20,400.00	6,978.46	2,053.70	2,037.81	220.24	9.00	-5.01	99.98	7,474.81	21,805.27	21,755.90	49.37	441.653			
20,500.00	6,978.39	2,049.96	2,034.17	221.83	8.98	-5.00	100.12	7,473.92	21,902.30	21,852.81	49.49	442.535			
20,600.00	6,978.31	2,046.24	2,030.56	223.43	8.96	-5.00	100.27	7,473.03	21,999.36	21,949.74	49.61	443.413			
20,700.00	6,978.23	2,042.54	2,026.98	225.02	8.95	-4.99	100.41	7,472.15	22,096.43	22,046.70	49.73	444.287			
20,800.00	6,978.15	2,000.00	1,985.62	226.61	8.74	-4.94	101.97	7,462.29	22,193.75	22,143.99	49.76	446.001			
20,900.00	6,978.07	2,000.00	1,985.62	228.21	8.74	-4.94	101.97	7,462.29	22,290.83	22,240.94	49.89	446.785			
21,000.00	6,977.99	2,000.00	1,985.62	229.80	8.74	-4.94	101.97	7,462.29	22,387.94	22,337.92	50.02	447.566			
21,100.00	6,977.92	2,000.00	1,985.62	231.39	8.74	-4.94	101.97	7,462.29	22,485.07	22,434.92	50.15	448.345			
21,200.00	6,977.84	2,000.00	1,985.62	232.99	8.74	-4.94	101.97	7,462.29	22,582.23	22,531.95	50.28	449.122			
21,300.00	6,977.76	2,000.00	1,985.62	234.58	8.74	-4.94	101.97	7,462.29	22,679.41	22,629.00	50.41	449.897			
21,400.00	6,977.68	2,000.00	1,985.62	236.18	8.74	-4.94	101.97	7,462.29	22,776.61	22,726.07	50.54	450.669			
21,500.00	6,977.60	2,000.00	1,985.62	237.77	8.74	-4.94	101.97	7,462.29	22,873.84	22,823.17	50.67	451.439			
21,600.00	6,977.52	2,000.00	1,985.62	239.37	8.74	-4.94	101.97	7,462.29	22,971.10	22,920.30	50.80	452.206			
21,700.00	6,977.45	2,000.00	1,985.62	240.96	8.74	-4.94	101.97	7,462.29	23,068.37	23,017.45	50.93	452.972			
21,800.00	6,977.37	2,000.00	1,985.62	242.56	8.74	-4.94	101.97	7,462.29	23,165.67	23,114.62	51.06	453.735			
21,900.00	6,977.29	2,000.00	1,985.62	244.15	8.74	-4.94	101.97	7,462.29	23,263.00	23,211.81	51.18	454.495			
22,000.00	6,977.21	2,000.00	1,985.62	245.75	8.74	-4.94	101.97	7,462.29	23,360.34	23,309.03	51.31	455.254			
22,100.00	6,977.13	2,000.00	1,985.62	247.34	8.74	-4.94	101.97	7,462.29	23,457.71	23,406.27	51.44	456.009			
22,200.00	6,977.05	2,000.00	1,985.62	248.94	8.74	-4.94	101.97	7,462.29	23,555.10	23,503.53	51.57	456.763			
22,269.73	6,977.00	2,000.00	1,985.62	250.05	8.74	-4.94	101.97	7,462.29	23,623.02	23,571.36	51.66	457.287			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #46 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 60-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	133.28	-99.39	105.53	149.37				
100.00	100.00	64.00	64.00	0.25	1.14	133.28	-99.39	105.53	144.97	143.58	1.39	104.588	
197.63	197.63	161.63	161.63	0.60	2.90	133.25	-99.28	105.53	144.89	141.39	3.50	41.445	
200.00	200.00	163.99	163.99	0.61	2.94	133.25	-99.28	105.53	144.89	141.34	3.55	40.847	
300.00	300.00	264.00	264.00	0.97	4.74	133.28	-99.39	105.53	144.97	139.26	5.71	25.388	
400.00	400.00	364.00	364.00	1.33	6.69	133.28	-99.39	105.53	144.97	136.95	8.02	18.080	
500.00	500.00	464.00	464.00	1.68	8.64	133.28	-99.39	105.53	144.97	134.64	10.33	14.039	
539.74	539.74	503.72	503.71	1.83	9.42	133.14	-98.90	105.53	144.63	133.39	11.24	12.865 CC	
600.00	600.00	563.86	563.86	2.04	10.59	133.16	-98.95	105.53	144.66	132.03	12.63	11.453	
700.00	700.00	663.68	663.67	2.40	12.53	133.23	-99.19	105.53	144.83	129.89	14.94	9.697	
800.00	799.98	764.02	763.98	2.76	14.56	144.42	-99.39	105.53	146.38	129.06	17.32	8.450 ES	
849.89	849.82	813.87	813.82	2.94	15.61	144.89	-99.39	105.53	148.16	129.61	18.55	7.988	
900.00	899.86	863.91	863.86	3.12	16.66	145.47	-99.39	105.53	150.31	130.53	19.78	7.600	
1,000.00	999.73	963.36	963.30	3.48	18.74	146.40	-98.79	105.53	154.22	132.00	22.22	6.940	
1,100.00	1,099.59	1,063.69	1,063.59	3.84	20.84	147.60	-99.39	105.53	159.04	134.36	24.68	6.445	
1,200.00	1,199.45	1,163.55	1,163.45	4.20	22.81	148.58	-99.39	105.53	163.48	136.48	27.00	6.054	
1,300.00	1,299.32	1,263.41	1,263.32	4.56	24.78	149.51	-99.39	105.53	167.97	138.64	29.33	5.727	
1,400.00	1,399.18	1,363.28	1,363.18	4.92	26.74	150.40	-99.39	105.53	172.50	140.84	31.65	5.449	
1,500.00	1,499.04	1,463.00	1,462.89	5.28	28.71	150.91	-97.84	105.53	175.87	141.89	33.98	5.176	
1,600.00	1,598.91	1,562.54	1,562.42	5.64	30.67	151.76	-98.07	105.53	180.64	144.34	36.30	4.976	
1,700.00	1,698.77	1,662.06	1,661.93	6.00	32.63	152.61	-98.53	105.53	185.63	147.01	38.62	4.807	
1,800.00	1,798.63	1,761.56	1,761.42	6.36	34.59	153.46	-99.23	105.53	190.85	149.91	40.94	4.662	
1,900.00	1,898.49	1,862.66	1,862.49	6.72	36.47	154.18	-99.39	105.53	195.67	152.49	43.18	4.532	
2,000.00	1,998.36	1,962.52	1,962.36	7.09	38.30	154.83	-99.39	105.53	200.39	155.02	45.37	4.417	
2,100.00	2,098.22	2,062.17	2,062.01	7.45	40.13	155.38	-98.95	105.53	204.78	157.22	47.55	4.306	
2,200.00	2,198.08	2,161.70	2,161.53	7.81	41.95	156.01	-99.18	105.53	209.73	159.99	49.74	4.217	
2,300.00	2,297.95	2,262.13	2,261.95	8.17	43.77	156.61	-99.39	105.53	214.69	162.78	51.92	4.135	
2,400.00	2,397.81	2,361.99	2,361.81	8.53	45.54	157.15	-99.39	105.53	219.51	165.45	54.05	4.061	
2,500.00	2,497.67	2,461.85	2,461.67	8.90	47.32	157.67	-99.39	105.53	224.34	168.15	56.19	3.993	
2,600.00	2,597.54	2,561.71	2,561.54	9.26	49.10	158.17	-99.39	105.53	229.18	170.86	58.32	3.930	
2,700.00	2,697.40	2,661.40	2,661.22	9.62	50.87	158.54	-98.63	105.53	233.40	172.95	60.45	3.861	
2,800.00	2,797.26	2,761.02	2,760.84	9.98	52.64	159.02	-98.78	105.53	238.41	175.82	62.59	3.809	
2,900.00	2,897.13	2,860.63	2,860.45	10.35	54.41	159.49	-99.05	105.53	243.53	178.81	64.72	3.763	
3,000.00	2,996.99	2,961.18	2,960.99	10.71	56.20	159.96	-99.39	105.53	248.73	181.86	66.87	3.720	
3,100.00	3,096.85	3,061.05	3,060.85	11.07	57.98	160.37	-99.39	105.53	253.65	184.64	69.01	3.676	
3,200.00	3,196.72	3,160.91	3,160.72	11.43	59.77	160.75	-99.39	105.53	258.58	187.43	71.15	3.634	
3,300.00	3,296.58	3,260.65	3,260.45	11.80	61.55	161.10	-99.14	105.53	263.30	190.01	73.30	3.592	
3,400.00	3,396.44	3,360.31	3,360.11	12.16	63.33	161.47	-99.23	105.53	268.34	192.90	75.44	3.557	
3,500.00	3,496.31	3,460.51	3,460.31	12.52	65.16	161.84	-99.39	105.53	273.44	195.82	77.62	3.523	
3,600.00	3,596.17	3,560.37	3,560.17	12.88	67.24	162.17	-99.39	105.53	278.42	198.35	80.07	3.477	
3,700.00	3,696.03	3,660.24	3,660.03	13.25	69.33	162.50	-99.39	105.53	283.40	200.89	82.51	3.435	
3,800.00	3,795.89	3,760.10	3,759.89	13.61	71.41	162.81	-99.39	105.53	288.39	203.44	84.95	3.395	
3,900.00	3,895.76	3,859.92	3,859.71	13.97	73.49	163.03	-98.53	105.53	292.63	205.24	87.39	3.348	
4,000.00	3,995.62	3,959.49	3,959.28	14.34	75.57	163.33	-98.60	105.53	297.70	207.87	89.83	3.314	
4,100.00	4,095.48	4,059.06	4,058.85	14.70	77.64	163.63	-98.78	105.53	302.88	210.61	92.26	3.283	
4,200.00	4,195.35	4,158.62	4,158.40	15.06	79.72	163.93	-99.07	105.53	308.16	213.46	94.70	3.254	
4,300.00	4,295.21	4,259.55	4,259.21	15.42	81.88	164.22	-99.39	105.53	313.47	216.25	97.22	3.224	
4,400.00	4,395.07	4,358.92	4,358.57	15.79	84.22	164.42	-98.72	105.53	317.91	217.98	99.92	3.182	
4,500.00	4,494.94	4,459.34	4,458.94	16.15	86.61	164.73	-99.39	105.53	323.55	220.88	102.67	3.151	
4,600.00	4,594.80	4,559.21	4,558.80	16.51	89.20	164.97	-99.39	105.53	328.60	222.98	105.62	3.111	
4,700.00	4,694.66	4,657.04	4,656.62	16.87	91.74	165.15	-98.75	105.53	333.08	224.57	108.51	3.069	
4,800.00	4,794.53	4,759.08	4,758.53	17.24	94.39	165.42	-99.39	105.53	338.71	227.18	111.54	3.037	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #46 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		60-A027Ua_INC-ONLY					Offset		Semi Major Axis		Rule Assigned:		Offset Well Error:	0.00 usft
Reference	Vertical	Reference	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Depth (usft)	Measured Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,900.00	4,894.39	4,856.85	4,856.26	17.60	96.97	165.58	-98.53	105.53	343.01	228.54	114.46	2.997		
5,000.00	4,994.25	4,958.92	4,958.25	17.96	99.60	165.86	-99.39	105.53	348.85	231.39	117.46	2.970		
5,100.00	5,094.12	5,056.93	5,056.25	18.33	102.05	166.03	-98.90	105.53	353.48	233.21	120.27	2.939		
5,200.00	5,193.98	5,158.72	5,157.98	18.69	104.56	166.26	-99.39	105.53	359.00	235.86	123.14	2.915		
5,300.00	5,293.84	5,256.25	5,255.49	19.05	106.94	166.42	-98.79	105.53	363.54	237.67	125.87	2.888		
5,336.91	5,330.71	5,291.35	5,290.59	19.19	107.79	166.51	-99.13	105.53	365.75	238.90	126.85	2.883		
5,400.00	5,393.71	5,358.52	5,357.71	19.41	109.31	166.65	-99.39	105.53	369.00	240.39	128.62	2.869		
5,500.00	5,493.62	5,458.43	5,457.62	19.77	111.52	166.80	-99.39	105.53	373.13	241.96	131.18	2.845 SF		
5,600.00	5,593.57	5,494.00	5,493.16	20.13	112.30	166.86	-99.39	105.53	381.89	251.50	130.39	2.929		
5,700.00	5,693.53	5,494.00	5,493.16	20.49	112.30	166.90	-99.39	105.53	412.98	291.02	121.95	3.386		
5,800.00	5,793.52	5,494.00	5,493.16	20.85	112.30	166.96	-99.39	105.53	463.27	353.21	110.06	4.209		
5,900.00	5,893.52	5,494.00	5,493.16	21.20	112.30	167.06	-99.39	105.53	527.31	429.32	97.98	5.382		
5,936.48	5,930.00	5,494.00	5,493.16	21.33	112.30	156.34	-99.39	105.53	553.18	459.31	93.87	5.893		
6,000.00	5,993.52	5,494.00	5,493.16	21.56	112.30	156.34	-99.39	105.53	600.81	513.54	87.26	6.885		
6,100.00	6,093.52	5,494.00	5,493.16	21.91	112.30	156.34	-99.39	105.53	681.06	602.73	78.33	8.695		
6,200.00	6,193.52	5,494.00	5,493.16	22.27	112.30	156.34	-99.39	105.53	765.97	694.92	71.05	10.780		
6,300.00	6,293.52	5,494.00	5,493.16	22.62	112.30	156.34	-99.39	105.53	854.16	789.00	65.16	13.109		
6,358.48	6,352.00	5,494.00	5,493.16	22.83	112.30	156.34	-99.39	105.53	906.87	844.63	62.24	14.570		
6,400.00	6,393.49	5,494.00	5,493.16	22.97	112.30	-121.96	-99.39	105.53	945.02	884.56	60.46	15.630		
6,450.00	6,443.20	5,494.00	5,493.16	23.15	112.30	-110.94	-99.39	105.53	991.98	933.23	58.75	16.886		
6,500.00	6,492.36	5,494.00	5,493.16	23.33	112.30	-97.17	-99.39	105.53	1,039.64	982.19	57.46	18.095		
6,550.00	6,540.64	5,494.00	5,493.16	23.51	112.30	-81.74	-99.39	105.53	1,087.66	1,031.10	56.56	19.232		
6,600.00	6,587.77	5,494.00	5,493.16	23.69	112.30	-66.80	-99.39	105.53	1,135.69	1,079.67	56.02	20.274		
6,650.00	6,633.44	5,494.00	5,493.16	23.88	112.30	-54.15	-99.39	105.53	1,183.46	1,127.64	55.82	21.202		
6,700.00	6,677.37	5,494.00	5,493.16	24.07	112.30	-44.29	-99.39	105.53	1,230.73	1,174.80	55.93	22.004		
6,750.00	6,719.30	5,494.00	5,493.16	24.26	112.30	-36.84	-99.39	105.53	1,277.27	1,220.93	56.34	22.671		
6,800.00	6,758.97	5,494.00	5,493.16	24.46	112.30	-31.22	-99.39	105.53	1,322.89	1,265.87	57.02	23.200		
6,850.00	6,796.12	5,494.00	5,493.16	24.67	112.30	-26.94	-99.39	105.53	1,367.42	1,309.47	57.95	23.595		
6,900.00	6,830.54	5,494.00	5,493.16	24.88	112.30	-23.62	-99.39	105.53	1,410.69	1,351.57	59.12	23.862		
6,950.00	6,862.00	5,494.00	5,493.16	25.11	112.30	-21.00	-99.39	105.53	1,452.57	1,392.07	60.50	24.011		
7,000.00	6,890.33	5,494.00	5,493.16	25.34	112.30	-18.91	-99.39	105.53	1,492.91	1,430.85	62.06	24.055		
7,050.00	6,915.33	5,494.00	5,493.16	25.59	112.30	-17.20	-99.39	105.53	1,531.61	1,467.82	63.80	24.007		
7,100.00	6,936.86	5,494.00	5,493.16	25.85	112.30	-15.80	-99.39	105.53	1,568.56	1,502.87	65.69	23.879		
7,150.00	6,954.79	5,494.00	5,493.16	26.12	112.30	-14.63	-99.39	105.53	1,603.66	1,535.95	67.71	23.683		
7,200.00	6,968.99	5,494.00	5,493.16	26.40	112.30	-13.66	-99.39	105.53	1,636.81	1,566.96	69.85	23.432		
7,250.00	6,979.40	5,494.00	5,493.16	26.69	112.30	-12.84	-99.39	105.53	1,667.94	1,595.84	72.09	23.136		
7,300.00	6,985.94	5,494.00	5,493.16	27.00	112.30	-12.15	-99.39	105.53	1,696.96	1,622.54	74.42	22.803		
7,350.00	6,988.56	5,494.00	5,493.16	27.31	112.30	-11.56	-99.39	105.53	1,723.82	1,647.00	76.82	22.441		
7,358.93	6,988.62	5,494.00	5,493.16	27.36	112.30	-11.46	-99.39	105.53	1,728.38	1,651.13	77.24	22.375		
7,400.00	6,988.59	5,494.00	5,493.16	27.63	112.30	-11.46	-99.39	105.53	1,749.56	1,670.33	79.23	22.083		
7,500.00	6,988.52	5,494.00	5,493.16	28.33	112.30	-11.46	-99.39	105.53	1,804.00	1,720.17	83.83	21.519		
7,600.00	6,988.45	5,494.00	5,493.16	29.10	112.30	-11.46	-99.39	105.53	1,862.23	1,774.13	88.10	21.138		
7,658.93	6,988.41	5,494.00	5,493.16	29.59	112.30	-11.46	-99.39	105.53	1,898.17	1,807.71	90.46	20.984		
7,700.00	6,988.38	5,494.00	5,493.16	29.94	112.30	-12.11	-99.39	105.53	1,923.84	1,831.82	92.03	20.905		
7,800.00	6,988.31	5,494.00	5,493.16	30.84	112.30	-13.74	-99.39	105.53	1,988.12	1,892.51	95.61	20.795		
7,900.00	6,988.24	5,494.00	5,493.16	31.79	112.30	-15.47	-99.39	105.53	2,054.65	1,955.79	98.86	20.784		
8,000.00	6,988.16	5,494.00	5,493.16	32.78	112.30	-17.27	-99.39	105.53	2,123.13	2,021.32	101.81	20.854		
8,100.00	6,988.09	5,494.00	5,493.16	33.82	112.30	-19.15	-99.39	105.53	2,193.32	2,088.83	104.49	20.991		
8,200.00	6,988.01	5,494.00	5,493.16	34.88	112.30	-21.08	-99.39	105.53	2,264.96	2,158.04	106.92	21.183		
8,300.00	6,987.94	5,494.00	5,493.16	35.98	112.30	-23.05	-99.39	105.53	2,337.84	2,228.71	109.13	21.422		
8,400.00	6,987.86	5,494.00	5,493.16	37.11	112.30	-25.06	-99.39	105.53	2,411.77	2,300.63	111.14	21.700		
8,416.35	6,987.85	5,494.00	5,493.16	37.29	112.30	-25.39	-99.39	105.53	2,423.95	2,312.49	111.45	21.748		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #46 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		60-A027Ua_INC-ONLY				Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (")	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,500.00	6,987.78	5,494.00	5,493.16	38.25	112.30	-25.39	-99.39	105.53	2,486.91	2,373.93	112.98	22.011	
8,600.00	6,987.70	5,494.00	5,493.16	39.43	112.30	-25.39	-99.39	105.53	2,563.74	2,449.06	114.68	22.356	
8,700.00	6,987.62	5,494.00	5,493.16	40.64	112.30	-25.39	-99.39	105.53	2,642.12	2,525.88	116.24	22.730	
8,800.00	6,987.55	5,494.00	5,493.16	41.88	112.30	-25.39	-99.39	105.53	2,721.91	2,604.23	117.68	23.129	
8,900.00	6,987.47	5,494.00	5,493.16	43.14	112.30	-25.39	-99.39	105.53	2,803.01	2,683.99	119.01	23.552	
9,000.00	6,987.39	5,494.00	5,493.16	44.42	112.30	-25.39	-99.39	105.53	2,885.29	2,765.05	120.24	23.996	
9,100.00	6,987.31	5,494.00	5,493.16	45.72	112.30	-25.39	-99.39	105.53	2,968.65	2,847.28	121.38	24.458	
9,200.00	6,987.23	5,494.00	5,493.16	47.04	112.30	-25.39	-99.39	105.53	3,053.02	2,930.59	122.43	24.938	
9,300.00	6,987.15	5,494.00	5,493.16	48.38	112.30	-25.39	-99.39	105.53	3,138.31	3,014.91	123.40	25.432	
9,400.00	6,987.08	5,494.00	5,493.16	49.73	112.30	-25.39	-99.39	105.53	3,224.44	3,100.14	124.30	25.940	
9,500.00	6,987.00	5,494.00	5,493.16	51.10	112.30	-25.39	-99.39	105.53	3,311.35	3,186.21	125.14	26.461	
9,600.00	6,986.92	5,494.00	5,493.16	52.48	112.30	-25.39	-99.39	105.53	3,398.98	3,273.06	125.92	26.993	
9,700.00	6,986.84	5,494.00	5,493.16	53.87	112.30	-25.39	-99.39	105.53	3,487.27	3,360.63	126.65	27.535	
9,800.00	6,986.76	5,494.00	5,493.16	55.28	112.30	-25.39	-99.39	105.53	3,576.19	3,448.86	127.33	28.087	
9,900.00	6,986.68	5,494.00	5,493.16	56.69	112.30	-25.39	-99.39	105.53	3,665.67	3,537.71	127.96	28.647	
10,000.00	6,986.61	5,494.00	5,493.16	58.12	112.30	-25.39	-99.39	105.53	3,755.68	3,627.13	128.55	29.215	
10,100.00	6,986.53	5,494.00	5,493.16	59.55	112.30	-25.39	-99.39	105.53	3,846.19	3,717.08	129.11	29.790	
10,200.00	6,986.45	5,494.00	5,493.16	61.00	112.30	-25.39	-99.39	105.53	3,937.16	3,807.53	129.63	30.371	
10,300.00	6,986.37	5,494.00	5,493.16	62.45	112.30	-25.39	-99.39	105.53	4,028.56	3,898.43	130.13	30.959	
10,400.00	6,986.29	5,494.00	5,493.16	63.90	112.30	-25.39	-99.39	105.53	4,120.35	3,989.76	130.59	31.552	
10,500.00	6,986.21	5,494.00	5,493.16	65.37	112.30	-25.39	-99.39	105.53	4,212.52	4,081.49	131.03	32.150	
10,600.00	6,986.14	5,494.00	5,493.16	66.84	112.30	-25.39	-99.39	105.53	4,305.04	4,173.60	131.44	32.753	
10,700.00	6,986.06	5,494.00	5,493.16	68.32	112.30	-25.39	-99.39	105.53	4,397.88	4,266.05	131.83	33.360	
10,800.00	6,985.98	5,494.00	5,493.16	69.80	112.30	-25.39	-99.39	105.53	4,491.04	4,358.84	132.20	33.972	
10,900.00	6,985.90	5,494.00	5,493.16	71.29	112.30	-25.39	-99.39	105.53	4,584.48	4,451.93	132.55	34.586	
11,000.00	6,985.82	5,494.00	5,493.16	72.78	112.30	-25.39	-99.39	105.53	4,678.19	4,545.30	132.89	35.205	
11,100.00	6,985.75	5,494.00	5,493.16	74.28	112.30	-25.39	-99.39	105.53	4,772.16	4,638.95	133.20	35.826	
11,200.00	6,985.67	5,494.00	5,493.16	75.78	112.30	-25.39	-99.39	105.53	4,866.37	4,732.86	133.51	36.450	
11,300.00	6,985.59	5,494.00	5,493.16	77.29	112.30	-25.39	-99.39	105.53	4,960.80	4,827.00	133.80	37.077	
11,400.00	6,985.51	5,494.00	5,493.16	78.80	112.30	-25.39	-99.39	105.53	5,055.45	4,921.38	134.07	37.706	
11,500.00	6,985.43	5,494.00	5,493.16	80.31	112.30	-25.39	-99.39	105.53	5,150.30	5,015.96	134.34	38.338	
11,600.00	6,985.35	5,494.00	5,493.16	81.83	112.30	-25.39	-99.39	105.53	5,245.34	5,110.75	134.59	38.972	
11,700.00	6,985.28	5,494.00	5,493.16	83.35	112.30	-25.39	-99.39	105.53	5,340.57	5,205.73	134.84	39.607	
11,800.00	6,985.20	5,494.00	5,493.16	84.87	112.30	-25.39	-99.39	105.53	5,435.96	5,300.89	135.07	40.245	
11,900.00	6,985.12	5,494.00	5,493.16	86.40	112.30	-25.39	-99.39	105.53	5,531.52	5,396.22	135.30	40.884	
12,000.00	6,985.04	5,494.00	5,493.16	87.93	112.30	-25.39	-99.39	105.53	5,627.23	5,491.72	135.52	41.524	
12,100.00	6,984.96	5,494.00	5,493.16	89.46	112.30	-25.39	-99.39	105.53	5,723.09	5,587.36	135.73	42.166	
12,200.00	6,984.88	5,494.00	5,493.16	90.99	112.30	-25.39	-99.39	105.53	5,819.09	5,683.16	135.93	42.809	
12,300.00	6,984.81	5,494.00	5,493.16	92.53	112.30	-25.39	-99.39	105.53	5,915.22	5,779.09	136.13	43.453	
12,400.00	6,984.73	5,494.00	5,493.16	94.07	112.30	-25.39	-99.39	105.53	6,011.48	5,875.16	136.32	44.099	
12,500.00	6,984.65	5,494.00	5,493.16	95.61	112.30	-25.39	-99.39	105.53	6,107.86	5,971.35	136.50	44.745	
12,600.00	6,984.57	5,494.00	5,493.16	97.15	112.30	-25.39	-99.39	105.53	6,204.35	6,067.67	136.68	45.392	
12,700.00	6,984.49	5,494.00	5,493.16	98.70	112.30	-25.39	-99.39	105.53	6,300.95	6,164.09	136.86	46.040	
12,800.00	6,984.41	5,494.00	5,493.16	100.25	112.30	-25.39	-99.39	105.53	6,397.66	6,260.63	137.03	46.689	
12,900.00	6,984.34	5,494.00	5,493.16	101.80	112.30	-25.39	-99.39	105.53	6,494.46	6,357.27	137.19	47.338	
13,000.00	6,984.26	5,494.00	5,493.16	103.35	112.30	-25.39	-99.39	105.53	6,591.36	6,454.01	137.35	47.988	
13,100.00	6,984.18	5,494.00	5,493.16	104.90	112.30	-25.39	-99.39	105.53	6,688.35	6,550.84	137.51	48.638	
13,200.00	6,984.10	5,494.00	5,493.16	106.45	112.30	-25.39	-99.39	105.53	6,785.43	6,647.77	137.67	49.289	
13,300.00	6,984.02	5,494.00	5,493.16	108.01	112.30	-25.39	-99.39	105.53	6,882.60	6,744.78	137.82	49.940	
13,400.00	6,983.94	5,494.00	5,493.16	109.56	112.30	-25.39	-99.39	105.53	6,979.84	6,841.88	137.96	50.592	
13,500.00	6,983.87	5,494.00	5,493.16	111.12	112.30	-25.39	-99.39	105.53	7,077.16	6,939.05	138.11	51.243	
13,600.00	6,983.79	5,494.00	5,493.16	112.68	112.30	-25.39	-99.39	105.53	7,174.55	7,036.30	138.25	51.895	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #46 - OH - OH-INC													Offset Site Error:	0.00 usft	
Survey Program:		60-A027Ua_INC-ONLY					Offset		Semi Maior Axis		Rule Assigned:		Warning	Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
13,700.00	6,983.71	5,494.00	5,493.16	114.24	112.30	-25.39	-99.39	105.53	7,272.02	7,133.63	138.39	52.547			
13,800.00	6,983.63	5,494.00	5,493.16	115.80	112.30	-25.39	-99.39	105.53	7,369.55	7,231.02	138.53	53.199			
13,900.00	6,983.55	5,494.00	5,493.16	117.37	112.30	-25.39	-99.39	105.53	7,467.15	7,328.49	138.66	53.851			
14,000.00	6,983.47	5,494.00	5,493.16	118.93	112.30	-25.39	-99.39	105.53	7,564.81	7,426.02	138.79	54.504			
14,100.00	6,983.40	5,494.00	5,493.16	120.50	112.30	-25.39	-99.39	105.53	7,662.53	7,523.61	138.93	55.156			
14,200.00	6,983.32	5,494.00	5,493.16	122.06	112.30	-25.39	-99.39	105.53	7,760.31	7,621.26	139.05	55.808			
14,300.00	6,983.24	5,494.00	5,493.16	123.63	112.30	-25.39	-99.39	105.53	7,858.14	7,718.96	139.18	56.460			
14,400.00	6,983.16	5,494.00	5,493.16	125.20	112.30	-25.39	-99.39	105.53	7,956.03	7,816.73	139.31	57.112			
14,500.00	6,983.08	5,494.00	5,493.16	126.77	112.30	-25.39	-99.39	105.53	8,053.97	7,914.54	139.43	57.764			
14,600.00	6,983.00	5,494.00	5,493.16	128.33	112.30	-25.39	-99.39	105.53	8,151.96	8,012.41	139.55	58.415			
14,700.00	6,982.93	5,494.00	5,493.16	129.91	112.30	-25.39	-99.39	105.53	8,250.00	8,110.33	139.67	59.066			
14,800.00	6,982.85	5,494.00	5,493.16	131.48	112.30	-25.39	-99.39	105.53	8,348.09	8,208.30	139.79	59.717			
14,900.00	6,982.77	5,494.00	5,493.16	133.05	112.30	-25.39	-99.39	105.53	8,446.22	8,306.31	139.91	60.368			
15,000.00	6,982.69	5,494.00	5,493.16	134.62	112.30	-25.39	-99.39	105.53	8,544.39	8,404.36	140.03	61.019			
15,100.00	6,982.61	5,494.00	5,493.16	136.20	112.30	-25.39	-99.39	105.53	8,642.61	8,502.46	140.15	61.669			
15,200.00	6,982.54	5,494.00	5,493.16	137.77	112.30	-25.39	-99.39	105.53	8,740.86	8,600.60	140.26	62.318			
15,300.00	6,982.46	5,494.00	5,493.16	139.35	112.30	-25.39	-99.39	105.53	8,839.16	8,698.78	140.38	62.968			
15,400.00	6,982.38	5,494.00	5,493.16	140.92	112.30	-25.39	-99.39	105.53	8,937.49	8,797.00	140.49	63.617			
15,500.00	6,982.30	5,494.00	5,493.16	142.50	112.30	-25.39	-99.39	105.53	9,035.86	8,895.26	140.60	64.265			
15,600.00	6,982.22	5,494.00	5,493.16	144.07	112.30	-25.39	-99.39	105.53	9,134.27	8,993.55	140.72	64.913			
15,700.00	6,982.14	5,494.00	5,493.16	145.65	112.30	-25.39	-99.39	105.53	9,232.71	9,091.88	140.83	65.561			
15,800.00	6,982.07	5,494.00	5,493.16	147.23	112.30	-25.39	-99.39	105.53	9,331.18	9,190.24	140.94	66.208			
15,900.00	6,981.99	5,494.00	5,493.16	148.81	112.30	-25.39	-99.39	105.53	9,429.68	9,288.63	141.05	66.854			
16,000.00	6,981.91	5,494.00	5,493.16	150.39	112.30	-25.39	-99.39	105.53	9,528.22	9,387.06	141.16	67.500			
16,100.00	6,981.83	5,494.00	5,493.16	151.97	112.30	-25.39	-99.39	105.53	9,626.78	9,485.52	141.27	68.146			
16,200.00	6,981.75	5,494.00	5,493.16	153.55	112.30	-25.39	-99.39	105.53	9,725.38	9,584.00	141.38	68.790			
16,300.00	6,981.67	5,494.00	5,493.16	155.13	112.30	-25.39	-99.39	105.53	9,824.00	9,682.52	141.49	69.435			
16,400.00	6,981.60	5,494.00	5,493.16	156.71	112.30	-25.39	-99.39	105.53	9,922.65	9,781.06	141.59	70.078			
16,500.00	6,981.52	5,494.00	5,493.16	158.29	112.30	-25.39	-99.39	105.53	10,021.33	9,879.63	141.70	70.721			
16,600.00	6,981.44	5,494.00	5,493.16	159.88	112.30	-25.39	-99.39	105.53	10,120.04	9,978.23	141.81	71.364			
16,700.00	6,981.36	5,494.00	5,493.16	161.46	112.30	-25.39	-99.39	105.53	10,218.76	10,076.85	141.92	72.006			
16,800.00	6,981.28	5,494.00	5,493.16	163.04	112.30	-25.39	-99.39	105.53	10,317.52	10,175.49	142.02	72.647			
16,900.00	6,981.20	5,494.00	5,493.16	164.62	112.30	-25.39	-99.39	105.53	10,416.30	10,274.17	142.13	73.287			
17,000.00	6,981.13	5,494.00	5,493.16	166.21	112.30	-25.39	-99.39	105.53	10,515.10	10,372.86	142.24	73.927			
17,100.00	6,981.05	5,494.00	5,493.16	167.79	112.30	-25.39	-99.39	105.53	10,613.92	10,471.58	142.34	74.566			
17,200.00	6,980.97	5,494.00	5,493.16	169.38	112.30	-25.39	-99.39	105.53	10,712.76	10,570.31	142.45	75.204			
17,300.00	6,980.89	5,494.00	5,493.16	170.96	112.30	-25.39	-99.39	105.53	10,811.63	10,669.07	142.55	75.842			
17,400.00	6,980.81	5,494.00	5,493.16	172.55	112.30	-25.39	-99.39	105.53	10,910.52	10,767.86	142.66	76.479			
17,500.00	6,980.73	5,494.00	5,493.16	174.13	112.30	-25.39	-99.39	105.53	11,009.42	10,866.66	142.77	77.115			
17,600.00	6,980.66	5,494.00	5,493.16	175.72	112.30	-25.39	-99.39	105.53	11,108.35	10,965.48	142.87	77.750			
17,700.00	6,980.58	5,494.00	5,493.16	177.31	112.30	-25.39	-99.39	105.53	11,207.29	11,064.32	142.98	78.385			
17,800.00	6,980.50	5,494.00	5,493.16	178.89	112.30	-25.39	-99.39	105.53	11,306.26	11,163.17	143.08	79.019			
17,900.00	6,980.42	5,494.00	5,493.16	180.48	112.30	-25.39	-99.39	105.53	11,405.24	11,262.05	143.19	79.652			
18,000.00	6,980.34	5,494.00	5,493.16	182.07	112.30	-25.39	-99.39	105.53	11,504.24	11,360.95	143.29	80.284			
18,100.00	6,980.26	5,494.00	5,493.16	183.66	112.30	-25.39	-99.39	105.53	11,603.26	11,459.86	143.40	80.915			
18,200.00	6,980.19	5,494.00	5,493.16	185.24	112.30	-25.39	-99.39	105.53	11,702.29	11,558.78	143.51	81.546			
18,300.00	6,980.11	5,494.00	5,493.16	186.83	112.30	-25.39	-99.39	105.53	11,801.34	11,657.73	143.61	82.176			
18,400.00	6,980.03	5,494.00	5,493.16	188.42	112.30	-25.39	-99.39	105.53	11,900.41	11,756.69	143.72	82.805			
18,500.00	6,979.95	5,494.00	5,493.16	190.01	112.30	-25.39	-99.39	105.53	11,999.49	11,855.66	143.82	83.433			
18,600.00	6,979.87	5,494.00	5,493.16	191.60	112.30	-25.39	-99.39	105.53	12,098.58	11,954.66	143.93	84.060			
18,700.00	6,979.79	5,494.00	5,493.16	193.19	112.30	-25.39	-99.39	105.53	12,197.69	12,053.66	144.03	84.687			
18,800.00	6,979.72	5,494.00	5,493.16	194.78	112.30	-25.39	-99.39	105.53	12,296.82	12,152.68	144.14	85.312			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #46 - OH - OH-INC												Offset Site Error: 0.00 usft		
Survey Program: Reference		60-A027Ua_INC-ONLY Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned: Distance				Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
18,900.00	6,979.64	5,494.00	5,493.16	196.37	112.30	-25.39	-99.39	105.53	12,395.96	12,251.71	144.24	85.937		
19,000.00	6,979.56	5,494.00	5,493.16	197.96	112.30	-25.39	-99.39	105.53	12,495.11	12,350.76	144.35	86.561		
19,100.00	6,979.48	5,494.00	5,493.16	199.55	112.30	-25.39	-99.39	105.53	12,594.28	12,449.82	144.46	87.184		
19,200.00	6,979.40	5,494.00	5,493.16	201.14	112.30	-25.39	-99.39	105.53	12,693.46	12,548.90	144.56	87.806		
19,300.00	6,979.33	5,494.00	5,493.16	202.73	112.30	-25.39	-99.39	105.53	12,792.65	12,647.98	144.67	88.427		
19,400.00	6,979.25	5,494.00	5,493.16	204.32	112.30	-25.39	-99.39	105.53	12,891.86	12,747.08	144.78	89.047		
19,500.00	6,979.17	5,494.00	5,493.16	205.91	112.30	-25.39	-99.39	105.53	12,991.07	12,846.19	144.88	89.667		
19,600.00	6,979.09	5,494.00	5,493.16	207.50	112.30	-25.39	-99.39	105.53	13,090.30	12,945.31	144.99	90.285		
19,700.00	6,979.01	5,494.00	5,493.16	209.09	112.30	-25.39	-99.39	105.53	13,189.54	13,044.45	145.10	90.903		
19,800.00	6,978.93	5,494.00	5,493.16	210.69	112.30	-25.39	-99.39	105.53	13,288.79	13,143.59	145.20	91.519		
19,900.00	6,978.86	5,494.00	5,493.16	212.28	112.30	-25.39	-99.39	105.53	13,388.06	13,242.75	145.31	92.135		
20,000.00	6,978.78	5,494.00	5,493.16	213.87	112.30	-25.39	-99.39	105.53	13,487.33	13,341.92	145.42	92.750		
20,100.00	6,978.70	5,494.00	5,493.16	215.46	112.30	-25.39	-99.39	105.53	13,586.62	13,441.09	145.52	93.364		
20,200.00	6,978.62	5,494.00	5,493.16	217.05	112.30	-25.39	-99.39	105.53	13,685.91	13,540.28	145.63	93.976		
20,300.00	6,978.54	5,494.00	5,493.16	218.65	112.30	-25.39	-99.39	105.53	13,785.22	13,639.48	145.74	94.588		
20,400.00	6,978.46	5,494.00	5,493.16	220.24	112.30	-25.39	-99.39	105.53	13,884.53	13,738.69	145.85	95.199		
20,500.00	6,978.39	5,494.00	5,493.16	221.83	112.30	-25.39	-99.39	105.53	13,983.86	13,837.90	145.95	95.810		
20,600.00	6,978.31	5,494.00	5,493.16	223.43	112.30	-25.39	-99.39	105.53	14,083.19	13,937.13	146.06	96.419		
20,700.00	6,978.23	5,494.00	5,493.16	225.02	112.30	-25.39	-99.39	105.53	14,182.54	14,036.36	146.17	97.027		
20,800.00	6,978.15	5,494.00	5,493.16	226.61	112.30	-25.39	-99.39	105.53	14,281.89	14,135.61	146.28	97.634		
20,900.00	6,978.07	5,494.00	5,493.16	228.21	112.30	-25.39	-99.39	105.53	14,381.25	14,234.86	146.39	98.240		
21,000.00	6,977.99	5,494.00	5,493.16	229.80	112.30	-25.39	-99.39	105.53	14,480.62	14,334.12	146.50	98.846		
21,100.00	6,977.92	5,494.00	5,493.16	231.39	112.30	-25.39	-99.39	105.53	14,580.00	14,433.40	146.61	99.450		
21,200.00	6,977.84	5,494.00	5,493.16	232.99	112.30	-25.39	-99.39	105.53	14,679.39	14,532.67	146.72	100.053		
21,300.00	6,977.76	5,494.00	5,493.16	234.58	112.30	-25.39	-99.39	105.53	14,778.79	14,631.96	146.83	100.656		
21,400.00	6,977.68	5,494.00	5,493.16	236.18	112.30	-25.39	-99.39	105.53	14,878.19	14,731.26	146.93	101.257		
21,500.00	6,977.60	5,494.00	5,493.16	237.77	112.30	-25.39	-99.39	105.53	14,977.60	14,830.56	147.04	101.858		
21,600.00	6,977.52	5,494.00	5,493.16	239.37	112.30	-25.39	-99.39	105.53	15,077.02	14,929.87	147.15	102.457		
21,700.00	6,977.45	5,494.00	5,493.16	240.96	112.30	-25.39	-99.39	105.53	15,176.45	15,029.18	147.26	103.055		
21,800.00	6,977.37	5,494.00	5,493.16	242.56	112.30	-25.39	-99.39	105.53	15,275.88	15,128.51	147.38	103.653		
21,900.00	6,977.29	5,494.00	5,493.16	244.15	112.30	-25.39	-99.39	105.53	15,375.33	15,227.84	147.49	104.249		
22,000.00	6,977.21	5,494.00	5,493.16	245.75	112.30	-25.39	-99.39	105.53	15,474.78	15,327.18	147.60	104.845		
22,100.00	6,977.13	5,494.00	5,493.16	247.34	112.30	-25.39	-99.39	105.53	15,574.23	15,426.53	147.71	105.439		
22,200.00	6,977.05	5,494.00	5,493.16	248.94	112.30	-25.39	-99.39	105.53	15,673.70	15,525.88	147.82	106.033		
22,269.73	6,977.00	5,494.00	5,493.16	250.05	112.30	-25.39	-99.39	105.53	15,743.05	15,595.16	147.90	106.446		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #80B - OH - OH-SVY														Offset Site Error: 0.00 usft	
Survey Program: Reference		300-MWD OWSG Rev5						Rule Assigned:		Offset Well Error: 0.00 usft					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.00	0.00	0.00	0.00	0.00	0.00	-108.51	-820.51	-2,450.32	2,584.84						
100.00	100.00	34.50	34.50	0.25	0.36	-108.51	-820.52	-2,450.33	2,584.06	2,583.45	0.61	4,221.420			
200.00	200.00	130.33	130.33	0.61	1.37	-108.52	-820.66	-2,450.42	2,584.20	2,582.23	1.97	1,309.522			
300.00	300.00	226.16	226.16	0.97	2.37	-108.52	-820.97	-2,450.62	2,584.50	2,581.16	3.33	775.045			
400.00	400.00	321.94	321.94	1.33	3.19	-108.53	-821.44	-2,450.93	2,584.96	2,580.45	4.51	573.057			
500.00	500.00	626.19	625.09	1.68	3.57	-108.15	-801.82	-2,446.42	2,581.40	2,576.25	5.15	501.096			
600.00	600.00	771.71	768.18	2.04	3.84	-107.63	-775.84	-2,442.04	2,572.82	2,567.16	5.66	454.450			
700.00	700.00	856.00	850.15	2.40	4.04	-107.22	-756.32	-2,440.56	2,564.02	2,557.87	6.15	417.004			
800.00	799.98	932.74	924.17	2.76	4.25	-96.21	-736.07	-2,440.67	2,556.37	2,549.70	6.66	383.704			
849.89	849.82	967.41	957.33	2.94	4.37	-96.09	-725.97	-2,441.25	2,553.08	2,546.15	6.92	368.677			
900.00	899.86	1,003.84	991.99	3.12	4.49	-95.88	-714.81	-2,442.25	2,550.14	2,542.94	7.20	354.167			
1,000.00	999.73	1,081.55	1,065.23	3.48	4.76	-95.39	-689.03	-2,445.40	2,544.96	2,537.17	7.79	326.569			
1,100.00	1,099.59	1,151.27	1,130.19	3.84	5.01	-94.90	-664.06	-2,449.40	2,540.95	2,532.55	8.40	302.387			
1,200.00	1,199.45	1,203.00	1,178.04	4.20	5.20	-94.52	-644.76	-2,453.28	2,538.58	2,529.61	8.97	282.898			
1,300.00	1,299.32	1,357.36	1,321.28	4.56	5.78	-93.39	-588.59	-2,465.43	2,537.60	2,527.57	10.03	252.975			
1,400.00	1,399.18	1,445.35	1,402.30	4.92	6.16	-92.71	-554.72	-2,470.90	2,534.58	2,523.75	10.83	234.000			
1,500.00	1,499.04	1,538.28	1,487.55	5.28	6.57	-91.98	-518.30	-2,477.38	2,532.55	2,520.86	11.69	216.653			
1,600.00	1,598.91	1,671.14	1,608.13	5.64	7.23	-90.86	-463.21	-2,485.91	2,529.98	2,517.14	12.83	197.149			
1,700.00	1,698.77	1,739.98	1,669.41	6.00	7.66	-90.23	-432.23	-2,490.68	2,527.83	2,514.19	13.65	185.212			
1,800.00	1,798.63	1,828.94	1,747.98	6.36	8.27	-89.38	-391.11	-2,497.71	2,527.02	2,512.39	14.63	172.774			
1,900.00	1,898.49	1,934.85	1,843.06	6.72	8.97	-88.43	-344.99	-2,504.71	2,526.06	2,510.37	15.69	160.952			
2,000.00	1,998.36	2,122.86	2,012.79	7.09	10.23	-86.80	-264.91	-2,515.08	2,525.72	2,508.41	17.30	145.970			
2,100.00	2,098.22	2,203.13	2,086.53	7.45	10.72	-86.17	-233.22	-2,516.93	2,522.60	2,504.44	18.16	138.895			
2,200.00	2,198.08	2,275.00	2,152.92	7.81	11.15	-85.63	-205.81	-2,519.26	2,520.91	2,501.95	18.96	132.975			
2,300.00	2,297.95	2,370.63	2,242.03	8.17	11.70	-84.95	-171.27	-2,522.49	2,520.02	2,500.15	19.87	126.844			
2,400.00	2,397.81	2,477.91	2,342.86	8.53	12.28	-84.23	-134.75	-2,525.38	2,519.01	2,498.20	20.81	121.053			
2,500.00	2,497.67	2,592.23	2,451.23	8.90	12.87	-83.54	-98.45	-2,527.65	2,517.84	2,496.09	21.75	115.769			
2,600.00	2,597.54	2,697.56	2,551.89	9.26	13.36	-82.95	-67.48	-2,529.29	2,516.72	2,494.12	22.61	111.334			
2,700.00	2,697.40	2,795.28	2,646.03	9.62	13.78	-82.47	-41.29	-2,530.37	2,515.52	2,492.13	23.39	107.559			
2,798.74	2,796.01	2,865.50	2,714.04	9.98	14.07	-82.15	-23.85	-2,531.23	2,514.80	2,490.77	24.03	104.655			
2,800.00	2,797.26	2,866.30	2,714.81	9.98	14.07	-82.14	-23.65	-2,531.25	2,514.80	2,490.76	24.04	104.622			
2,900.00	2,897.13	2,980.75	2,826.41	10.35	14.49	-81.70	1.65	-2,532.48	2,514.06	2,489.25	24.81	101.332			
3,000.00	2,996.99	3,085.66	2,929.51	10.71	14.81	-81.38	21.02	-2,533.67	2,513.69	2,488.20	25.49	98.615			
3,100.00	3,096.85	3,177.47	3,020.28	11.07	15.04	-81.17	34.78	-2,534.41	2,513.18	2,487.10	26.08	96.361			
3,200.00	3,196.72	3,311.11	3,152.87	11.43	15.33	-80.95	51.47	-2,534.66	2,512.13	2,485.42	26.72	94.021			
3,300.00	3,296.58	3,402.56	3,243.74	11.80	15.52	-80.82	61.68	-2,534.29	2,510.59	2,483.34	27.25	92.121			
3,400.00	3,396.44	3,481.51	3,322.29	12.16	15.70	-80.74	69.63	-2,534.67	2,509.92	2,482.16	27.76	90.431			
3,500.00	3,496.31	3,582.14	3,422.60	12.52	15.96	-80.67	77.58	-2,535.54	2,509.74	2,481.48	28.26	88.814			
3,553.29	3,549.52	3,623.85	3,464.25	12.72	16.08	-80.67	79.74	-2,535.81	2,509.58	2,481.09	28.49	88.075			
3,600.00	3,596.17	3,668.54	3,508.90	12.88	16.20	-80.68	81.55	-2,536.30	2,509.65	2,480.94	28.70	87.440			
3,700.00	3,696.03	3,779.71	3,620.02	13.25	16.49	-80.75	84.36	-2,537.08	2,509.43	2,480.30	29.13	86.140			
3,800.00	3,795.89	3,879.96	3,720.25	13.61	22.63	-80.82	86.36	-2,537.61	2,509.07	2,473.47	35.60	70.486			
3,900.00	3,895.76	3,980.28	3,820.55	13.97	30.27	-80.89	88.34	-2,538.12	2,508.69	2,465.09	43.60	57.539			
4,000.00	3,995.62	4,080.60	3,920.86	14.34	37.90	-80.97	90.30	-2,538.62	2,508.30	2,456.70	51.60	48.608			
4,100.00	4,095.48	4,180.92	4,021.16	14.70	45.54	-81.04	92.22	-2,539.10	2,507.90	2,448.30	59.61	42.075			
4,200.00	4,195.35	4,281.24	4,121.46	15.06	53.18	-81.12	94.12	-2,539.57	2,507.50	2,439.89	67.61	37.089			
4,300.00	4,295.21	4,381.56	4,221.76	15.42	60.81	-81.19	96.00	-2,540.02	2,507.08	2,431.47	75.61	33.158			
4,400.00	4,395.07	4,481.88	4,322.05	15.79	68.45	-81.27	97.84	-2,540.45	2,506.65	2,423.03	83.61	29.979			
4,500.00	4,494.94	4,582.19	4,422.35	16.15	76.09	-81.34	99.66	-2,540.87	2,506.21	2,414.59	91.62	27.356			
4,600.00	4,594.80	4,682.50	4,522.64	16.51	83.72	-81.42	101.46	-2,541.27	2,505.76	2,406.14	99.62	25.154			
4,700.00	4,694.66	4,782.81	4,622.94	16.87	91.36	-81.50	103.22	-2,541.66	2,505.30	2,397.68	107.62	23.279			
4,800.00	4,794.53	4,883.12	4,723.23	17.24	98.99	-81.58	104.96	-2,542.03	2,504.83	2,389.21	115.62	21.664			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #80B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 300-MWD OWSG Rev5												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,900.00	4,894.39	4,983.42	4,823.52	17.60	106.63	-81.66	106.67	-2,542.38	2,504.35	2,380.72	123.62	20.258	
5,000.00	4,994.25	5,083.73	4,923.81	17.96	114.26	-81.74	108.36	-2,542.72	2,503.86	2,372.23	131.62	19.023	
5,100.00	5,094.12	5,184.03	5,024.10	18.33	121.90	-81.82	110.02	-2,543.04	2,503.36	2,363.73	139.63	17.929	
5,200.00	5,193.98	5,284.33	5,124.38	18.69	129.53	-81.90	111.66	-2,543.35	2,502.85	2,355.22	147.63	16.954	
5,300.00	5,293.84	5,384.62	5,224.66	19.05	137.17	-81.98	113.26	-2,543.64	2,502.33	2,346.70	155.63	16.079	
5,336.91	5,330.71	5,421.65	5,261.68	19.19	139.99	-82.01	113.85	-2,543.75	2,502.14	2,343.55	158.58	15.778	
5,400.00	5,393.71	5,484.92	5,324.95	19.41	144.80	-82.06	114.84	-2,543.92	2,501.82	2,338.20	163.63	15.290	
5,500.00	5,493.62	5,585.25	5,425.26	19.77	152.44	-82.12	116.40	-2,544.18	2,501.42	2,329.79	171.63	14.574	
5,600.00	5,593.57	5,685.59	5,525.59	20.13	160.08	-82.16	117.92	-2,544.42	2,501.13	2,321.50	179.63	13.924	
5,700.00	5,693.53	5,785.95	5,625.94	20.49	167.72	-82.18	119.43	-2,544.65	2,500.94	2,313.31	187.63	13.329	
5,800.00	5,793.52	5,886.30	5,726.28	20.85	175.36	-82.18	120.90	-2,544.86	2,500.85	2,305.22	195.63	12.783	
5,831.24	5,824.76	5,917.66	5,757.63	20.96	177.74	-82.18	121.36	-2,544.93	2,500.85	2,302.72	198.13	12.622	
5,900.00	5,893.52	5,986.66	5,826.63	21.20	183.00	-82.16	122.35	-2,545.06	2,500.87	2,297.24	203.63	12.281	
5,936.48	5,930.00	6,023.27	5,863.24	21.33	185.78	-92.91	122.87	-2,545.13	2,500.91	2,294.36	206.55	12.108	
6,000.00	5,993.52	6,087.01	5,926.97	21.56	190.64	-92.89	123.77	-2,545.24	2,500.97	2,289.35	211.63	11.818	
6,100.00	6,093.52	6,187.36	6,027.31	21.91	198.28	-92.86	125.16	-2,545.41	2,501.07	2,281.45	219.62	11.388	
6,200.00	6,193.52	6,287.71	6,127.65	22.27	205.92	-92.82	126.53	-2,545.56	2,501.15	2,273.53	227.62	10.988	
6,300.00	6,293.52	6,388.06	6,227.99	22.62	213.56	-92.79	127.87	-2,545.69	2,501.22	2,265.60	235.62	10.616	
6,358.48	6,352.00	6,446.75	6,286.68	22.83	218.02	-92.78	128.65	-2,545.76	2,501.25	2,260.96	240.29	10.409	
6,400.00	6,393.49	6,488.28	6,328.20	22.97	220.61	-18.21	129.19	-2,545.81	2,499.99	2,256.96	243.02	10.287	
6,450.00	6,443.20	6,537.98	6,377.90	23.15	223.30	-18.37	129.84	-2,545.87	2,495.06	2,249.17	245.89	10.147	
6,500.00	6,492.36	6,587.13	6,427.05	23.33	225.97	-18.67	130.50	-2,545.93	2,486.44	2,237.72	248.73	9.997	
6,550.00	6,540.64	6,635.44	6,475.35	23.51	228.59	-19.12	131.15	-2,545.98	2,474.20	2,222.68	251.52	9.837	
6,600.00	6,587.77	6,682.61	6,522.52	23.69	231.14	-19.73	131.78	-2,546.04	2,458.39	2,204.15	254.24	9.670	
6,650.00	6,633.44	6,728.34	6,568.25	23.88	233.62	-20.53	132.41	-2,546.10	2,439.15	2,182.26	256.88	9.495	
6,700.00	6,677.37	6,772.36	6,612.26	24.07	236.01	-21.53	133.02	-2,546.15	2,416.58	2,157.15	259.43	9.315	
6,750.00	6,719.30	6,814.40	6,654.29	24.26	238.29	-22.77	133.60	-2,546.21	2,390.84	2,128.98	261.86	9.130	
6,800.00	6,758.97	6,854.19	6,694.07	24.46	240.45	-24.30	134.16	-2,546.26	2,362.10	2,097.93	264.16	8.942	
6,850.00	6,796.12	6,891.48	6,731.37	24.67	242.47	-26.18	134.68	-2,546.31	2,330.55	2,064.22	266.33	8.751	
6,900.00	6,830.54	6,926.06	6,765.95	24.88	244.34	-28.49	135.17	-2,546.35	2,296.40	2,028.07	268.33	8.558	
6,950.00	6,862.00	6,957.71	6,797.59	25.11	246.06	-31.33	135.63	-2,546.40	2,259.87	1,989.70	270.17	8.365	
7,000.00	6,890.33	6,986.23	6,826.10	25.34	247.60	-34.82	136.04	-2,546.43	2,221.22	1,949.38	271.84	8.171	
7,050.00	6,915.33	7,011.44	6,851.31	25.59	248.97	-39.14	136.40	-2,546.47	2,180.70	1,907.38	273.32	7.979	
7,100.00	6,936.86	7,033.20	6,873.07	25.85	250.15	-44.46	136.71	-2,546.50	2,138.57	1,863.97	274.61	7.788	
7,150.00	6,954.79	7,051.36	6,891.22	26.12	251.13	-50.98	136.98	-2,546.52	2,095.12	1,819.43	275.70	7.599	
7,200.00	6,968.99	7,065.81	6,905.68	26.40	251.92	-58.82	137.19	-2,546.54	2,050.65	1,774.07	276.58	7.414	
7,250.00	6,979.40	7,076.47	6,916.33	26.69	252.50	-67.94	137.34	-2,546.56	2,005.43	1,728.17	277.26	7.233	
7,300.00	6,985.94	7,083.26	6,923.12	27.00	252.86	-78.00	137.44	-2,546.57	1,959.78	1,682.05	277.73	7.056	
7,350.00	6,988.56	7,086.15	6,926.01	27.31	253.02	-88.38	137.49	-2,546.57	1,914.00	1,636.00	278.00	6.885	
7,358.93	6,988.62	7,086.25	6,926.12	27.36	253.03	-90.20	137.49	-2,546.57	1,905.84	1,627.81	278.02	6.855	
7,400.00	6,988.59	7,086.44	6,926.30	27.63	253.04	-90.22	137.49	-2,546.57	1,868.36	1,590.23	278.13	6.718	
7,500.00	6,988.52	7,086.89	6,926.76	28.33	253.06	-90.25	137.50	-2,546.57	1,777.77	1,499.35	278.42	6.385	
7,600.00	6,988.45	7,087.34	6,927.21	29.10	253.09	-90.28	137.50	-2,546.57	1,688.25	1,409.48	278.77	6.056	
7,658.93	6,988.41	7,087.61	6,927.48	29.59	253.10	-90.30	137.51	-2,546.57	1,636.06	1,357.05	279.01	5.864	
7,700.00	6,988.38	7,087.79	6,927.66	29.94	253.11	-90.33	137.51	-2,546.57	1,599.83	1,320.63	279.19	5.730	
7,800.00	6,988.31	7,088.20	6,928.07	30.84	253.13	-90.38	137.52	-2,546.57	1,511.43	1,231.74	279.68	5.404	
7,900.00	6,988.24	7,088.56	6,928.43	31.79	253.15	-90.44	137.52	-2,546.57	1,422.83	1,142.60	280.24	5.077	
8,000.00	6,988.16	7,088.87	6,928.73	32.78	253.17	-90.51	137.53	-2,546.57	1,334.13	1,053.27	280.86	4.750	
8,100.00	6,988.09	7,089.13	6,928.99	33.82	253.18	-90.57	137.53	-2,546.58	1,245.42	963.86	281.56	4.423	
8,200.00	6,988.01	7,089.33	6,929.20	34.88	253.19	-90.63	137.53	-2,546.58	1,156.81	874.45	282.36	4.097	
8,300.00	6,987.94	7,089.49	6,929.35	35.98	253.20	-90.70	137.54	-2,546.58	1,068.45	785.19	283.26	3.772	
8,400.00	6,987.86	7,089.59	6,929.45	37.11	253.21	-90.76	137.54	-2,546.58	980.53	696.24	284.29	3.449	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #80B - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 300-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,416.35	6,987.85	7,089.60	6,929.47	37.29	253.21	-90.77	137.54	-2,546.58	966.21	681.74	284.47	3.397	
8,500.00	6,987.78	7,089.66	6,929.52	38.25	253.21	-90.78	137.54	-2,546.58	893.93	608.44	285.49	3.131	
8,600.00	6,987.70	7,089.73	6,929.59	39.43	253.21	-90.78	137.54	-2,546.58	810.40	523.43	286.97	2.824	
8,700.00	6,987.62	7,089.79	6,929.66	40.64	253.22	-90.79	137.54	-2,546.58	731.02	442.23	288.78	2.531	
8,800.00	6,987.55	7,089.86	6,929.73	41.88	253.22	-90.80	137.54	-2,546.58	657.28	366.32	290.96	2.259	
8,900.00	6,987.47	7,089.93	6,929.79	43.14	253.23	-90.81	137.54	-2,546.58	591.32	297.84	293.48	2.015	
9,000.00	6,987.39	7,090.00	6,929.86	44.42	253.23	-90.82	137.54	-2,546.58	535.99	239.83	296.16	1.810	
9,100.00	6,987.31	7,090.06	6,929.93	45.72	253.23	-90.83	137.54	-2,546.58	494.90	196.28	298.62	1.657	
9,200.00	6,987.23	7,090.13	6,930.00	47.04	253.24	-90.83	137.55	-2,546.58	471.76	171.55	300.21	1.571	
9,261.82	6,987.18	7,090.17	6,930.04	47.87	253.24	-90.84	137.55	-2,546.58	467.69	167.19	300.50	1.556 CC, ES, SF	
9,300.00	6,987.15	7,090.20	6,930.06	48.38	253.24	-90.84	137.55	-2,546.58	469.25	168.88	300.37	1.562	
9,400.00	6,987.08	7,090.27	6,930.13	49.73	253.24	-90.85	137.55	-2,546.58	487.68	188.64	299.04	1.631	
9,500.00	6,987.00	7,090.34	6,930.20	51.10	253.25	-90.86	137.55	-2,546.58	524.85	228.15	296.70	1.769	
9,600.00	6,986.92	7,090.40	6,930.27	52.48	253.25	-90.87	137.55	-2,546.58	577.15	283.13	294.01	1.963	
9,700.00	6,986.84	7,090.47	6,930.34	53.87	253.26	-90.88	137.55	-2,546.58	640.89	349.44	291.45	2.199	
9,800.00	6,986.76	7,090.54	6,930.40	55.28	253.26	-90.88	137.55	-2,546.58	713.00	423.79	289.21	2.465	
9,900.00	6,986.68	7,090.61	6,930.47	56.69	253.26	-90.89	137.55	-2,546.58	791.20	503.84	287.36	2.753	
10,000.00	6,986.61	7,090.68	6,930.54	58.12	253.27	-90.90	137.55	-2,546.58	873.86	588.01	285.86	3.057	
10,100.00	6,986.53	7,090.74	6,930.61	59.55	253.27	-90.91	137.55	-2,546.58	959.83	675.18	284.65	3.372	
10,200.00	6,986.45	7,090.81	6,930.68	61.00	253.27	-90.92	137.56	-2,546.58	1,048.29	764.60	283.69	3.695	
10,300.00	6,986.37	7,090.88	6,930.74	62.45	253.28	-90.93	137.56	-2,546.58	1,138.66	855.75	282.91	4.025	
10,400.00	6,986.29	7,090.95	6,930.81	63.90	253.28	-90.93	137.56	-2,546.58	1,230.52	948.23	282.29	4.359	
10,500.00	6,986.21	7,091.01	6,930.88	65.37	253.28	-90.94	137.56	-2,546.58	1,323.56	1,041.78	281.78	4.697	
10,600.00	6,986.14	7,091.08	6,930.95	66.84	253.29	-90.95	137.56	-2,546.58	1,417.55	1,136.18	281.37	5.038	
10,700.00	6,986.06	7,091.15	6,931.02	68.32	253.29	-90.96	137.56	-2,546.58	1,512.31	1,231.28	281.04	5.381	
10,800.00	6,985.98	7,091.22	6,931.08	69.80	253.30	-90.97	137.56	-2,546.58	1,607.71	1,326.95	280.76	5.726	
10,900.00	6,985.90	7,091.29	6,931.15	71.29	253.30	-90.98	137.56	-2,546.58	1,703.63	1,423.09	280.53	6.073	
11,000.00	6,985.82	7,091.35	6,931.22	72.78	253.30	-90.98	137.56	-2,546.58	1,800.00	1,519.65	280.35	6.421	
11,100.00	6,985.75	7,091.42	6,931.29	74.28	253.31	-90.99	137.56	-2,546.58	1,896.74	1,616.54	280.20	6.769	
11,200.00	6,985.67	7,091.49	6,931.35	75.78	253.31	-91.00	137.57	-2,546.58	1,993.80	1,713.73	280.07	7.119	
11,300.00	6,985.59	7,091.56	6,931.42	77.29	253.31	-91.01	137.57	-2,546.58	2,091.15	1,811.17	279.97	7.469	
11,400.00	6,985.51	7,091.63	6,931.49	78.80	253.32	-91.02	137.57	-2,546.58	2,188.73	1,908.84	279.89	7.820	
11,500.00	6,985.43	7,091.69	6,931.56	80.31	253.32	-91.03	137.57	-2,546.58	2,286.52	2,006.69	279.82	8.171	
11,600.00	6,985.35	7,091.76	6,931.63	81.83	253.33	-91.03	137.57	-2,546.58	2,384.49	2,104.72	279.77	8.523	
11,700.00	6,985.28	7,091.83	6,931.69	83.35	253.33	-91.04	137.57	-2,546.58	2,482.63	2,202.89	279.74	8.875	
11,800.00	6,985.20	7,091.90	6,931.76	84.87	253.33	-91.05	137.57	-2,546.58	2,580.90	2,301.20	279.71	9.227	
11,900.00	6,985.12	7,091.97	6,931.83	86.40	253.34	-91.06	137.57	-2,546.58	2,679.31	2,399.62	279.69	9.580	
12,000.00	6,985.04	7,092.03	6,931.90	87.93	253.34	-91.07	137.57	-2,546.58	2,777.83	2,498.15	279.68	9.932	
12,100.00	6,984.96	7,092.10	6,931.97	89.46	253.34	-91.08	137.57	-2,546.58	2,876.45	2,596.78	279.67	10.285	
12,200.00	6,984.88	7,092.17	6,932.03	90.99	253.35	-91.08	137.58	-2,546.58	2,975.16	2,695.49	279.68	10.638	
12,300.00	6,984.81	7,092.24	6,932.10	92.53	253.35	-91.09	137.58	-2,546.58	3,073.96	2,794.28	279.69	10.991	
12,400.00	6,984.73	7,092.31	6,932.17	94.07	253.35	-91.10	137.58	-2,546.58	3,172.83	2,893.13	279.70	11.344	
12,500.00	6,984.65	7,092.37	6,932.24	95.61	253.36	-91.11	137.58	-2,546.58	3,271.77	2,992.06	279.72	11.697	
12,600.00	6,984.57	7,092.44	6,932.31	97.15	253.36	-91.12	137.58	-2,546.58	3,370.78	3,091.04	279.74	12.050	
12,700.00	6,984.49	7,092.51	6,932.37	98.70	253.37	-91.13	137.58	-2,546.58	3,469.84	3,190.07	279.77	12.403	
12,800.00	6,984.41	7,092.58	6,932.44	100.25	253.37	-91.13	137.58	-2,546.58	3,568.95	3,289.16	279.80	12.756	
12,900.00	6,984.34	7,092.65	6,932.51	101.80	253.37	-91.14	137.58	-2,546.58	3,668.11	3,388.28	279.83	13.108	
13,000.00	6,984.26	7,092.72	6,932.58	103.35	253.38	-91.15	137.58	-2,546.58	3,767.32	3,487.45	279.86	13.461	
13,100.00	6,984.18	7,092.78	6,932.65	104.90	253.38	-91.16	137.58	-2,546.58	3,866.56	3,586.66	279.90	13.814	
13,200.00	6,984.10	7,092.85	6,932.72	106.45	253.38	-91.17	137.59	-2,546.58	3,965.85	3,685.90	279.94	14.167	
13,300.00	6,984.02	7,092.92	6,932.78	108.01	253.39	-91.18	137.59	-2,546.58	4,065.17	3,785.18	279.99	14.519	
13,400.00	6,983.94	7,092.99	6,932.85	109.56	253.39	-91.18	137.59	-2,546.58	4,164.52	3,884.49	280.03	14.872	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #80B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		300-MWD OWSG Rev5					Rule Assigned:		Offset Well Error:		0.00 usft			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,500.00	6,983.87	7,093.06	6,932.92	111.12	253.40	-91.19	137.59	-2,546.58	4,263.90	3,983.82	280.08	15.224		
13,600.00	6,983.79	7,093.12	6,932.99	112.68	253.40	-91.20	137.59	-2,546.58	4,363.31	4,083.18	280.13	15.576		
13,700.00	6,983.71	7,093.19	6,933.06	114.24	253.40	-91.21	137.59	-2,546.58	4,462.75	4,182.57	280.18	15.928		
13,800.00	6,983.63	7,093.26	6,933.12	115.80	253.41	-91.22	137.59	-2,546.58	4,562.21	4,281.98	280.23	16.280		
13,900.00	6,983.55	7,093.33	6,933.19	117.37	253.41	-91.23	137.59	-2,546.58	4,661.69	4,381.41	280.29	16.632		
14,000.00	6,983.47	7,093.40	6,933.26	118.93	253.41	-91.23	137.59	-2,546.58	4,761.20	4,480.86	280.34	16.983		
14,100.00	6,983.40	7,093.46	6,933.33	120.50	253.42	-91.24	137.59	-2,546.58	4,860.73	4,580.32	280.40	17.335		
14,200.00	6,983.32	7,093.53	6,933.40	122.06	253.42	-91.25	137.59	-2,546.58	4,960.27	4,679.81	280.46	17.686		
14,300.00	6,983.24	7,093.60	6,933.46	123.63	253.42	-91.26	137.60	-2,546.58	5,059.84	4,779.31	280.52	18.037		
14,400.00	6,983.16	7,093.67	6,933.53	125.20	253.43	-91.27	137.60	-2,546.58	5,159.42	4,878.83	280.58	18.388		
14,500.00	6,983.08	7,093.74	6,933.60	126.77	253.43	-91.28	137.60	-2,546.58	5,259.01	4,978.37	280.65	18.739		
14,600.00	6,983.00	7,093.81	6,933.67	128.33	253.44	-91.28	137.60	-2,546.58	5,358.62	5,077.91	280.71	19.090		
14,700.00	6,982.93	7,093.87	6,933.74	129.91	253.44	-91.29	137.60	-2,546.58	5,458.25	5,177.47	280.78	19.440		
14,800.00	6,982.85	7,093.94	6,933.81	131.48	253.44	-91.30	137.60	-2,546.58	5,557.89	5,277.05	280.84	19.790		
14,900.00	6,982.77	7,094.01	6,933.87	133.05	253.45	-91.31	137.60	-2,546.58	5,657.54	5,376.63	280.91	20.140		
15,000.00	6,982.69	7,094.08	6,933.94	134.62	253.45	-91.32	137.60	-2,546.58	5,757.20	5,476.22	280.98	20.490		
15,100.00	6,982.61	7,094.15	6,934.01	136.20	253.45	-91.33	137.60	-2,546.58	5,856.88	5,575.83	281.05	20.839		
15,200.00	6,982.54	7,094.21	6,934.08	137.77	253.46	-91.33	137.60	-2,546.58	5,956.56	5,675.45	281.12	21.189		
15,300.00	6,982.46	7,094.28	6,934.15	139.35	253.46	-91.34	137.61	-2,546.58	6,056.26	5,775.07	281.19	21.538		
15,400.00	6,982.38	7,094.35	6,934.21	140.92	253.47	-91.35	137.61	-2,546.58	6,155.97	5,874.70	281.26	21.887		
15,500.00	6,982.30	7,094.42	6,934.28	142.50	253.47	-91.36	137.61	-2,546.58	6,255.68	5,974.35	281.33	22.236		
15,600.00	6,982.22	7,094.49	6,934.35	144.07	253.47	-91.37	137.61	-2,546.58	6,355.41	6,074.00	281.41	22.584		
15,700.00	6,982.14	7,094.56	6,934.42	145.65	253.48	-91.38	137.61	-2,546.58	6,455.14	6,173.65	281.48	22.933		
15,800.00	6,982.07	7,094.62	6,934.49	147.23	253.48	-91.38	137.61	-2,546.58	6,554.88	6,273.32	281.56	23.281		
15,900.00	6,981.99	7,094.69	6,934.56	148.81	253.48	-91.39	137.61	-2,546.58	6,654.63	6,372.99	281.64	23.628		
16,000.00	6,981.91	7,094.76	6,934.62	150.39	253.49	-91.40	137.61	-2,546.58	6,754.39	6,472.67	281.71	23.976		
16,100.00	6,981.83	7,094.83	6,934.69	151.97	253.49	-91.41	137.61	-2,546.58	6,854.15	6,572.36	281.79	24.323		
16,200.00	6,981.75	7,094.90	6,934.76	153.55	253.50	-91.42	137.62	-2,546.58	6,953.92	6,672.05	281.87	24.670		
16,300.00	6,981.67	7,094.96	6,934.83	155.13	253.50	-91.43	137.62	-2,546.58	7,053.70	6,771.74	281.95	25.017		
16,400.00	6,981.60	7,095.03	6,934.90	156.71	253.50	-91.43	137.62	-2,546.58	7,153.48	6,871.45	282.03	25.364		
16,500.00	6,981.52	7,095.10	6,934.97	158.29	253.51	-91.44	137.62	-2,546.58	7,253.27	6,971.15	282.11	25.710		
16,600.00	6,981.44	7,095.17	6,935.03	159.88	253.51	-91.45	137.62	-2,546.58	7,353.06	7,070.87	282.20	26.057		
16,700.00	6,981.36	7,095.24	6,935.10	161.46	253.51	-91.46	137.62	-2,546.58	7,452.86	7,170.58	282.28	26.402		
16,800.00	6,981.28	7,095.31	6,935.17	163.04	253.52	-91.47	137.62	-2,546.58	7,552.67	7,270.31	282.36	26.748		
16,900.00	6,981.20	7,095.37	6,935.24	164.62	253.52	-91.48	137.62	-2,546.58	7,652.48	7,370.03	282.45	27.093		
17,000.00	6,981.13	7,095.44	6,935.31	166.21	253.52	-91.49	137.62	-2,546.58	7,752.29	7,469.76	282.53	27.439		
17,100.00	6,981.05	7,095.51	6,935.37	167.79	253.53	-91.49	137.62	-2,546.58	7,852.11	7,569.50	282.62	27.783		
17,200.00	6,980.97	7,095.58	6,935.44	169.38	253.53	-91.50	137.63	-2,546.58	7,951.94	7,669.23	282.70	28.128		
17,300.00	6,980.89	7,095.65	6,935.51	170.96	253.54	-91.51	137.63	-2,546.58	8,051.77	7,768.98	282.79	28.472		
17,400.00	6,980.81	7,095.72	6,935.58	172.55	253.54	-91.52	137.63	-2,546.58	8,151.60	7,868.72	282.88	28.817		
17,500.00	6,980.73	7,095.78	6,935.65	174.13	253.54	-91.53	137.63	-2,546.58	8,251.44	7,968.47	282.97	29.160		
17,600.00	6,980.66	7,095.85	6,935.72	175.72	253.55	-91.54	137.63	-2,546.58	8,351.28	8,068.22	283.06	29.504		
17,700.00	6,980.58	7,095.92	6,935.78	177.31	253.55	-91.54	137.63	-2,546.58	8,451.12	8,167.98	283.15	29.847		
17,800.00	6,980.50	7,095.99	6,935.85	178.89	253.55	-91.55	137.63	-2,546.58	8,550.97	8,267.74	283.24	30.190		
17,900.00	6,980.42	7,096.06	6,935.92	180.48	253.56	-91.56	137.63	-2,546.58	8,650.82	8,367.50	283.33	30.533		
18,000.00	6,980.34	7,096.13	6,935.99	182.07	253.56	-91.57	137.63	-2,546.59	8,750.68	8,467.26	283.42	30.876		
18,100.00	6,980.26	7,096.19	6,936.06	183.66	253.57	-91.58	137.63	-2,546.59	8,850.54	8,567.03	283.51	31.218		
18,200.00	6,980.19	7,096.26	6,936.13	185.24	253.57	-91.59	137.64	-2,546.59	8,950.40	8,666.80	283.60	31.560		
18,300.00	6,980.11	7,096.33	6,936.19	186.83	253.57	-91.59	137.64	-2,546.59	9,050.27	8,766.57	283.69	31.901		
18,400.00	6,980.03	7,096.40	6,936.26	188.42	253.58	-91.60	137.64	-2,546.59	9,150.13	8,866.35	283.79	32.243		
18,500.00	6,979.95	7,096.47	6,936.33	190.01	253.58	-91.61	137.64	-2,546.59	9,250.00	8,966.12	283.88	32.584		
18,600.00	6,979.87	7,096.54	6,936.40	191.60	253.58	-91.62	137.64	-2,546.59	9,349.88	9,065.90	283.98	32.925		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #80B - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 300-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,700.00	6,979.79	7,096.60	6,936.47	193.19	253.59	-91.63	137.64	-2,546.59	9,449.75	9,165.68	284.07	33.265	
18,800.00	6,979.72	7,096.67	6,936.54	194.78	253.59	-91.64	137.64	-2,546.59	9,549.63	9,265.46	284.17	33.606	
18,900.00	6,979.64	7,096.74	6,936.61	196.37	253.60	-91.64	137.64	-2,546.59	9,649.51	9,365.25	284.26	33.946	
19,000.00	6,979.56	7,096.81	6,936.67	197.96	253.60	-91.65	137.64	-2,546.59	9,749.40	9,465.04	284.36	34.285	
19,100.00	6,979.48	7,096.88	6,936.74	199.55	253.60	-91.66	137.64	-2,546.59	9,849.28	9,564.83	284.46	34.625	
19,200.00	6,979.40	7,096.95	6,936.81	201.14	253.61	-91.67	137.65	-2,546.59	9,949.17	9,664.62	284.56	34.964	
19,300.00	6,979.33	7,097.02	6,936.88	202.73	253.61	-91.68	137.65	-2,546.59	10,049.06	9,764.41	284.65	35.303	
19,400.00	6,979.25	7,097.08	6,936.95	204.32	253.61	-91.69	137.65	-2,546.59	10,148.95	9,864.20	284.75	35.641	
19,500.00	6,979.17	7,097.15	6,937.02	205.91	253.62	-91.69	137.65	-2,546.59	10,248.85	9,964.00	284.85	35.979	
19,600.00	6,979.09	7,097.22	6,937.08	207.50	253.62	-91.70	137.65	-2,546.59	10,348.75	10,063.79	284.95	36.317	
19,700.00	6,979.01	7,097.29	6,937.15	209.09	253.62	-91.71	137.65	-2,546.59	10,448.65	10,163.59	285.05	36.655	
19,800.00	6,978.93	7,097.36	6,937.22	210.69	253.63	-91.72	137.65	-2,546.59	10,548.55	10,263.39	285.15	36.993	
19,900.00	6,978.86	7,097.43	6,937.29	212.28	253.63	-91.73	137.65	-2,546.59	10,648.45	10,363.19	285.25	37.330	
20,000.00	6,978.78	7,097.49	6,937.36	213.87	253.64	-91.74	137.65	-2,546.59	10,748.35	10,463.00	285.36	37.666	
20,100.00	6,978.70	7,097.56	6,937.43	215.46	253.64	-91.74	137.65	-2,546.59	10,848.26	10,562.80	285.46	38.003	
20,200.00	6,978.62	7,097.63	6,937.50	217.05	253.64	-91.75	137.66	-2,546.59	10,948.17	10,662.61	285.56	38.339	
20,300.00	6,978.54	7,097.70	6,937.56	218.65	253.65	-91.76	137.66	-2,546.59	11,048.08	10,762.41	285.66	38.675	
20,400.00	6,978.46	7,097.77	6,937.63	220.24	253.65	-91.77	137.66	-2,546.59	11,147.99	10,862.22	285.77	39.011	
20,500.00	6,978.39	7,097.84	6,937.70	221.83	253.65	-91.78	137.66	-2,546.59	11,247.90	10,962.03	285.87	39.346	
20,600.00	6,978.31	7,097.91	6,937.77	223.43	253.66	-91.79	137.66	-2,546.59	11,347.81	11,061.84	285.98	39.681	
20,700.00	6,978.23	7,097.97	6,937.84	225.02	253.66	-91.80	137.66	-2,546.59	11,447.73	11,161.65	286.08	40.016	
20,800.00	6,978.15	7,098.04	6,937.91	226.61	253.67	-91.80	137.66	-2,546.59	11,547.65	11,261.46	286.19	40.350	
20,900.00	6,978.07	7,098.11	6,937.97	228.21	253.67	-91.81	137.66	-2,546.59	11,647.57	11,361.27	286.29	40.684	
21,000.00	6,977.99	7,098.18	6,938.04	229.80	253.67	-91.82	137.66	-2,546.59	11,747.49	11,461.09	286.40	41.018	
21,100.00	6,977.92	7,098.25	6,938.11	231.39	253.68	-91.83	137.66	-2,546.59	11,847.41	11,560.90	286.50	41.352	
21,200.00	6,977.84	7,098.32	6,938.18	232.99	253.68	-91.84	137.67	-2,546.59	11,947.33	11,660.72	286.61	41.685	
21,300.00	6,977.76	7,098.39	6,938.25	234.58	253.68	-91.85	137.67	-2,546.59	12,047.25	11,760.54	286.72	42.018	
21,400.00	6,977.68	7,098.45	6,938.32	236.18	253.69	-91.85	137.67	-2,546.59	12,147.18	11,860.35	286.83	42.350	
21,500.00	6,977.60	7,098.52	6,938.39	237.77	253.69	-91.86	137.67	-2,546.59	12,247.11	11,960.17	286.93	42.683	
21,600.00	6,977.52	7,098.59	6,938.45	239.37	253.70	-91.87	137.67	-2,546.59	12,347.03	12,059.99	287.04	43.015	
21,700.00	6,977.45	7,098.66	6,938.52	240.96	253.70	-91.88	137.67	-2,546.59	12,446.96	12,159.81	287.15	43.346	
21,800.00	6,977.37	7,098.73	6,938.59	242.56	253.70	-91.89	137.67	-2,546.59	12,546.89	12,259.63	287.26	43.678	
21,900.00	6,977.29	7,098.80	6,938.66	244.15	253.71	-91.90	137.67	-2,546.59	12,646.82	12,359.45	287.37	44.009	
22,000.00	6,977.21	7,098.87	6,938.73	245.75	253.71	-91.90	137.67	-2,546.59	12,746.76	12,459.28	287.48	44.340	
22,100.00	6,977.13	7,098.93	6,938.80	247.34	253.71	-91.91	137.67	-2,546.59	12,846.69	12,559.10	287.59	44.670	
22,200.00	6,977.05	7,099.00	6,938.87	248.94	253.72	-91.92	137.68	-2,546.59	12,946.62	12,658.92	287.70	45.000	
22,269.73	6,977.00	7,099.05	6,938.91	250.05	253.72	-91.93	137.68	-2,546.59	13,016.30	12,728.52	287.78	45.230	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #95 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 235-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	429.01	429.00	0.00	9.13	93.53	-380.69	6,165.71	6,177.45				
100.00	100.00	528.55	528.53	0.25	11.25	93.52	-379.58	6,165.71	6,177.38	6,165.88	11.50	537.154	CC
200.00	200.00	627.29	627.27	0.61	13.35	93.53	-379.87	6,165.71	6,177.40	6,163.44	13.96	442.499	
300.00	300.00	726.05	726.01	0.97	15.45	93.53	-380.49	6,165.71	6,177.44	6,161.02	16.42	376.203	
400.00	400.00	829.09	829.00	1.33	17.65	93.53	-380.69	6,165.71	6,177.45	6,158.48	18.97	325.607	
500.00	500.00	929.09	929.00	1.68	19.77	93.53	-380.69	6,165.71	6,177.45	6,155.99	21.46	287.874	
572.94	572.94	1,002.00	1,001.90	1.95	21.33	93.52	-379.59	6,165.71	6,177.38	6,154.11	23.27	265.440	
600.00	600.00	1,028.71	1,028.61	2.04	21.89	93.52	-379.61	6,165.71	6,177.38	6,153.44	23.94	258.062	
700.00	700.00	1,127.42	1,127.31	2.40	24.00	93.53	-379.88	6,165.71	6,177.40	6,151.00	26.40	234.020	
800.00	799.98	1,226.10	1,225.98	2.76	26.10	104.29	-380.49	6,165.71	6,177.87	6,149.01	28.85	214.102	
849.89	849.82	1,278.99	1,278.82	2.94	27.25	104.30	-380.69	6,165.71	6,178.42	6,148.23	30.18	204.689	
900.00	899.86	1,329.03	1,328.86	3.12	28.36	104.33	-380.69	6,165.71	6,179.07	6,147.59	31.47	196.332	
1,000.00	999.73	1,428.89	1,428.73	3.48	30.57	104.37	-380.69	6,165.71	6,180.36	6,146.32	34.04	181.539	
1,100.00	1,099.59	1,528.26	1,528.08	3.84	32.77	104.41	-379.65	6,165.71	6,181.60	6,144.99	36.61	168.870	
1,200.00	1,199.45	1,626.71	1,626.53	4.20	34.95	104.46	-379.95	6,165.71	6,182.92	6,143.78	39.15	157.939	
1,300.00	1,299.32	1,725.13	1,724.94	4.56	37.14	104.51	-380.59	6,165.71	6,184.28	6,142.59	41.69	148.343	
1,400.00	1,399.18	1,828.44	1,828.18	4.92	39.51	104.56	-380.69	6,165.71	6,185.60	6,141.17	44.42	139.238	
1,500.00	1,499.04	1,928.30	1,928.04	5.28	41.82	104.61	-380.69	6,165.71	6,186.92	6,139.83	47.09	131.383	
1,600.00	1,598.91	2,027.41	2,027.13	5.64	44.10	104.64	-379.36	6,165.71	6,188.15	6,138.41	49.74	124.411	
1,700.00	1,698.77	2,125.46	2,125.17	6.00	46.37	104.69	-379.75	6,165.71	6,189.50	6,137.14	52.36	118.200	
1,800.00	1,798.63	2,223.48	2,223.18	6.36	48.63	104.75	-380.55	6,165.71	6,190.89	6,135.90	54.99	112.585	
1,900.00	1,898.49	2,327.87	2,327.49	6.72	51.13	104.80	-380.69	6,165.71	6,192.23	6,134.38	57.85	107.041	
2,000.00	1,998.36	2,427.74	2,427.36	7.09	53.53	104.84	-380.69	6,165.71	6,193.57	6,132.96	60.61	102.182	
2,100.00	2,098.22	2,526.84	2,526.44	7.45	55.92	104.88	-379.35	6,165.71	6,194.82	6,131.46	63.36	97.774	
2,200.00	2,198.08	2,624.80	2,624.39	7.81	58.27	104.93	-379.72	6,165.71	6,196.19	6,130.12	66.08	93.773	
2,300.00	2,297.95	2,722.72	2,722.30	8.17	60.63	104.98	-380.51	6,165.71	6,197.60	6,128.81	68.79	90.090	
2,400.00	2,397.81	2,827.34	2,826.81	8.53	63.23	105.03	-380.69	6,165.71	6,198.97	6,127.21	71.76	86.383	
2,500.00	2,497.67	2,927.20	2,926.67	8.90	65.74	105.08	-380.69	6,165.71	6,200.33	6,125.70	74.63	83.084	
2,600.00	2,597.54	3,026.15	3,025.60	9.26	68.22	105.11	-379.09	6,165.71	6,201.57	6,124.10	77.47	80.052	
2,700.00	2,697.40	3,123.60	3,123.04	9.62	70.66	105.16	-379.52	6,165.71	6,202.97	6,122.70	80.27	77.272	
2,800.00	2,797.26	3,221.01	3,220.43	9.98	73.10	105.21	-380.46	6,165.71	6,204.42	6,121.34	83.08	74.682	
2,900.00	2,897.13	3,326.82	3,326.13	10.35	75.93	105.26	-380.69	6,165.71	6,205.81	6,119.54	86.27	71.934	
3,000.00	2,996.99	3,423.72	3,423.01	10.71	78.56	105.30	-380.03	6,165.71	6,207.14	6,117.88	89.26	69.542	
3,100.00	3,096.85	3,526.67	3,525.85	11.07	81.42	105.36	-380.69	6,165.71	6,208.58	6,116.09	92.48	67.132	
3,200.00	3,196.72	3,626.53	3,625.72	11.43	84.34	105.40	-380.69	6,165.71	6,209.97	6,114.20	95.77	64.845	
3,300.00	3,296.58	3,726.39	3,725.58	11.80	87.26	105.45	-380.69	6,165.71	6,211.36	6,112.31	99.05	62.710	
3,400.00	3,396.44	3,823.38	3,822.51	12.16	90.10	105.48	-378.74	6,165.71	6,212.59	6,110.35	102.25	60.760	
3,500.00	3,496.31	3,919.80	3,918.91	12.52	92.92	105.53	-379.61	6,165.71	6,214.07	6,108.64	105.43	58.940	
3,600.00	3,596.17	4,026.29	4,025.17	12.88	95.93	105.59	-380.69	6,165.71	6,215.56	6,106.76	108.80	57.126	
3,700.00	3,696.03	4,126.15	4,125.03	13.25	98.55	105.63	-380.69	6,165.71	6,216.97	6,105.18	111.79	55.613	
3,800.00	3,795.89	4,226.01	4,224.89	13.61	101.18	105.68	-380.69	6,165.71	6,218.38	6,103.61	114.78	54.178	
3,900.00	3,895.76	4,322.87	4,321.70	13.97	103.72	105.71	-378.73	6,165.71	6,219.63	6,101.95	117.68	52.851	
4,000.00	3,995.62	4,419.13	4,417.93	14.34	106.25	105.76	-379.60	6,165.71	6,221.13	6,100.56	120.57	51.596	
4,100.00	4,095.48	4,525.81	4,524.48	14.70	108.95	105.82	-380.69	6,165.71	6,222.65	6,099.01	123.63	50.332	
4,200.00	4,195.35	4,625.67	4,624.35	15.06	111.26	105.87	-380.69	6,165.71	6,224.08	6,097.77	126.31	49.278	
4,300.00	4,295.21	4,725.53	4,724.21	15.42	113.57	105.91	-380.69	6,165.71	6,225.51	6,096.53	128.98	48.267	
4,400.00	4,395.07	4,823.37	4,822.03	15.79	115.83	105.95	-379.48	6,165.71	6,226.84	6,095.23	131.61	47.314	
4,500.00	4,494.94	4,920.81	4,919.45	16.15	118.09	106.00	-380.04	6,165.71	6,228.33	6,094.11	134.22	46.403	
4,600.00	4,594.80	5,025.24	5,023.80	16.51	120.51	106.05	-380.69	6,165.71	6,229.84	6,092.83	137.00	45.473	
4,700.00	4,694.66	5,125.11	5,123.66	16.87	122.82	106.10	-380.69	6,165.71	6,231.29	6,091.61	139.68	44.613	
4,800.00	4,794.53	5,224.97	5,223.53	17.24	125.13	106.14	-380.69	6,165.71	6,232.74	6,090.39	142.35	43.785	
4,900.00	4,894.39	5,322.71	5,321.25	17.60	127.39	106.18	-379.47	6,165.71	6,234.08	6,089.11	144.97	43.001	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #95 - OH - OH-INC													Offset Site Error:	0.00 usft		
Survey Program:		235-A027Ua_INC-ONLY					Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
5,000.00	4,994.25	5,420.05	5,418.58	17.96	129.64	106.23	-380.03	6,165.71	6,235.60	6,088.01	147.59	42.250				
5,100.00	5,094.12	5,524.68	5,523.12	18.33	132.10	106.28	-380.69	6,165.71	6,237.12	6,086.72	150.41	41.468				
5,200.00	5,193.98	5,624.54	5,622.98	18.69	134.52	106.33	-380.69	6,165.71	6,238.59	6,085.41	153.19	40.725				
5,300.00	5,293.84	5,724.40	5,722.84	19.05	136.93	106.37	-380.69	6,165.71	6,240.07	6,084.10	155.96	40.010				
5,336.91	5,330.71	5,761.27	5,759.71	19.19	137.82	106.39	-380.69	6,165.71	6,240.61	6,083.62	156.99	39.752				
5,400.00	5,393.71	5,824.28	5,822.71	19.41	139.35	106.42	-380.69	6,165.71	6,241.50	6,082.76	158.74	39.319				
5,500.00	5,493.62	5,924.18	5,922.62	19.77	141.76	106.46	-380.69	6,165.71	6,242.70	6,081.18	161.52	38.650				
5,600.00	5,593.57	5,990.00	5,988.29	20.13	143.36	106.49	-380.69	6,165.71	6,243.75	6,080.28	163.47	38.196 ES				
5,700.00	5,693.53	5,990.00	5,988.29	20.49	143.36	106.50	-380.69	6,165.71	6,245.81	6,082.02	163.79	38.134				
5,800.00	5,793.52	5,990.00	5,988.29	20.85	143.36	106.52	-380.69	6,165.71	6,249.22	6,085.16	164.07	38.090				
5,900.00	5,893.52	5,990.00	5,988.29	21.20	143.36	106.54	-380.69	6,165.71	6,253.98	6,089.68	164.30	38.064				
5,936.48	5,930.00	5,990.00	5,988.29	21.33	143.36	95.79	-380.69	6,165.71	6,256.06	6,091.68	164.38	38.059				
6,000.00	5,993.52	5,990.00	5,988.29	21.56	143.36	95.79	-380.69	6,165.71	6,260.14	6,095.64	164.50	38.056 SF				
6,100.00	6,093.52	5,990.00	5,988.29	21.91	143.36	95.79	-380.69	6,165.71	6,267.87	6,103.22	164.65	38.067				
6,200.00	6,193.52	5,990.00	5,988.29	22.27	143.36	95.79	-380.69	6,165.71	6,277.18	6,112.42	164.77	38.097				
6,300.00	6,293.52	5,990.00	5,988.29	22.62	143.36	95.79	-380.69	6,165.71	6,288.08	6,123.23	164.84	38.146				
6,358.48	6,352.00	5,990.00	5,988.29	22.83	143.36	95.79	-380.69	6,165.71	6,295.17	6,130.30	164.87	38.183				
6,400.00	6,393.49	5,990.00	5,988.29	22.97	143.36	170.29	-380.69	6,165.71	6,301.85	6,136.98	164.88	38.221				
6,450.00	6,443.20	5,990.00	5,988.29	23.15	143.36	170.10	-380.69	6,165.71	6,313.72	6,148.83	164.88	38.292				
6,500.00	6,492.36	5,990.00	5,988.29	23.33	143.36	169.84	-380.69	6,165.71	6,329.66	6,164.78	164.88	38.389				
6,550.00	6,540.64	5,990.00	5,988.29	23.51	143.36	169.49	-380.69	6,165.71	6,349.55	6,184.68	164.87	38.512				
6,600.00	6,587.77	5,990.00	5,988.29	23.69	143.36	169.04	-380.69	6,165.71	6,373.23	6,208.37	164.86	38.659				
6,650.00	6,633.44	5,990.00	5,988.29	23.88	143.36	168.47	-380.69	6,165.71	6,400.52	6,235.67	164.84	38.829				
6,700.00	6,677.37	5,990.00	5,988.29	24.07	143.36	167.75	-380.69	6,165.71	6,431.19	6,266.37	164.82	39.020				
6,750.00	6,719.30	5,990.00	5,988.29	24.26	143.36	166.84	-380.69	6,165.71	6,465.02	6,300.23	164.79	39.232				
6,800.00	6,758.97	5,990.00	5,988.29	24.46	143.36	165.68	-380.69	6,165.71	6,501.75	6,336.99	164.76	39.461				
6,850.00	6,796.12	5,990.00	5,988.29	24.67	143.36	164.18	-380.69	6,165.71	6,541.10	6,376.37	164.74	39.707				
6,900.00	6,830.54	5,990.00	5,988.29	24.88	143.36	162.21	-380.69	6,165.71	6,582.80	6,418.09	164.71	39.966				
6,950.00	6,862.00	5,990.00	5,988.29	25.11	143.36	159.55	-380.69	6,165.71	6,626.53	6,461.84	164.69	40.237				
7,000.00	6,890.33	5,990.00	5,988.29	25.34	143.36	155.81	-380.69	6,165.71	6,671.99	6,507.32	164.67	40.518				
7,050.00	6,915.33	5,990.00	5,988.29	25.59	143.36	150.30	-380.69	6,165.71	6,718.87	6,554.22	164.66	40.805				
7,100.00	6,936.86	5,990.00	5,988.29	25.85	143.36	141.68	-380.69	6,165.71	6,766.86	6,602.21	164.65	41.098				
7,150.00	6,954.79	5,990.00	5,988.29	26.12	143.36	127.45	-380.69	6,165.71	6,815.63	6,650.98	164.66	41.393				
7,200.00	6,968.99	5,990.00	5,988.29	26.40	143.36	104.48	-380.69	6,165.71	6,864.88	6,700.21	164.67	41.688				
7,250.00	6,979.40	5,990.00	5,988.29	26.69	143.36	75.70	-380.69	6,165.71	6,914.29	6,749.59	164.70	41.981				
7,300.00	6,985.94	5,990.00	5,988.29	27.00	143.36	52.39	-380.69	6,165.71	6,963.56	6,798.82	164.74	42.270				
7,350.00	6,988.56	5,990.00	5,988.29	27.31	143.36	37.90	-380.69	6,165.71	7,012.40	6,847.60	164.80	42.552				
7,358.93	6,988.62	5,990.00	5,988.29	27.36	143.36	36.00	-380.69	6,165.71	7,021.05	6,856.24	164.81	42.601				
7,400.00	6,988.59	5,990.00	5,988.29	27.63	143.36	36.00	-380.69	6,165.71	7,060.80	6,895.93	164.86	42.828				
7,500.00	6,988.52	5,990.00	5,988.29	28.33	143.36	36.00	-380.69	6,165.71	7,157.64	6,992.64	165.00	43.380				
7,600.00	6,988.45	5,990.00	5,988.29	29.10	143.36	36.00	-380.69	6,165.71	7,254.56	7,089.43	165.14	43.931				
7,658.93	6,988.41	5,990.00	5,988.29	29.59	143.36	36.00	-380.69	6,165.71	7,311.72	7,146.50	165.22	44.256				
7,700.00	6,988.38	5,990.00	5,988.29	29.94	143.36	33.24	-380.69	6,165.71	7,351.61	7,186.34	165.27	44.483				
7,800.00	6,988.31	5,990.00	5,988.29	30.84	143.36	25.63	-380.69	6,165.71	7,449.09	7,283.70	165.40	45.038				
7,900.00	6,988.24	5,990.00	5,988.29	31.79	143.36	16.76	-380.69	6,165.71	7,546.95	7,381.44	165.51	45.598				
8,000.00	6,988.16	5,990.00	5,988.29	32.78	143.36	6.83	-380.69	6,165.71	7,645.07	7,479.45	165.62	46.161				
8,100.00	6,988.09	5,990.00	5,988.29	33.82	143.36	-3.67	-380.69	6,165.71	7,743.31	7,577.60	165.71	46.727				
8,200.00	6,988.01	5,990.00	5,988.29	34.88	143.36	-14.06	-380.69	6,165.71	7,841.55	7,675.76	165.80	47.296				
8,300.00	6,987.94	5,990.00	5,988.29	35.98	143.36	-23.70	-380.69	6,165.71	7,939.68	7,773.81	165.87	47.866				
8,400.00	6,987.86	5,990.00	5,988.29	37.11	143.36	-32.18	-380.69	6,165.71	8,037.58	7,871.64	165.94	48.437				
8,416.35	6,987.85	5,990.00	5,988.29	37.29	143.36	-33.44	-380.69	6,165.71	8,053.56	7,887.62	165.95	48.531				
8,500.00	6,987.78	5,990.00	5,988.29	38.25	143.36	-33.44	-380.69	6,165.71	8,135.30	7,969.30	166.00	49.008				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #95 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		235-A027Ua_INC-ONLY					Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,600.00	6,987.70	5,990.00	5,988.29	39.43	143.36	-33.44	-380.69	6,165.71	8,233.07	8,067.01	166.06	49.579		
8,700.00	6,987.62	5,990.00	5,988.29	40.64	143.36	-33.44	-380.69	6,165.71	8,330.89	8,164.77	166.12	50.149		
8,800.00	6,987.55	5,990.00	5,988.29	41.88	143.36	-33.44	-380.69	6,165.71	8,428.76	8,262.58	166.19	50.719		
8,900.00	6,987.47	5,990.00	5,988.29	43.14	143.36	-33.44	-380.69	6,165.71	8,526.68	8,360.44	166.25	51.289		
9,000.00	6,987.39	5,990.00	5,988.29	44.42	143.36	-33.44	-380.69	6,165.71	8,624.65	8,458.34	166.31	51.858		
9,100.00	6,987.31	5,990.00	5,988.29	45.72	143.36	-33.44	-380.69	6,165.71	8,722.67	8,556.29	166.38	52.427		
9,200.00	6,987.23	5,990.00	5,988.29	47.04	143.36	-33.44	-380.69	6,165.71	8,820.73	8,654.29	166.44	52.996		
9,300.00	6,987.15	5,990.00	5,988.29	48.38	143.36	-33.44	-380.69	6,165.71	8,918.83	8,752.33	166.51	53.565		
9,400.00	6,987.08	5,990.00	5,988.29	49.73	143.36	-33.44	-380.69	6,165.71	9,016.98	8,850.41	166.57	54.133		
9,500.00	6,987.00	5,990.00	5,988.29	51.10	143.36	-33.44	-380.69	6,165.71	9,115.16	8,948.52	166.64	54.701		
9,600.00	6,986.92	5,990.00	5,988.29	52.48	143.36	-33.44	-380.69	6,165.71	9,213.39	9,046.68	166.70	55.268		
9,700.00	6,986.84	5,990.00	5,988.29	53.87	143.36	-33.44	-380.69	6,165.71	9,311.65	9,144.88	166.77	55.835		
9,800.00	6,986.76	5,990.00	5,988.29	55.28	143.36	-33.44	-380.69	6,165.71	9,409.95	9,243.11	166.84	56.402		
9,900.00	6,986.68	5,990.00	5,988.29	56.69	143.36	-33.44	-380.69	6,165.71	9,508.28	9,341.37	166.91	56.968		
10,000.00	6,986.61	5,990.00	5,988.29	58.12	143.36	-33.44	-380.69	6,165.71	9,606.65	9,439.67	166.97	57.534		
10,100.00	6,986.53	5,990.00	5,988.29	59.55	143.36	-33.44	-380.69	6,165.71	9,705.05	9,538.01	167.04	58.099		
10,200.00	6,986.45	5,990.00	5,988.29	61.00	143.36	-33.44	-380.69	6,165.71	9,803.49	9,636.37	167.11	58.664		
10,300.00	6,986.37	5,990.00	5,988.29	62.45	143.36	-33.44	-380.69	6,165.71	9,901.95	9,734.77	167.18	59.229		
10,400.00	6,986.29	5,990.00	5,988.29	63.90	143.36	-33.44	-380.69	6,165.71	10,000.45	9,833.19	167.25	59.793		
10,500.00	6,986.21	5,990.00	5,988.29	65.37	143.36	-33.44	-380.69	6,165.71	10,098.97	9,931.65	167.32	60.356		
10,600.00	6,986.14	5,990.00	5,988.29	66.84	143.36	-33.44	-380.69	6,165.71	10,197.53	10,030.13	167.39	60.920		
10,700.00	6,986.06	5,990.00	5,988.29	68.32	143.36	-33.44	-380.69	6,165.71	10,296.11	10,128.64	167.46	61.482		
10,800.00	6,985.98	5,990.00	5,988.29	69.80	143.36	-33.44	-380.69	6,165.71	10,394.72	10,227.18	167.54	62.044		
10,900.00	6,985.90	5,990.00	5,988.29	71.29	143.36	-33.44	-380.69	6,165.71	10,493.35	10,325.74	167.61	62.606		
11,000.00	6,985.82	5,990.00	5,988.29	72.78	143.36	-33.44	-380.69	6,165.71	10,592.01	10,424.33	167.68	63.167		
11,100.00	6,985.75	5,990.00	5,988.29	74.28	143.36	-33.44	-380.69	6,165.71	10,690.70	10,522.95	167.75	63.728		
11,200.00	6,985.67	5,990.00	5,988.29	75.78	143.36	-33.44	-380.69	6,165.71	10,789.41	10,621.58	167.83	64.288		
11,300.00	6,985.59	5,990.00	5,988.29	77.29	143.36	-33.44	-380.69	6,165.71	10,888.14	10,720.24	167.90	64.848		
11,400.00	6,985.51	5,990.00	5,988.29	78.80	143.36	-33.44	-380.69	6,165.71	10,986.90	10,818.92	167.98	65.407		
11,500.00	6,985.43	5,990.00	5,988.29	80.31	143.36	-33.44	-380.69	6,165.71	11,085.68	10,917.63	168.05	65.966		
11,600.00	6,985.35	5,990.00	5,988.29	81.83	143.36	-33.44	-380.69	6,165.71	11,184.48	11,016.35	168.13	66.524		
11,700.00	6,985.28	5,990.00	5,988.29	83.35	143.36	-33.44	-380.69	6,165.71	11,283.30	11,115.10	168.20	67.082		
11,800.00	6,985.20	5,990.00	5,988.29	84.87	143.36	-33.44	-380.69	6,165.71	11,382.14	11,213.86	168.28	67.639		
11,900.00	6,985.12	5,990.00	5,988.29	86.40	143.36	-33.44	-380.69	6,165.71	11,481.01	11,312.65	168.36	68.195		
12,000.00	6,985.04	5,990.00	5,988.29	87.93	143.36	-33.44	-380.69	6,165.71	11,579.89	11,411.46	168.43	68.751		
12,100.00	6,984.96	5,990.00	5,988.29	89.46	143.36	-33.44	-380.69	6,165.71	11,678.79	11,510.28	168.51	69.306		
12,200.00	6,984.88	5,990.00	5,988.29	90.99	143.36	-33.44	-380.69	6,165.71	11,777.71	11,609.12	168.59	69.861		
12,300.00	6,984.81	5,990.00	5,988.29	92.53	143.36	-33.44	-380.69	6,165.71	11,876.65	11,707.98	168.67	70.415		
12,400.00	6,984.73	5,990.00	5,988.29	94.07	143.36	-33.44	-380.69	6,165.71	11,975.60	11,806.86	168.74	70.969		
12,500.00	6,984.65	5,990.00	5,988.29	95.61	143.36	-33.44	-380.69	6,165.71	12,074.57	11,905.75	168.82	71.522		
12,600.00	6,984.57	5,990.00	5,988.29	97.15	143.36	-33.44	-380.69	6,165.71	12,173.56	12,004.66	168.90	72.074		
12,700.00	6,984.49	5,990.00	5,988.29	98.70	143.36	-33.44	-380.69	6,165.71	12,272.57	12,103.59	168.98	72.626		
12,800.00	6,984.41	5,990.00	5,988.29	100.25	143.36	-33.44	-380.69	6,165.71	12,371.59	12,202.53	169.06	73.177		
12,900.00	6,984.34	5,990.00	5,988.29	101.80	143.36	-33.44	-380.69	6,165.71	12,470.63	12,301.48	169.14	73.727		
13,000.00	6,984.26	5,990.00	5,988.29	103.35	143.36	-33.44	-380.69	6,165.71	12,569.68	12,400.45	169.23	74.277		
13,100.00	6,984.18	5,990.00	5,988.29	104.90	143.36	-33.44	-380.69	6,165.71	12,668.75	12,499.44	169.31	74.827		
13,200.00	6,984.10	5,990.00	5,988.29	106.45	143.36	-33.44	-380.69	6,165.71	12,767.83	12,598.44	169.39	75.375		
13,300.00	6,984.02	5,990.00	5,988.29	108.01	143.36	-33.44	-380.69	6,165.71	12,866.93	12,697.45	169.47	75.923		
13,400.00	6,983.94	5,990.00	5,988.29	109.56	143.36	-33.44	-380.69	6,165.71	12,966.04	12,796.48	169.56	76.471		
13,500.00	6,983.87	5,990.00	5,988.29	111.12	143.36	-33.44	-380.69	6,165.71	13,065.16	12,895.52	169.64	77.017		
13,600.00	6,983.79	5,990.00	5,988.29	112.68	143.36	-33.44	-380.69	6,165.71	13,164.30	12,994.57	169.72	77.564		
13,700.00	6,983.71	5,990.00	5,988.29	114.24	143.36	-33.44	-380.69	6,165.71	13,263.45	13,093.64	169.81	78.109		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #95 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		235-A027Ua_INC-ONLY				Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,800.00	6,983.63	5,990.00	5,988.29	115.80	143.36	-33.44	-380.69	6,165.71	13,362.61	13,192.72	169.89	78.654	
13,900.00	6,983.55	5,990.00	5,988.29	117.37	143.36	-33.44	-380.69	6,165.71	13,461.78	13,291.81	169.98	79.198	
14,000.00	6,983.47	5,990.00	5,988.29	118.93	143.36	-33.44	-380.69	6,165.71	13,560.97	13,390.91	170.06	79.741	
14,100.00	6,983.40	5,990.00	5,988.29	120.50	143.36	-33.44	-380.69	6,165.71	13,660.17	13,490.02	170.15	80.284	
14,200.00	6,983.32	5,990.00	5,988.29	122.06	143.36	-33.44	-380.69	6,165.71	13,759.38	13,589.14	170.23	80.826	
14,300.00	6,983.24	5,990.00	5,988.29	123.63	143.36	-33.44	-380.69	6,165.71	13,858.60	13,688.28	170.32	81.367	
14,400.00	6,983.16	5,990.00	5,988.29	125.20	143.36	-33.44	-380.69	6,165.71	13,957.83	13,787.43	170.41	81.908	
14,500.00	6,983.08	5,990.00	5,988.29	126.77	143.36	-33.44	-380.69	6,165.71	14,057.08	13,886.58	170.50	82.448	
14,600.00	6,983.00	5,990.00	5,988.29	128.33	143.36	-33.44	-380.69	6,165.71	14,156.33	13,985.75	170.58	82.988	
14,700.00	6,982.93	5,990.00	5,988.29	129.91	143.36	-33.44	-380.69	6,165.71	14,255.60	14,084.92	170.67	83.526	
14,800.00	6,982.85	5,990.00	5,988.29	131.48	143.36	-33.44	-380.69	6,165.71	14,354.87	14,184.11	170.76	84.064	
14,900.00	6,982.77	5,990.00	5,988.29	133.05	143.36	-33.44	-380.69	6,165.71	14,454.16	14,283.31	170.85	84.601	
15,000.00	6,982.69	5,990.00	5,988.29	134.62	143.36	-33.44	-380.69	6,165.71	14,553.45	14,382.51	170.94	85.138	
15,100.00	6,982.61	5,990.00	5,988.29	136.20	143.36	-33.44	-380.69	6,165.71	14,652.76	14,481.73	171.03	85.674	
15,200.00	6,982.54	5,990.00	5,988.29	137.77	143.36	-33.44	-380.69	6,165.71	14,752.07	14,580.95	171.12	86.209	
15,300.00	6,982.46	5,990.00	5,988.29	139.35	143.36	-33.44	-380.69	6,165.71	14,851.39	14,680.18	171.21	86.743	
15,400.00	6,982.38	5,990.00	5,988.29	140.92	143.36	-33.44	-380.69	6,165.71	14,950.72	14,779.42	171.30	87.277	
15,500.00	6,982.30	5,990.00	5,988.29	142.50	143.36	-33.44	-380.69	6,165.71	15,050.07	14,878.67	171.39	87.810	
15,600.00	6,982.22	5,990.00	5,988.29	144.07	143.36	-33.44	-380.69	6,165.71	15,149.42	14,977.93	171.49	88.342	
15,700.00	6,982.14	5,990.00	5,988.29	145.65	143.36	-33.44	-380.69	6,165.71	15,248.77	15,077.20	171.58	88.874	
15,800.00	6,982.07	5,990.00	5,988.29	147.23	143.36	-33.44	-380.69	6,165.71	15,348.14	15,176.47	171.67	89.405	
15,900.00	6,981.99	5,990.00	5,988.29	148.81	143.36	-33.44	-380.69	6,165.71	15,447.51	15,275.75	171.76	89.935	
16,000.00	6,981.91	5,990.00	5,988.29	150.39	143.36	-33.44	-380.69	6,165.71	15,546.90	15,375.04	171.86	90.464	
16,100.00	6,981.83	5,990.00	5,988.29	151.97	143.36	-33.44	-380.69	6,165.71	15,646.29	15,474.34	171.95	90.993	
16,200.00	6,981.75	5,990.00	5,988.29	153.55	143.36	-33.44	-380.69	6,165.71	15,745.69	15,573.64	172.04	91.521	
16,300.00	6,981.67	5,990.00	5,988.29	155.13	143.36	-33.44	-380.69	6,165.71	15,845.09	15,672.95	172.14	92.048	
16,400.00	6,981.60	5,990.00	5,988.29	156.71	143.36	-33.44	-380.69	6,165.71	15,944.50	15,772.27	172.23	92.575	
16,500.00	6,981.52	5,990.00	5,988.29	158.29	143.36	-33.44	-380.69	6,165.71	16,043.92	15,871.60	172.33	93.100	
16,600.00	6,981.44	5,990.00	5,988.29	159.88	143.36	-33.44	-380.69	6,165.71	16,143.35	15,970.93	172.43	93.625	
16,700.00	6,981.36	5,990.00	5,988.29	161.46	143.36	-33.44	-380.69	6,165.71	16,242.79	16,070.27	172.52	94.149	
16,800.00	6,981.28	5,990.00	5,988.29	163.04	143.36	-33.44	-380.69	6,165.71	16,342.23	16,169.61	172.62	94.673	
16,900.00	6,981.20	5,990.00	5,988.29	164.62	143.36	-33.44	-380.69	6,165.71	16,441.68	16,268.96	172.71	95.196	
17,000.00	6,981.13	5,990.00	5,988.29	166.21	143.36	-33.44	-380.69	6,165.71	16,541.13	16,368.32	172.81	95.718	
17,100.00	6,981.05	5,990.00	5,988.29	167.79	143.36	-33.44	-380.69	6,165.71	16,640.59	16,467.68	172.91	96.239	
17,200.00	6,980.97	5,990.00	5,988.29	169.38	143.36	-33.44	-380.69	6,165.71	16,740.06	16,567.05	173.01	96.759	
17,300.00	6,980.89	5,990.00	5,988.29	170.96	143.36	-33.44	-380.69	6,165.71	16,839.54	16,666.43	173.11	97.279	
17,400.00	6,980.81	5,990.00	5,988.29	172.55	143.36	-33.44	-380.69	6,165.71	16,939.02	16,765.81	173.20	97.798	
17,500.00	6,980.73	5,990.00	5,988.29	174.13	143.36	-33.44	-380.69	6,165.71	17,038.50	16,865.20	173.30	98.316	
17,600.00	6,980.66	5,990.00	5,988.29	175.72	143.36	-33.44	-380.69	6,165.71	17,138.00	16,964.59	173.40	98.834	
17,700.00	6,980.58	5,990.00	5,988.29	177.31	143.36	-33.44	-380.69	6,165.71	17,237.49	17,063.99	173.50	99.350	
17,800.00	6,980.50	5,990.00	5,988.29	178.89	143.36	-33.44	-380.69	6,165.71	17,337.00	17,163.40	173.60	99.866	
17,900.00	6,980.42	5,990.00	5,988.29	180.48	143.36	-33.44	-380.69	6,165.71	17,436.51	17,262.81	173.70	100.381	
18,000.00	6,980.34	5,990.00	5,988.29	182.07	143.36	-33.44	-380.69	6,165.71	17,536.02	17,362.22	173.80	100.896	
18,100.00	6,980.26	5,990.00	5,988.29	183.66	143.36	-33.44	-380.69	6,165.71	17,635.54	17,461.64	173.90	101.410	
18,200.00	6,980.19	5,990.00	5,988.29	185.24	143.36	-33.44	-380.69	6,165.71	17,735.07	17,561.06	174.01	101.922	
18,300.00	6,980.11	5,990.00	5,988.29	186.83	143.36	-33.44	-380.69	6,165.71	17,834.60	17,660.49	174.11	102.435	
18,400.00	6,980.03	5,990.00	5,988.29	188.42	143.36	-33.44	-380.69	6,165.71	17,934.14	17,759.93	174.21	102.946	
18,500.00	6,979.95	5,990.00	5,988.29	190.01	143.36	-33.44	-380.69	6,165.71	18,033.68	17,859.37	174.31	103.456	
18,600.00	6,979.87	5,990.00	5,988.29	191.60	143.36	-33.44	-380.69	6,165.71	18,133.23	17,958.81	174.41	103.966	
18,700.00	6,979.79	5,990.00	5,988.29	193.19	143.36	-33.44	-380.69	6,165.71	18,232.78	18,058.26	174.52	104.475	
18,800.00	6,979.72	5,990.00	5,988.29	194.78	143.36	-33.44	-380.69	6,165.71	18,332.34	18,157.71	174.62	104.984	
18,900.00	6,979.64	5,990.00	5,988.29	196.37	143.36	-33.44	-380.69	6,165.71	18,431.90	18,257.17	174.72	105.491	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #95 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		235-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
19,000.00	6,979.56	5,990.00	5,988.29	197.96	143.36	-33.44	-380.69	6,165.71	18,531.46	18,356.63	174.83	105.998	
19,100.00	6,979.48	5,990.00	5,988.29	199.55	143.36	-33.44	-380.69	6,165.71	18,631.03	18,456.10	174.93	106.504	
19,200.00	6,979.40	5,990.00	5,988.29	201.14	143.36	-33.44	-380.69	6,165.71	18,730.61	18,555.57	175.04	107.009	
19,300.00	6,979.33	5,990.00	5,988.29	202.73	143.36	-33.44	-380.69	6,165.71	18,830.19	18,655.05	175.14	107.513	
19,400.00	6,979.25	5,990.00	5,988.29	204.32	143.36	-33.44	-380.69	6,165.71	18,929.77	18,754.53	175.25	108.017	
19,500.00	6,979.17	5,990.00	5,988.29	205.91	143.36	-33.44	-380.69	6,165.71	19,029.36	18,854.01	175.35	108.520	
19,600.00	6,979.09	5,990.00	5,988.29	207.50	143.36	-33.44	-380.69	6,165.71	19,128.96	18,953.50	175.46	109.022	
19,700.00	6,979.01	5,990.00	5,988.29	209.09	143.36	-33.44	-380.69	6,165.71	19,228.55	19,052.99	175.57	109.523	
19,800.00	6,978.93	5,990.00	5,988.29	210.69	143.36	-33.44	-380.69	6,165.71	19,328.16	19,152.48	175.67	110.024	
19,900.00	6,978.86	5,990.00	5,988.29	212.28	143.36	-33.44	-380.69	6,165.71	19,427.76	19,251.98	175.78	110.523	
20,000.00	6,978.78	5,990.00	5,988.29	213.87	143.36	-33.44	-380.69	6,165.71	19,527.37	19,351.48	175.89	111.022	
20,100.00	6,978.70	5,990.00	5,988.29	215.46	143.36	-33.44	-380.69	6,165.71	19,626.98	19,450.99	175.99	111.521	
20,200.00	6,978.62	5,990.00	5,988.29	217.05	143.36	-33.44	-380.69	6,165.71	19,726.60	19,550.50	176.10	112.018	
20,300.00	6,978.54	5,990.00	5,988.29	218.65	143.36	-33.44	-380.69	6,165.71	19,826.22	19,650.01	176.21	112.515	
20,400.00	6,978.46	5,990.00	5,988.29	220.24	143.36	-33.44	-380.69	6,165.71	19,925.85	19,749.53	176.32	113.011	
20,500.00	6,978.39	5,990.00	5,988.29	221.83	143.36	-33.44	-380.69	6,165.71	20,025.48	19,849.05	176.43	113.506	
20,600.00	6,978.31	5,990.00	5,988.29	223.43	143.36	-33.44	-380.69	6,165.71	20,125.11	19,948.57	176.54	114.000	
20,700.00	6,978.23	5,990.00	5,988.29	225.02	143.36	-33.44	-380.69	6,165.71	20,224.75	20,048.10	176.65	114.494	
20,800.00	6,978.15	5,990.00	5,988.29	226.61	143.36	-33.44	-380.69	6,165.71	20,324.39	20,147.63	176.75	114.986	
20,900.00	6,978.07	5,990.00	5,988.29	228.21	143.36	-33.44	-380.69	6,165.71	20,424.03	20,247.16	176.86	115.478	
21,000.00	6,977.99	5,990.00	5,988.29	229.80	143.36	-33.44	-380.69	6,165.71	20,523.68	20,346.70	176.97	115.970	
21,100.00	6,977.92	5,990.00	5,988.29	231.39	143.36	-33.44	-380.69	6,165.71	20,623.33	20,446.24	177.08	116.460	
21,200.00	6,977.84	5,990.00	5,988.29	232.99	143.36	-33.44	-380.69	6,165.71	20,722.98	20,545.78	177.20	116.950	
21,300.00	6,977.76	5,990.00	5,988.29	234.58	143.36	-33.44	-380.69	6,165.71	20,822.64	20,645.33	177.31	117.439	
21,400.00	6,977.68	5,990.00	5,988.29	236.18	143.36	-33.44	-380.69	6,165.71	20,922.30	20,744.88	177.42	117.927	
21,500.00	6,977.60	5,990.00	5,988.29	237.77	143.36	-33.44	-380.69	6,165.71	21,021.96	20,844.43	177.53	118.414	
21,600.00	6,977.52	5,990.00	5,988.29	239.37	143.36	-33.44	-380.69	6,165.71	21,121.63	20,943.98	177.64	118.901	
21,700.00	6,977.45	5,990.00	5,988.29	240.96	143.36	-33.44	-380.69	6,165.71	21,221.30	21,043.54	177.75	119.387	
21,800.00	6,977.37	5,990.00	5,988.29	242.56	143.36	-33.44	-380.69	6,165.71	21,320.97	21,143.10	177.87	119.872	
21,900.00	6,977.29	5,990.00	5,988.29	244.15	143.36	-33.44	-380.69	6,165.71	21,420.64	21,242.67	177.98	120.356	
22,000.00	6,977.21	5,990.00	5,988.29	245.75	143.36	-33.44	-380.69	6,165.71	21,520.32	21,342.23	178.09	120.839	
22,100.00	6,977.13	5,990.00	5,988.29	247.34	143.36	-33.44	-380.69	6,165.71	21,620.00	21,441.80	178.20	121.322	
22,200.00	6,977.05	5,990.00	5,988.29	248.94	143.36	-33.44	-380.69	6,165.71	21,719.69	21,541.37	178.32	121.804	
22,269.73	6,977.00	5,990.00	5,988.29	250.05	143.36	-33.44	-380.69	6,165.71	21,789.20	21,610.80	178.40	122.140	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 358-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-51.88	3,050.37	-3,888.17	4,942.02				
100.00	100.00	77.26	77.26	0.25	0.08	-51.89	3,050.29	-3,888.17	4,941.89	4,941.55	0.33	N/A	
200.00	200.00	186.08	186.08	0.61	0.20	-51.89	3,049.91	-3,888.18	4,941.67	4,940.86	0.81	6,091.892	
300.00	300.00	294.90	294.90	0.97	0.32	-51.90	3,049.21	-3,888.18	4,941.27	4,939.99	1.29	3,837.542	
400.00	400.00	375.70	375.70	1.33	0.43	-51.90	3,048.46	-3,888.26	4,940.82	4,939.07	1.75	2,818.409	
408.12	408.12	379.12	379.12	1.36	0.43	-51.90	3,048.42	-3,888.29	4,940.82	4,939.03	1.79	2,760.842	
500.00	500.00	419.00	418.98	1.68	0.52	-51.91	3,047.86	-3,889.09	4,941.37	4,939.17	2.20	2,242.990	
600.00	600.00	438.37	438.33	2.04	0.57	-51.92	3,047.59	-3,889.82	4,943.29	4,940.68	2.60	1,898.405	
700.00	700.00	462.59	462.52	2.40	0.62	-51.93	3,047.24	-3,891.15	4,946.73	4,943.72	3.02	1,640.390	
800.00	799.98	480.00	479.88	2.76	0.67	-41.14	3,047.01	-3,892.38	4,950.42	4,947.01	3.41	1,451.546	
849.89	849.82	495.01	494.84	2.94	0.71	-41.14	3,046.84	-3,893.65	4,951.86	4,948.24	3.62	1,367.551	
900.00	899.86	510.00	509.75	3.12	0.75	-41.16	3,046.70	-3,895.12	4,953.40	4,949.57	3.83	1,292.113	
1,000.00	999.73	524.15	523.82	3.48	0.79	-41.18	3,046.63	-3,896.69	4,957.66	4,953.44	4.22	1,174.213	
1,100.00	1,099.59	541.00	540.54	3.84	0.83	-41.20	3,046.65	-3,898.74	4,963.57	4,958.95	4.62	1,075.085	
1,200.00	1,199.45	572.00	571.23	4.20	0.92	-41.24	3,046.95	-3,903.11	4,971.15	4,966.10	5.05	985.094	
1,300.00	1,299.32	572.00	571.23	4.56	0.92	-41.24	3,046.95	-3,903.11	4,980.29	4,974.89	5.40	922.626	
1,400.00	1,399.18	602.00	600.79	4.92	1.01	-41.28	3,047.54	-3,908.14	4,991.06	4,985.24	5.83	856.780	
1,500.00	1,499.04	616.01	614.55	5.28	1.05	-41.30	3,047.92	-3,910.77	5,003.47	4,997.26	6.21	805.568	
1,600.00	1,598.91	633.00	631.19	5.64	1.11	-41.33	3,048.45	-3,914.15	5,017.49	5,010.89	6.60	760.025	
1,700.00	1,698.77	664.00	661.42	6.00	1.21	-41.38	3,049.56	-3,920.92	5,033.07	5,026.04	7.03	715.478	
1,800.00	1,798.63	680.88	677.82	6.36	1.28	-41.40	3,050.19	-3,924.91	5,050.12	5,042.69	7.43	680.125	
1,900.00	1,898.49	710.46	706.42	6.72	1.41	-41.46	3,051.27	-3,932.34	5,068.59	5,060.73	7.86	645.114	
2,000.00	1,998.36	741.85	736.64	7.09	1.56	-41.52	3,052.28	-3,940.78	5,088.36	5,080.06	8.30	613.226	
2,100.00	2,098.22	787.00	779.87	7.45	1.79	-41.62	3,053.55	-3,953.75	5,109.35	5,100.55	8.79	580.976	
2,200.00	2,198.08	818.00	809.43	7.81	1.97	-41.69	3,054.13	-3,963.07	5,131.31	5,122.07	9.24	555.221	
2,300.00	2,297.95	848.00	837.89	8.17	2.15	-41.76	3,054.62	-3,972.52	5,154.51	5,144.82	9.69	532.036	
2,400.00	2,397.81	879.00	867.07	8.53	2.35	-41.84	3,055.16	-3,982.98	5,179.19	5,169.05	10.14	510.653	
2,500.00	2,497.67	892.13	879.34	8.90	2.44	-41.88	3,055.39	-3,987.64	5,205.28	5,194.77	10.51	495.076	
2,600.00	2,597.54	910.00	895.96	9.26	2.57	-41.93	3,055.70	-3,994.20	5,232.80	5,221.90	10.90	479.899	
2,700.00	2,697.40	940.00	923.64	9.62	2.80	-42.01	3,056.11	-4,005.77	5,261.67	5,250.32	11.36	463.254	
2,800.00	2,797.26	971.00	951.95	9.98	3.05	-42.11	3,056.39	-4,018.39	5,291.91	5,280.09	11.82	447.613	
2,900.00	2,897.13	971.00	951.95	10.35	3.05	-42.11	3,056.39	-4,018.39	5,323.43	5,311.32	12.11	439.599	
3,000.00	2,996.99	1,000.00	978.17	10.71	3.29	-42.20	3,056.63	-4,030.79	5,356.23	5,343.67	12.56	426.432	
3,100.00	3,096.85	1,031.00	1,005.93	11.07	3.57	-42.31	3,056.96	-4,044.58	5,390.37	5,377.34	13.02	413.852	
3,200.00	3,196.72	1,062.00	1,033.44	11.43	3.86	-42.41	3,057.31	-4,058.86	5,425.75	5,412.26	13.49	402.158	
3,300.00	3,296.58	1,075.86	1,045.66	11.80	4.00	-42.46	3,057.47	-4,065.40	5,462.26	5,448.41	13.85	394.463	
3,400.00	3,396.44	1,091.00	1,058.95	12.16	4.15	-42.51	3,057.68	-4,072.64	5,500.03	5,485.82	14.21	387.168	
3,500.00	3,496.31	1,122.00	1,085.90	12.52	4.46	-42.62	3,058.15	-4,087.96	5,539.07	5,524.40	14.67	377.578	
3,600.00	3,596.17	1,122.00	1,085.90	12.88	4.46	-42.62	3,058.15	-4,087.96	5,579.34	5,564.42	14.92	373.984	
3,700.00	3,696.03	1,152.00	1,111.56	13.25	4.79	-42.73	3,058.77	-4,103.48	5,620.92	5,605.55	15.37	365.632	
3,800.00	3,795.89	1,152.00	1,111.56	13.61	4.79	-42.73	3,058.77	-4,103.48	5,663.69	5,648.07	15.61	362.807	
3,900.00	3,895.76	1,182.00	1,136.86	13.97	5.13	-42.84	3,059.57	-4,119.59	5,707.65	5,691.59	16.06	355.367	
4,000.00	3,995.62	1,200.09	1,151.96	14.34	5.35	-42.91	3,060.04	-4,129.53	5,752.71	5,736.28	16.43	350.236	
4,100.00	4,095.48	1,238.98	1,184.15	14.70	5.81	-43.06	3,060.90	-4,151.33	5,798.74	5,781.80	16.94	342.232	
4,200.00	4,195.35	1,276.00	1,214.55	15.06	6.27	-43.20	3,061.40	-4,172.47	5,845.55	5,828.10	17.45	334.968	
4,300.00	4,295.21	1,335.95	1,263.43	15.42	7.02	-43.44	3,062.08	-4,207.17	5,893.10	5,874.95	18.14	324.809	
4,400.00	4,395.07	1,418.47	1,330.72	15.79	8.00	-43.77	3,062.92	-4,254.93	5,940.81	5,921.82	18.99	312.914	
4,500.00	4,494.94	1,435.00	1,344.17	16.15	8.20	-43.83	3,063.10	-4,264.52	5,989.12	5,969.80	19.32	310.028	
4,600.00	4,594.80	1,467.00	1,370.00	16.51	8.62	-43.96	3,063.42	-4,283.41	6,038.33	6,018.54	19.78	305.202	
4,700.00	4,694.66	1,506.69	1,401.81	16.87	9.14	-44.12	3,064.05	-4,307.15	6,088.44	6,068.13	20.30	299.864	
4,800.00	4,794.53	1,552.12	1,438.09	17.24	9.74	-44.29	3,064.95	-4,334.46	6,139.16	6,118.29	20.87	294.143	
4,900.00	4,894.39	1,594.00	1,471.43	17.60	10.30	-44.45	3,066.01	-4,359.80	6,190.56	6,169.16	21.40	289.235	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		358-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor	
5,000.00	4,994.25	1,672.39	1,533.48	17.96	11.34	-44.76	3,067.57	-4,407.66	6,242.44	6,220.20	22.24	280.732		
5,100.00	5,094.12	1,714.16	1,566.42	18.33	11.91	-44.92	3,068.23	-4,433.35	6,294.66	6,271.90	22.76	276.511		
5,200.00	5,193.98	1,754.00	1,597.83	18.69	12.45	-45.07	3,069.35	-4,457.83	6,347.48	6,324.21	23.27	272.788		
5,300.00	5,293.84	1,774.26	1,613.70	19.05	12.73	-45.15	3,069.95	-4,470.41	6,401.07	6,377.45	23.61	271.085		
5,336.91	5,330.71	1,786.00	1,622.83	19.19	12.90	-45.19	3,070.27	-4,477.78	6,421.07	6,397.29	23.78	270.071		
5,400.00	5,393.71	5,980.61	5,467.91	19.41	38.04	-52.89	2,992.15	-5,589.46	6,191.84	6,150.86	40.97	151.123		
5,500.00	5,493.62	6,077.90	5,565.12	19.77	38.11	-52.94	2,988.04	-5,589.71	6,187.63	6,146.22	41.42	149.403		
5,600.00	5,593.57	6,175.27	5,662.41	20.13	38.17	-52.98	2,984.03	-5,589.96	6,184.00	6,142.13	41.86	147.716		
5,700.00	5,693.53	6,272.72	5,759.77	20.49	38.24	-53.02	2,980.11	-5,590.20	6,180.93	6,138.61	42.32	146.061		
5,800.00	5,793.52	6,370.22	5,857.21	20.85	38.30	-53.06	2,976.28	-5,590.43	6,178.43	6,135.66	42.78	144.439		
5,900.00	5,893.52	6,467.78	5,954.69	21.20	38.37	-53.09	2,972.55	-5,590.66	6,176.50	6,133.26	43.24	142.848		
5,936.48	5,930.00	6,503.38	5,990.27	21.33	38.39	-63.85	2,971.21	-5,590.74	6,175.93	6,132.52	43.41	142.276		
6,000.00	5,993.52	6,565.38	6,052.22	21.56	38.44	-63.87	2,968.91	-5,590.88	6,175.02	6,131.32	43.70	141.289		
6,100.00	6,093.52	6,662.98	6,149.76	21.91	38.50	-63.90	2,965.37	-5,591.10	6,173.62	6,129.45	44.17	139.754		
6,200.00	6,193.52	6,760.59	6,247.31	22.27	38.57	-63.93	2,961.92	-5,591.31	6,172.26	6,127.61	44.65	138.243		
6,300.00	6,293.52	6,858.21	6,344.87	22.62	38.63	-63.96	2,958.56	-5,591.51	6,170.94	6,125.82	45.12	136.754		
6,358.48	6,352.00	6,915.30	6,401.93	22.83	38.67	-63.98	2,956.64	-5,591.63	6,170.18	6,124.78	45.40	135.895		
6,400.00	6,393.49	6,955.80	6,442.40	22.97	38.70	10.64	2,955.30	-5,591.71	6,168.33	6,122.72	45.60	135.263		
6,450.00	6,443.20	7,004.30	6,490.88	23.15	38.73	10.74	2,953.72	-5,591.81	6,162.58	6,116.74	45.84	134.430		
6,500.00	6,492.36	7,052.23	6,538.78	23.33	38.77	10.90	2,952.18	-5,591.90	6,153.03	6,106.95	46.08	133.522		
6,550.00	6,540.64	7,099.29	6,585.82	23.51	38.80	11.15	2,950.69	-5,591.99	6,139.74	6,093.42	46.32	132.546		
6,600.00	6,587.77	7,145.20	6,631.71	23.69	38.83	11.48	2,949.25	-5,592.08	6,122.79	6,076.23	46.56	131.512		
6,650.00	6,633.44	7,189.67	6,676.16	23.88	38.86	11.92	2,947.89	-5,592.16	6,102.28	6,055.49	46.79	130.428		
6,700.00	6,677.37	7,232.43	6,718.90	24.07	38.89	12.47	2,946.59	-5,592.24	6,078.34	6,031.33	47.01	129.303		
6,750.00	6,719.30	7,273.22	6,759.67	24.26	38.92	13.16	2,945.37	-5,592.32	6,051.11	6,003.89	47.22	128.143		
6,800.00	6,758.97	7,311.78	6,798.21	24.46	38.94	14.03	2,944.23	-5,592.38	6,020.78	5,973.35	47.42	126.957		
6,850.00	6,796.12	7,347.88	6,834.29	24.67	38.97	15.10	2,943.18	-5,592.45	5,987.51	5,939.90	47.61	125.751		
6,900.00	6,830.54	7,381.29	6,867.69	24.88	38.99	16.45	2,942.22	-5,592.51	5,951.53	5,903.74	47.79	124.532		
6,950.00	6,862.00	7,411.81	6,898.20	25.11	39.01	18.16	2,941.35	-5,592.56	5,913.04	5,865.09	47.95	123.305		
7,000.00	6,890.33	7,439.25	6,925.63	25.34	39.03	20.36	2,940.57	-5,592.61	5,872.30	5,824.20	48.10	122.078		
7,050.00	6,915.33	7,463.44	6,949.81	25.59	39.05	23.25	2,939.90	-5,592.65	5,829.55	5,781.31	48.24	120.854		
7,100.00	6,936.86	7,484.23	6,970.59	25.85	39.06	27.16	2,939.32	-5,592.68	5,785.05	5,736.70	48.35	119.638		
7,150.00	6,954.79	7,501.49	6,987.84	26.12	39.07	32.59	2,938.85	-5,592.71	5,739.09	5,690.63	48.46	118.436		
7,200.00	6,968.99	7,515.11	7,001.46	26.40	39.08	40.40	2,938.47	-5,592.74	5,691.94	5,643.39	48.55	117.249		
7,250.00	6,979.40	7,525.01	7,011.36	26.69	39.09	51.89	2,938.20	-5,592.75	5,643.90	5,595.28	48.62	116.083		
7,300.00	6,985.94	7,531.13	7,017.48	27.00	39.09	68.42	2,938.04	-5,592.76	5,595.27	5,546.59	48.68	114.938		
7,350.00	6,988.56	7,533.43	7,019.77	27.31	39.09	89.38	2,937.98	-5,592.77	5,546.34	5,497.61	48.73	113.817		
7,358.93	6,988.62	7,533.43	7,019.78	27.36	39.09	93.27	2,937.98	-5,592.77	5,537.60	5,488.86	48.74	113.619		
7,400.00	6,988.59	7,533.18	7,019.52	27.63	39.09	93.26	2,937.98	-5,592.77	5,497.38	5,448.61	48.77	112.713		
7,500.00	6,988.52	7,532.56	7,018.91	28.33	39.09	93.23	2,938.00	-5,592.76	5,399.52	5,350.66	48.87	110.497		
7,600.00	6,988.45	7,531.95	7,018.29	29.10	39.09	93.19	2,938.02	-5,592.76	5,301.74	5,252.77	48.97	108.268		
7,658.93	6,988.41	7,531.58	7,017.93	29.59	39.09	93.18	2,938.03	-5,592.76	5,244.16	5,195.13	49.03	106.949		
7,700.00	6,988.38	7,531.34	7,017.68	29.94	39.09	92.97	2,938.03	-5,592.76	5,204.11	5,155.02	49.08	106.026		
7,800.00	6,988.31	7,530.80	7,017.14	30.84	39.09	92.57	2,938.05	-5,592.76	5,107.25	5,058.03	49.23	103.753		
7,900.00	6,988.24	7,530.35	7,016.70	31.79	39.09	92.27	2,938.06	-5,592.76	5,011.47	4,962.07	49.40	101.442		
8,000.00	6,988.16	7,530.00	7,016.34	32.78	39.09	92.04	2,938.07	-5,592.76	4,916.95	4,867.33	49.62	99.087		
8,100.00	6,988.09	7,529.74	7,016.08	33.82	39.09	91.86	2,938.08	-5,592.76	4,823.88	4,773.99	49.89	96.682		
8,200.00	6,988.01	7,529.57	7,015.91	34.88	39.09	91.71	2,938.08	-5,592.76	4,732.46	4,682.24	50.23	94.224		
8,300.00	6,987.94	7,529.49	7,015.83	35.98	39.09	91.60	2,938.08	-5,592.76	4,642.91	4,592.28	50.63	91.706		
8,400.00	6,987.86	7,529.50	7,015.84	37.11	39.09	91.50	2,938.08	-5,592.76	4,555.45	4,504.33	51.11	89.125		
8,416.35	6,987.85	7,529.51	7,015.85	37.29	39.09	91.48	2,938.08	-5,592.76	4,541.36	4,490.16	51.20	88.699		
8,500.00	6,987.78	7,529.57	7,015.92	38.25	39.09	91.48	2,938.08	-5,592.76	4,469.66	4,417.97	51.68	86.485		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		358-APC_ISCWSA REV 2 MWD						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
8,600.00	6,987.70	7,529.64	7,015.99	39.43	39.09	91.49	2,938.08	-5,592.76	4,384.49	4,332.17	52.32	83.800	
8,700.00	6,987.62	7,529.72	7,016.06	40.64	39.09	91.49	2,938.08	-5,592.76	4,299.97	4,246.93	53.03	81.079	
8,800.00	6,987.55	7,529.79	7,016.14	41.88	39.09	91.49	2,938.07	-5,592.76	4,216.12	4,162.30	53.83	78.330	
8,900.00	6,987.47	7,529.87	7,016.21	43.14	39.09	91.49	2,938.07	-5,592.76	4,132.99	4,078.30	54.70	75.560	
9,000.00	6,987.39	7,529.94	7,016.28	44.42	39.09	91.49	2,938.07	-5,592.76	4,050.63	3,994.97	55.66	72.780	
9,100.00	6,987.31	7,530.01	7,016.36	45.72	39.09	91.50	2,938.07	-5,592.76	3,969.07	3,912.37	56.70	69.998	
9,200.00	6,987.23	7,530.09	7,016.43	47.04	39.09	91.50	2,938.07	-5,592.76	3,888.38	3,830.54	57.84	67.225	
9,300.00	6,987.15	7,530.16	7,016.51	48.38	39.09	91.50	2,938.06	-5,592.76	3,808.60	3,749.53	59.08	64.469	
9,400.00	6,987.08	7,530.23	7,016.58	49.73	39.09	91.50	2,938.06	-5,592.76	3,729.80	3,669.39	60.41	61.741	
9,500.00	6,987.00	7,530.31	7,016.65	51.10	39.09	91.50	2,938.06	-5,592.76	3,652.04	3,590.19	61.84	59.052	
9,600.00	6,986.92	7,530.38	7,016.73	52.48	39.09	91.50	2,938.06	-5,592.76	3,575.38	3,511.99	63.38	56.409	
9,700.00	6,986.84	7,530.46	7,016.80	53.87	39.09	91.51	2,938.06	-5,592.76	3,499.90	3,434.87	65.03	53.822	
9,800.00	6,986.76	7,530.53	7,016.87	55.28	39.09	91.51	2,938.05	-5,592.76	3,425.67	3,358.89	66.78	51.299	
9,900.00	6,986.68	7,530.60	7,016.95	56.69	39.09	91.51	2,938.05	-5,592.76	3,352.79	3,284.15	68.64	48.847	
10,000.00	6,986.61	7,530.68	7,017.02	58.12	39.09	91.51	2,938.05	-5,592.76	3,281.33	3,210.72	70.61	46.474	
10,100.00	6,986.53	7,530.75	7,017.09	59.55	39.09	91.51	2,938.05	-5,592.76	3,211.40	3,138.72	72.68	44.183	
10,200.00	6,986.45	7,530.82	7,017.17	61.00	39.09	91.52	2,938.05	-5,592.76	3,143.09	3,068.22	74.87	41.981	
10,300.00	6,986.37	7,530.90	7,017.24	62.45	39.09	91.52	2,938.04	-5,592.76	3,076.52	2,999.36	77.16	39.871	
10,400.00	6,986.29	7,530.97	7,017.31	63.90	39.09	91.52	2,938.04	-5,592.76	3,011.80	2,932.24	79.56	37.856	
10,500.00	6,986.21	7,531.04	7,017.39	65.37	39.09	91.52	2,938.04	-5,592.76	2,949.05	2,866.99	82.06	35.938	
10,600.00	6,986.14	7,531.12	7,017.46	66.84	39.09	91.52	2,938.04	-5,592.76	2,888.40	2,803.75	84.65	34.120	
10,700.00	6,986.06	7,531.19	7,017.54	68.32	39.09	91.52	2,938.04	-5,592.76	2,829.98	2,742.64	87.34	32.402	
10,800.00	6,985.98	7,531.26	7,017.61	69.80	39.09	91.53	2,938.03	-5,592.76	2,773.94	2,683.83	90.11	30.784	
10,900.00	6,985.90	7,531.34	7,017.68	71.29	39.09	91.53	2,938.03	-5,592.76	2,720.43	2,627.47	92.95	29.267	
11,000.00	6,985.82	7,531.41	7,017.76	72.78	39.09	91.53	2,938.03	-5,592.76	2,669.58	2,573.72	95.86	27.850	
11,100.00	6,985.75	7,531.49	7,017.83	74.28	39.09	91.53	2,938.03	-5,592.76	2,621.57	2,522.76	98.81	26.531	
11,200.00	6,985.67	7,531.56	7,017.90	75.78	39.09	91.53	2,938.03	-5,592.76	2,576.54	2,474.74	101.80	25.309	
11,300.00	6,985.59	7,531.63	7,017.98	77.29	39.09	91.54	2,938.02	-5,592.76	2,534.67	2,429.86	104.81	24.184	
11,400.00	6,985.51	7,531.71	7,018.05	78.80	39.09	91.54	2,938.02	-5,592.76	2,496.09	2,388.28	107.81	23.152	
11,500.00	6,985.43	7,531.78	7,018.12	80.31	39.09	91.54	2,938.02	-5,592.76	2,460.98	2,350.18	110.80	22.211	
11,600.00	6,985.35	7,531.85	7,018.20	81.83	39.09	91.54	2,938.02	-5,592.76	2,429.48	2,315.74	113.74	21.360	
11,700.00	6,985.28	7,531.93	7,018.27	83.35	39.09	91.54	2,938.02	-5,592.76	2,401.74	2,285.13	116.61	20.596	
11,800.00	6,985.20	7,532.00	7,018.34	84.87	39.09	91.54	2,938.01	-5,592.76	2,377.88	2,258.48	119.39	19.917	
11,900.00	6,985.12	7,532.07	7,018.42	86.40	39.09	91.55	2,938.01	-5,592.76	2,358.02	2,235.96	122.06	19.319	
12,000.00	6,985.04	7,532.15	7,018.49	87.93	39.09	91.55	2,938.01	-5,592.76	2,342.26	2,217.68	124.58	18.801	
12,100.00	6,984.96	7,532.22	7,018.56	89.46	39.09	91.55	2,938.01	-5,592.76	2,330.70	2,203.75	126.95	18.359	
12,200.00	6,984.88	7,532.29	7,018.64	90.99	39.09	91.55	2,938.01	-5,592.76	2,323.38	2,194.24	129.14	17.991	
12,300.00	6,984.81	7,532.37	7,018.71	92.53	39.09	91.55	2,938.00	-5,592.76	2,320.36	2,189.23	131.13	17.695	
12,320.23	6,984.79	7,532.38	7,018.73	92.84	39.09	91.55	2,938.00	-5,592.76	2,320.27	2,188.76	131.51	17.643 CC	
12,400.00	6,984.73	7,532.44	7,018.78	94.07	39.09	91.56	2,938.00	-5,592.76	2,321.64	2,188.73	132.91	17.467 ES	
12,500.00	6,984.65	7,532.51	7,018.86	95.61	39.09	91.56	2,938.00	-5,592.76	2,327.22	2,192.75	134.47	17.306	
12,600.00	6,984.57	7,532.59	7,018.93	97.15	39.09	91.56	2,938.00	-5,592.76	2,337.08	2,201.27	135.81	17.209	
12,700.00	6,984.49	7,532.66	7,019.00	98.70	39.09	91.56	2,938.00	-5,592.76	2,351.14	2,214.23	136.91	17.172 SF	
12,800.00	6,984.41	7,532.73	7,019.08	100.25	39.09	91.56	2,937.99	-5,592.77	2,369.35	2,231.56	137.79	17.195	
12,900.00	6,984.34	7,532.81	7,019.15	101.80	39.09	91.56	2,937.99	-5,592.77	2,391.61	2,253.15	138.45	17.274	
13,000.00	6,984.26	7,532.88	7,019.22	103.35	39.09	91.57	2,937.99	-5,592.77	2,417.80	2,278.90	138.90	17.407	
13,100.00	6,984.18	7,532.95	7,019.30	104.90	39.09	91.57	2,937.99	-5,592.77	2,447.79	2,308.65	139.15	17.592	
13,200.00	6,984.10	7,533.03	7,019.37	106.45	39.09	91.57	2,937.99	-5,592.77	2,481.46	2,342.26	139.20	17.826	
13,300.00	6,984.02	7,533.10	7,019.44	108.01	39.09	91.57	2,937.98	-5,592.77	2,518.65	2,379.56	139.09	18.108	
13,400.00	6,983.94	7,533.17	7,019.52	109.56	39.09	91.57	2,937.98	-5,592.77	2,559.21	2,420.39	138.82	18.436	
13,500.00	6,983.87	7,533.25	7,019.59	111.12	39.09	91.58	2,937.98	-5,592.77	2,602.98	2,464.58	138.40	18.807	
13,600.00	6,983.79	7,533.32	7,019.66	112.68	39.09	91.58	2,937.98	-5,592.77	2,649.80	2,511.94	137.87	19.220	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY											Offset Site Error: 0.00 usft		
Survey Program: Reference		358-APC_ISCWSA REV 2 MWD					Rule Assigned:				Offset Well Error: 0.00 usft		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,700.00	6,983.71	7,533.39	7,019.74	114.24	39.09	91.58	2,937.98	-5,592.77	2,699.52	2,562.30	137.22	19.673	
13,800.00	6,983.63	7,533.47	7,019.81	115.80	39.09	91.58	2,937.97	-5,592.77	2,751.98	2,615.49	136.48	20.163	
13,900.00	6,983.55	7,533.54	7,019.88	117.37	39.09	91.58	2,937.97	-5,592.77	2,807.01	2,671.35	135.67	20.690	
14,000.00	6,983.47	7,533.61	7,019.96	118.93	39.09	91.58	2,937.97	-5,592.77	2,864.49	2,729.70	134.78	21.252	
14,100.00	6,983.40	7,533.69	7,020.03	120.50	39.09	91.59	2,937.97	-5,592.77	2,924.25	2,790.40	133.85	21.847	
14,200.00	6,983.32	7,533.76	7,020.10	122.06	39.09	91.59	2,937.97	-5,592.77	2,986.17	2,853.29	132.87	22.474	
14,300.00	6,983.24	7,533.83	7,020.18	123.63	39.09	91.59	2,937.96	-5,592.77	3,050.10	2,918.24	131.86	23.131	
14,400.00	6,983.16	7,533.91	7,020.25	125.20	39.09	91.59	2,937.96	-5,592.77	3,115.94	2,985.11	130.83	23.817	
14,500.00	6,983.08	7,533.98	7,020.32	126.77	39.09	91.59	2,937.96	-5,592.77	3,183.56	3,053.78	129.78	24.530	
14,600.00	6,983.00	7,534.05	7,020.40	128.33	39.09	91.60	2,937.96	-5,592.77	3,252.84	3,124.12	128.73	25.270	
14,700.00	6,982.93	7,534.13	7,020.47	129.91	39.09	91.60	2,937.96	-5,592.77	3,323.70	3,196.03	127.67	26.034	
14,800.00	6,982.85	7,534.20	7,020.54	131.48	39.09	91.60	2,937.95	-5,592.77	3,396.01	3,269.40	126.61	26.823	
14,900.00	6,982.77	7,534.27	7,020.62	133.05	39.09	91.60	2,937.95	-5,592.77	3,469.71	3,344.15	125.56	27.634	
15,000.00	6,982.69	7,534.35	7,020.69	134.62	39.09	91.60	2,937.95	-5,592.77	3,544.69	3,420.17	124.52	28.467	
15,100.00	6,982.61	7,534.42	7,020.76	136.20	39.09	91.60	2,937.95	-5,592.77	3,620.88	3,497.39	123.49	29.321	
15,200.00	6,982.54	7,534.49	7,020.83	137.77	39.10	91.61	2,937.95	-5,592.77	3,698.20	3,575.72	122.48	30.194	
15,300.00	6,982.46	7,534.57	7,020.91	139.35	39.10	91.61	2,937.94	-5,592.77	3,776.59	3,655.11	121.49	31.086	
15,400.00	6,982.38	7,534.64	7,020.98	140.92	39.10	91.61	2,937.94	-5,592.77	3,855.99	3,735.47	120.51	31.996	
15,500.00	6,982.30	7,534.71	7,021.05	142.50	39.10	91.61	2,937.94	-5,592.77	3,936.32	3,816.76	119.56	32.924	
15,600.00	6,982.22	7,534.78	7,021.13	144.07	39.10	91.61	2,937.94	-5,592.77	4,017.53	3,898.90	118.63	33.867	
15,700.00	6,982.14	7,534.86	7,021.20	145.65	39.10	91.62	2,937.94	-5,592.77	4,099.57	3,981.86	117.72	34.826	
15,800.00	6,982.07	7,534.93	7,021.27	147.23	39.10	91.62	2,937.93	-5,592.77	4,182.40	4,065.57	116.83	35.800	
15,900.00	6,981.99	7,535.00	7,021.35	148.81	39.10	91.62	2,937.93	-5,592.77	4,265.96	4,150.00	115.96	36.788	
16,000.00	6,981.91	7,535.08	7,021.42	150.39	39.10	91.62	2,937.93	-5,592.77	4,350.21	4,235.09	115.12	37.789	
16,100.00	6,981.83	7,535.15	7,021.49	151.97	39.10	91.62	2,937.93	-5,592.77	4,435.12	4,320.82	114.30	38.803	
16,200.00	6,981.75	7,535.22	7,021.57	153.55	39.10	91.62	2,937.93	-5,592.77	4,520.65	4,407.14	113.50	39.829	
16,300.00	6,981.67	7,535.30	7,021.64	155.13	39.10	91.63	2,937.92	-5,592.77	4,606.76	4,494.03	112.73	40.866	
16,400.00	6,981.60	7,535.37	7,021.71	156.71	39.10	91.63	2,937.92	-5,592.77	4,693.42	4,581.44	111.97	41.915	
16,500.00	6,981.52	7,535.44	7,021.79	158.29	39.10	91.63	2,937.92	-5,592.77	4,780.60	4,669.35	111.24	42.974	
16,600.00	6,981.44	7,535.52	7,021.86	159.88	39.10	91.63	2,937.92	-5,592.77	4,868.27	4,757.74	110.53	44.043	
16,700.00	6,981.36	7,535.59	7,021.93	161.46	39.10	91.63	2,937.92	-5,592.77	4,956.41	4,846.57	109.85	45.122	
16,800.00	6,981.28	7,535.66	7,022.00	163.04	39.10	91.64	2,937.91	-5,592.77	5,044.99	4,935.82	109.18	46.209	
16,900.00	6,981.20	7,535.74	7,022.08	164.62	39.10	91.64	2,937.91	-5,592.77	5,134.00	5,025.47	108.53	47.305	
17,000.00	6,981.13	7,535.81	7,022.15	166.21	39.10	91.64	2,937.91	-5,592.77	5,223.40	5,115.50	107.90	48.410	
17,100.00	6,981.05	7,535.88	7,022.22	167.79	39.10	91.64	2,937.91	-5,592.77	5,313.17	5,205.88	107.29	49.522	
17,200.00	6,980.97	7,535.95	7,022.30	169.38	39.10	91.64	2,937.91	-5,592.77	5,403.31	5,296.61	106.70	50.641	
17,300.00	6,980.89	7,536.03	7,022.37	170.96	39.10	91.64	2,937.90	-5,592.77	5,493.79	5,387.67	106.13	51.767	
17,400.00	6,980.81	7,536.10	7,022.44	172.55	39.10	91.65	2,937.90	-5,592.77	5,584.59	5,479.02	105.57	52.900	
17,500.00	6,980.73	7,536.17	7,022.52	174.13	39.10	91.65	2,937.90	-5,592.77	5,675.71	5,570.68	105.03	54.039	
17,600.00	6,980.66	7,536.25	7,022.59	175.72	39.10	91.65	2,937.90	-5,592.77	5,767.11	5,662.61	104.51	55.184	
17,700.00	6,980.58	7,536.32	7,022.66	177.31	39.10	91.65	2,937.90	-5,592.77	5,858.80	5,754.80	104.00	56.335	
17,800.00	6,980.50	7,536.39	7,022.73	178.89	39.10	91.65	2,937.89	-5,592.77	5,950.76	5,847.25	103.51	57.491	
17,900.00	6,980.42	7,536.47	7,022.81	180.48	39.10	91.66	2,937.89	-5,592.77	6,042.97	5,939.94	103.03	58.652	
18,000.00	6,980.34	7,536.54	7,022.88	182.07	39.10	91.66	2,937.89	-5,592.77	6,135.42	6,032.85	102.57	59.818	
18,100.00	6,980.26	7,536.61	7,022.95	183.66	39.10	91.66	2,937.89	-5,592.77	6,228.11	6,125.99	102.12	60.989	
18,200.00	6,980.19	7,536.68	7,023.03	185.24	39.10	91.66	2,937.89	-5,592.77	6,321.02	6,219.34	101.68	62.164	
18,300.00	6,980.11	7,536.76	7,023.10	186.83	39.10	91.66	2,937.88	-5,592.77	6,414.15	6,312.88	101.26	63.343	
18,400.00	6,980.03	7,536.83	7,023.17	188.42	39.10	91.66	2,937.88	-5,592.77	6,507.47	6,406.62	100.85	64.525	
18,500.00	6,979.95	7,536.90	7,023.24	190.01	39.10	91.67	2,937.88	-5,592.77	6,601.00	6,500.54	100.45	65.711	
18,600.00	6,979.87	7,536.98	7,023.32	191.60	39.10	91.67	2,937.88	-5,592.77	6,694.71	6,594.64	100.07	66.901	
18,700.00	6,979.79	7,537.05	7,023.39	193.19	39.10	91.67	2,937.88	-5,592.77	6,788.60	6,688.90	99.70	68.094	
18,800.00	6,979.72	7,537.12	7,023.46	194.78	39.10	91.67	2,937.88	-5,592.77	6,882.66	6,783.33	99.33	69.289	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		358-APC_ISCWSA REV 2 MWD					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Minimum Separation (usft)	Separation Factor	
18,900.00	6,979.64	7,537.19	7,023.54	196.37	39.10	91.67	2,937.87	-5,592.77	6,976.89	6,877.91	98.98	70.488		
19,000.00	6,979.56	7,537.27	7,023.61	197.96	39.10	91.67	2,937.87	-5,592.77	7,071.28	6,972.64	98.64	71.689		
19,100.00	6,979.48	7,537.34	7,023.68	199.55	39.10	91.68	2,937.87	-5,592.77	7,165.81	7,067.51	98.31	72.892		
19,200.00	6,979.40	7,537.41	7,023.75	201.14	39.10	91.68	2,937.87	-5,592.77	7,260.50	7,162.51	97.99	74.098		
19,300.00	6,979.33	7,537.49	7,023.83	202.73	39.10	91.68	2,937.87	-5,592.77	7,355.32	7,257.65	97.67	75.306		
19,400.00	6,979.25	7,537.56	7,023.90	204.32	39.10	91.68	2,937.86	-5,592.77	7,450.29	7,352.92	97.37	76.515		
19,500.00	6,979.17	7,537.63	7,023.97	205.91	39.10	91.68	2,937.86	-5,592.77	7,545.38	7,448.30	97.08	77.727		
19,600.00	6,979.09	7,537.70	7,024.05	207.50	39.10	91.69	2,937.86	-5,592.77	7,640.59	7,543.80	96.79	78.940		
19,700.00	6,979.01	7,537.78	7,024.12	209.09	39.10	91.69	2,937.86	-5,592.77	7,735.93	7,639.42	96.51	80.155		
19,800.00	6,978.93	7,537.85	7,024.19	210.69	39.10	91.69	2,937.86	-5,592.77	7,831.38	7,735.14	96.24	81.371		
19,900.00	6,978.86	7,537.92	7,024.26	212.28	39.10	91.69	2,937.85	-5,592.77	7,926.95	7,830.97	95.98	82.588		
20,000.00	6,978.78	7,538.00	7,024.34	213.87	39.10	91.69	2,937.85	-5,592.77	8,022.62	7,926.89	95.73	83.806		
20,100.00	6,978.70	7,538.07	7,024.41	215.46	39.10	91.69	2,937.85	-5,592.77	8,118.40	8,022.92	95.48	85.026		
20,200.00	6,978.62	7,538.14	7,024.48	217.05	39.10	91.70	2,937.85	-5,592.77	8,214.28	8,119.04	95.24	86.246		
20,300.00	6,978.54	7,538.21	7,024.56	218.65	39.10	91.70	2,937.85	-5,592.77	8,310.25	8,215.24	95.01	87.467		
20,400.00	6,978.46	7,538.29	7,024.63	220.24	39.10	91.70	2,937.84	-5,592.77	8,406.32	8,311.54	94.78	88.688		
20,500.00	6,978.39	7,538.36	7,024.70	221.83	39.10	91.70	2,937.84	-5,592.77	8,502.48	8,407.92	94.57	89.910		
20,600.00	6,978.31	7,538.43	7,024.77	223.43	39.10	91.70	2,937.84	-5,592.77	8,598.73	8,504.38	94.35	91.133		
20,700.00	6,978.23	7,538.50	7,024.85	225.02	39.10	91.71	2,937.84	-5,592.77	8,695.06	8,600.92	94.15	92.356		
20,800.00	6,978.15	7,538.58	7,024.92	226.61	39.10	91.71	2,937.84	-5,592.77	8,791.48	8,697.53	93.95	93.579		
20,900.00	6,978.07	7,538.65	7,024.99	228.21	39.10	91.71	2,937.83	-5,592.77	8,887.97	8,794.22	93.75	94.803		
21,000.00	6,977.99	7,538.72	7,025.06	229.80	39.10	91.71	2,937.83	-5,592.77	8,984.54	8,890.98	93.56	96.026		
21,100.00	6,977.92	7,538.80	7,025.14	231.39	39.10	91.71	2,937.83	-5,592.78	9,081.19	8,987.81	93.38	97.249		
21,200.00	6,977.84	7,538.87	7,025.21	232.99	39.10	91.71	2,937.83	-5,592.78	9,177.90	9,084.70	93.20	98.473		
21,300.00	6,977.76	7,538.94	7,025.28	234.58	39.10	91.72	2,937.83	-5,592.78	9,274.69	9,181.66	93.03	99.696		
21,400.00	6,977.68	7,539.01	7,025.35	236.18	39.10	91.72	2,937.82	-5,592.78	9,371.54	9,278.68	92.86	100.919		
21,500.00	6,977.60	7,539.09	7,025.43	237.77	39.10	91.72	2,937.82	-5,592.78	9,468.46	9,375.76	92.70	102.141		
21,600.00	6,977.52	7,539.16	7,025.50	239.37	39.10	91.72	2,937.82	-5,592.78	9,565.44	9,472.90	92.54	103.363		
21,700.00	6,977.45	7,539.23	7,025.57	240.96	39.10	91.72	2,937.82	-5,592.78	9,662.49	9,570.10	92.39	104.585		
21,800.00	6,977.37	7,539.30	7,025.65	242.56	39.10	91.73	2,937.82	-5,592.78	9,759.59	9,667.35	92.24	105.806		
21,900.00	6,977.29	7,539.38	7,025.72	244.15	39.10	91.73	2,937.81	-5,592.78	9,856.75	9,764.66	92.10	107.026		
22,000.00	6,977.21	7,539.45	7,025.79	245.75	39.10	91.73	2,937.81	-5,592.78	9,953.97	9,862.01	91.96	108.246		
22,100.00	6,977.13	7,539.52	7,025.86	247.34	39.10	91.73	2,937.81	-5,592.78	10,051.24	9,959.42	91.82	109.465		
22,200.00	6,977.05	7,539.59	7,025.94	248.94	39.10	91.73	2,937.81	-5,592.78	10,148.57	10,056.88	91.69	110.684		
22,269.73	6,977.00	7,539.65	7,025.99	250.05	39.10	91.73	2,937.81	-5,592.78	10,216.46	10,124.86	91.60	111.533		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 148 COM - OH - OH-INC											Offset Site Error: 0.00 usft
Survey Program: 248-A027Ua_INC-ONLY											Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	-84.79	1,279.61	-14,042.52	14,100.76		
100.00	100.00	61.00	61.00	0.25	1.13	-84.79	1,279.61	-14,042.52	14,100.70	14,099.33	N/A
200.00	200.00	161.00	161.00	0.61	2.98	-84.79	1,279.61	-14,042.52	14,100.70	14,097.12	3.59 3,932.569
300.00	300.00	261.00	261.00	0.97	4.85	-84.79	1,279.61	-14,042.52	14,100.70	14,094.89	5.82 2,424.727
400.00	400.00	361.00	361.00	1.33	6.87	-84.79	1,279.61	-14,042.52	14,100.70	14,092.51	8.20 1,720.142
500.00	500.00	464.75	464.74	1.68	8.97	-84.79	1,279.76	-14,042.52	14,100.72	14,090.06	10.66 1,323.358
600.00	600.00	561.04	561.00	2.04	11.14	-84.79	1,279.61	-14,042.52	14,100.70	14,087.52	13.18 1,069.766
700.00	700.00	664.22	664.17	2.40	13.64	-84.79	1,280.27	-14,042.52	14,100.76	14,084.72	16.05 878.786
800.00	799.98	776.39	776.33	2.76	16.37	-74.06	1,279.45	-14,042.52	14,100.22	14,081.09	19.13 737.151
849.89	849.82	810.95	810.82	2.94	17.33	-74.07	1,279.61	-14,042.52	14,099.63	14,079.36	20.27 695.720
900.00	899.86	860.99	860.86	3.12	18.67	-74.08	1,279.61	-14,042.52	14,098.91	14,077.12	21.79 647.136
1,000.00	999.73	964.21	964.06	3.48	21.44	-74.10	1,280.87	-14,042.52	14,097.59	14,072.67	24.91 565.902
1,100.00	1,099.59	1,076.73	1,076.56	3.84	24.45	-74.13	1,280.01	-14,042.52	14,096.08	14,067.80	28.29 498.329
1,200.00	1,199.45	1,160.74	1,160.45	4.20	26.67	-74.15	1,279.61	-14,042.52	14,094.61	14,063.74	30.86 456.656
1,300.00	1,299.32	1,260.60	1,260.32	4.56	29.29	-74.17	1,279.61	-14,042.52	14,093.18	14,059.34	33.84 416.452
1,400.00	1,399.18	1,360.92	1,360.61	4.92	31.92	-74.18	1,281.50	-14,042.52	14,091.92	14,055.09	36.83 382.624
1,500.00	1,499.04	1,469.05	1,468.72	5.28	34.75	-74.20	1,281.11	-14,042.52	14,090.46	14,050.44	40.02 352.060
1,600.00	1,598.91	1,577.12	1,576.77	5.64	37.58	-74.23	1,279.99	-14,042.52	14,088.94	14,045.73	43.22 326.019
1,700.00	1,698.77	1,660.25	1,659.77	6.00	39.59	-74.25	1,279.61	-14,042.52	14,087.48	14,041.89	45.58 309.053
1,800.00	1,798.63	1,760.12	1,759.63	6.36	41.90	-74.27	1,279.61	-14,042.52	14,086.06	14,037.80	48.26 291.903
1,900.00	1,898.49	1,860.39	1,859.89	6.72	44.22	-74.28	1,281.24	-14,042.52	14,084.78	14,033.84	50.94 276.504
2,000.00	1,998.36	1,967.06	1,966.54	7.09	46.69	-74.31	1,280.91	-14,042.52	14,083.33	14,029.56	53.77 261.920
2,100.00	2,098.22	2,073.68	2,073.15	7.45	49.16	-74.33	1,279.98	-14,042.52	14,081.84	14,025.24	56.60 248.797
2,200.00	2,198.08	2,159.69	2,159.08	7.81	51.03	-74.35	1,279.61	-14,042.52	14,080.39	14,021.55	58.84 239.301
2,300.00	2,297.95	2,259.55	2,258.95	8.17	53.14	-74.37	1,279.61	-14,042.52	14,078.98	14,017.67	61.31 229.632
2,400.00	2,397.81	2,361.01	2,360.39	8.53	55.29	-74.39	1,280.56	-14,042.52	14,077.65	14,013.83	63.82 220.598
2,500.00	2,497.67	2,465.74	2,465.12	8.90	57.50	-74.41	1,280.20	-14,042.52	14,076.21	14,009.82	66.39 212.023
2,600.00	2,597.54	2,559.21	2,558.54	9.26	59.46	-74.43	1,279.61	-14,042.52	14,074.76	14,006.05	68.71 204.846
2,700.00	2,697.40	2,659.07	2,658.40	9.62	61.38	-74.45	1,279.61	-14,042.52	14,073.35	14,002.36	70.99 198.244
2,800.00	2,797.26	2,758.94	2,758.26	9.98	63.29	-74.47	1,279.61	-14,042.52	14,071.95	13,998.68	73.27 192.054
2,900.00	2,897.13	2,861.54	2,860.86	10.35	65.27	-74.49	1,280.60	-14,042.52	14,070.63	13,995.03	75.60 186.108
3,000.00	2,996.99	2,965.71	2,965.02	10.71	67.27	-74.51	1,280.16	-14,042.52	14,069.20	13,991.23	77.97 180.448
3,100.00	3,096.85	3,058.57	3,057.85	11.07	69.01	-74.53	1,279.61	-14,042.52	14,067.75	13,987.68	80.07 175.695
3,200.00	3,196.72	3,158.43	3,157.72	11.43	70.67	-74.56	1,279.61	-14,042.52	14,066.36	13,984.27	82.09 171.352
3,300.00	3,296.58	3,258.30	3,257.58	11.80	72.32	-74.58	1,279.61	-14,042.52	14,064.96	13,980.85	84.11 167.217
3,400.00	3,396.44	3,358.16	3,357.44	12.16	73.98	-74.60	1,279.61	-14,042.52	14,063.57	13,977.44	86.13 163.276
3,500.00	3,496.31	3,459.41	3,458.69	12.52	75.67	-74.61	1,280.26	-14,042.52	14,062.23	13,974.06	88.18 159.475
3,600.00	3,596.17	3,560.80	3,560.07	12.88	77.35	-74.64	1,280.07	-14,042.52	14,060.83	13,970.61	90.22 155.842
3,700.00	3,696.03	3,662.17	3,661.45	13.25	79.04	-74.66	1,279.74	-14,042.52	14,059.42	13,967.15	92.27 152.370
3,800.00	3,795.89	3,757.63	3,756.89	13.61	80.69	-74.68	1,279.61	-14,042.52	14,058.02	13,963.73	94.29 149.091
3,900.00	3,895.76	3,858.10	3,857.36	13.97	82.48	-74.70	1,279.74	-14,042.52	14,056.65	13,960.21	96.44 145.759
4,000.00	3,995.62	3,957.36	3,956.62	14.34	84.25	-74.72	1,279.61	-14,042.52	14,055.26	13,956.69	98.57 142.587
4,100.00	4,095.48	4,057.23	4,056.48	14.70	86.82	-74.74	1,279.61	-14,042.52	14,053.88	13,952.38	101.50 138.459
4,200.00	4,195.35	4,159.24	4,158.50	15.06	89.44	-74.76	1,280.07	-14,042.52	14,052.54	13,948.05	104.49 134.491
4,300.00	4,295.21	4,263.89	4,263.14	15.42	92.13	-74.78	1,279.64	-14,042.52	14,051.13	13,943.59	107.54 130.661
4,400.00	4,395.07	4,360.84	4,359.94	15.79	95.22	-74.80	1,280.44	-14,042.52	14,049.82	13,938.83	110.99 126.585
4,500.00	4,494.94	4,456.97	4,455.94	16.15	98.35	-74.82	1,279.61	-14,042.52	14,048.38	13,933.89	114.49 122.708
4,600.00	4,594.80	4,556.96	4,555.80	16.51	101.70	-74.84	1,279.61	-14,042.52	14,047.01	13,928.81	118.20 118.845
4,700.00	4,694.66	4,681.18	4,679.97	16.87	106.00	-74.87	1,279.69	-14,042.52	14,045.67	13,922.81	122.86 114.321
4,800.00	4,794.53	4,765.75	4,764.41	17.24	109.03	-74.88	1,280.24	-14,042.52	14,044.33	13,918.07	126.26 111.237
4,900.00	4,894.39	4,856.85	4,855.39	17.60	112.37	-74.90	1,279.61	-14,042.52	14,042.91	13,912.96	129.95 108.061
5,000.00	4,994.25	4,956.89	4,955.25	17.96	116.12	-74.93	1,279.61	-14,042.52	14,041.55	13,907.48	134.07 104.733

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 148 COM - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		248-A027Ua_INC-ONLY					Rule Assigned:				Offset Well Error:		0.00 usft	
Reference	Offset	Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Minimum Separation	Separation	Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Factor			
5,100.00	5,094.12	5,070.06	5,068.37	18.33	120.48	-74.94	1,280.55	-14,042.52	14,040.26	13,901.47	138.79	101.160		
5,200.00	5,193.98	5,156.90	5,154.98	18.69	123.84	-74.97	1,279.61	-14,042.52	14,038.83	13,896.31	142.51	98.509		
5,300.00	5,293.84	5,256.95	5,254.84	19.05	127.71	-74.99	1,279.61	-14,042.52	14,037.47	13,890.73	146.74	95.663		
5,336.91	5,330.71	5,293.81	5,291.71	19.19	129.07	-74.99	1,279.61	-14,042.52	14,036.97	13,888.73	148.24	94.694		
5,400.00	5,393.71	5,375.57	5,373.41	19.41	132.09	-75.00	1,280.14	-14,042.52	14,036.21	13,884.73	151.49	92.657		
5,500.00	5,493.62	5,456.92	5,454.62	19.77	135.05	-75.01	1,279.61	-14,042.52	14,035.06	13,880.26	154.80	90.664		
5,600.00	5,593.57	5,557.01	5,554.57	20.13	138.66	-75.02	1,279.61	-14,042.52	14,034.19	13,875.41	158.78	88.390		
5,700.00	5,693.53	5,658.61	5,656.12	20.49	142.34	-75.02	1,281.10	-14,042.52	14,033.65	13,870.84	162.81	86.195		
5,800.00	5,793.52	5,783.22	5,780.68	20.85	146.85	-75.04	1,279.42	-14,042.52	14,033.13	13,865.45	167.68	83.689		
5,900.00	5,893.52	5,857.25	5,854.52	21.20	149.64	-75.04	1,279.61	-14,042.52	14,032.93	13,862.10	170.82	82.148		
5,936.48	5,930.00	5,893.73	5,891.00	21.33	151.01	-85.79	1,279.61	-14,042.52	14,032.91	13,860.59	172.32	81.434		
6,000.00	5,993.52	5,971.18	5,968.38	21.56	153.91	-85.79	1,280.63	-14,042.52	14,032.99	13,857.54	175.45	79.982		
6,100.00	6,093.52	6,057.57	6,054.52	21.91	157.19	-85.79	1,279.61	-14,042.52	14,032.91	13,853.82	179.09	78.357		
6,200.00	6,193.52	6,164.62	6,161.52	22.27	161.35	-85.79	1,280.94	-14,042.52	14,033.01	13,849.41	183.60	76.432		
6,300.00	6,293.52	6,257.87	6,254.52	22.62	164.96	-85.79	1,279.61	-14,042.52	14,032.91	13,845.35	187.56	74.817		
6,358.48	6,352.00	6,321.88	6,318.50	22.83	167.38	-85.79	1,280.39	-14,042.52	14,032.97	13,842.78	190.19	73.783		
6,400.00	6,393.49	6,394.30	6,390.87	22.97	170.12	-11.22	1,278.92	-14,042.52	14,031.58	13,838.51	193.08	72.674		
6,450.00	6,443.20	6,407.71	6,404.20	23.15	170.59	-11.31	1,279.61	-14,042.52	14,026.47	13,832.75	193.72	72.406		
6,500.00	6,492.36	6,456.86	6,453.36	23.33	172.40	-11.48	1,279.61	-14,042.52	14,017.55	13,821.85	195.70	71.627		
6,550.00	6,540.64	6,517.16	6,513.61	23.51	174.61	-11.73	1,280.49	-14,042.52	14,004.94	13,806.85	198.09	70.700		
6,600.00	6,587.77	6,580.00	6,576.41	23.69	176.92	-12.07	1,279.27	-14,042.52	13,988.51	13,787.95	200.57	69.745		
6,650.00	6,633.44	6,598.17	6,594.44	23.88	177.59	-12.50	1,279.61	-14,042.52	13,968.58	13,767.18	201.40	69.357		
6,700.00	6,677.37	6,642.93	6,639.17	24.07	179.24	-13.04	1,280.48	-14,042.52	13,945.26	13,742.05	203.21	68.626		
6,750.00	6,719.30	6,705.09	6,701.31	24.26	181.53	-13.74	1,279.80	-14,042.52	13,918.54	13,712.89	205.64	67.683		
6,800.00	6,758.97	6,723.87	6,719.97	24.46	182.19	-14.58	1,279.61	-14,042.52	13,888.67	13,682.23	206.44	67.276		
6,850.00	6,796.12	6,761.02	6,757.12	24.67	183.43	-15.63	1,279.61	-14,042.52	13,855.89	13,648.07	207.81	66.674		
6,900.00	6,830.54	6,795.44	6,791.54	24.88	184.58	-16.95	1,279.61	-14,042.52	13,820.34	13,611.26	209.08	66.099		
6,950.00	6,862.00	6,826.91	6,823.00	25.11	185.63	-18.61	1,279.61	-14,042.52	13,782.27	13,572.02	210.25	65.553		
7,000.00	6,890.33	6,855.23	6,851.33	25.34	186.57	-20.75	1,279.61	-14,042.52	13,741.89	13,530.60	211.29	65.038		
7,050.00	6,915.33	6,881.90	6,877.95	25.59	187.46	-23.52	1,281.47	-14,042.52	13,699.60	13,487.33	212.27	64.538		
7,100.00	6,936.86	6,906.98	6,903.03	25.85	188.30	-27.27	1,281.38	-14,042.52	13,655.38	13,442.19	213.19	64.053		
7,150.00	6,954.79	6,927.77	6,923.80	26.12	188.99	-32.45	1,281.23	-14,042.52	13,609.65	13,395.70	213.95	63.611		
7,200.00	6,968.99	6,944.14	6,940.17	26.40	189.54	-39.83	1,281.06	-14,042.52	13,562.69	13,348.13	214.56	63.213		
7,250.00	6,979.40	6,956.03	6,952.05	26.69	189.94	-50.64	1,280.92	-14,042.52	13,514.78	13,299.78	215.00	62.859		
7,300.00	6,985.94	6,963.39	6,959.41	27.00	190.18	-66.26	1,280.82	-14,042.52	13,466.24	13,250.95	215.29	62.549		
7,350.00	6,988.56	6,966.21	6,962.22	27.31	190.28	-86.59	1,280.78	-14,042.52	13,417.35	13,201.93	215.42	62.284		
7,358.93	6,988.62	6,966.23	6,962.25	27.36	190.28	-90.46	1,280.78	-14,042.52	13,408.61	13,193.18	215.43	62.241		
7,400.00	6,988.59	6,966.01	6,962.03	27.63	190.27	-90.45	1,280.78	-14,042.52	13,368.40	13,152.95	215.45	62.048		
7,500.00	6,988.52	6,965.49	6,961.50	28.33	190.25	-90.44	1,280.79	-14,042.52	13,270.51	13,055.00	215.51	61.578		
7,600.00	6,988.45	6,964.97	6,960.98	29.10	190.24	-90.43	1,280.80	-14,042.52	13,172.65	12,957.08	215.57	61.106		
7,658.93	6,988.41	6,964.66	6,960.68	29.59	190.23	-90.43	1,280.80	-14,042.52	13,115.00	12,899.40	215.61	60.828		
7,700.00	6,988.38	6,964.46	6,960.47	29.94	190.22	-90.45	1,280.80	-14,042.52	13,074.77	12,859.13	215.64	60.633		
7,800.00	6,988.31	6,963.99	6,960.01	30.84	190.20	-90.55	1,280.81	-14,042.52	12,976.37	12,760.66	215.70	60.158		
7,900.00	6,988.24	6,963.59	6,959.61	31.79	190.19	-90.69	1,280.81	-14,042.52	12,877.42	12,661.66	215.76	59.683		
8,000.00	6,988.16	6,963.24	6,959.26	32.78	190.18	-90.93	1,280.82	-14,042.52	12,778.04	12,562.23	215.81	59.209		
8,100.00	6,988.09	6,962.95	6,958.96	33.82	190.17	-91.47	1,280.82	-14,042.52	12,678.34	12,462.49	215.85	58.737		
8,200.00	6,988.01	6,962.71	6,958.73	34.88	190.16	-93.50	1,280.83	-14,042.52	12,578.44	12,362.56	215.88	58.267		
8,300.00	6,987.94	6,962.52	6,958.54	35.98	190.15	-99.04	1,280.83	-14,042.52	12,478.44	12,262.55	215.89	57.800		
8,400.00	6,987.86	6,962.39	6,958.41	37.11	190.15	-91.98	1,280.83	-14,042.52	12,378.49	12,162.60	215.89	57.337		
8,416.35	6,987.85	6,962.38	6,958.40	37.29	190.15	-91.76	1,280.83	-14,042.52	12,362.15	12,146.26	215.89	57.262		
8,500.00	6,987.78	6,962.30	6,958.32	38.25	190.15	-91.75	1,280.83	-14,042.52	12,278.61	12,062.73	215.88	56.877		
8,600.00	6,987.70	6,962.21	6,958.22	39.43	190.14	-91.74	1,280.83	-14,042.52	12,178.74	11,962.87	215.87	56.416		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 148 COM - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		248-A027Ua_INC-ONLY				Rule Assigned:							Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,700.00	6,987.62	6,962.11	6,958.13	40.64	190.14	91.74	1,280.84	-14,042.52	12,078.88	11,863.01	215.87	55.955		
8,800.00	6,987.55	6,962.02	6,958.04	41.88	190.14	91.73	1,280.84	-14,042.52	11,979.01	11,763.15	215.86	55.494		
8,900.00	6,987.47	6,961.93	6,957.94	43.14	190.13	91.72	1,280.84	-14,042.52	11,879.15	11,663.30	215.85	55.033		
9,000.00	6,987.39	6,961.83	6,957.85	44.42	190.13	91.71	1,280.84	-14,042.52	11,779.29	11,563.44	215.85	54.572		
9,100.00	6,987.31	6,961.74	6,957.76	45.72	190.13	91.70	1,280.84	-14,042.52	11,679.43	11,463.59	215.85	54.110		
9,200.00	6,987.23	6,961.64	6,957.66	47.04	190.12	91.69	1,280.84	-14,042.52	11,579.58	11,363.73	215.84	53.648		
9,300.00	6,987.15	6,961.55	6,957.57	48.38	190.12	91.68	1,280.84	-14,042.52	11,479.72	11,263.88	215.84	53.186		
9,400.00	6,987.08	6,961.46	6,957.48	49.73	190.12	91.68	1,280.85	-14,042.52	11,379.87	11,164.03	215.84	52.724		
9,500.00	6,987.00	6,961.36	6,957.38	51.10	190.11	91.67	1,280.85	-14,042.52	11,280.03	11,064.19	215.84	52.261		
9,600.00	6,986.92	6,961.27	6,957.29	52.48	190.11	91.66	1,280.85	-14,042.52	11,180.18	10,964.34	215.84	51.798		
9,700.00	6,986.84	6,961.18	6,957.20	53.87	190.11	91.65	1,280.85	-14,042.52	11,080.34	10,864.50	215.84	51.335		
9,800.00	6,986.76	6,961.08	6,957.10	55.28	190.11	91.64	1,280.85	-14,042.52	10,980.50	10,764.65	215.85	50.872		
9,900.00	6,986.68	6,960.99	6,957.01	56.69	190.10	91.63	1,280.85	-14,042.52	10,880.66	10,664.81	215.85	50.408		
10,000.00	6,986.61	6,960.90	6,956.92	58.12	190.10	91.62	1,280.85	-14,042.52	10,780.83	10,564.98	215.86	49.944		
10,100.00	6,986.53	6,960.80	6,956.82	59.55	190.10	91.62	1,280.85	-14,042.52	10,681.00	10,465.14	215.86	49.481		
10,200.00	6,986.45	6,960.71	6,956.73	61.00	190.09	91.61	1,280.86	-14,042.52	10,581.17	10,365.30	215.87	49.016		
10,300.00	6,986.37	6,960.62	6,956.64	62.45	190.09	91.60	1,280.86	-14,042.52	10,481.35	10,265.47	215.88	48.552		
10,400.00	6,986.29	6,960.52	6,956.54	63.90	190.09	91.59	1,280.86	-14,042.52	10,381.53	10,165.64	215.89	48.088		
10,500.00	6,986.21	6,960.43	6,956.45	65.37	190.08	91.58	1,280.86	-14,042.52	10,281.71	10,065.82	215.90	47.623		
10,600.00	6,986.14	6,960.34	6,956.36	66.84	190.08	91.57	1,280.86	-14,042.52	10,181.90	9,965.99	215.91	47.158		
10,700.00	6,986.06	6,960.24	6,956.26	68.32	190.08	91.57	1,280.86	-14,042.52	10,082.09	9,866.17	215.92	46.693		
10,800.00	6,985.98	6,960.15	6,956.17	69.80	190.07	91.56	1,280.86	-14,042.52	9,982.29	9,766.35	215.94	46.228		
10,900.00	6,985.90	6,960.06	6,956.08	71.29	190.07	91.55	1,280.86	-14,042.52	9,882.49	9,666.53	215.95	45.762		
11,000.00	6,985.82	6,959.96	6,955.98	72.78	190.07	91.54	1,280.87	-14,042.52	9,782.69	9,566.72	215.97	45.296		
11,100.00	6,985.75	6,959.87	6,955.89	74.28	190.07	91.53	1,280.87	-14,042.52	9,682.89	9,466.91	215.99	44.830		
11,200.00	6,985.67	6,959.78	6,955.80	75.78	190.06	91.52	1,280.87	-14,042.52	9,583.11	9,367.10	216.01	44.364		
11,300.00	6,985.59	6,959.68	6,955.70	77.29	190.06	91.51	1,280.87	-14,042.52	9,483.32	9,267.29	216.03	43.898		
11,400.00	6,985.51	6,959.59	6,955.61	78.80	190.06	91.51	1,280.87	-14,042.52	9,383.54	9,167.49	216.05	43.432		
11,500.00	6,985.43	6,959.50	6,955.52	80.31	190.05	91.50	1,280.87	-14,042.52	9,283.77	9,067.69	216.08	42.965		
11,600.00	6,985.35	6,959.40	6,955.42	81.83	190.05	91.49	1,280.87	-14,042.52	9,184.00	8,967.89	216.10	42.499		
11,700.00	6,985.28	6,959.31	6,955.33	83.35	190.05	91.48	1,280.87	-14,042.52	9,084.23	8,868.10	216.13	42.032		
11,800.00	6,985.20	6,959.22	6,955.24	84.87	190.04	91.47	1,280.88	-14,042.52	8,984.47	8,768.31	216.16	41.565		
11,900.00	6,985.12	6,959.12	6,955.14	86.40	190.04	91.46	1,280.88	-14,042.52	8,884.72	8,668.53	216.19	41.097		
12,000.00	6,985.04	6,959.03	6,955.05	87.93	190.04	91.45	1,280.88	-14,042.52	8,784.97	8,568.75	216.22	40.630		
12,100.00	6,984.96	6,958.94	6,954.96	89.46	190.03	91.45	1,280.88	-14,042.52	8,685.22	8,468.97	216.25	40.162		
12,200.00	6,984.88	6,958.85	6,954.86	90.99	190.03	91.44	1,280.88	-14,042.52	8,585.49	8,369.20	216.29	39.694		
12,300.00	6,984.81	6,958.75	6,954.77	92.53	190.03	91.43	1,280.88	-14,042.52	8,485.75	8,269.43	216.33	39.226		
12,400.00	6,984.73	6,958.66	6,954.68	94.07	190.02	91.42	1,280.88	-14,042.52	8,386.03	8,169.66	216.37	38.758		
12,500.00	6,984.65	6,958.57	6,954.59	95.61	190.02	91.41	1,280.88	-14,042.52	8,286.31	8,069.90	216.41	38.290		
12,600.00	6,984.57	6,958.47	6,954.49	97.15	190.02	91.40	1,280.89	-14,042.52	8,186.60	7,970.15	216.45	37.822		
12,700.00	6,984.49	6,958.38	6,954.40	98.70	190.02	91.39	1,280.89	-14,042.52	8,086.90	7,870.40	216.50	37.353		
12,800.00	6,984.41	6,958.29	6,954.31	100.25	190.01	91.39	1,280.89	-14,042.52	7,987.20	7,770.65	216.55	36.884		
12,900.00	6,984.34	6,958.19	6,954.21	101.80	190.01	91.38	1,280.89	-14,042.52	7,887.51	7,670.91	216.60	36.415		
13,000.00	6,984.26	6,958.10	6,954.12	103.35	190.01	91.37	1,280.89	-14,042.52	7,787.83	7,571.17	216.65	35.946		
13,100.00	6,984.18	6,958.01	6,954.03	104.90	190.00	91.36	1,280.89	-14,042.52	7,688.16	7,471.44	216.71	35.476		
13,200.00	6,984.10	6,957.91	6,953.93	106.45	190.00	91.35	1,280.89	-14,042.52	7,588.49	7,371.72	216.77	35.007		
13,300.00	6,984.02	6,957.82	6,953.84	108.01	190.00	91.34	1,280.89	-14,042.52	7,488.84	7,272.00	216.83	34.537		
13,400.00	6,983.94	6,957.73	6,953.75	109.56	189.99	91.33	1,280.90	-14,042.52	7,389.19	7,172.29	216.90	34.067		
13,500.00	6,983.87	6,957.64	6,953.66	111.12	189.99	91.33	1,280.90	-14,042.52	7,289.55	7,072.58	216.97	33.597		
13,600.00	6,983.79	6,957.54	6,953.56	112.68	189.99	91.32	1,280.90	-14,042.52	7,189.93	6,972.88	217.04	33.127		
13,700.00	6,983.71	6,957.45	6,953.47	114.24	189.98	91.31	1,280.90	-14,042.52	7,090.31	6,873.19	217.12	32.656		
13,800.00	6,983.63	6,957.36	6,953.38	115.80	189.98	91.30	1,280.90	-14,042.52	6,990.71	6,773.51	217.20	32.185		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 148 COM - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		248-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		
13,900.00	6,983.55	6,957.26	6,953.28	117.37	189.98	91.29	1,280.90	-14,042.52	6,891.11	6,673.83	217.29	31.714	
14,000.00	6,983.47	6,957.17	6,953.19	118.93	189.97	91.28	1,280.90	-14,042.52	6,791.53	6,574.16	217.38	31.243	
14,100.00	6,983.40	6,957.08	6,953.10	120.50	189.97	91.28	1,280.90	-14,042.52	6,691.96	6,474.49	217.47	30.772	
14,200.00	6,983.32	6,956.99	6,953.01	122.06	189.97	91.27	1,280.91	-14,042.52	6,592.41	6,374.84	217.57	30.300	
14,300.00	6,983.24	6,956.89	6,952.91	123.63	189.97	91.26	1,280.91	-14,042.52	6,492.87	6,275.19	217.68	29.828	
14,400.00	6,983.16	6,956.80	6,952.82	125.20	189.96	91.25	1,280.91	-14,042.52	6,393.34	6,175.55	217.79	29.356	
14,500.00	6,983.08	6,956.71	6,952.73	126.77	189.96	91.24	1,280.91	-14,042.52	6,293.83	6,075.92	217.91	28.883	
14,600.00	6,983.00	6,956.61	6,952.63	128.33	189.96	91.23	1,280.91	-14,042.52	6,194.33	5,976.30	218.03	28.410	
14,700.00	6,982.93	6,956.52	6,952.54	129.91	189.95	91.22	1,280.91	-14,042.52	6,094.85	5,876.69	218.16	27.937	
14,800.00	6,982.85	6,956.43	6,952.45	131.48	189.95	91.22	1,280.91	-14,042.52	5,995.38	5,777.09	218.30	27.464	
14,900.00	6,982.77	6,956.34	6,952.36	133.05	189.95	91.21	1,280.91	-14,042.52	5,895.94	5,677.49	218.45	26.990	
15,000.00	6,982.69	6,956.24	6,952.26	134.62	189.94	91.20	1,280.92	-14,042.52	5,796.51	5,577.91	218.60	26.516	
15,100.00	6,982.61	6,956.15	6,952.17	136.20	189.94	91.19	1,280.92	-14,042.52	5,697.11	5,478.34	218.77	26.042	
15,200.00	6,982.54	6,956.06	6,952.08	137.77	189.94	91.18	1,280.92	-14,042.52	5,597.72	5,378.78	218.94	25.567	
15,300.00	6,982.46	6,955.96	6,951.99	139.35	189.93	91.17	1,280.92	-14,042.52	5,498.36	5,279.24	219.12	25.093	
15,400.00	6,982.38	6,955.87	6,951.89	140.92	189.93	91.16	1,280.92	-14,042.52	5,399.02	5,179.70	219.32	24.617	
15,500.00	6,982.30	6,955.78	6,951.80	142.50	189.93	91.16	1,280.92	-14,042.52	5,299.71	5,080.18	219.53	24.141	
15,600.00	6,982.22	6,955.69	6,951.71	144.07	189.93	91.15	1,280.92	-14,042.52	5,200.42	4,980.67	219.75	23.665	
15,700.00	6,982.14	6,955.59	6,951.61	145.65	189.92	91.14	1,280.92	-14,042.52	5,101.16	4,881.18	219.98	23.189	
15,800.00	6,982.07	6,955.50	6,951.52	147.23	189.92	91.13	1,280.93	-14,042.52	5,001.93	4,781.70	220.23	22.712	
15,900.00	6,981.99	6,955.41	6,951.43	148.81	189.92	91.12	1,280.93	-14,042.52	4,902.73	4,682.23	220.50	22.235	
16,000.00	6,981.91	6,955.32	6,951.34	150.39	189.91	91.11	1,280.93	-14,042.52	4,803.56	4,582.78	220.78	21.757	
16,100.00	6,981.83	6,955.22	6,951.24	151.97	189.91	91.11	1,280.93	-14,042.52	4,704.43	4,483.35	221.09	21.279	
16,200.00	6,981.75	6,955.13	6,951.15	153.55	189.91	91.10	1,280.93	-14,042.52	4,605.34	4,383.93	221.41	20.800	
16,300.00	6,981.67	6,955.04	6,951.06	155.13	189.90	91.09	1,280.93	-14,042.52	4,506.29	4,284.53	221.76	20.321	
16,400.00	6,981.60	6,954.94	6,950.97	156.71	189.90	91.08	1,280.93	-14,042.52	4,407.27	4,185.15	222.13	19.841	
16,500.00	6,981.52	6,954.85	6,950.87	158.29	189.90	91.07	1,280.93	-14,042.52	4,308.31	4,085.79	222.52	19.361	
16,600.00	6,981.44	6,954.76	6,950.78	159.88	189.89	91.06	1,280.94	-14,042.52	4,209.39	3,986.45	222.95	18.881	
16,700.00	6,981.36	6,954.67	6,950.69	161.46	189.89	91.05	1,280.94	-14,042.52	4,110.53	3,887.13	223.40	18.400	
16,800.00	6,981.28	6,954.57	6,950.60	163.04	189.89	91.05	1,280.94	-14,042.52	4,011.72	3,787.83	223.89	17.918	
16,900.00	6,981.20	6,954.48	6,950.50	164.62	189.89	91.04	1,280.94	-14,042.52	3,912.98	3,688.56	224.42	17.436	
17,000.00	6,981.13	6,954.39	6,950.41	166.21	189.88	91.03	1,280.94	-14,042.52	3,814.30	3,589.31	224.99	16.953	
17,100.00	6,981.05	6,954.30	6,950.32	167.79	189.88	91.02	1,280.94	-14,042.52	3,715.69	3,490.09	225.60	16.470	
17,200.00	6,980.97	6,954.20	6,950.23	169.38	189.88	91.01	1,280.94	-14,042.52	3,617.15	3,390.90	226.25	15.987	
17,300.00	6,980.89	6,954.11	6,950.13	170.96	189.87	91.00	1,280.94	-14,042.52	3,518.70	3,291.74	226.96	15.503	
17,400.00	6,980.81	6,954.02	6,950.04	172.55	189.87	91.00	1,280.94	-14,042.52	3,420.34	3,192.61	227.73	15.019	
17,500.00	6,980.73	6,953.93	6,949.95	174.13	189.87	90.99	1,280.95	-14,042.52	3,322.07	3,093.51	228.56	14.535	
17,600.00	6,980.66	6,953.83	6,949.86	175.72	189.86	90.98	1,280.95	-14,042.52	3,223.92	2,994.45	229.46	14.050	
17,700.00	6,980.58	6,953.74	6,949.76	177.31	189.86	90.97	1,280.95	-14,042.52	3,125.88	2,895.44	230.44	13.565	
17,800.00	6,980.50	6,953.65	6,949.67	178.89	189.86	90.96	1,280.95	-14,042.52	3,027.96	2,796.47	231.50	13.080	
17,900.00	6,980.42	6,953.56	6,949.58	180.48	189.85	90.95	1,280.95	-14,042.52	2,930.19	2,697.54	232.65	12.595	
18,000.00	6,980.34	6,953.46	6,949.49	182.07	189.85	90.94	1,280.95	-14,042.52	2,832.58	2,598.67	233.91	12.110	
18,100.00	6,980.26	6,953.37	6,949.39	183.66	189.85	90.94	1,280.95	-14,042.52	2,735.13	2,499.86	235.28	11.625	
18,200.00	6,980.19	6,953.28	6,949.30	185.24	189.85	90.93	1,280.95	-14,042.52	2,637.88	2,401.11	236.78	11.141	
18,300.00	6,980.11	6,953.19	6,949.21	186.83	189.84	90.92	1,280.96	-14,042.52	2,540.84	2,302.43	238.41	10.657	
18,400.00	6,980.03	6,953.09	6,949.12	188.42	189.84	90.91	1,280.96	-14,042.52	2,444.04	2,203.83	240.21	10.175	
18,500.00	6,979.95	6,953.00	6,949.02	190.01	189.84	90.90	1,280.96	-14,042.52	2,347.51	2,105.33	242.18	9.693	
18,600.00	6,979.87	6,952.91	6,948.93	191.60	189.83	90.89	1,280.96	-14,042.52	2,251.28	2,006.93	244.36	9.213	
18,700.00	6,979.79	6,952.82	6,948.84	193.19	189.83	90.89	1,280.96	-14,042.52	2,155.40	1,908.64	246.76	8.735	
18,800.00	6,979.72	6,952.73	6,948.75	194.78	189.83	90.88	1,280.96	-14,042.52	2,059.91	1,810.50	249.41	8.259	
18,900.00	6,979.64	6,952.63	6,948.66	196.37	189.82	90.87	1,280.96	-14,042.52	1,964.86	1,712.51	252.35	7.786	
19,000.00	6,979.56	6,952.54	6,948.56	197.96	189.82	90.86	1,280.96	-14,042.52	1,870.33	1,614.72	255.61	7.317	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 148 COM - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 248-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
19,100.00	6,979.48	6,952.45	6,948.47	199.55	189.82	90.85	1,280.96	-14,042.52	1,776.40	1,517.14	259.26	6.852	
19,200.00	6,979.40	6,952.36	6,948.38	201.14	189.81	90.84	1,280.97	-14,042.52	1,683.17	1,419.84	263.33	6.392	
19,300.00	6,979.33	6,952.26	6,948.29	202.73	189.81	90.83	1,280.97	-14,042.52	1,590.76	1,322.87	267.89	5.938	
19,400.00	6,979.25	6,952.17	6,948.19	204.32	189.81	90.83	1,280.97	-14,042.52	1,499.33	1,226.30	273.03	5.491	
19,500.00	6,979.17	6,952.08	6,948.10	205.91	189.81	90.82	1,280.97	-14,042.52	1,409.06	1,130.24	278.82	5.054	
19,600.00	6,979.09	6,951.99	6,948.01	207.50	189.80	90.81	1,280.97	-14,042.52	1,320.20	1,034.82	285.38	4.626	
19,700.00	6,979.01	6,951.90	6,947.92	209.09	189.80	90.80	1,280.97	-14,042.52	1,233.04	940.23	292.80	4.211	
19,800.00	6,978.93	6,951.80	6,947.83	210.69	189.80	90.79	1,280.97	-14,042.52	1,147.98	846.74	301.24	3.811	
19,900.00	6,978.86	6,951.71	6,947.73	212.28	189.79	90.78	1,280.97	-14,042.52	1,065.51	754.70	310.81	3.428	
20,000.00	6,978.78	6,951.62	6,947.64	213.87	189.79	90.78	1,280.97	-14,042.52	986.29	664.65	321.64	3.066	
20,100.00	6,978.70	6,951.53	6,947.55	215.46	189.79	90.77	1,280.98	-14,042.52	911.17	577.36	333.81	2.730	
20,200.00	6,978.62	6,951.43	6,947.46	217.05	189.78	90.76	1,280.98	-14,042.52	841.25	493.96	347.30	2.422	
20,300.00	6,978.54	6,951.34	6,947.37	218.65	189.78	90.75	1,280.98	-14,042.52	777.92	416.06	361.86	2.150	
20,400.00	6,978.46	6,951.25	6,947.27	220.24	189.78	90.74	1,280.98	-14,042.52	722.93	345.99	376.94	1.918	
20,500.00	6,978.39	6,951.16	6,947.18	221.83	189.77	90.73	1,280.98	-14,042.52	678.30	286.80	391.50	1.733	
20,600.00	6,978.31	6,951.07	6,947.09	223.43	189.77	90.72	1,280.98	-14,042.52	646.19	242.18	404.01	1.599	
20,700.00	6,978.23	6,950.97	6,947.00	225.02	189.77	90.72	1,280.98	-14,042.52	628.51	215.79	412.72	1.523	
20,762.68	6,978.18	6,950.92	6,946.94	226.02	189.77	90.71	1,280.98	-14,042.52	625.37	209.79	415.59	1.505	CC, ES, SF
20,800.00	6,978.15	6,950.88	6,946.90	226.61	189.77	90.71	1,280.98	-14,042.52	626.49	210.23	416.25	1.505	
20,900.00	6,978.07	6,950.79	6,946.81	228.21	189.76	90.70	1,280.99	-14,042.52	640.27	226.02	414.25	1.546	
21,000.00	6,977.99	6,950.70	6,946.72	229.80	189.76	90.69	1,280.99	-14,042.52	668.89	261.38	407.51	1.641	
21,100.00	6,977.92	6,950.61	6,946.63	231.39	189.76	90.68	1,280.99	-14,042.52	710.55	313.00	397.55	1.787	
21,200.00	6,977.84	6,950.51	6,946.54	232.99	189.75	90.67	1,280.99	-14,042.52	763.11	377.18	385.94	1.977	
21,300.00	6,977.76	6,950.42	6,946.44	234.58	189.75	90.67	1,280.99	-14,042.52	824.50	450.59	373.92	2.205	
21,400.00	6,977.68	6,950.33	6,946.35	236.18	189.75	90.66	1,280.99	-14,042.52	892.90	530.62	362.28	2.465	
21,500.00	6,977.60	6,950.24	6,946.26	237.77	189.74	90.65	1,280.99	-14,042.52	966.81	615.38	351.43	2.751	
21,600.00	6,977.52	6,950.15	6,946.17	239.37	189.74	90.64	1,280.99	-14,042.52	1,045.08	703.52	341.56	3.060	
21,700.00	6,977.45	6,950.05	6,946.08	240.96	189.74	90.63	1,280.99	-14,042.52	1,126.79	794.11	332.68	3.387	
21,800.00	6,977.37	6,949.96	6,945.99	242.56	189.73	90.62	1,281.00	-14,042.52	1,211.25	886.50	324.75	3.730	
21,900.00	6,977.29	6,949.87	6,945.89	244.15	189.73	90.62	1,281.00	-14,042.52	1,297.92	980.24	317.68	4.086	
22,000.00	6,977.21	6,949.78	6,945.80	245.75	189.73	90.61	1,281.00	-14,042.52	1,386.38	1,075.00	311.38	4.452	
22,100.00	6,977.13	6,949.69	6,945.71	247.34	189.73	90.60	1,281.00	-14,042.52	1,476.32	1,170.56	305.76	4.828	
22,200.00	6,977.05	6,949.59	6,945.62	248.94	189.72	90.59	1,281.00	-14,042.52	1,567.47	1,266.74	300.73	5.212	
22,269.73	6,977.00	6,949.53	6,945.55	250.05	189.72	90.58	1,281.00	-14,042.52	1,631.65	1,334.11	297.54	5.484	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #672H - OH - Prelim 5													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	29.08	69.90	38.88	79.99				
100.00	100.00	100.00	100.00	0.25	0.25	29.08	69.90	38.88	79.99	79.48	0.50	159.379	
200.00	200.00	200.00	200.00	0.61	0.61	29.08	69.90	38.88	79.99	78.77	1.22	65.627	
300.00	300.00	300.00	300.00	0.97	0.97	29.08	69.90	38.88	79.99	78.05	1.94	41.321	
400.00	400.00	400.00	400.00	1.33	1.33	29.08	69.90	38.88	79.99	77.33	2.65	30.153	
500.00	500.00	500.00	500.00	1.68	1.68	29.08	69.90	38.88	79.99	76.62	3.37	23.737 CC, ES	
600.00	600.00	597.39	597.37	2.04	2.03	28.70	71.53	39.17	81.59	77.52	4.08	20.012	
700.00	700.00	694.56	694.41	2.40	2.39	27.65	76.41	40.03	86.44	81.65	4.78	18.076	
800.00	799.98	791.42	790.92	2.76	2.74	37.43	84.49	41.45	93.16	87.68	5.48	17.003	
849.89	849.82	839.66	838.86	2.94	2.91	37.24	89.71	42.37	96.69	90.87	5.82	16.605	
900.00	899.86	888.01	886.82	3.12	3.09	37.12	95.74	43.43	100.70	94.53	6.17	16.325	
1,000.00	999.73	984.05	981.75	3.48	3.44	36.55	110.08	45.96	111.12	104.26	6.86	16.207	
1,100.00	1,099.59	1,079.64	1,075.70	3.84	3.81	35.57	127.47	48.75	124.64	117.10	7.54	16.531	
1,200.00	1,199.45	1,174.36	1,168.18	4.20	4.19	34.16	147.77	51.27	141.10	132.88	8.22	17.172	
1,300.00	1,299.32	1,267.97	1,258.87	4.56	4.58	32.55	170.83	53.51	160.52	151.64	8.88	18.076	
1,400.00	1,399.18	1,360.29	1,347.54	4.92	4.99	30.88	196.45	55.47	182.92	173.39	9.54	19.181	
1,500.00	1,499.04	1,451.16	1,433.98	5.28	5.40	29.25	224.43	57.16	208.31	198.13	10.18	20.463	
1,600.00	1,598.91	1,543.79	1,521.26	5.64	5.84	27.69	255.40	58.67	236.33	225.47	10.85	21.771	
1,700.00	1,698.77	1,639.48	1,611.30	6.00	6.32	26.39	287.74	60.19	264.85	253.27	11.58	22.872	
1,800.00	1,798.63	1,735.17	1,701.35	6.36	6.80	25.35	320.09	61.72	293.47	281.16	12.31	23.842	
1,900.00	1,898.49	1,830.86	1,791.40	6.72	7.28	24.49	352.44	63.24	322.16	309.12	13.04	24.703	
2,000.00	1,998.36	1,926.56	1,881.44	7.09	7.78	23.77	384.79	64.77	350.91	337.13	13.78	25.469	
2,100.00	2,098.22	2,022.25	1,971.49	7.45	8.27	23.15	417.13	66.29	379.70	365.19	14.52	26.157	
2,200.00	2,198.08	2,117.94	2,061.54	7.81	8.78	22.63	449.48	67.82	408.53	393.27	15.26	26.776	
2,300.00	2,297.95	2,213.63	2,151.58	8.17	9.28	22.17	481.83	69.34	437.38	421.38	16.00	27.336	
2,400.00	2,397.81	2,309.33	2,241.63	8.53	9.79	21.77	514.17	70.87	466.26	449.52	16.75	27.844	
2,500.00	2,497.67	2,405.02	2,331.68	8.90	10.30	21.42	546.52	72.39	495.16	477.66	17.49	28.309	
2,600.00	2,597.54	2,500.71	2,421.72	9.26	10.81	21.10	578.87	73.92	524.07	505.83	18.24	28.734	
2,700.00	2,697.40	2,596.40	2,511.77	9.62	11.32	20.82	611.22	75.44	552.99	534.00	18.99	29.124	
2,800.00	2,797.26	2,692.10	2,601.81	9.98	11.84	20.57	643.56	76.97	581.92	562.19	19.74	29.484	
2,900.00	2,897.13	2,787.79	2,691.86	10.35	12.36	20.34	675.91	78.50	610.87	590.38	20.49	29.817	
3,000.00	2,996.99	2,883.48	2,781.91	10.71	12.88	20.13	708.26	80.02	639.82	618.58	21.24	30.125	
3,100.00	3,096.85	2,979.17	2,871.95	11.07	13.39	19.94	740.61	81.55	668.78	646.79	21.99	30.412	
3,200.00	3,196.72	3,074.86	2,962.00	11.43	13.91	19.77	772.95	83.07	697.74	675.00	22.74	30.679	
3,300.00	3,296.58	3,170.56	3,052.05	11.80	14.43	19.61	805.30	84.60	726.71	703.22	23.50	30.929	
3,400.00	3,396.44	3,266.25	3,142.09	12.16	14.96	19.46	837.65	86.12	755.69	731.44	24.25	31.162	
3,500.00	3,496.31	3,361.94	3,232.14	12.52	15.48	19.32	869.99	87.65	784.67	759.67	25.00	31.381	
3,600.00	3,596.17	3,457.63	3,322.19	12.88	16.00	19.19	902.34	89.17	813.65	787.90	25.76	31.587	
3,700.00	3,696.03	3,553.33	3,412.23	13.25	16.52	19.07	934.69	90.70	842.64	816.13	26.51	31.781	
3,800.00	3,795.89	3,649.02	3,502.28	13.61	17.05	18.96	967.04	92.22	871.63	844.36	27.27	31.963	
3,900.00	3,895.76	3,744.71	3,592.33	13.97	17.57	18.86	999.38	93.75	900.62	872.60	28.03	32.136	
4,000.00	3,995.62	3,840.40	3,682.37	14.34	18.10	18.76	1,031.73	95.28	929.62	900.84	28.78	32.299	
4,100.00	4,095.48	3,936.10	3,772.42	14.70	18.62	18.67	1,064.08	96.80	958.62	929.08	29.54	32.453	
4,200.00	4,195.35	4,031.79	3,862.46	15.06	19.15	18.58	1,096.43	98.33	987.62	957.32	30.30	32.600	
4,300.00	4,295.21	4,127.48	3,952.51	15.42	19.67	18.50	1,128.77	99.85	1,016.62	985.57	31.05	32.739	
4,400.00	4,395.07	4,223.17	4,042.56	15.79	20.20	18.42	1,161.12	101.38	1,045.62	1,013.81	31.81	32.871	
4,500.00	4,494.94	4,318.87	4,132.60	16.15	20.73	18.35	1,193.47	102.90	1,074.63	1,042.06	32.57	32.997	
4,600.00	4,594.80	4,414.56	4,222.65	16.51	21.25	18.28	1,225.81	104.43	1,103.64	1,070.31	33.33	33.117	
4,700.00	4,694.66	4,510.25	4,312.70	16.87	21.78	18.22	1,258.16	105.95	1,132.65	1,098.56	34.08	33.231	
4,800.00	4,794.53	4,605.94	4,402.74	17.24	22.31	18.16	1,290.51	107.48	1,161.66	1,126.81	34.84	33.341	
4,900.00	4,894.39	4,701.63	4,492.79	17.60	22.83	18.10	1,322.86	109.00	1,190.67	1,155.07	35.60	33.445	
5,000.00	4,994.25	4,797.33	4,582.84	17.96	23.36	18.04	1,355.20	110.53	1,219.68	1,183.32	36.36	33.545	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #672H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,100.00	5,094.12	4,893.02	4,672.88	18.33	23.89	17.99	1,387.55	112.05	1,248.69	1,211.57	37.12	33.640	
5,200.00	5,193.98	4,988.71	4,762.93	18.69	24.42	17.94	1,419.90	113.58	1,277.70	1,239.83	37.88	33.732	
5,300.00	5,293.84	5,084.40	4,852.98	19.05	24.94	17.89	1,452.25	115.11	1,306.72	1,268.08	38.64	33.820	
5,336.91	5,330.71	5,119.73	4,886.22	19.19	25.14	17.87	1,464.19	115.67	1,317.43	1,278.51	38.92	33.851	
5,400.00	5,393.71	5,180.05	4,942.98	19.41	25.47	17.87	1,484.58	116.63	1,335.89	1,296.50	39.40	33.909	
5,500.00	5,493.62	5,275.46	5,032.76	19.77	26.00	17.86	1,516.83	118.15	1,365.81	1,325.65	40.15	34.014	
5,600.00	5,593.57	5,370.62	5,122.30	20.13	26.52	17.84	1,548.99	119.67	1,396.51	1,355.60	40.91	34.137	
5,700.00	5,693.53	5,465.51	5,211.59	20.49	27.05	17.82	1,581.07	121.18	1,428.01	1,386.35	41.66	34.276	
5,800.00	5,793.52	5,560.13	5,300.63	20.85	27.57	17.78	1,613.06	122.69	1,460.30	1,417.89	42.41	34.431	
5,900.00	5,893.52	5,654.48	5,389.41	21.20	28.09	17.75	1,644.95	124.19	1,493.38	1,450.22	43.16	34.601	
5,936.48	5,930.00	5,697.03	5,429.48	21.33	28.32	6.97	1,659.25	124.87	1,505.58	1,462.08	43.50	34.611	
6,000.00	5,993.52	5,778.59	5,506.58	21.56	28.76	6.89	1,685.86	126.12	1,526.27	1,482.13	44.14	34.574	
6,100.00	6,093.52	5,908.60	5,630.22	21.91	29.45	6.78	1,725.99	128.01	1,557.10	1,511.95	45.15	34.488	
6,200.00	6,193.52	6,040.48	5,756.53	22.27	30.12	6.68	1,763.82	129.80	1,585.76	1,539.63	46.14	34.371	
6,300.00	6,293.52	6,174.12	5,885.40	22.62	30.77	6.59	1,799.19	131.47	1,612.20	1,565.10	47.10	34.226	
6,358.48	6,352.00	6,253.05	5,961.88	22.83	31.14	6.54	1,818.67	132.39	1,626.62	1,578.96	47.66	34.129	
6,400.00	6,393.49	6,309.47	6,016.71	22.97	31.40	80.30	1,831.95	133.01	1,636.17	1,588.12	48.05	34.050	
6,450.00	6,443.20	6,377.66	6,083.16	23.15	31.70	79.58	1,847.27	133.73	1,646.55	1,598.04	48.52	33.938	
6,500.00	6,492.36	6,445.65	6,149.58	23.33	32.00	79.16	1,861.76	134.42	1,655.69	1,606.71	48.98	33.804	
6,550.00	6,540.64	6,512.96	6,215.50	23.51	32.29	79.03	1,875.33	135.06	1,663.60	1,614.16	49.44	33.651	
6,600.00	6,587.77	6,579.09	6,280.42	23.69	32.57	79.15	1,887.91	135.65	1,670.34	1,620.45	49.89	33.481	
6,650.00	6,633.44	6,643.56	6,343.85	23.88	32.83	79.52	1,899.45	136.19	1,676.01	1,625.67	50.33	33.298	
6,700.00	6,677.37	6,705.91	6,405.31	24.07	33.08	80.08	1,909.93	136.69	1,680.73	1,629.96	50.77	33.103	
6,750.00	6,719.30	6,735.37	6,434.37	24.26	33.20	80.22	1,914.75	136.82	1,684.96	1,633.86	51.11	32.969	
6,800.00	6,758.97	6,750.00	6,448.76	24.46	33.26	80.09	1,917.39	136.60	1,689.54	1,638.14	51.40	32.873	
6,850.00	6,796.12	6,769.02	6,467.38	24.67	33.34	80.05	1,921.16	135.93	1,694.50	1,642.78	51.71	32.767	
6,900.00	6,830.54	6,785.14	6,483.10	24.88	33.41	79.93	1,924.65	135.04	1,699.87	1,647.84	52.03	32.671	
6,950.00	6,862.00	6,800.00	6,497.51	25.11	33.48	79.76	1,928.09	133.96	1,705.68	1,653.32	52.36	32.579	
7,000.00	6,890.33	6,815.72	6,512.68	25.34	33.55	79.59	1,931.99	132.54	1,711.92	1,659.21	52.71	32.478	
7,050.00	6,915.33	6,830.06	6,526.43	25.59	33.62	79.36	1,935.75	130.99	1,718.62	1,665.54	53.08	32.377	
7,100.00	6,936.86	6,850.00	6,545.40	25.85	33.72	79.27	1,941.33	128.45	1,725.81	1,672.30	53.51	32.253	
7,150.00	6,954.79	6,850.00	6,545.40	26.12	33.72	78.59	1,941.33	128.45	1,733.43	1,679.59	53.85	32.192	
7,200.00	6,968.99	6,868.43	6,562.77	26.40	33.81	78.40	1,946.83	125.70	1,741.50	1,687.18	54.32	32.058	
7,250.00	6,979.40	6,879.36	6,572.99	26.69	33.87	77.96	1,950.24	123.89	1,750.07	1,695.29	54.78	31.948	
7,300.00	6,985.94	6,900.00	6,592.13	27.00	33.97	77.79	1,957.01	120.11	1,759.15	1,703.83	55.31	31.802	
7,350.00	6,988.56	6,900.00	6,592.13	27.31	33.97	76.95	1,957.01	120.11	1,768.55	1,712.80	55.74	31.727	
7,358.93	6,988.62	6,900.00	6,592.13	27.36	33.97	76.79	1,957.01	120.11	1,770.28	1,714.46	55.82	31.713	
7,400.00	6,988.59	6,900.00	6,592.13	27.63	33.97	76.79	1,957.01	120.11	1,778.74	1,722.55	56.19	31.658	
7,500.00	6,988.52	6,923.12	6,613.26	28.33	34.10	77.52	1,965.07	115.30	1,802.84	1,745.58	57.27	31.480	
7,600.00	6,988.45	6,950.00	6,637.40	29.10	34.25	78.35	1,975.05	108.98	1,831.81	1,773.40	58.41	31.361	
7,658.93	6,988.41	6,957.66	6,644.19	29.59	34.29	78.59	1,978.01	107.03	1,850.99	1,791.95	59.04	31.350	
7,700.00	6,988.38	6,968.21	6,653.47	29.94	34.36	78.85	1,982.18	104.24	1,865.53	1,806.01	59.52	31.344	
7,800.00	6,988.31	7,000.00	6,680.94	30.84	34.54	79.64	1,995.32	95.13	1,905.99	1,845.29	60.70	31.398	
7,900.00	6,988.24	7,030.73	6,706.73	31.79	34.73	80.38	2,008.85	85.30	1,953.14	1,891.27	61.87	31.571	
8,000.00	6,988.16	7,071.04	6,739.30	32.78	34.98	81.36	2,027.74	70.95	2,006.30	1,943.25	63.06	31.817	
8,100.00	6,988.09	7,119.52	6,776.44	33.82	35.30	82.54	2,052.11	51.55	2,064.78	2,000.53	64.25	32.136	
8,200.00	6,988.01	7,178.29	6,818.17	34.88	35.70	83.93	2,083.86	25.07	2,127.80	2,062.30	65.51	32.481	
8,300.00	6,987.94	7,249.75	6,863.60	35.98	36.22	85.50	2,125.37	-11.20	2,194.60	2,127.74	66.85	32.827	
8,400.00	6,987.86	7,336.22	6,909.98	37.11	36.87	87.16	2,179.13	-60.43	2,264.33	2,196.01	68.33	33.140	
8,416.35	6,987.85	7,351.90	6,917.32	37.29	36.99	87.42	2,189.23	-69.92	2,275.96	2,207.38	68.59	33.184	
8,500.00	6,987.78	7,440.32	6,952.22	38.25	37.70	88.72	2,247.66	-126.24	2,335.34	2,265.34	70.01	33.359	
8,600.00	6,987.70	7,563.87	6,981.68	39.43	38.73	89.76	2,331.99	-211.32	2,405.29	2,333.32	71.97	33.421	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #672H - OH - Prelim 5													Offset Site Error: 0.00 usft	
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:				Offset Well Error: 0.00 usft			
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,700.00	6,987.62	7,680.35	6,988.39	40.64	39.74	89.98	2,411.81	-295.70	2,473.62	2,399.66	73.96	33.445		
8,800.00	6,987.55	9,671.14	6,986.92	41.88	57.98	89.99	3,122.30	-2,061.56	2,519.23	2,433.80	85.43	29.489		
8,900.00	6,987.47	9,771.14	6,986.85	43.14	58.90	89.99	3,123.14	-2,161.56	2,519.63	2,431.70	87.93	28.656		
9,000.00	6,987.39	9,871.14	6,986.78	44.42	59.84	89.99	3,123.97	-2,261.55	2,520.03	2,429.56	90.47	27.854		
9,100.00	6,987.31	9,971.14	6,986.70	45.72	60.82	89.99	3,124.81	-2,361.55	2,520.43	2,427.37	93.06	27.085		
9,200.00	6,987.23	10,071.14	6,986.63	47.04	61.82	89.99	3,125.65	-2,461.54	2,520.83	2,425.15	95.68	26.346		
9,300.00	6,987.15	10,171.14	6,986.56	48.38	62.84	89.99	3,126.49	-2,561.54	2,521.23	2,422.89	98.34	25.638		
9,400.00	6,987.08	10,271.14	6,986.48	49.73	63.89	89.99	3,127.33	-2,661.54	2,521.63	2,420.60	101.03	24.960		
9,500.00	6,987.00	10,371.14	6,986.41	51.10	64.97	89.99	3,128.17	-2,761.53	2,522.03	2,418.28	103.75	24.310		
9,600.00	6,986.92	10,471.14	6,986.33	52.48	66.06	89.99	3,129.01	-2,861.53	2,522.43	2,415.94	106.49	23.686		
9,700.00	6,986.84	10,571.14	6,986.26	53.87	67.18	89.99	3,129.85	-2,961.52	2,522.83	2,413.56	109.26	23.089		
9,800.00	6,986.76	10,671.13	6,986.19	55.28	68.31	89.99	3,130.69	-3,061.52	2,523.23	2,411.17	112.06	22.517		
9,900.00	6,986.68	10,771.13	6,986.11	56.69	69.47	89.99	3,131.53	-3,161.51	2,523.63	2,408.75	114.87	21.969		
10,000.00	6,986.61	10,871.13	6,986.04	58.12	70.64	89.99	3,132.36	-3,261.51	2,524.03	2,406.32	117.71	21.443		
10,100.00	6,986.53	10,971.13	6,985.97	59.55	71.83	89.99	3,133.20	-3,361.50	2,524.43	2,403.86	120.57	20.938		
10,200.00	6,986.45	11,071.13	6,985.89	61.00	73.03	89.99	3,134.04	-3,461.50	2,524.83	2,401.39	123.44	20.454		
10,300.00	6,986.37	11,171.13	6,985.82	62.45	74.25	89.99	3,134.88	-3,561.50	2,525.23	2,398.90	126.33	19.990		
10,400.00	6,986.29	11,271.13	6,985.75	63.90	75.49	89.99	3,135.72	-3,661.49	2,525.63	2,396.40	129.23	19.544		
10,500.00	6,986.21	11,371.13	6,985.67	65.37	76.74	89.99	3,136.56	-3,761.49	2,526.03	2,393.88	132.15	19.115		
10,600.00	6,986.14	11,471.13	6,985.60	66.84	78.00	89.99	3,137.40	-3,861.48	2,526.43	2,391.35	135.08	18.703		
10,700.00	6,986.06	11,571.13	6,985.53	68.32	79.28	89.99	3,138.24	-3,961.48	2,526.83	2,388.81	138.02	18.307		
10,800.00	6,985.98	11,671.13	6,985.45	69.80	80.57	89.99	3,139.08	-4,061.47	2,527.23	2,386.25	140.98	17.926		
10,900.00	6,985.90	11,771.13	6,985.38	71.29	81.87	89.99	3,139.92	-4,161.47	2,527.63	2,383.69	143.94	17.560		
11,000.00	6,985.82	11,871.12	6,985.30	72.78	83.18	89.99	3,140.75	-4,261.47	2,528.03	2,381.11	146.92	17.207		
11,100.00	6,985.75	11,971.12	6,985.23	74.28	84.50	89.99	3,141.59	-4,361.46	2,528.43	2,378.53	149.90	16.867		
11,200.00	6,985.67	12,071.12	6,985.16	75.78	85.83	89.99	3,142.43	-4,461.46	2,528.83	2,375.93	152.90	16.539		
11,300.00	6,985.59	12,171.12	6,985.08	77.29	87.17	89.99	3,143.27	-4,561.45	2,529.23	2,373.33	155.90	16.223		
11,400.00	6,985.51	12,271.12	6,985.01	78.80	88.52	89.99	3,144.11	-4,661.45	2,529.63	2,370.72	158.91	15.918		
11,500.00	6,985.43	12,371.12	6,984.94	80.31	89.87	89.99	3,144.95	-4,761.44	2,530.03	2,368.10	161.93	15.624		
11,600.00	6,985.35	12,471.12	6,984.86	81.83	91.24	89.99	3,145.79	-4,861.44	2,530.43	2,365.47	164.96	15.340		
11,700.00	6,985.28	12,571.12	6,984.79	83.35	92.61	89.99	3,146.63	-4,961.44	2,530.83	2,362.84	167.99	15.065		
11,800.00	6,985.20	12,671.12	6,984.72	84.87	94.00	89.99	3,147.47	-5,061.43	2,531.23	2,360.20	171.03	14.800		
11,900.00	6,985.12	12,771.12	6,984.64	86.40	95.38	89.99	3,148.31	-5,161.43	2,531.63	2,357.56	174.08	14.543		
12,000.00	6,985.04	12,871.12	6,984.57	87.93	96.78	89.99	3,149.14	-5,261.42	2,532.03	2,354.90	177.13	14.295		
12,100.00	6,984.96	12,971.12	6,984.49	89.46	98.18	89.99	3,149.98	-5,361.42	2,532.43	2,352.25	180.18	14.055		
12,200.00	6,984.88	13,071.12	6,984.42	90.99	99.59	89.99	3,150.82	-5,461.41	2,532.83	2,349.59	183.24	13.822		
12,300.00	6,984.81	13,171.11	6,984.35	92.53	101.00	89.99	3,151.66	-5,561.41	2,533.23	2,346.92	186.31	13.597		
12,400.00	6,984.73	13,271.11	6,984.27	94.07	102.42	89.99	3,152.50	-5,661.40	2,533.63	2,344.25	189.38	13.378		
12,500.00	6,984.65	13,371.11	6,984.20	95.61	103.85	89.99	3,153.34	-5,761.40	2,534.03	2,341.57	192.46	13.167		
12,600.00	6,984.57	13,471.11	6,984.13	97.15	105.28	89.99	3,154.18	-5,861.40	2,534.43	2,338.89	195.54	12.961		
12,700.00	6,984.49	13,571.11	6,984.05	98.70	106.71	89.99	3,155.02	-5,961.39	2,534.83	2,336.21	198.62	12.762		
12,800.00	6,984.41	13,671.11	6,983.98	100.25	108.15	89.99	3,155.86	-6,061.39	2,535.23	2,333.52	201.71	12.569		
12,900.00	6,984.34	13,771.11	6,983.91	101.80	109.60	89.99	3,156.70	-6,161.38	2,535.63	2,330.83	204.80	12.381		
13,000.00	6,984.26	13,871.11	6,983.83	103.35	111.05	89.99	3,157.53	-6,261.38	2,536.03	2,328.13	207.90	12.198		
13,100.00	6,984.18	13,971.11	6,983.76	104.90	112.50	89.99	3,158.37	-6,361.37	2,536.43	2,325.43	211.00	12.021		
13,200.00	6,984.10	14,071.11	6,983.69	106.45	113.96	89.99	3,159.21	-6,461.37	2,536.83	2,322.73	214.10	11.849		
13,300.00	6,984.02	14,171.11	6,983.61	108.01	115.42	89.99	3,160.05	-6,561.37	2,537.23	2,320.03	217.20	11.681		
13,400.00	6,983.94	14,271.11	6,983.54	109.56	116.89	89.99	3,160.89	-6,661.36	2,537.63	2,317.32	220.31	11.518		
13,500.00	6,983.87	14,371.10	6,983.46	111.12	118.36	89.99	3,161.73	-6,761.36	2,538.03	2,314.61	223.42	11.360		
13,600.00	6,983.79	14,471.10	6,983.39	112.68	119.83	89.99	3,162.57	-6,861.35	2,538.43	2,311.90	226.54	11.205		
13,700.00	6,983.71	14,571.10	6,983.32	114.24	121.31	89.99	3,163.41	-6,961.35	2,538.83	2,309.18	229.65	11.055		
13,800.00	6,983.63	14,671.10	6,983.24	115.80	122.79	89.99	3,164.25	-7,061.34	2,539.23	2,306.46	232.77	10.909		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #672H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS				Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
13,900.00	6,983.55	14,771.10	6,983.17	117.37	124.27	89.99	3,165.09	-7,161.34	2,539.63	2,303.74	235.89	10.766	
14,000.00	6,983.47	14,871.10	6,983.10	118.93	125.76	89.99	3,165.92	-7,261.34	2,540.03	2,301.02	239.02	10.627	
14,100.00	6,983.40	14,971.10	6,983.02	120.50	127.25	89.99	3,166.76	-7,361.33	2,540.43	2,298.29	242.14	10.491	
14,200.00	6,983.32	15,071.10	6,982.95	122.06	128.74	89.99	3,167.60	-7,461.33	2,540.83	2,295.56	245.27	10.359	
14,300.00	6,983.24	15,171.10	6,982.88	123.63	130.23	89.99	3,168.44	-7,561.32	2,541.23	2,292.83	248.40	10.230	
14,400.00	6,983.16	15,271.10	6,982.80	125.20	131.73	89.99	3,169.28	-7,661.32	2,541.63	2,290.10	251.53	10.105	
14,500.00	6,983.08	15,371.10	6,982.73	126.77	133.23	89.99	3,170.12	-7,761.31	2,542.03	2,287.37	254.67	9.982	
14,600.00	6,983.00	15,471.10	6,982.66	128.33	134.73	89.99	3,170.96	-7,861.31	2,542.43	2,284.63	257.80	9.862	
14,700.00	6,982.93	15,571.10	6,982.58	129.91	136.24	89.99	3,171.80	-7,961.31	2,542.83	2,281.89	260.94	9.745	
14,800.00	6,982.85	15,671.09	6,982.51	131.48	137.74	89.99	3,172.64	-8,061.30	2,543.23	2,279.15	264.08	9.631	
14,900.00	6,982.77	15,771.09	6,982.43	133.05	139.25	89.99	3,173.48	-8,161.30	2,543.63	2,276.41	267.22	9.519	
15,000.00	6,982.69	15,871.09	6,982.36	134.62	140.76	89.99	3,174.31	-8,261.29	2,544.03	2,273.67	270.36	9.410	
15,100.00	6,982.61	15,971.09	6,982.29	136.20	142.28	89.99	3,175.15	-8,361.29	2,544.43	2,270.93	273.51	9.303	
15,200.00	6,982.54	16,071.09	6,982.21	137.77	143.79	89.99	3,175.99	-8,461.28	2,544.83	2,268.18	276.65	9.199	
15,300.00	6,982.46	16,171.09	6,982.14	139.35	145.31	89.99	3,176.83	-8,561.28	2,545.23	2,265.43	279.80	9.097	
15,400.00	6,982.38	16,271.09	6,982.07	140.92	146.83	89.99	3,177.67	-8,661.27	2,545.63	2,262.69	282.95	8.997	
15,500.00	6,982.30	16,371.09	6,981.99	142.50	148.35	89.99	3,178.51	-8,761.27	2,546.03	2,259.94	286.10	8.899	
15,600.00	6,982.22	16,471.09	6,981.92	144.07	149.87	89.99	3,179.35	-8,861.27	2,546.43	2,257.18	289.25	8.804	
15,700.00	6,982.14	16,571.09	6,981.85	145.65	151.40	89.99	3,180.19	-8,961.26	2,546.83	2,254.43	292.40	8.710	
15,800.00	6,982.07	16,671.09	6,981.77	147.23	152.92	89.99	3,181.03	-9,061.26	2,547.23	2,251.68	295.56	8.618	
15,900.00	6,981.99	16,771.09	6,981.70	148.81	154.45	89.99	3,181.87	-9,161.25	2,547.63	2,248.92	298.71	8.529	
16,000.00	6,981.91	16,871.09	6,981.62	150.39	155.98	89.99	3,182.70	-9,261.25	2,548.03	2,246.17	301.87	8.441	
16,100.00	6,981.83	16,971.08	6,981.55	151.97	157.51	89.99	3,183.54	-9,361.24	2,548.43	2,243.41	305.02	8.355	
16,200.00	6,981.75	17,071.08	6,981.48	153.55	159.04	89.99	3,184.38	-9,461.24	2,548.83	2,240.65	308.18	8.271	
16,300.00	6,981.67	17,171.08	6,981.40	155.13	160.58	89.99	3,185.22	-9,561.24	2,549.24	2,237.89	311.34	8.188	
16,400.00	6,981.60	17,271.08	6,981.33	156.71	162.11	89.99	3,186.06	-9,661.23	2,549.64	2,235.13	314.50	8.107	
16,500.00	6,981.52	17,371.08	6,981.26	158.29	163.65	89.99	3,186.90	-9,761.23	2,550.04	2,232.37	317.66	8.028	
16,600.00	6,981.44	17,471.08	6,981.18	159.88	165.19	89.99	3,187.74	-9,861.22	2,550.44	2,229.61	320.82	7.950	
16,700.00	6,981.36	17,571.08	6,981.11	161.46	166.73	89.99	3,188.58	-9,961.22	2,550.84	2,226.85	323.99	7.873	
16,800.00	6,981.28	17,671.08	6,981.04	163.04	168.27	89.99	3,189.42	-10,061.21	2,551.24	2,224.08	327.15	7.798	
16,900.00	6,981.20	17,771.08	6,980.96	164.62	169.81	89.99	3,190.26	-10,161.21	2,551.64	2,221.32	330.32	7.725	
17,000.00	6,981.13	17,871.08	6,980.89	166.21	171.35	89.99	3,191.09	-10,261.21	2,552.04	2,218.55	333.48	7.653	
17,100.00	6,981.05	17,971.08	6,980.82	167.79	172.89	89.99	3,191.93	-10,361.20	2,552.44	2,215.79	336.65	7.582	
17,200.00	6,980.97	18,071.08	6,980.74	169.38	174.44	89.99	3,192.77	-10,461.20	2,552.84	2,213.02	339.81	7.512	
17,300.00	6,980.89	18,171.07	6,980.67	170.96	175.98	89.99	3,193.61	-10,561.19	2,553.24	2,210.25	342.98	7.444	
17,400.00	6,980.81	18,271.07	6,980.59	172.55	177.53	89.99	3,194.45	-10,661.19	2,553.64	2,207.48	346.15	7.377	
17,500.00	6,980.73	18,371.07	6,980.52	174.13	179.08	90.00	3,195.29	-10,761.18	2,554.04	2,204.72	349.32	7.311	
17,600.00	6,980.66	18,471.07	6,980.45	175.72	180.63	90.00	3,196.13	-10,861.18	2,554.44	2,201.94	352.49	7.247	
17,700.00	6,980.58	18,571.07	6,980.37	177.31	182.18	90.00	3,196.97	-10,961.17	2,554.84	2,199.17	355.66	7.183	
17,800.00	6,980.50	18,671.07	6,980.30	178.89	183.73	90.00	3,197.81	-11,061.17	2,555.24	2,196.40	358.83	7.121	
17,900.00	6,980.42	18,771.07	6,980.23	180.48	185.28	90.00	3,198.65	-11,161.17	2,555.64	2,193.63	362.01	7.060	
18,000.00	6,980.34	18,871.07	6,980.15	182.07	186.84	90.00	3,199.48	-11,261.16	2,556.04	2,190.86	365.18	6.999	
18,100.00	6,980.26	18,971.07	6,980.08	183.66	188.39	90.00	3,200.32	-11,361.16	2,556.44	2,188.08	368.35	6.940	
18,200.00	6,980.19	19,071.07	6,980.01	185.24	189.94	90.00	3,201.16	-11,461.15	2,556.84	2,185.31	371.53	6.882	
18,300.00	6,980.11	19,171.07	6,979.93	186.83	191.50	90.00	3,202.00	-11,561.15	2,557.24	2,182.54	374.70	6.825	
18,400.00	6,980.03	19,271.07	6,979.86	188.42	193.06	90.00	3,202.84	-11,661.14	2,557.64	2,179.76	377.88	6.768	
18,500.00	6,979.95	19,371.07	6,979.79	190.01	194.61	90.00	3,203.68	-11,761.14	2,558.04	2,176.98	381.05	6.713	
18,600.00	6,979.87	19,471.06	6,979.71	191.60	196.17	90.00	3,204.52	-11,861.14	2,558.44	2,174.21	384.23	6.659	
18,700.00	6,979.79	19,571.06	6,979.64	193.19	197.73	90.00	3,205.36	-11,961.13	2,558.84	2,171.43	387.41	6.605	
18,800.00	6,979.72	19,671.06	6,979.56	194.78	199.29	90.00	3,206.20	-12,061.13	2,559.24	2,168.65	390.58	6.552	
18,900.00	6,979.64	19,771.06	6,979.49	196.37	200.85	90.00	3,207.04	-12,161.12	2,559.64	2,165.88	393.76	6.500	
19,000.00	6,979.56	19,871.06	6,979.42	197.96	202.41	90.00	3,207.87	-12,261.12	2,560.04	2,163.10	396.94	6.449	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #672H - OH - Prelim 5													Offset Site Error:	0.00 usft	
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
19,100.00	6,979.48	19,971.06	6,979.34	199.55	203.97	90.00	3,208.71	-12,361.11	2,560.44	2,160.32	400.12	6.399			
19,200.00	6,979.40	20,071.06	6,979.27	201.14	205.53	90.00	3,209.55	-12,461.11	2,560.84	2,157.54	403.30	6.350			
19,300.00	6,979.33	20,171.06	6,979.20	202.73	207.10	90.00	3,210.39	-12,561.11	2,561.24	2,154.76	406.48	6.301			
19,400.00	6,979.25	20,271.06	6,979.12	204.32	208.66	90.00	3,211.23	-12,661.10	2,561.64	2,151.98	409.66	6.253			
19,500.00	6,979.17	20,371.06	6,979.05	205.91	210.22	90.00	3,212.07	-12,761.10	2,562.04	2,149.20	412.84	6.206			
19,600.00	6,979.09	20,471.06	6,978.98	207.50	211.79	90.00	3,212.91	-12,861.09	2,562.44	2,146.42	416.02	6.159			
19,700.00	6,979.01	20,571.06	6,978.90	209.09	213.35	90.00	3,213.75	-12,961.09	2,562.84	2,143.64	419.20	6.114			
19,800.00	6,978.93	20,671.05	6,978.83	210.69	214.92	90.00	3,214.59	-13,061.08	2,563.24	2,140.85	422.39	6.068			
19,900.00	6,978.86	20,771.05	6,978.75	212.28	216.48	90.00	3,215.43	-13,161.08	2,563.64	2,138.07	425.57	6.024			
20,000.00	6,978.78	20,871.05	6,978.68	213.87	218.05	90.00	3,216.26	-13,261.07	2,564.04	2,135.29	428.75	5.980			
20,100.00	6,978.70	20,971.05	6,978.61	215.46	219.62	90.00	3,217.10	-13,361.07	2,564.44	2,132.50	431.93	5.937			
20,200.00	6,978.62	21,071.05	6,978.53	217.05	221.19	90.00	3,217.94	-13,461.07	2,564.84	2,129.72	435.12	5.895			
20,300.00	6,978.54	21,171.05	6,978.46	218.65	222.76	90.00	3,218.78	-13,561.06	2,565.24	2,126.94	438.30	5.853			
20,400.00	6,978.46	21,271.05	6,978.39	220.24	224.33	90.00	3,219.62	-13,661.06	2,565.64	2,124.15	441.49	5.811			
20,500.00	6,978.39	21,371.05	6,978.31	221.83	225.90	90.00	3,220.46	-13,761.05	2,566.04	2,121.37	444.67	5.771			
20,600.00	6,978.31	21,471.05	6,978.24	223.43	227.47	90.00	3,221.30	-13,861.05	2,566.44	2,118.58	447.86	5.730			
20,700.00	6,978.23	21,571.05	6,978.17	225.02	229.04	90.00	3,222.14	-13,961.04	2,566.84	2,115.80	451.04	5.691			
20,800.00	6,978.15	21,671.05	6,978.09	226.61	230.61	90.00	3,222.98	-14,061.04	2,567.24	2,113.01	454.23	5.652			
20,900.00	6,978.07	21,771.05	6,978.02	228.21	232.18	90.00	3,223.82	-14,161.04	2,567.64	2,110.23	457.41	5.613			
21,000.00	6,977.99	21,871.05	6,977.95	229.80	233.75	90.00	3,224.65	-14,261.03	2,568.04	2,107.44	460.60	5.575			
21,100.00	6,977.92	21,971.04	6,977.87	231.39	235.32	90.00	3,225.49	-14,361.03	2,568.44	2,104.65	463.79	5.538			
21,200.00	6,977.84	22,071.04	6,977.80	232.99	236.90	90.00	3,226.33	-14,461.02	2,568.84	2,101.87	466.97	5.501			
21,300.00	6,977.76	22,171.04	6,977.72	234.58	238.47	90.00	3,227.17	-14,561.02	2,569.24	2,099.08	470.16	5.465			
21,400.00	6,977.68	22,271.04	6,977.65	236.18	240.04	90.00	3,228.01	-14,661.01	2,569.64	2,096.29	473.35	5.429			
21,500.00	6,977.60	22,371.04	6,977.58	237.77	241.62	90.00	3,228.85	-14,761.01	2,570.04	2,093.50	476.54	5.393			
21,600.00	6,977.52	22,471.04	6,977.50	239.37	243.19	90.00	3,229.69	-14,861.01	2,570.44	2,090.71	479.73	5.358			
21,700.00	6,977.45	22,571.04	6,977.43	240.96	244.77	90.00	3,230.53	-14,961.00	2,570.84	2,087.93	482.91	5.324			
21,800.00	6,977.37	22,671.04	6,977.36	242.56	246.34	90.00	3,231.37	-15,061.00	2,571.24	2,085.14	486.10	5.289			
21,900.00	6,977.29	22,771.04	6,977.28	244.15	247.92	90.00	3,232.21	-15,160.99	2,571.64	2,082.35	489.29	5.256			
22,000.00	6,977.21	22,871.04	6,977.21	245.75	249.49	90.00	3,233.04	-15,260.99	2,572.04	2,079.56	492.48	5.223			
22,100.00	6,977.13	22,971.04	6,977.14	247.34	251.07	90.00	3,233.88	-15,360.98	2,572.44	2,076.77	495.67	5.190			
22,200.00	6,977.05	23,071.04	6,977.06	248.94	252.65	90.00	3,234.72	-15,460.98	2,572.84	2,073.98	498.86	5.157			
22,269.73	6,977.00	23,140.76	6,977.01	250.05	253.75	90.00	3,235.31	-15,530.70	2,573.12	2,072.04	501.08	5.135	SF		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #674H - OH - Prelim 5													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	29.14	52.43	29.23	60.03				
100.00	100.00	100.00	100.00	0.25	0.25	29.14	52.43	29.23	60.03	59.52	0.50	119.605	
200.00	200.00	200.00	200.00	0.61	0.61	29.14	52.43	29.23	60.03	58.81	1.22	49.249	
300.00	300.00	300.00	300.00	0.97	0.97	29.14	52.43	29.23	60.03	58.09	1.94	31.009	
400.00	400.00	400.00	400.00	1.33	1.33	29.14	52.43	29.23	60.03	57.37	2.65	22.628	
500.00	500.00	500.00	500.00	1.68	1.68	29.14	52.43	29.23	60.03	56.66	3.37	17.814	
510.00	510.00	510.00	510.00	1.72	1.72	29.14	52.43	29.23	60.03	56.58	3.44	17.442	CC
600.00	600.00	599.12	599.12	2.04	2.04	28.93	52.85	29.21	60.39	56.31	4.08	14.789	ES
700.00	700.00	697.24	697.17	2.40	2.39	27.35	56.21	29.07	63.34	58.55	4.79	13.217	
800.00	799.98	795.14	794.84	2.76	2.75	36.13	62.90	28.80	67.96	62.46	5.50	12.364	
849.89	849.82	843.92	843.40	2.94	2.93	35.39	67.48	28.61	70.36	64.51	5.84	12.038	
900.00	899.86	892.84	892.02	3.12	3.10	34.61	72.90	28.38	73.19	66.99	6.19	11.816	
1,000.00	999.73	990.11	988.38	3.48	3.46	32.49	86.14	27.83	81.19	74.30	6.89	11.786	
1,100.00	1,099.59	1,086.71	1,083.58	3.84	3.82	29.98	102.51	27.15	92.41	84.83	7.58	12.198	
1,200.00	1,199.45	1,184.26	1,179.19	4.20	4.20	27.48	121.80	26.34	106.45	98.17	8.28	12.862	
1,300.00	1,299.32	1,283.12	1,276.03	4.56	4.60	25.49	141.68	25.51	120.98	111.99	8.99	13.451	
1,400.00	1,399.18	1,381.98	1,372.87	4.92	5.00	23.92	161.56	24.69	135.63	125.91	9.72	13.953	
1,500.00	1,499.04	1,480.84	1,469.71	5.28	5.40	22.66	181.43	23.86	150.35	139.90	10.45	14.392	
1,600.00	1,598.91	1,579.70	1,566.55	5.64	5.81	21.63	201.31	23.03	165.13	153.96	11.17	14.778	
1,700.00	1,698.77	1,678.56	1,663.39	6.00	6.22	20.76	221.19	22.20	179.96	168.06	11.90	15.118	
1,800.00	1,798.63	1,777.43	1,760.23	6.36	6.64	20.03	241.07	21.38	194.82	182.19	12.63	15.421	
1,900.00	1,898.49	1,876.29	1,857.06	6.72	7.05	19.40	260.95	20.55	209.71	196.34	13.36	15.691	
2,000.00	1,998.36	1,975.15	1,953.90	7.09	7.47	18.85	280.83	19.72	224.62	210.52	14.10	15.934	
2,100.00	2,098.22	2,074.01	2,050.74	7.45	7.89	18.38	300.70	18.89	239.54	224.71	14.83	16.154	
2,200.00	2,198.08	2,172.87	2,147.58	7.81	8.31	17.96	320.58	18.06	254.48	238.92	15.56	16.353	
2,300.00	2,297.95	2,271.73	2,244.42	8.17	8.73	17.58	340.46	17.24	269.44	253.14	16.30	16.534	
2,400.00	2,397.81	2,370.59	2,341.26	8.53	9.16	17.24	360.34	16.41	284.40	267.37	17.03	16.700	
2,500.00	2,497.67	2,469.45	2,438.10	8.90	9.58	16.94	380.22	15.58	299.37	281.60	17.76	16.852	
2,600.00	2,597.54	2,568.32	2,534.93	9.26	10.00	16.67	400.10	14.75	314.35	295.85	18.50	16.992	
2,700.00	2,697.40	2,667.18	2,631.77	9.62	10.43	16.42	419.98	13.92	329.33	310.10	19.23	17.122	
2,800.00	2,797.26	2,766.04	2,728.61	9.98	10.85	16.19	439.85	13.10	344.32	324.35	19.97	17.242	
2,900.00	2,897.13	2,864.90	2,825.45	10.35	11.28	15.99	459.73	12.27	359.32	338.61	20.71	17.354	
3,000.00	2,996.99	2,963.76	2,922.29	10.71	11.70	15.80	479.61	11.44	374.32	352.88	21.44	17.458	
3,100.00	3,096.85	3,062.62	3,019.13	11.07	12.13	15.62	499.49	10.61	389.32	367.14	22.18	17.555	
3,200.00	3,196.72	3,161.48	3,115.97	11.43	12.56	15.46	519.37	9.78	404.33	381.41	22.91	17.645	
3,300.00	3,296.58	3,260.35	3,212.80	11.80	12.98	15.30	539.25	8.96	419.34	395.69	23.65	17.731	
3,400.00	3,396.44	3,359.21	3,309.64	12.16	13.41	15.16	559.12	8.13	434.35	409.96	24.39	17.811	
3,500.00	3,496.31	3,458.07	3,406.48	12.52	13.84	15.03	579.00	7.30	449.37	424.24	25.12	17.886	
3,600.00	3,596.17	3,556.93	3,503.32	12.88	14.26	14.91	598.88	6.47	464.38	438.52	25.86	17.957	
3,700.00	3,696.03	3,655.79	3,600.16	13.25	14.69	14.79	618.76	5.64	479.40	452.80	26.60	18.024	
3,800.00	3,795.89	3,754.65	3,697.00	13.61	15.12	14.68	638.64	4.82	494.42	467.09	27.34	18.087	
3,900.00	3,895.76	3,853.51	3,793.84	13.97	15.55	14.58	658.52	3.99	509.44	481.37	28.07	18.148	
4,000.00	3,995.62	3,952.37	3,890.67	14.34	15.98	14.49	678.40	3.16	524.47	495.66	28.81	18.205	
4,100.00	4,095.48	4,051.24	3,987.51	14.70	16.40	14.39	698.27	2.33	539.49	509.95	29.55	18.259	
4,200.00	4,195.35	4,150.10	4,084.35	15.06	16.83	14.31	718.15	1.50	554.52	524.24	30.28	18.310	
4,300.00	4,295.21	4,248.96	4,181.19	15.42	17.26	14.23	738.03	0.68	569.55	538.53	31.02	18.359	
4,400.00	4,395.07	4,347.82	4,278.03	15.79	17.69	14.15	757.91	-0.15	584.58	552.82	31.76	18.406	
4,500.00	4,494.94	4,446.68	4,374.87	16.15	18.12	14.08	777.79	-0.98	599.61	567.11	32.50	18.451	
4,600.00	4,594.80	4,545.54	4,471.71	16.51	18.55	14.01	797.67	-1.81	614.64	581.40	33.24	18.493	
4,700.00	4,694.66	4,644.40	4,568.54	16.87	18.98	13.94	817.55	-2.64	629.67	595.69	33.97	18.534	
4,800.00	4,794.53	4,743.26	4,665.38	17.24	19.41	13.88	837.42	-3.46	644.70	609.99	34.71	18.573	
4,900.00	4,894.39	4,842.13	4,762.22	17.60	19.84	13.82	857.30	-4.29	659.73	624.28	35.45	18.610	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #674H - OH - Prelim 5													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,994.25	4,940.99	4,859.06	17.96	20.26	13.76	877.18	-5.12	674.77	638.58	36.19	18.646	
5,100.00	5,094.12	5,039.85	4,955.90	18.33	20.69	13.70	897.06	-5.95	689.80	652.87	36.93	18.680	
5,200.00	5,193.98	5,138.71	5,052.74	18.69	21.12	13.65	916.94	-6.78	704.84	667.17	37.66	18.713	
5,300.00	5,293.84	5,237.57	5,149.58	19.05	21.55	13.60	936.82	-7.60	719.87	681.47	38.40	18.745	
5,336.91	5,330.71	5,274.06	5,185.32	19.19	21.71	13.58	944.15	-7.91	725.42	686.75	38.68	18.757	
5,400.00	5,393.71	5,336.41	5,246.39	19.41	21.98	13.56	956.69	-8.43	735.07	695.93	39.14	18.780	
5,500.00	5,493.62	5,435.12	5,343.08	19.77	22.41	13.51	976.54	-9.26	751.06	711.18	39.88	18.834	
5,600.00	5,593.57	5,536.58	5,442.48	20.13	22.85	13.45	996.86	-10.10	767.80	727.17	40.64	18.895	
5,700.00	5,693.53	5,642.28	5,546.19	20.49	23.30	13.39	1,017.24	-10.95	784.64	743.22	41.42	18.943	
5,800.00	5,793.52	5,748.15	5,650.26	20.85	23.75	13.31	1,036.70	-11.76	801.41	759.21	42.20	18.989	
5,900.00	5,893.52	5,854.21	5,754.68	21.20	24.20	13.23	1,055.23	-12.54	818.11	775.13	42.98	19.035	
5,936.48	5,930.00	5,892.94	5,792.86	21.33	24.36	2.44	1,061.76	-12.81	824.18	780.92	43.26	19.051	
6,000.00	5,993.52	5,960.47	5,859.48	21.56	24.63	2.38	1,072.83	-13.27	834.57	790.82	43.75	19.075	
6,100.00	6,093.52	6,067.05	5,964.74	21.91	25.07	2.28	1,089.50	-13.96	850.17	805.65	44.52	19.096	
6,200.00	6,193.52	6,173.93	6,070.45	22.27	25.49	2.20	1,105.23	-14.62	864.86	819.58	45.29	19.098	
6,300.00	6,293.52	6,281.10	6,176.60	22.62	25.91	2.12	1,120.02	-15.23	878.63	832.58	46.05	19.081	
6,358.48	6,352.00	6,343.90	6,238.86	22.83	26.16	2.08	1,128.23	-15.58	886.26	839.77	46.49	19.063	
6,400.00	6,393.49	6,388.56	6,283.16	22.97	26.33	76.31	1,133.85	-15.81	891.16	844.36	46.80	19.041	
6,450.00	6,443.20	6,442.28	6,336.48	23.15	26.54	76.20	1,140.39	-16.08	896.03	848.85	47.18	18.991	
6,500.00	6,492.36	6,495.58	6,389.41	23.33	26.74	76.44	1,146.63	-16.34	899.78	852.22	47.56	18.918	
6,550.00	6,540.64	6,527.09	6,420.66	23.51	26.86	76.60	1,150.55	-17.07	903.04	855.19	47.86	18.870	
6,600.00	6,587.77	6,550.00	6,443.29	23.69	26.95	76.66	1,153.86	-18.46	906.58	858.48	48.09	18.850	
6,650.00	6,633.44	6,587.98	6,480.54	23.88	27.11	77.02	1,160.17	-22.35	910.24	861.82	48.42	18.799	
6,700.00	6,677.37	6,618.52	6,510.16	24.07	27.24	77.28	1,165.98	-26.90	914.22	865.51	48.71	18.770	
6,750.00	6,719.30	6,650.00	6,540.33	24.26	27.38	77.58	1,172.66	-32.93	918.48	869.47	49.01	18.741	
6,800.00	6,758.97	6,679.83	6,568.50	24.46	27.51	77.88	1,179.60	-39.86	923.04	873.73	49.31	18.718	
6,850.00	6,796.12	6,710.67	6,597.12	24.67	27.65	78.22	1,187.39	-48.27	927.95	878.30	49.65	18.690	
6,900.00	6,830.54	6,741.65	6,625.31	24.88	27.80	78.58	1,195.83	-57.96	933.21	883.20	50.01	18.659	
6,950.00	6,862.00	6,772.83	6,653.03	25.11	27.95	78.95	1,204.92	-68.96	938.87	888.45	50.41	18.624	
7,000.00	6,890.33	6,800.00	6,676.60	25.34	28.09	79.21	1,213.33	-79.53	944.95	894.14	50.81	18.598	
7,050.00	6,915.33	6,835.89	6,706.84	25.59	28.27	79.73	1,225.07	-94.89	951.46	900.14	51.32	18.539	
7,100.00	6,936.86	6,867.89	6,732.85	25.85	28.43	80.13	1,236.14	-109.87	958.44	906.61	51.83	18.491	
7,150.00	6,954.79	6,900.00	6,758.00	26.12	28.60	80.53	1,247.78	-126.09	965.92	913.53	52.38	18.440	
7,200.00	6,968.99	6,933.10	6,782.84	26.40	28.77	80.94	1,260.31	-144.00	973.90	920.93	52.97	18.386	
7,250.00	6,979.40	6,966.48	6,806.73	26.69	28.96	81.34	1,273.46	-163.26	982.41	928.83	53.58	18.335	
7,300.00	6,985.94	7,000.00	6,829.46	27.00	29.14	81.73	1,287.14	-183.73	991.45	937.24	54.21	18.290	
7,350.00	6,988.56	7,035.33	6,852.00	27.31	29.35	82.16	1,302.04	-206.49	1,001.02	946.18	54.85	18.251	
7,358.93	6,988.62	7,041.64	6,855.86	27.36	29.38	82.23	1,304.75	-210.68	1,002.79	947.83	54.96	18.245	
7,400.00	6,988.59	7,071.83	6,873.67	27.63	29.56	83.31	1,317.91	-231.20	1,011.30	955.80	55.49	18.224	
7,500.00	6,988.52	7,154.95	6,916.56	28.33	30.08	85.88	1,355.52	-291.57	1,034.24	977.40	56.83	18.197	
7,600.00	6,988.45	7,251.93	6,954.47	29.10	30.72	88.09	1,401.34	-368.07	1,058.85	1,000.60	58.26	18.175	
7,658.93	6,988.41	7,314.99	6,971.70	29.59	31.17	89.07	1,431.76	-420.51	1,073.44	1,014.28	59.15	18.146	
7,700.00	6,988.38	7,360.92	6,980.46	29.94	31.50	89.56	1,454.03	-459.70	1,083.71	1,023.90	59.81	18.120	
7,800.00	6,988.31	7,481.58	6,988.21	30.84	32.42	89.98	1,512.03	-565.05	1,110.05	1,048.52	61.53	18.040	
7,900.00	6,988.24	7,640.52	6,988.09	31.79	33.70	89.98	1,582.94	-707.27	1,135.81	1,072.25	63.55	17.871	
8,000.00	6,988.16	7,802.61	6,987.98	32.78	35.11	89.98	1,647.02	-856.13	1,159.52	1,093.85	65.67	17.656	
8,100.00	6,988.09	7,967.72	6,987.86	33.82	36.62	89.98	1,703.54	-1,011.24	1,181.07	1,113.20	67.87	17.402	
8,200.00	6,988.01	8,135.66	6,987.73	34.88	38.23	89.98	1,751.76	-1,172.08	1,200.35	1,130.25	70.10	17.122	
8,300.00	6,987.94	8,306.18	6,987.61	35.98	39.92	89.98	1,790.99	-1,338.01	1,217.25	1,144.91	72.34	16.827	
8,400.00	6,987.86	8,479.02	6,987.48	37.11	41.68	89.98	1,820.62	-1,508.26	1,231.68	1,157.12	74.56	16.520	
8,416.35	6,987.85	8,507.48	6,987.45	37.29	41.97	89.98	1,824.51	-1,536.46	1,233.80	1,158.88	74.91	16.470	
8,500.00	6,987.78	8,654.04	6,987.34	38.25	43.49	89.98	1,840.10	-1,682.17	1,242.33	1,165.62	76.71	16.195	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #674H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)		Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
8,600.00	6,987.70	8,830.70	6,987.21	39.43	45.35	89.98	1,848.96	-1,858.58	1,246.91	1,168.14	78.77	15.830		
8,700.00	6,987.62	8,948.75	6,987.12	40.64	46.61	89.98	1,849.84	-1,976.62	1,247.13	1,166.03	81.10	15.377		
8,800.00	6,987.55	9,048.75	6,987.05	41.88	47.70	89.98	1,850.32	-2,076.62	1,247.18	1,163.59	83.59	14.920		
8,900.00	6,987.47	9,148.75	6,986.97	43.14	48.82	89.98	1,850.81	-2,176.62	1,247.23	1,161.10	86.13	14.481		
9,000.00	6,987.39	9,248.75	6,986.90	44.42	49.97	89.98	1,851.30	-2,276.61	1,247.28	1,158.57	88.71	14.060		
9,100.00	6,987.31	9,348.75	6,986.83	45.72	51.14	89.98	1,851.79	-2,376.61	1,247.33	1,156.00	91.33	13.658		
9,200.00	6,987.23	9,448.75	6,986.75	47.04	52.33	89.98	1,852.27	-2,476.61	1,247.37	1,153.39	93.98	13.272		
9,300.00	6,987.15	9,548.75	6,986.68	48.38	53.55	89.98	1,852.76	-2,576.61	1,247.42	1,150.75	96.67	12.904		
9,400.00	6,987.08	9,648.75	6,986.60	49.73	54.78	89.98	1,853.25	-2,676.61	1,247.47	1,148.08	99.39	12.551		
9,500.00	6,987.00	9,748.75	6,986.53	51.10	56.04	89.98	1,853.74	-2,776.61	1,247.52	1,145.38	102.14	12.214		
9,600.00	6,986.92	9,848.75	6,986.45	52.48	57.31	89.98	1,854.22	-2,876.61	1,247.57	1,142.65	104.92	11.891		
9,700.00	6,986.84	9,948.75	6,986.38	53.87	58.60	89.98	1,854.71	-2,976.61	1,247.62	1,139.90	107.71	11.583		
9,800.00	6,986.76	10,048.75	6,986.30	55.28	59.90	89.98	1,855.20	-3,076.60	1,247.67	1,137.13	110.54	11.287		
9,900.00	6,986.68	10,148.75	6,986.23	56.69	61.22	89.98	1,855.69	-3,176.60	1,247.72	1,134.34	113.38	11.005		
10,000.00	6,986.61	10,248.75	6,986.15	58.12	62.55	89.98	1,856.17	-3,276.60	1,247.76	1,131.53	116.24	10.735		
10,100.00	6,986.53	10,348.75	6,986.08	59.55	63.89	89.98	1,856.66	-3,376.60	1,247.81	1,128.70	119.12	10.476		
10,200.00	6,986.45	10,448.75	6,986.01	61.00	65.25	89.98	1,857.15	-3,476.60	1,247.86	1,125.85	122.01	10.227		
10,300.00	6,986.37	10,548.75	6,985.93	62.45	66.61	89.98	1,857.64	-3,576.60	1,247.91	1,122.99	124.92	9.989		
10,400.00	6,986.29	10,648.75	6,985.86	63.90	67.99	89.98	1,858.12	-3,676.60	1,247.96	1,120.11	127.85	9.761		
10,500.00	6,986.21	10,748.75	6,985.78	65.37	69.38	89.98	1,858.61	-3,776.60	1,248.01	1,117.22	130.79	9.542		
10,600.00	6,986.14	10,848.75	6,985.71	66.84	70.77	89.98	1,859.10	-3,876.59	1,248.06	1,114.32	133.74	9.332		
10,700.00	6,986.06	10,948.75	6,985.63	68.32	72.18	89.98	1,859.59	-3,976.59	1,248.10	1,111.41	136.70	9.130		
10,800.00	6,985.98	11,048.75	6,985.56	69.80	73.59	89.98	1,860.07	-4,076.59	1,248.15	1,108.48	139.67	8.936		
10,900.00	6,985.90	11,148.75	6,985.48	71.29	75.01	89.98	1,860.56	-4,176.59	1,248.20	1,105.55	142.65	8.750		
11,000.00	6,985.82	11,248.75	6,985.41	72.78	76.44	89.98	1,861.05	-4,276.59	1,248.25	1,102.60	145.65	8.570		
11,100.00	6,985.75	11,348.75	6,985.33	74.28	77.87	89.98	1,861.54	-4,376.59	1,248.30	1,099.65	148.65	8.398		
11,200.00	6,985.67	11,448.75	6,985.26	75.78	79.31	89.98	1,862.03	-4,476.59	1,248.35	1,096.69	151.66	8.231		
11,300.00	6,985.59	11,548.75	6,985.19	77.29	80.76	89.98	1,862.51	-4,576.59	1,248.40	1,093.72	154.68	8.071		
11,400.00	6,985.51	11,648.75	6,985.11	78.80	82.21	89.98	1,863.00	-4,676.58	1,248.45	1,090.74	157.70	7.916		
11,500.00	6,985.43	11,748.75	6,985.04	80.31	83.67	89.98	1,863.49	-4,776.58	1,248.49	1,087.76	160.74	7.767		
11,600.00	6,985.35	11,848.75	6,984.96	81.83	85.13	89.98	1,863.98	-4,876.58	1,248.54	1,084.77	163.78	7.623		
11,700.00	6,985.28	11,948.75	6,984.89	83.35	86.60	89.98	1,864.46	-4,976.58	1,248.59	1,081.77	166.82	7.485		
11,800.00	6,985.20	12,048.75	6,984.81	84.87	88.08	89.98	1,864.95	-5,076.58	1,248.64	1,078.77	169.87	7.350		
11,900.00	6,985.12	12,148.75	6,984.74	86.40	89.56	89.98	1,865.44	-5,176.58	1,248.69	1,075.76	172.93	7.221		
12,000.00	6,985.04	12,248.75	6,984.66	87.93	91.04	89.98	1,865.93	-5,276.58	1,248.74	1,072.74	175.99	7.095		
12,100.00	6,984.96	12,348.75	6,984.59	89.46	92.52	89.98	1,866.41	-5,376.58	1,248.79	1,069.72	179.06	6.974		
12,200.00	6,984.88	12,448.75	6,984.51	90.99	94.01	89.98	1,866.90	-5,476.57	1,248.84	1,066.70	182.14	6.857		
12,300.00	6,984.81	12,548.75	6,984.44	92.53	95.51	89.98	1,867.39	-5,576.57	1,248.88	1,063.67	185.21	6.743		
12,400.00	6,984.73	12,648.75	6,984.37	94.07	97.01	89.98	1,867.88	-5,676.57	1,248.93	1,060.64	188.30	6.633		
12,500.00	6,984.65	12,748.75	6,984.29	95.61	98.51	89.98	1,868.36	-5,776.57	1,248.98	1,057.60	191.38	6.526		
12,600.00	6,984.57	12,848.75	6,984.22	97.15	100.01	89.98	1,868.85	-5,876.57	1,249.03	1,054.56	194.47	6.423		
12,700.00	6,984.49	12,948.75	6,984.14	98.70	101.52	89.98	1,869.34	-5,976.57	1,249.08	1,051.51	197.57	6.322		
12,800.00	6,984.41	13,048.75	6,984.07	100.25	103.03	89.98	1,869.83	-6,076.57	1,249.13	1,048.46	200.66	6.225		
12,900.00	6,984.34	13,148.75	6,983.99	101.80	104.54	89.98	1,870.31	-6,176.57	1,249.18	1,045.41	203.76	6.130		
13,000.00	6,984.26	13,248.75	6,983.92	103.35	106.06	89.98	1,870.80	-6,276.57	1,249.22	1,042.36	206.87	6.039		
13,100.00	6,984.18	13,348.75	6,983.84	104.90	107.58	89.98	1,871.29	-6,376.56	1,249.27	1,039.30	209.98	5.950		
13,200.00	6,984.10	13,448.75	6,983.77	106.45	109.10	89.98	1,871.78	-6,476.56	1,249.32	1,036.24	213.09	5.863		
13,300.00	6,984.02	13,548.75	6,983.69	108.01	110.62	89.98	1,872.27	-6,576.56	1,249.37	1,033.17	216.20	5.779		
13,400.00	6,983.94	13,648.75	6,983.62	109.56	112.15	89.99	1,872.75	-6,676.56	1,249.42	1,030.10	219.32	5.697		
13,500.00	6,983.87	13,748.75	6,983.55	111.12	113.67	89.99	1,873.24	-6,776.56	1,249.47	1,027.03	222.44	5.617		
13,600.00	6,983.79	13,848.75	6,983.47	112.68	115.20	89.99	1,873.73	-6,876.56	1,249.52	1,023.96	225.56	5.540		
13,700.00	6,983.71	13,948.75	6,983.40	114.24	116.74	89.99	1,874.22	-6,976.56	1,249.57	1,020.89	228.68	5.464		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #674H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS				Rule Assigned:				Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,800.00	6,983.63	14,048.75	6,983.32	115.80	118.27	89.99	1,874.70	-7,076.56	1,249.61	1,017.81	231.81	5.391		
13,900.00	6,983.55	14,148.75	6,983.25	117.37	119.80	89.99	1,875.19	-7,176.55	1,249.66	1,014.73	234.93	5.319		
14,000.00	6,983.47	14,248.75	6,983.17	118.93	121.34	89.99	1,875.68	-7,276.55	1,249.71	1,011.65	238.06	5.249		
14,100.00	6,983.40	14,348.75	6,983.10	120.50	122.88	89.99	1,876.17	-7,376.55	1,249.76	1,008.56	241.20	5.181		
14,200.00	6,983.32	14,448.75	6,983.02	122.06	124.42	89.99	1,876.65	-7,476.55	1,249.81	1,005.48	244.33	5.115		
14,300.00	6,983.24	14,548.75	6,982.95	123.63	125.96	89.99	1,877.14	-7,576.55	1,249.86	1,002.39	247.47	5.051		
14,400.00	6,983.16	14,648.75	6,982.87	125.20	127.51	89.99	1,877.63	-7,676.55	1,249.91	999.30	250.61	4.988		
14,500.00	6,983.08	14,748.75	6,982.80	126.77	129.05	89.99	1,878.12	-7,776.55	1,249.96	996.21	253.75	4.926		
14,600.00	6,983.00	14,848.75	6,982.73	128.33	130.60	89.99	1,878.60	-7,876.55	1,250.00	993.12	256.89	4.866		
14,700.00	6,982.93	14,948.75	6,982.65	129.91	132.15	89.99	1,879.09	-7,976.54	1,250.05	990.02	260.03	4.807		
14,800.00	6,982.85	15,048.75	6,982.58	131.48	133.70	89.99	1,879.58	-8,076.54	1,250.10	986.93	263.18	4.750		
14,900.00	6,982.77	15,148.75	6,982.50	133.05	135.25	89.99	1,880.07	-8,176.54	1,250.15	983.83	266.32	4.694		
15,000.00	6,982.69	15,248.75	6,982.43	134.62	136.80	89.99	1,880.55	-8,276.54	1,250.20	980.73	269.47	4.639		
15,100.00	6,982.61	15,348.75	6,982.35	136.20	138.35	89.99	1,881.04	-8,376.54	1,250.25	977.63	272.62	4.586		
15,200.00	6,982.54	15,448.75	6,982.28	137.77	139.91	89.99	1,881.53	-8,476.54	1,250.30	974.53	275.77	4.534		
15,300.00	6,982.46	15,548.75	6,982.20	139.35	141.46	89.99	1,882.02	-8,576.54	1,250.35	971.42	278.92	4.483		
15,400.00	6,982.38	15,648.75	6,982.13	140.92	143.02	89.99	1,882.50	-8,676.54	1,250.39	968.32	282.08	4.433		
15,500.00	6,982.30	15,748.75	6,982.05	142.50	144.58	89.99	1,882.99	-8,776.53	1,250.44	965.21	285.23	4.384		
15,600.00	6,982.22	15,848.75	6,981.98	144.07	146.14	89.99	1,883.48	-8,876.53	1,250.49	962.10	288.39	4.336		
15,700.00	6,982.14	15,948.75	6,981.91	145.65	147.70	89.99	1,883.97	-8,976.53	1,250.54	959.00	291.54	4.289		
15,800.00	6,982.07	16,048.75	6,981.83	147.23	149.26	89.99	1,884.46	-9,076.53	1,250.59	955.89	294.70	4.244		
15,900.00	6,981.99	16,148.75	6,981.76	148.81	150.82	89.99	1,884.94	-9,176.53	1,250.64	952.78	297.86	4.199		
16,000.00	6,981.91	16,248.75	6,981.68	150.39	152.38	89.99	1,885.43	-9,276.53	1,250.69	949.67	301.02	4.155		
16,100.00	6,981.83	16,348.75	6,981.61	151.97	153.94	89.99	1,885.92	-9,376.53	1,250.73	946.55	304.18	4.112		
16,200.00	6,981.75	16,448.75	6,981.53	153.55	155.51	89.99	1,886.41	-9,476.53	1,250.78	943.44	307.34	4.070		
16,300.00	6,981.67	16,548.75	6,981.46	155.13	157.07	89.99	1,886.89	-9,576.52	1,250.83	940.33	310.51	4.028		
16,400.00	6,981.60	16,648.75	6,981.38	156.71	158.64	89.99	1,887.38	-9,676.52	1,250.88	937.21	313.67	3.988		
16,500.00	6,981.52	16,748.75	6,981.31	158.29	160.20	89.99	1,887.87	-9,776.52	1,250.93	934.09	316.84	3.948		
16,600.00	6,981.44	16,848.75	6,981.23	159.88	161.77	89.99	1,888.36	-9,876.52	1,250.98	930.98	320.00	3.909		
16,700.00	6,981.36	16,948.75	6,981.16	161.46	163.34	89.99	1,888.84	-9,976.52	1,251.03	927.86	323.17	3.871		
16,800.00	6,981.28	17,048.75	6,981.09	163.04	164.91	89.99	1,889.33	-10,076.52	1,251.08	924.74	326.34	3.834		
16,900.00	6,981.20	17,148.75	6,981.01	164.62	166.48	89.99	1,889.82	-10,176.52	1,251.12	921.62	329.50	3.797		
17,000.00	6,981.13	17,248.75	6,980.94	166.21	168.05	89.99	1,890.31	-10,276.52	1,251.17	918.50	332.67	3.761		
17,100.00	6,981.05	17,348.75	6,980.86	167.79	169.62	89.99	1,890.79	-10,376.51	1,251.22	915.38	335.84	3.726		
17,200.00	6,980.97	17,448.75	6,980.79	169.38	171.19	89.99	1,891.28	-10,476.51	1,251.27	912.26	339.01	3.691		
17,300.00	6,980.89	17,548.75	6,980.71	170.96	172.76	89.99	1,891.77	-10,576.51	1,251.32	909.13	342.19	3.657		
17,400.00	6,980.81	17,648.75	6,980.64	172.55	174.33	89.99	1,892.26	-10,676.51	1,251.37	906.01	345.36	3.623		
17,500.00	6,980.73	17,748.75	6,980.56	174.13	175.91	89.99	1,892.74	-10,776.51	1,251.42	902.89	348.53	3.591		
17,600.00	6,980.66	17,848.75	6,980.49	175.72	177.48	89.99	1,893.23	-10,876.51	1,251.47	899.76	351.70	3.558		
17,700.00	6,980.58	17,948.75	6,980.41	177.31	179.05	89.99	1,893.72	-10,976.51	1,251.51	896.64	354.88	3.527		
17,800.00	6,980.50	18,048.75	6,980.34	178.89	180.63	89.99	1,894.21	-11,076.51	1,251.56	893.51	358.05	3.495		
17,900.00	6,980.42	18,148.75	6,980.27	180.48	182.20	89.99	1,894.70	-11,176.50	1,251.61	890.38	361.23	3.465		
18,000.00	6,980.34	18,248.75	6,980.19	182.07	183.78	89.99	1,895.18	-11,276.50	1,251.66	887.26	364.40	3.435		
18,100.00	6,980.26	18,348.75	6,980.12	183.66	185.36	89.99	1,895.67	-11,376.50	1,251.71	884.13	367.58	3.405		
18,200.00	6,980.19	18,448.75	6,980.04	185.24	186.93	89.99	1,896.16	-11,476.50	1,251.76	881.00	370.76	3.376		
18,300.00	6,980.11	18,548.75	6,979.97	186.83	188.51	89.99	1,896.65	-11,576.50	1,251.81	877.87	373.93	3.348		
18,400.00	6,980.03	18,648.75	6,979.89	188.42	190.09	89.99	1,897.13	-11,676.50	1,251.85	874.74	377.11	3.320		
18,500.00	6,979.95	18,748.75	6,979.82	190.01	191.67	89.99	1,897.62	-11,776.50	1,251.90	871.61	380.29	3.292		
18,600.00	6,979.87	18,848.75	6,979.74	191.60	193.24	89.99	1,898.11	-11,876.50	1,251.95	868.48	383.47	3.265		
18,700.00	6,979.79	18,948.75	6,979.67	193.19	194.82	89.99	1,898.60	-11,976.50	1,252.00	865.35	386.65	3.238		
18,800.00	6,979.72	19,048.75	6,979.59	194.78	196.40	89.99	1,899.08	-12,076.49	1,252.05	862.22	389.83	3.212		
18,900.00	6,979.64	19,148.75	6,979.52	196.37	197.98	89.99	1,899.57	-12,176.49	1,252.10	859.09	393.01	3.186		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #674H - OH - Prelim 5											Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
19,000.00	6,979.56	19,248.75	6,979.45	197.96	199.56	89.99	1,900.06	-12,276.49	1,252.15	855.96	396.19	3.160
19,100.00	6,979.48	19,348.75	6,979.37	199.55	201.14	89.99	1,900.55	-12,376.49	1,252.20	852.82	399.37	3.135
19,200.00	6,979.40	19,448.75	6,979.30	201.14	202.72	90.00	1,901.03	-12,476.49	1,252.24	849.69	402.55	3.111
19,300.00	6,979.33	19,548.75	6,979.22	202.73	204.31	90.00	1,901.52	-12,576.49	1,252.29	846.56	405.74	3.086
19,400.00	6,979.25	19,648.75	6,979.15	204.32	205.89	90.00	1,902.01	-12,676.49	1,252.34	843.42	408.92	3.063
19,500.00	6,979.17	19,748.75	6,979.07	205.91	207.47	90.00	1,902.50	-12,776.49	1,252.39	840.29	412.10	3.039
19,600.00	6,979.09	19,848.75	6,979.00	207.50	209.05	90.00	1,902.98	-12,876.48	1,252.44	837.15	415.29	3.016
19,700.00	6,979.01	19,948.75	6,978.92	209.09	210.63	90.00	1,903.47	-12,976.48	1,252.49	834.02	418.47	2.993
19,800.00	6,978.93	20,048.75	6,978.85	210.69	212.22	90.00	1,903.96	-13,076.48	1,252.54	830.88	421.65	2.971
19,900.00	6,978.86	20,148.75	6,978.77	212.28	213.80	90.00	1,904.45	-13,176.48	1,252.59	827.75	424.84	2.948
20,000.00	6,978.78	20,248.75	6,978.70	213.87	215.38	90.00	1,904.93	-13,276.48	1,252.63	824.61	428.02	2.927
20,100.00	6,978.70	20,348.75	6,978.63	215.46	216.97	90.00	1,905.42	-13,376.48	1,252.68	821.47	431.21	2.905
20,200.00	6,978.62	20,448.75	6,978.55	217.05	218.55	90.00	1,905.91	-13,476.48	1,252.73	818.34	434.39	2.884
20,300.00	6,978.54	20,548.75	6,978.48	218.65	220.14	90.00	1,906.40	-13,576.48	1,252.78	815.20	437.58	2.863
20,400.00	6,978.46	20,648.75	6,978.40	220.24	221.72	90.00	1,906.89	-13,676.47	1,252.83	812.06	440.77	2.842
20,500.00	6,978.39	20,748.75	6,978.33	221.83	223.31	90.00	1,907.37	-13,776.47	1,252.88	808.92	443.95	2.822
20,600.00	6,978.31	20,848.75	6,978.25	223.43	224.89	90.00	1,907.86	-13,876.47	1,252.93	805.79	447.14	2.802
20,700.00	6,978.23	20,948.75	6,978.18	225.02	226.48	90.00	1,908.35	-13,976.47	1,252.97	802.65	450.33	2.782
20,800.00	6,978.15	21,048.75	6,978.10	226.61	228.06	90.00	1,908.84	-14,076.47	1,253.02	799.51	453.52	2.763
20,900.00	6,978.07	21,148.75	6,978.03	228.21	229.65	90.00	1,909.32	-14,176.47	1,253.07	796.37	456.70	2.744
21,000.00	6,977.99	21,248.75	6,977.95	229.80	231.24	90.00	1,909.81	-14,276.47	1,253.12	793.23	459.89	2.725
21,100.00	6,977.92	21,348.75	6,977.88	231.39	232.82	90.00	1,910.30	-14,376.47	1,253.17	790.09	463.08	2.706
21,200.00	6,977.84	21,448.75	6,977.81	232.99	234.41	90.00	1,910.79	-14,476.46	1,253.22	786.95	466.27	2.688
21,300.00	6,977.76	21,548.75	6,977.73	234.58	236.00	90.00	1,911.27	-14,576.46	1,253.27	783.81	469.46	2.670
21,400.00	6,977.68	21,648.75	6,977.66	236.18	237.59	90.00	1,911.76	-14,676.46	1,253.32	780.67	472.65	2.652
21,500.00	6,977.60	21,748.75	6,977.58	237.77	239.17	90.00	1,912.25	-14,776.46	1,253.36	777.53	475.84	2.634
21,600.00	6,977.52	21,848.75	6,977.51	239.37	240.76	90.00	1,912.74	-14,876.46	1,253.41	774.39	479.03	2.617
21,700.00	6,977.45	21,948.75	6,977.43	240.96	242.35	90.00	1,913.22	-14,976.46	1,253.46	771.25	482.22	2.599
21,800.00	6,977.37	22,048.75	6,977.36	242.56	243.94	90.00	1,913.71	-15,076.46	1,253.51	768.10	485.41	2.582
21,900.00	6,977.29	22,148.75	6,977.28	244.15	245.53	90.00	1,914.20	-15,176.46	1,253.56	764.96	488.60	2.566
22,000.00	6,977.21	22,248.75	6,977.21	245.75	247.11	90.00	1,914.69	-15,276.45	1,253.61	761.82	491.79	2.549
22,100.00	6,977.13	22,348.75	6,977.13	247.34	248.70	90.00	1,915.17	-15,376.45	1,253.66	758.68	494.98	2.533
22,200.00	6,977.05	22,448.75	6,977.06	248.94	250.29	90.00	1,915.66	-15,476.45	1,253.71	755.53	498.17	2.517
22,269.73	6,977.00	22,518.47	6,977.01	250.05	251.40	90.00	1,916.00	-15,546.18	1,253.74	753.34	500.40	2.505 SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #690H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	28.90	34.95	19.29	39.92				
100.00	100.00	100.00	100.00	0.25	0.25	28.90	34.95	19.29	39.92	39.42	0.50	79.549	
200.00	200.00	200.00	200.00	0.61	0.61	28.90	34.95	19.29	39.92	38.70	1.22	32.755	
300.00	300.00	300.00	300.00	0.97	0.97	28.90	34.95	19.29	39.92	37.99	1.94	20.624	
400.00	400.00	400.00	400.00	1.33	1.33	28.90	34.95	19.29	39.92	37.27	2.65	15.050	
500.00	500.00	500.00	500.00	1.68	1.68	28.90	34.95	19.29	39.92	36.55	3.37	11.848	
600.00	600.00	600.00	600.00	2.04	2.04	28.90	34.95	19.29	39.92	35.84	4.09	9.769 CC, ES	
700.00	700.00	698.89	698.87	2.40	2.40	27.41	36.63	19.00	41.28	36.48	4.80	8.602	
800.00	799.98	797.64	797.48	2.76	2.75	35.48	41.66	18.11	44.07	38.56	5.51	8.001	
849.89	849.82	846.87	846.56	2.94	2.93	34.29	45.42	17.45	45.49	39.63	5.86	7.763	
900.00	899.86	896.26	895.73	3.12	3.11	32.92	50.02	16.64	47.29	41.08	6.21	7.615 SF	
1,000.00	999.73	994.54	993.29	3.48	3.47	29.13	61.66	14.58	53.23	46.31	6.91	7.702	
1,100.00	1,099.59	1,092.25	1,089.83	3.84	3.83	24.79	76.50	11.97	62.45	54.85	7.60	8.215	
1,200.00	1,199.45	1,189.16	1,185.02	4.20	4.20	20.70	94.40	8.81	75.11	66.83	8.28	9.069	
1,300.00	1,299.32	1,285.07	1,278.56	4.56	4.58	17.20	115.23	5.14	91.24	82.29	8.95	10.195	
1,400.00	1,399.18	1,379.78	1,370.19	4.92	4.98	14.37	138.82	0.98	110.80	101.19	9.61	11.534	
1,500.00	1,499.04	1,473.12	1,459.66	5.28	5.39	12.12	164.97	-3.63	133.69	123.44	10.25	13.043	
1,600.00	1,598.91	1,567.66	1,549.51	5.64	5.82	10.33	193.92	-8.74	159.37	148.44	10.93	14.583	
1,700.00	1,698.77	1,664.11	1,641.09	6.00	6.27	9.00	223.74	-14.00	185.48	173.83	11.65	15.921	
1,800.00	1,798.63	1,760.57	1,732.67	6.36	6.73	7.99	253.57	-19.26	211.66	199.28	12.38	17.103	
1,900.00	1,898.49	1,857.02	1,824.24	6.72	7.20	7.21	283.40	-24.51	237.88	224.77	13.11	18.152	
2,000.00	1,998.36	1,953.47	1,915.82	7.09	7.67	6.58	313.22	-29.77	264.14	250.30	13.84	19.088	
2,100.00	2,098.22	2,049.93	2,007.40	7.45	8.15	6.06	343.05	-35.03	290.42	275.85	14.57	19.929	
2,200.00	2,198.08	2,146.38	2,098.97	7.81	8.63	5.63	372.87	-40.29	316.72	301.41	15.31	20.686	
2,300.00	2,297.95	2,242.84	2,190.55	8.17	9.12	5.27	402.70	-45.55	343.03	326.98	16.05	21.373	
2,400.00	2,397.81	2,339.29	2,282.13	8.53	9.61	4.96	432.52	-50.81	369.36	352.57	16.79	21.998	
2,500.00	2,497.67	2,435.75	2,373.70	8.90	10.10	4.69	462.35	-56.07	395.69	378.16	17.53	22.568	
2,600.00	2,597.54	2,532.20	2,465.28	9.26	10.59	4.45	492.18	-61.33	422.03	403.76	18.28	23.091	
2,700.00	2,697.40	2,628.66	2,556.86	9.62	11.09	4.24	522.00	-66.59	448.38	429.36	19.02	23.572	
2,800.00	2,797.26	2,725.11	2,648.43	9.98	11.58	4.06	551.83	-71.85	474.73	454.97	19.77	24.016	
2,900.00	2,897.13	2,821.57	2,740.01	10.35	12.08	3.89	581.65	-77.11	501.09	480.57	20.51	24.427	
3,000.00	2,996.99	2,918.02	2,831.59	10.71	12.58	3.74	611.48	-82.36	527.45	506.19	21.26	24.808	
3,100.00	3,096.85	3,014.47	2,923.16	11.07	13.08	3.60	641.31	-87.62	553.81	531.80	22.01	25.163	
3,200.00	3,196.72	3,110.93	3,014.74	11.43	13.59	3.48	671.13	-92.88	580.18	557.42	22.76	25.494	
3,300.00	3,296.58	3,207.38	3,106.31	11.80	14.09	3.37	700.96	-98.14	606.54	583.04	23.51	25.803	
3,400.00	3,396.44	3,303.84	3,197.89	12.16	14.59	3.27	730.78	-103.40	632.91	608.66	24.26	26.092	
3,500.00	3,496.31	3,400.29	3,289.47	12.52	15.10	3.17	760.61	-108.66	659.28	634.28	25.01	26.364	
3,600.00	3,596.17	3,496.75	3,381.04	12.88	15.60	3.08	790.44	-113.92	685.66	659.90	25.76	26.620	
3,700.00	3,696.03	3,593.20	3,472.62	13.25	16.11	3.00	820.26	-119.18	712.03	685.52	26.51	26.860	
3,800.00	3,795.89	3,689.66	3,564.20	13.61	16.61	2.93	850.09	-124.44	738.41	711.15	27.26	27.088	
3,900.00	3,895.76	3,786.11	3,655.77	13.97	17.12	2.86	879.91	-129.70	764.78	736.77	28.01	27.302	
4,000.00	3,995.62	3,882.57	3,747.35	14.34	17.63	2.79	909.74	-134.96	791.16	762.40	28.76	27.505	
4,100.00	4,095.48	3,979.02	3,838.93	14.70	18.13	2.73	939.56	-140.22	817.54	788.02	29.52	27.698	
4,200.00	4,195.35	4,075.48	3,930.50	15.06	18.64	2.67	969.39	-145.47	843.92	813.65	30.27	27.880	
4,300.00	4,295.21	4,171.93	4,022.08	15.42	19.15	2.62	999.22	-150.73	870.30	839.28	31.02	28.054	
4,400.00	4,395.07	4,268.38	4,113.66	15.79	19.66	2.57	1,029.04	-155.99	896.68	864.90	31.78	28.219	
4,500.00	4,494.94	4,364.84	4,205.23	16.15	20.17	2.52	1,058.87	-161.25	923.06	890.53	32.53	28.376	
4,600.00	4,594.80	4,461.29	4,296.81	16.51	20.67	2.48	1,088.69	-166.51	949.44	916.16	33.28	28.526	
4,700.00	4,694.66	4,557.75	4,388.39	16.87	21.18	2.43	1,118.52	-171.77	975.83	941.79	34.04	28.670	
4,800.00	4,794.53	4,654.20	4,479.96	17.24	21.69	2.39	1,148.35	-177.03	1,002.21	967.42	34.79	28.806	
4,900.00	4,894.39	4,750.66	4,571.54	17.60	22.20	2.35	1,178.17	-182.29	1,028.59	993.05	35.55	28.937	
5,000.00	4,994.25	4,847.11	4,663.11	17.96	22.71	2.32	1,208.00	-187.55	1,054.98	1,018.68	36.30	29.062	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #690H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
5,100.00	5,094.12	4,943.57	4,754.69	18.33	23.22	2.28	1,237.82	-192.81	1,081.36	1,044.30	37.06	29.182		
5,200.00	5,193.98	5,040.02	4,846.27	18.69	23.73	2.25	1,267.65	-198.07	1,107.74	1,069.93	37.81	29.297		
5,300.00	5,293.84	5,136.48	4,937.84	19.05	24.24	2.22	1,297.48	-203.32	1,134.13	1,095.56	38.57	29.408		
5,336.91	5,330.71	5,172.08	4,971.65	19.19	24.43	2.21	1,308.49	-205.27	1,143.87	1,105.02	38.84	29.448		
5,400.00	5,393.71	5,232.88	5,029.38	19.41	24.75	2.19	1,327.29	-208.58	1,160.68	1,121.36	39.32	29.518		
5,500.00	5,493.62	5,329.07	5,120.70	19.77	25.26	2.17	1,357.03	-213.83	1,188.02	1,147.94	40.07	29.645		
5,600.00	5,593.57	5,425.02	5,211.80	20.13	25.77	2.14	1,386.70	-219.06	1,216.19	1,175.36	40.83	29.790		
5,700.00	5,693.53	5,520.72	5,302.65	20.49	26.28	2.12	1,416.29	-224.28	1,245.20	1,203.62	41.58	29.950		
5,800.00	5,793.52	5,616.16	5,393.27	20.85	26.78	2.09	1,445.80	-229.48	1,275.04	1,232.72	42.32	30.127		
5,900.00	5,893.52	5,737.31	5,508.64	21.20	27.41	2.06	1,482.20	-235.90	1,304.84	1,261.56	43.28	30.150		
5,936.48	5,930.00	5,782.58	5,551.94	21.33	27.64	-8.71	1,495.19	-238.19	1,315.41	1,271.78	43.63	30.149		
6,000.00	5,993.52	5,861.86	5,628.04	21.56	28.04	-8.73	1,517.11	-242.05	1,333.24	1,289.01	44.24	30.139		
6,100.00	6,093.52	5,987.95	5,749.66	21.91	28.66	-8.76	1,549.84	-247.82	1,359.60	1,314.42	45.18	30.095		
6,200.00	6,193.52	6,115.50	5,873.42	22.27	29.25	-8.79	1,580.27	-253.19	1,383.81	1,337.71	46.10	30.017		
6,300.00	6,293.52	6,244.43	5,999.17	22.62	29.83	-8.82	1,608.25	-258.12	1,405.85	1,358.84	47.00	29.909		
6,358.48	6,352.00	6,320.41	6,073.57	22.83	30.16	-8.83	1,623.43	-260.80	1,417.71	1,370.19	47.52	29.832		
6,400.00	6,393.49	6,374.71	6,126.86	22.97	30.39	65.21	1,633.69	-262.61	1,425.13	1,377.24	47.89	29.761		
6,450.00	6,443.20	6,440.37	6,191.43	23.15	30.66	64.89	1,645.43	-264.68	1,432.05	1,383.74	48.32	29.639		
6,500.00	6,492.36	6,505.86	6,255.96	23.33	30.93	64.93	1,656.41	-266.61	1,436.79	1,388.05	48.74	29.476		
6,550.00	6,540.64	6,570.67	6,319.95	23.51	31.18	65.31	1,666.55	-268.40	1,439.39	1,390.22	49.17	29.277		
6,600.00	6,587.77	6,634.31	6,382.89	23.69	31.43	66.03	1,675.83	-270.04	1,439.93	1,390.35	49.58	29.043		
6,650.00	6,633.44	6,659.67	6,408.00	23.88	31.53	66.47	1,679.33	-270.66	1,438.91	1,389.04	49.87	28.852		
6,700.00	6,677.37	6,700.00	6,447.82	24.07	31.68	67.34	1,685.70	-270.71	1,437.24	1,387.02	50.22	28.618		
6,750.00	6,719.30	6,700.00	6,447.82	24.26	31.68	67.51	1,685.70	-270.71	1,435.20	1,384.79	50.41	28.469		
6,800.00	6,758.97	6,722.66	6,470.04	24.46	31.78	68.24	1,690.05	-269.95	1,432.95	1,382.25	50.70	28.262		
6,850.00	6,796.12	6,750.00	6,496.66	24.67	31.90	69.20	1,696.04	-268.27	1,430.78	1,379.75	51.03	28.039		
6,900.00	6,830.54	6,750.00	6,496.66	24.88	31.90	69.41	1,696.04	-268.27	1,428.30	1,377.08	51.22	27.888		
6,950.00	6,862.00	6,750.00	6,496.66	25.11	31.90	69.59	1,696.04	-268.27	1,426.19	1,374.79	51.40	27.745		
7,000.00	6,890.33	6,771.67	6,517.58	25.34	32.00	70.49	1,701.34	-266.34	1,424.02	1,372.26	51.76	27.511		
7,050.00	6,915.33	6,780.12	6,525.69	25.59	32.03	70.94	1,703.54	-265.45	1,422.27	1,370.21	52.05	27.322		
7,100.00	6,936.86	6,800.00	6,544.65	25.85	32.13	71.81	1,709.01	-263.04	1,421.03	1,368.56	52.47	27.081		
7,150.00	6,954.79	6,800.00	6,544.65	26.12	32.13	71.91	1,709.01	-263.04	1,419.96	1,367.19	52.77	26.909		
7,200.00	6,968.99	6,800.00	6,544.65	26.40	32.13	71.95	1,709.01	-263.04	1,419.42	1,366.32	53.10	26.731		
7,224.15	6,974.50	6,800.00	6,544.65	26.54	32.13	71.96	1,709.01	-263.04	1,419.36	1,366.09	53.27	26.644		
7,250.00	6,979.40	6,800.00	6,544.65	26.69	32.13	71.95	1,709.01	-263.04	1,419.43	1,365.97	53.46	26.549		
7,300.00	6,985.94	6,800.00	6,544.65	27.00	32.13	71.90	1,709.01	-263.04	1,419.99	1,366.12	53.87	26.361		
7,350.00	6,988.56	6,800.00	6,544.65	27.31	32.13	71.81	1,709.01	-263.04	1,421.08	1,366.77	54.31	26.168		
7,358.93	6,988.62	6,800.00	6,544.65	27.36	32.13	71.79	1,709.01	-263.04	1,421.33	1,366.94	54.39	26.133		
7,400.00	6,988.59	6,800.00	6,544.65	27.63	32.13	71.79	1,709.01	-263.04	1,423.12	1,368.35	54.77	25.981		
7,500.00	6,988.52	6,800.00	6,544.65	28.33	32.13	71.79	1,709.01	-263.04	1,432.40	1,376.62	55.78	25.682		
7,600.00	6,988.45	6,800.00	6,544.65	29.10	32.13	71.79	1,709.01	-263.04	1,448.54	1,391.71	56.82	25.492		
7,658.93	6,988.41	6,800.00	6,544.65	29.59	32.13	71.79	1,709.01	-263.04	1,461.17	1,403.72	57.45	25.435		
7,700.00	6,988.38	6,800.00	6,544.65	29.94	32.13	71.72	1,709.01	-263.04	1,471.58	1,413.70	57.88	25.424		
7,800.00	6,988.31	6,800.00	6,544.65	30.84	32.13	71.51	1,709.01	-263.04	1,503.52	1,444.60	58.92	25.517		
7,900.00	6,988.24	6,800.00	6,544.65	31.79	32.13	71.22	1,709.01	-263.04	1,544.30	1,484.39	59.91	25.777		
8,000.00	6,988.16	6,800.00	6,544.65	32.78	32.13	70.85	1,709.01	-263.04	1,593.20	1,532.37	60.82	26.193		
8,100.00	6,988.09	6,800.00	6,544.65	33.82	32.13	70.40	1,709.01	-263.04	1,649.43	1,587.78	61.65	26.754		
8,200.00	6,988.01	6,800.00	6,544.65	34.88	32.13	69.85	1,709.01	-263.04	1,712.21	1,649.82	62.39	27.445		
8,300.00	6,987.94	6,781.43	6,526.95	35.98	32.04	68.34	1,703.89	-265.30	1,780.40	1,717.56	62.84	28.331		
8,400.00	6,987.86	6,778.74	6,524.37	37.11	32.03	67.40	1,703.18	-265.60	1,853.92	1,790.54	63.38	29.251		
8,416.35	6,987.85	6,778.29	6,523.94	37.29	32.03	67.23	1,703.06	-265.65	1,866.38	1,802.91	63.46	29.409		
8,500.00	6,987.78	6,776.04	6,521.78	38.25	32.02	67.12	1,702.47	-265.89	1,931.13	1,867.28	63.85	30.246		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 34 - Rosa Unit #690H - OH - Prelim 5											Offset Site Error:		0.00 usft	
Survey Program:		0-MWD+HRGM+MS						Rule Assigned:						Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
8,600.00	6,987.70	6,773.49	6,519.33	39.43	32.00	67.00	1,701.81	-266.16	2,010.36	1,946.10	64.26	31.285				
8,700.00	6,987.62	6,771.07	6,517.00	40.64	31.99	66.89	1,701.19	-266.40	2,091.36	2,026.74	64.63	32.361				
8,800.00	6,987.55	6,750.00	6,496.66	41.88	31.90	65.91	1,696.04	-268.27	2,174.29	2,109.51	64.77	33.567				
8,900.00	6,987.47	6,750.00	6,496.66	43.14	31.90	65.91	1,696.04	-268.27	2,258.18	2,193.09	65.09	34.695				
9,000.00	6,987.39	6,750.00	6,496.66	44.42	31.90	65.91	1,696.04	-268.27	2,343.33	2,277.97	65.37	35.848				
9,100.00	6,987.31	6,750.00	6,496.66	45.72	31.90	65.91	1,696.04	-268.27	2,429.62	2,364.00	65.62	37.026				
9,200.00	6,987.23	6,750.00	6,496.66	47.04	31.90	65.91	1,696.04	-268.27	2,516.92	2,451.08	65.85	38.224				
9,300.00	6,987.15	6,750.00	6,496.66	48.38	31.90	65.91	1,696.04	-268.27	2,605.14	2,539.09	66.05	39.442				
9,400.00	6,987.08	6,750.00	6,496.66	49.73	31.90	65.91	1,696.04	-268.27	2,694.18	2,627.94	66.24	40.676				
9,500.00	6,987.00	6,750.00	6,496.66	51.10	31.90	65.91	1,696.04	-268.27	2,783.96	2,717.56	66.40	41.925				
9,600.00	6,986.92	6,750.00	6,496.66	52.48	31.90	65.91	1,696.04	-268.27	2,874.42	2,807.86	66.56	43.187				
9,700.00	6,986.84	6,750.00	6,496.66	53.87	31.90	65.91	1,696.04	-268.27	2,965.49	2,898.79	66.70	44.462				
9,800.00	6,986.76	6,750.00	6,496.66	55.28	31.90	65.91	1,696.04	-268.27	3,057.12	2,990.29	66.83	45.747				
9,900.00	6,986.68	6,750.00	6,496.66	56.69	31.90	65.91	1,696.04	-268.27	3,149.26	3,082.31	66.94	47.043				
10,000.00	6,986.61	6,750.00	6,496.66	58.12	31.90	65.91	1,696.04	-268.27	3,241.86	3,174.81	67.05	48.346				
10,100.00	6,986.53	6,750.00	6,496.66	59.55	31.90	65.91	1,696.04	-268.27	3,334.90	3,267.74	67.16	49.658				
10,200.00	6,986.45	6,750.00	6,496.66	61.00	31.90	65.91	1,696.04	-268.27	3,428.32	3,361.07	67.25	50.977				
10,300.00	6,986.37	6,750.00	6,496.66	62.45	31.90	65.91	1,696.04	-268.27	3,522.10	3,454.76	67.34	52.302				
10,400.00	6,986.29	6,750.00	6,496.66	63.90	31.90	65.91	1,696.04	-268.27	3,616.22	3,548.80	67.43	53.633				
10,500.00	6,986.21	6,750.00	6,496.66	65.37	31.90	65.91	1,696.04	-268.27	3,710.65	3,643.14	67.51	54.968				
10,600.00	6,986.14	6,750.00	6,496.66	66.84	31.90	65.91	1,696.04	-268.27	3,805.36	3,737.78	67.58	56.309				
10,700.00	6,986.06	6,750.00	6,496.66	68.32	31.90	65.91	1,696.04	-268.27	3,900.33	3,832.68	67.65	57.653				
10,800.00	6,985.98	6,750.00	6,496.66	69.80	31.90	65.91	1,696.04	-268.27	3,995.55	3,927.83	67.72	59.001				
10,900.00	6,985.90	6,750.00	6,496.66	71.29	31.90	65.91	1,696.04	-268.27	4,091.00	4,023.22	67.79	60.352				
11,000.00	6,985.82	6,750.00	6,496.66	72.78	31.90	65.91	1,696.04	-268.27	4,186.66	4,118.81	67.85	61.706				
11,100.00	6,985.75	6,750.00	6,496.66	74.28	31.90	65.91	1,696.04	-268.27	4,282.52	4,214.61	67.91	63.063				
11,200.00	6,985.67	6,750.00	6,496.66	75.78	31.90	65.91	1,696.04	-268.27	4,378.57	4,310.60	67.97	64.422				
11,300.00	6,985.59	6,750.00	6,496.66	77.29	31.90	65.91	1,696.04	-268.27	4,474.78	4,406.76	68.02	65.782				
11,400.00	6,985.51	6,750.00	6,496.66	78.80	31.90	65.91	1,696.04	-268.27	4,571.16	4,503.08	68.08	67.145				
11,500.00	6,985.43	6,750.00	6,496.66	80.31	31.90	65.91	1,696.04	-268.27	4,667.70	4,599.56	68.13	68.508				
11,600.00	6,985.35	6,750.00	6,496.66	81.83	31.90	65.91	1,696.04	-268.27	4,764.37	4,696.18	68.19	69.873				
11,700.00	6,985.28	6,750.00	6,496.66	83.35	31.90	65.91	1,696.04	-268.27	4,861.18	4,792.94	68.24	71.239				
11,800.00	6,985.20	6,750.00	6,496.66	84.87	31.90	65.91	1,696.04	-268.27	4,958.12	4,889.83	68.29	72.605				
11,900.00	6,985.12	6,750.00	6,496.66	86.40	31.90	65.91	1,696.04	-268.27	5,055.17	4,986.83	68.34	73.972				
12,000.00	6,985.04	6,750.00	6,496.66	87.93	31.90	65.91	1,696.04	-268.27	5,152.34	5,083.95	68.39	75.339				
12,100.00	6,984.96	6,750.00	6,496.66	89.46	31.90	65.91	1,696.04	-268.27	5,249.62	5,181.18	68.44	76.706				
12,200.00	6,984.88	6,727.93	6,475.18	90.99	31.80	64.88	1,691.14	-269.69	5,346.62	5,278.28	68.34	78.238				
12,300.00	6,984.81	6,727.29	6,474.56	92.53	31.80	64.85	1,691.01	-269.72	5,444.07	5,375.69	68.38	79.612				
12,400.00	6,984.73	6,726.67	6,473.96	94.07	31.80	64.83	1,690.88	-269.75	5,541.61	5,473.19	68.43	80.986				
12,500.00	6,984.65	6,726.07	6,473.38	95.61	31.80	64.80	1,690.76	-269.79	5,639.24	5,570.77	68.47	82.359				
12,600.00	6,984.57	6,725.49	6,472.80	97.15	31.79	64.77	1,690.64	-269.81	5,736.95	5,668.43	68.52	83.732				
12,700.00	6,984.49	6,724.92	6,472.25	98.70	31.79	64.74	1,690.52	-269.84	5,834.73	5,766.17	68.56	85.104				
12,800.00	6,984.41	6,724.36	6,471.70	100.25	31.79	64.72	1,690.40	-269.87	5,932.59	5,863.99	68.60	86.475				
12,900.00	6,984.34	6,723.82	6,471.17	101.80	31.79	64.69	1,690.29	-269.90	6,030.52	5,961.87	68.65	87.846				
13,000.00	6,984.26	6,723.29	6,470.66	103.35	31.78	64.67	1,690.18	-269.92	6,128.51	6,059.82	68.69	89.216				
13,100.00	6,984.18	6,722.78	6,470.15	104.90	31.78	64.65	1,690.08	-269.94	6,226.57	6,157.83	68.74	90.584				
13,200.00	6,984.10	6,700.00	6,447.82	106.45	31.68	63.61	1,685.70	-270.71	6,325.05	6,256.41	68.64	92.143				
13,300.00	6,984.02	6,700.00	6,447.82	108.01	31.68	63.61	1,685.70	-270.71	6,423.21	6,354.52	68.69	93.507				
13,400.00	6,983.94	6,700.00	6,447.82	109.56	31.68	63.61	1,685.70	-270.71	6,521.42	6,452.68	68.74	94.869				
13,500.00	6,983.87	6,700.00	6,447.82	111.12	31.68	63.61	1,685.70	-270.71	6,619.69	6,550.90	68.79	96.230				
13,600.00	6,983.79	6,700.00	6,447.82	112.68	31.68	63.61	1,685.70	-270.71	6,718.01	6,649.17	68.84	97.590				
13,700.00	6,983.71	6,700.00	6,447.82	114.24	31.68	63.61	1,685.70	-270.71	6,816.38	6,747.49	68.89	98.947				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #690H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,800.00	6,983.63	6,700.00	6,447.82	115.80	31.68	63.61	1,685.70	-270.71	6,914.80	6,845.86	68.94	100.304	
13,900.00	6,983.55	6,700.00	6,447.82	117.37	31.68	63.61	1,685.70	-270.71	7,013.26	6,944.27	68.99	101.658	
14,000.00	6,983.47	6,700.00	6,447.82	118.93	31.68	63.61	1,685.70	-270.71	7,111.76	7,042.72	69.04	103.011	
14,100.00	6,983.40	6,700.00	6,447.82	120.50	31.68	63.61	1,685.70	-270.71	7,210.30	7,141.21	69.09	104.362	
14,200.00	6,983.32	6,700.00	6,447.82	122.06	31.68	63.61	1,685.70	-270.71	7,308.89	7,239.75	69.14	105.711	
14,300.00	6,983.24	6,700.00	6,447.82	123.63	31.68	63.61	1,685.70	-270.71	7,407.51	7,338.32	69.19	107.058	
14,400.00	6,983.16	6,700.00	6,447.82	125.20	31.68	63.61	1,685.70	-270.71	7,506.17	7,436.93	69.24	108.403	
14,500.00	6,983.08	6,700.00	6,447.82	126.77	31.68	63.61	1,685.70	-270.71	7,604.86	7,535.57	69.30	109.746	
14,600.00	6,983.00	6,700.00	6,447.82	128.33	31.68	63.61	1,685.70	-270.71	7,703.59	7,634.24	69.35	111.086	
14,700.00	6,982.93	6,700.00	6,447.82	129.91	31.68	63.61	1,685.70	-270.71	7,802.35	7,732.95	69.40	112.425	
14,800.00	6,982.85	6,700.00	6,447.82	131.48	31.68	63.61	1,685.70	-270.71	7,901.14	7,831.69	69.45	113.761	
14,900.00	6,982.77	6,700.00	6,447.82	133.05	31.68	63.61	1,685.70	-270.71	7,999.96	7,930.45	69.51	115.095	
15,000.00	6,982.69	6,700.00	6,447.82	134.62	31.68	63.61	1,685.70	-270.71	8,098.81	8,029.25	69.56	116.427	
15,100.00	6,982.61	6,700.00	6,447.82	136.20	31.68	63.61	1,685.70	-270.71	8,197.69	8,128.07	69.62	117.757	
15,200.00	6,982.54	6,700.00	6,447.82	137.77	31.68	63.61	1,685.70	-270.71	8,296.59	8,226.92	69.67	119.084	
15,300.00	6,982.46	6,700.00	6,447.82	139.35	31.68	63.61	1,685.70	-270.71	8,395.52	8,325.80	69.73	120.408	
15,400.00	6,982.38	6,700.00	6,447.82	140.92	31.68	63.61	1,685.70	-270.71	8,494.48	8,424.70	69.78	121.730	
15,500.00	6,982.30	6,700.00	6,447.82	142.50	31.68	63.61	1,685.70	-270.71	8,593.46	8,523.62	69.84	123.050	
15,600.00	6,982.22	6,700.00	6,447.82	144.07	31.68	63.61	1,685.70	-270.71	8,692.46	8,622.57	69.89	124.367	
15,700.00	6,982.14	6,700.00	6,447.82	145.65	31.68	63.61	1,685.70	-270.71	8,791.49	8,721.54	69.95	125.681	
15,800.00	6,982.07	6,700.00	6,447.82	147.23	31.68	63.61	1,685.70	-270.71	8,890.53	8,820.52	70.01	126.993	
15,900.00	6,981.99	6,700.00	6,447.82	148.81	31.68	63.61	1,685.70	-270.71	8,989.60	8,919.54	70.07	128.302	
16,000.00	6,981.91	6,700.00	6,447.82	150.39	31.68	63.61	1,685.70	-270.71	9,088.69	9,018.57	70.12	129.608	
16,100.00	6,981.83	6,700.00	6,447.82	151.97	31.68	63.61	1,685.70	-270.71	9,187.80	9,117.62	70.18	130.911	
16,200.00	6,981.75	6,700.00	6,447.82	153.55	31.68	63.61	1,685.70	-270.71	9,286.93	9,216.68	70.24	132.212	
16,300.00	6,981.67	6,700.00	6,447.82	155.13	31.68	63.61	1,685.70	-270.71	9,386.07	9,315.77	70.30	133.510	
16,400.00	6,981.60	6,700.00	6,447.82	156.71	31.68	63.61	1,685.70	-270.71	9,485.24	9,414.88	70.36	134.805	
16,500.00	6,981.52	6,700.00	6,447.82	158.29	31.68	63.61	1,685.70	-270.71	9,584.42	9,514.00	70.42	136.097	
16,600.00	6,981.44	6,700.00	6,447.82	159.88	31.68	63.61	1,685.70	-270.71	9,683.62	9,613.13	70.48	137.387	
16,700.00	6,981.36	6,700.00	6,447.82	161.46	31.68	63.61	1,685.70	-270.71	9,782.83	9,712.29	70.55	138.673	
16,800.00	6,981.28	6,700.00	6,447.82	163.04	31.68	63.61	1,685.70	-270.71	9,882.06	9,811.45	70.61	139.957	
16,900.00	6,981.20	6,700.00	6,447.82	164.62	31.68	63.61	1,685.70	-270.71	9,981.31	9,910.64	70.67	141.237	
17,000.00	6,981.13	6,700.00	6,447.82	166.21	31.68	63.61	1,685.70	-270.71	10,080.57	10,009.84	70.73	142.515	
17,100.00	6,981.05	6,700.00	6,447.82	167.79	31.68	63.61	1,685.70	-270.71	10,179.84	10,109.05	70.80	143.789	
17,200.00	6,980.97	6,700.00	6,447.82	169.38	31.68	63.61	1,685.70	-270.71	10,279.13	10,208.27	70.86	145.061	
17,300.00	6,980.89	6,700.00	6,447.82	170.96	31.68	63.61	1,685.70	-270.71	10,378.44	10,307.51	70.93	146.329	
17,400.00	6,980.81	6,700.00	6,447.82	172.55	31.68	63.61	1,685.70	-270.71	10,477.75	10,406.76	70.99	147.594	
17,500.00	6,980.73	6,700.00	6,447.82	174.13	31.68	63.61	1,685.70	-270.71	10,577.08	10,506.03	71.06	148.857	
17,600.00	6,980.66	6,700.00	6,447.82	175.72	31.68	63.61	1,685.70	-270.71	10,676.42	10,605.30	71.12	150.116	
17,700.00	6,980.58	6,700.00	6,447.82	177.31	31.68	63.61	1,685.70	-270.71	10,775.78	10,704.59	71.19	151.372	
17,800.00	6,980.50	6,700.00	6,447.82	178.89	31.68	63.61	1,685.70	-270.71	10,875.14	10,803.89	71.25	152.624	
17,900.00	6,980.42	6,700.00	6,447.82	180.48	31.68	63.61	1,685.70	-270.71	10,974.52	10,903.20	71.32	153.874	
18,000.00	6,980.34	6,700.00	6,447.82	182.07	31.68	63.61	1,685.70	-270.71	11,073.91	11,002.52	71.39	155.120	
18,100.00	6,980.26	6,700.00	6,447.82	183.66	31.68	63.61	1,685.70	-270.71	11,173.31	11,101.85	71.46	156.364	
18,200.00	6,980.19	6,700.00	6,447.82	185.24	31.68	63.61	1,685.70	-270.71	11,272.72	11,201.19	71.53	157.604	
18,300.00	6,980.11	6,700.00	6,447.82	186.83	31.68	63.61	1,685.70	-270.71	11,372.14	11,300.54	71.59	158.840	
18,400.00	6,980.03	6,700.00	6,447.82	188.42	31.68	63.61	1,685.70	-270.71	11,471.57	11,399.90	71.66	160.074	
18,500.00	6,979.95	6,700.00	6,447.82	190.01	31.68	63.61	1,685.70	-270.71	11,571.01	11,499.28	71.73	161.304	
18,600.00	6,979.87	6,700.00	6,447.82	191.60	31.68	63.61	1,685.70	-270.71	11,670.46	11,598.65	71.80	162.531	
18,700.00	6,979.79	6,700.00	6,447.82	193.19	31.68	63.61	1,685.70	-270.71	11,769.92	11,698.04	71.88	163.754	
18,800.00	6,979.72	6,700.00	6,447.82	194.78	31.68	63.61	1,685.70	-270.71	11,869.39	11,797.44	71.95	164.974	
18,900.00	6,979.64	6,700.00	6,447.82	196.37	31.68	63.61	1,685.70	-270.71	11,968.86	11,896.84	72.02	166.191	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #690H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS				Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
19,000.00	6,979.56	6,700.00	6,447.82	197.96	31.68	63.61	1,685.70	-270.71	12,068.35	11,996.26	72.09	167.405	
19,100.00	6,979.48	6,700.00	6,447.82	199.55	31.68	63.61	1,685.70	-270.71	12,167.84	12,095.68	72.16	168.615	
19,200.00	6,979.40	6,700.00	6,447.82	201.14	31.68	63.61	1,685.70	-270.71	12,267.35	12,195.11	72.24	169.822	
19,300.00	6,979.33	6,700.00	6,447.82	202.73	31.68	63.61	1,685.70	-270.71	12,366.86	12,294.55	72.31	171.025	
19,400.00	6,979.25	6,700.00	6,447.82	204.32	31.68	63.61	1,685.70	-270.71	12,466.37	12,393.99	72.38	172.226	
19,500.00	6,979.17	6,700.00	6,447.82	205.91	31.68	63.61	1,685.70	-270.71	12,565.90	12,493.44	72.46	173.422	
19,600.00	6,979.09	6,700.00	6,447.82	207.50	31.68	63.61	1,685.70	-270.71	12,665.43	12,592.90	72.53	174.616	
19,700.00	6,979.01	6,700.00	6,447.82	209.09	31.68	63.61	1,685.70	-270.71	12,764.97	12,692.37	72.61	175.805	
19,800.00	6,978.93	6,700.00	6,447.82	210.69	31.68	63.61	1,685.70	-270.71	12,864.52	12,791.84	72.68	176.992	
19,900.00	6,978.86	6,700.00	6,447.82	212.28	31.68	63.61	1,685.70	-270.71	12,964.08	12,891.32	72.76	178.175	
20,000.00	6,978.78	6,700.00	6,447.82	213.87	31.68	63.61	1,685.70	-270.71	13,063.64	12,990.80	72.84	179.354	
20,100.00	6,978.70	6,700.00	6,447.82	215.46	31.68	63.61	1,685.70	-270.71	13,163.21	13,090.29	72.91	180.531	
20,200.00	6,978.62	6,700.00	6,447.82	217.05	31.68	63.61	1,685.70	-270.71	13,262.78	13,189.79	72.99	181.703	
20,300.00	6,978.54	6,700.00	6,447.82	218.65	31.68	63.61	1,685.70	-270.71	13,362.36	13,289.29	73.07	182.872	
20,400.00	6,978.46	6,700.00	6,447.82	220.24	31.68	63.61	1,685.70	-270.71	13,461.95	13,388.80	73.15	184.038	
20,500.00	6,978.39	6,700.00	6,447.82	221.83	31.68	63.61	1,685.70	-270.71	13,561.54	13,488.32	73.23	185.201	
20,600.00	6,978.31	6,700.00	6,447.82	223.43	31.68	63.61	1,685.70	-270.71	13,661.14	13,587.84	73.31	186.359	
20,700.00	6,978.23	6,700.00	6,447.82	225.02	31.68	63.61	1,685.70	-270.71	13,760.75	13,687.36	73.38	187.515	
20,800.00	6,978.15	6,700.00	6,447.82	226.61	31.68	63.61	1,685.70	-270.71	13,860.36	13,786.89	73.46	188.666	
20,900.00	6,978.07	6,700.00	6,447.82	228.21	31.68	63.61	1,685.70	-270.71	13,959.97	13,886.43	73.55	189.815	
21,000.00	6,977.99	6,700.00	6,447.82	229.80	31.68	63.61	1,685.70	-270.71	14,059.60	13,985.97	73.63	190.960	
21,100.00	6,977.92	6,700.00	6,447.82	231.39	31.68	63.61	1,685.70	-270.71	14,159.22	14,085.52	73.71	192.101	
21,200.00	6,977.84	6,700.00	6,447.82	232.99	31.68	63.61	1,685.70	-270.71	14,258.85	14,185.07	73.79	193.239	
21,300.00	6,977.76	6,700.00	6,447.82	234.58	31.68	63.61	1,685.70	-270.71	14,358.49	14,284.62	73.87	194.373	
21,400.00	6,977.68	6,700.00	6,447.82	236.18	31.68	63.61	1,685.70	-270.71	14,458.13	14,384.18	73.95	195.504	
21,500.00	6,977.60	6,700.00	6,447.82	237.77	31.68	63.61	1,685.70	-270.71	14,557.78	14,483.75	74.04	196.631	
21,600.00	6,977.52	6,700.00	6,447.82	239.37	31.68	63.61	1,685.70	-270.71	14,657.43	14,583.32	74.12	197.755	
21,700.00	6,977.45	6,700.00	6,447.82	240.96	31.68	63.61	1,685.70	-270.71	14,757.09	14,682.89	74.20	198.876	
21,800.00	6,977.37	6,700.00	6,447.82	242.56	31.68	63.61	1,685.70	-270.71	14,856.75	14,782.47	74.29	199.992	
21,900.00	6,977.29	6,700.00	6,447.82	244.15	31.68	63.61	1,685.70	-270.71	14,956.42	14,882.05	74.37	201.106	
22,000.00	6,977.21	6,700.00	6,447.82	245.75	31.68	63.61	1,685.70	-270.71	15,056.09	14,981.63	74.46	202.215	
22,100.00	6,977.13	6,700.00	6,447.82	247.34	31.68	63.61	1,685.70	-270.71	15,155.76	15,081.22	74.54	203.322	
22,200.00	6,977.05	6,700.00	6,447.82	248.94	31.68	63.61	1,685.70	-270.71	15,255.44	15,180.82	74.63	204.424	
22,269.73	6,977.00	6,700.00	6,447.82	250.05	31.68	63.61	1,685.70	-270.71	15,324.95	15,250.26	74.69	205.191	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	28.90	17.48	9.65	19.96				
100.00	100.00	100.00	100.00	0.25	0.25	28.90	17.48	9.65	19.96	19.46	0.50	39.774	
200.00	200.00	200.00	200.00	0.61	0.61	28.90	17.48	9.65	19.96	18.74	1.22	16.378	
300.00	300.00	300.00	300.00	0.97	0.97	28.90	17.48	9.65	19.96	18.03	1.94	10.312	
400.00	400.00	400.00	400.00	1.33	1.33	28.90	17.48	9.65	19.96	17.31	2.65	7.525	
500.00	500.00	500.00	500.00	1.68	1.68	28.90	17.48	9.65	19.96	16.59	3.37	5.924	
600.00	600.00	600.00	600.00	2.04	2.04	28.90	17.48	9.65	19.96	15.87	4.09	4.885	
700.00	700.00	700.00	700.00	2.40	2.40	28.90	17.48	9.65	19.96	15.16	4.80	4.156	CC
800.00	799.98	799.43	799.41	2.76	2.76	39.97	19.19	9.45	20.03	14.52	5.52	3.631	
849.89	849.82	849.04	848.98	2.94	2.94	40.36	21.33	9.22	20.13	14.25	5.87	3.428	ES
900.00	899.86	898.86	898.70	3.12	3.12	40.11	24.33	8.88	20.59	14.36	6.23	3.307	SF
1,000.00	999.73	998.17	997.63	3.48	3.48	36.03	32.88	7.92	23.69	16.76	6.93	3.417	
1,100.00	1,099.59	1,097.12	1,095.85	3.84	3.84	29.77	44.78	6.59	29.97	22.34	7.63	3.927	
1,200.00	1,199.45	1,196.02	1,193.60	4.20	4.20	24.05	59.74	4.91	39.40	31.07	8.33	4.730	
1,300.00	1,299.32	1,295.46	1,291.79	4.56	4.57	20.35	75.33	3.17	49.63	40.58	9.05	5.486	
1,400.00	1,399.18	1,394.89	1,389.98	4.92	4.95	17.93	90.91	1.42	59.99	50.22	9.77	6.142	
1,500.00	1,499.04	1,494.33	1,488.17	5.28	5.33	16.21	106.50	-0.32	70.42	59.93	10.49	6.714	
1,600.00	1,598.91	1,593.76	1,586.36	5.64	5.72	14.95	122.09	-2.07	80.90	69.69	11.21	7.215	
1,700.00	1,698.77	1,693.20	1,684.55	6.00	6.11	13.97	137.68	-3.82	91.41	79.47	11.94	7.658	
1,800.00	1,798.63	1,792.63	1,782.74	6.36	6.50	13.19	153.27	-5.56	101.94	89.28	12.66	8.051	
1,900.00	1,898.49	1,892.07	1,880.93	6.72	6.89	12.56	168.85	-7.31	112.49	99.10	13.39	8.402	
2,000.00	1,998.36	1,991.50	1,979.12	7.09	7.29	12.04	184.44	-9.05	123.05	108.93	14.11	8.717	
2,100.00	2,098.22	2,090.94	2,077.31	7.45	7.68	11.60	200.03	-10.80	133.61	118.77	14.84	9.002	
2,200.00	2,198.08	2,190.38	2,175.50	7.81	8.08	11.23	215.62	-12.54	144.18	128.61	15.57	9.260	
2,300.00	2,297.95	2,289.81	2,273.69	8.17	8.47	10.90	231.21	-14.29	154.76	138.46	16.30	9.496	
2,400.00	2,397.81	2,389.25	2,371.88	8.53	8.87	10.62	246.79	-16.04	165.34	148.32	17.03	9.711	
2,500.00	2,497.67	2,488.68	2,470.07	8.90	9.27	10.37	262.38	-17.78	175.93	158.17	17.76	9.908	
2,600.00	2,597.54	2,588.12	2,568.26	9.26	9.67	10.15	277.97	-19.53	186.52	168.03	18.49	10.090	
2,700.00	2,697.40	2,687.55	2,666.45	9.62	10.06	9.95	293.56	-21.27	197.11	177.89	19.21	10.258	
2,800.00	2,797.26	2,786.99	2,764.65	9.98	10.46	9.78	309.15	-23.02	207.70	187.76	19.94	10.414	
2,900.00	2,897.13	2,886.42	2,862.84	10.35	10.86	9.62	324.73	-24.76	218.30	197.62	20.67	10.559	
3,000.00	2,996.99	2,985.86	2,961.03	10.71	11.26	9.47	340.32	-26.51	228.89	207.49	21.40	10.694	
3,100.00	3,096.85	3,085.29	3,059.22	11.07	11.66	9.34	355.91	-28.26	239.49	217.36	22.13	10.820	
3,200.00	3,196.72	3,184.73	3,157.41	11.43	12.06	9.22	371.50	-30.00	250.09	227.22	22.86	10.938	
3,300.00	3,296.58	3,284.17	3,255.60	11.80	12.46	9.11	387.09	-31.75	260.69	237.09	23.59	11.048	
3,400.00	3,396.44	3,383.60	3,353.79	12.16	12.87	9.01	402.67	-33.49	271.29	246.96	24.33	11.152	
3,500.00	3,496.31	3,483.04	3,451.98	12.52	13.27	8.91	418.26	-35.24	281.89	256.83	25.06	11.250	
3,600.00	3,596.17	3,582.47	3,550.17	12.88	13.67	8.83	433.85	-36.98	292.49	266.70	25.79	11.343	
3,700.00	3,696.03	3,681.91	3,648.36	13.25	14.07	8.74	449.44	-38.73	303.09	276.58	26.52	11.430	
3,800.00	3,795.89	3,781.34	3,746.55	13.61	14.47	8.67	465.03	-40.48	313.70	286.45	27.25	11.512	
3,900.00	3,895.76	3,880.78	3,844.74	13.97	14.87	8.60	480.61	-42.22	324.30	296.32	27.98	11.590	
4,000.00	3,995.62	3,980.21	3,942.93	14.34	15.28	8.53	496.20	-43.97	334.90	306.19	28.71	11.665	
4,100.00	4,095.48	4,079.65	4,041.12	14.70	15.68	8.47	511.79	-45.71	345.51	316.07	29.44	11.735	
4,200.00	4,195.35	4,179.08	4,139.31	15.06	16.08	8.41	527.38	-47.46	356.11	325.94	30.17	11.802	
4,300.00	4,295.21	4,278.52	4,237.50	15.42	16.48	8.35	542.96	-49.20	366.72	335.81	30.90	11.866	
4,400.00	4,395.07	4,377.96	4,335.69	15.79	16.89	8.30	558.55	-50.95	377.32	345.69	31.64	11.927	
4,500.00	4,494.94	4,477.39	4,433.88	16.15	17.29	8.25	574.14	-52.70	387.93	355.56	32.37	11.985	
4,600.00	4,594.80	4,576.83	4,532.07	16.51	17.69	8.21	589.73	-54.44	398.54	365.44	33.10	12.041	
4,700.00	4,694.66	4,676.26	4,630.27	16.87	18.09	8.16	605.32	-56.19	409.14	375.31	33.83	12.094	
4,800.00	4,794.53	4,775.70	4,728.46	17.24	18.50	8.12	620.90	-57.93	419.75	385.19	34.56	12.145	
4,900.00	4,894.39	4,875.13	4,826.65	17.60	18.90	8.08	636.49	-59.68	430.36	395.06	35.29	12.193	
5,000.00	4,994.25	4,974.57	4,924.84	17.96	19.30	8.04	652.08	-61.42	440.96	404.94	36.03	12.240	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,100.00	5,094.12	5,074.00	5,023.03	18.33	19.71	8.01	667.67	-63.17	451.57	414.81	36.76	12.285	
5,200.00	5,193.98	5,173.44	5,121.22	18.69	20.11	7.97	683.26	-64.92	462.18	424.69	37.49	12.328	
5,300.00	5,293.84	5,272.87	5,219.41	19.05	20.51	7.94	698.84	-66.66	472.79	434.57	38.22	12.370	
5,336.91	5,330.71	5,309.58	5,255.65	19.19	20.66	7.93	704.60	-67.31	476.70	438.21	38.49	12.385	
5,400.00	5,393.71	5,372.29	5,317.58	19.41	20.92	7.91	714.43	-68.41	483.56	444.61	38.95	12.414	
5,500.00	5,493.62	5,473.11	5,417.15	19.77	21.32	7.87	730.21	-70.17	495.12	455.42	39.70	12.473	
5,600.00	5,593.57	5,581.98	5,524.86	20.13	21.76	7.82	745.94	-71.93	506.32	465.82	40.49	12.503	
5,700.00	5,693.53	5,691.20	5,633.19	20.49	22.18	7.78	759.67	-73.47	516.48	475.20	41.28	12.512	
5,800.00	5,793.52	5,800.72	5,742.08	20.85	22.60	7.73	771.37	-74.78	525.62	483.57	42.05	12.500	
5,900.00	5,893.52	5,910.53	5,851.45	21.20	23.00	7.69	781.03	-75.86	533.71	490.90	42.80	12.469	
5,936.48	5,930.00	5,950.65	5,891.46	21.33	23.15	-3.08	784.04	-76.20	536.40	493.32	43.07	12.453	
6,000.00	5,993.52	6,020.59	5,961.25	21.56	23.40	-3.11	788.62	-76.71	540.57	497.03	43.54	12.415	
6,100.00	6,093.52	6,130.91	6,071.42	21.91	23.78	-3.14	794.12	-77.33	545.58	501.32	44.26	12.326	
6,200.00	6,193.52	6,241.40	6,181.86	22.27	24.16	-3.16	797.51	-77.71	548.67	503.71	44.97	12.202	
6,300.00	6,293.52	6,351.97	6,292.43	22.62	24.52	-3.17	798.79	-77.85	549.83	504.19	45.64	12.046	
6,354.62	6,348.14	6,412.38	6,352.83	22.81	24.71	-3.17	798.59	-77.83	549.65	503.65	46.00	11.948	
6,358.48	6,352.00	6,408.05	6,348.50	22.83	24.69	-3.17	798.63	-77.84	549.68	503.63	46.05	11.937	
6,400.00	6,393.49	6,443.43	6,383.86	22.97	24.80	71.63	798.85	-76.95	549.50	503.15	46.34	11.857	
6,445.10	6,438.35	6,475.22	6,415.56	23.13	24.91	72.19	799.88	-74.71	549.42	502.75	46.66	11.774	
6,450.00	6,443.20	6,478.62	6,418.94	23.15	24.92	72.27	800.04	-74.39	549.42	502.72	46.70	11.766	
6,500.00	6,492.36	6,512.40	6,452.41	23.33	25.03	73.28	802.09	-70.35	549.64	502.62	47.02	11.688	
6,550.00	6,540.64	6,550.00	6,489.32	23.51	25.16	74.82	805.42	-64.06	550.53	503.19	47.35	11.627	
6,600.00	6,587.77	6,573.43	6,512.09	23.69	25.25	75.92	808.04	-59.19	552.36	504.79	47.57	11.611	
6,650.00	6,633.44	6,600.00	6,537.64	23.88	25.34	77.28	811.53	-52.80	555.70	507.93	47.77	11.632	
6,700.00	6,677.37	6,623.34	6,559.82	24.07	25.42	78.45	815.02	-46.42	560.91	513.01	47.91	11.709	
6,750.00	6,719.30	6,650.00	6,584.80	24.26	25.52	79.86	819.51	-38.28	568.44	520.37	48.07	11.825	
6,800.00	6,758.97	6,661.11	6,595.10	24.46	25.56	79.89	821.54	-34.63	578.37	530.38	47.99	12.051	
6,850.00	6,796.12	6,675.57	6,608.38	24.67	25.62	79.98	824.31	-29.64	591.04	543.09	47.96	12.324	
6,900.00	6,830.54	6,687.25	6,619.02	24.88	25.66	79.61	826.66	-25.42	606.45	558.56	47.89	12.663	
6,950.00	6,862.00	6,700.00	6,630.52	25.11	25.71	79.09	829.34	-20.62	624.54	576.64	47.90	13.038	
7,000.00	6,890.33	6,700.00	6,630.52	25.34	25.71	77.10	829.34	-20.62	645.11	597.44	47.67	13.532	
7,050.00	6,915.33	6,700.00	6,630.52	25.59	25.71	74.85	829.34	-20.62	668.03	620.52	47.51	14.061	
7,100.00	6,936.86	6,700.00	6,630.52	25.85	25.71	72.37	829.34	-20.62	692.94	645.51	47.43	14.609	
7,150.00	6,954.79	6,700.00	6,630.52	26.12	25.71	69.70	829.34	-20.62	719.47	672.03	47.45	15.164	
7,200.00	6,968.99	6,700.00	6,630.52	26.40	25.71	66.90	829.34	-20.62	747.31	699.76	47.56	15.714	
7,250.00	6,979.40	6,700.00	6,630.52	26.69	25.71	64.01	829.34	-20.62	776.15	728.40	47.75	16.255	
7,300.00	6,985.94	6,700.00	6,630.52	27.00	25.71	61.08	829.34	-20.62	805.72	757.70	48.02	16.780	
7,350.00	6,988.56	6,700.00	6,630.52	27.31	25.71	58.16	829.34	-20.62	835.76	787.41	48.35	17.287	
7,358.93	6,988.62	6,700.00	6,630.52	27.36	25.71	57.65	829.34	-20.62	841.15	792.75	48.41	17.376	
7,400.00	6,988.59	6,700.00	6,630.52	27.63	25.71	57.65	829.34	-20.62	866.62	817.91	48.70	17.795	
7,500.00	6,988.52	6,676.83	6,609.53	28.33	25.62	55.83	824.56	-29.19	932.56	883.69	48.87	19.083	
7,600.00	6,988.45	6,665.47	6,599.11	29.10	25.58	54.95	822.36	-33.15	1,003.95	954.70	49.24	20.387	
7,658.93	6,988.41	6,650.00	6,584.80	29.59	25.52	53.77	819.51	-38.28	1,048.17	998.90	49.27	21.273	
7,700.00	6,988.38	6,650.00	6,584.80	29.94	25.52	53.18	819.51	-38.28	1,079.78	1,030.29	49.49	21.820	
7,800.00	6,988.31	6,650.00	6,584.80	30.84	25.52	51.52	819.51	-38.28	1,160.35	1,110.40	49.95	23.228	
7,900.00	6,988.24	6,650.00	6,584.80	31.79	25.52	49.47	819.51	-38.28	1,245.17	1,194.82	50.35	24.730	
8,000.00	6,988.16	6,626.29	6,562.60	32.78	25.44	45.11	815.49	-45.56	1,332.71	1,282.36	50.35	26.467	
8,100.00	6,988.09	6,617.64	6,554.43	33.82	25.40	41.38	814.13	-48.04	1,422.99	1,372.44	50.55	28.150	
8,200.00	6,988.01	6,600.00	6,537.64	34.88	25.34	36.38	811.53	-52.80	1,515.32	1,464.72	50.61	29.944	
8,300.00	6,987.94	6,600.00	6,537.64	35.98	25.34	31.95	811.53	-52.80	1,608.99	1,558.13	50.86	31.638	
8,400.00	6,987.86	6,600.00	6,537.64	37.11	25.34	26.65	811.53	-52.80	1,703.96	1,652.88	51.07	33.363	
8,416.35	6,987.85	6,600.00	6,537.64	37.29	25.34	25.70	811.53	-52.80	1,719.59	1,668.48	51.11	33.647	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,500.00	6,987.78	6,600.00	6,537.64	38.25	25.34	25.70	811.53	-52.80	1,799.77	1,748.51	51.26	35.109		
8,600.00	6,987.70	6,580.88	6,519.28	39.43	25.27	24.56	808.97	-57.49	1,895.66	1,844.41	51.25	36.991		
8,700.00	6,987.62	6,574.86	6,513.47	40.64	25.25	24.22	808.22	-58.87	1,992.02	1,940.68	51.35	38.795		
8,800.00	6,987.55	6,569.23	6,508.02	41.88	25.23	23.91	807.54	-60.12	2,088.67	2,037.23	51.44	40.604		
8,900.00	6,987.47	6,550.00	6,489.32	43.14	25.16	22.90	805.42	-64.06	2,185.75	2,134.34	51.41	42.515		
9,000.00	6,987.39	6,550.00	6,489.32	44.42	25.16	22.90	805.42	-64.06	2,282.75	2,231.22	51.53	44.295		
9,100.00	6,987.31	6,550.00	6,489.32	45.72	25.16	22.90	805.42	-64.06	2,380.01	2,328.36	51.65	46.082		
9,200.00	6,987.23	6,550.00	6,489.32	47.04	25.16	22.90	805.42	-64.06	2,477.48	2,425.73	51.75	47.874		
9,300.00	6,987.15	6,550.00	6,489.32	48.38	25.16	22.90	805.42	-64.06	2,575.14	2,523.30	51.85	49.670		
9,400.00	6,987.08	6,550.00	6,489.32	49.73	25.16	22.90	805.42	-64.06	2,672.98	2,621.05	51.93	51.469		
9,500.00	6,987.00	6,550.00	6,489.32	51.10	25.16	22.90	805.42	-64.06	2,770.97	2,718.96	52.02	53.271		
9,600.00	6,986.92	6,550.00	6,489.32	52.48	25.16	22.90	805.42	-64.06	2,869.11	2,817.01	52.09	55.075		
9,700.00	6,986.84	6,550.00	6,489.32	53.87	25.16	22.90	805.42	-64.06	2,967.36	2,915.19	52.17	56.880		
9,800.00	6,986.76	6,528.29	6,468.06	55.28	25.09	21.86	803.36	-67.93	3,065.32	3,013.21	52.11	58.820		
9,900.00	6,986.68	6,525.29	6,465.12	56.69	25.08	21.72	803.11	-68.41	3,163.67	3,111.51	52.17	60.644		
10,000.00	6,986.61	6,522.44	6,462.30	58.12	25.07	21.60	802.87	-68.86	3,262.11	3,209.89	52.22	62.468		
10,100.00	6,986.53	6,500.00	6,440.15	59.55	24.99	20.65	801.23	-72.01	3,360.96	3,308.80	52.17	64.426		
10,200.00	6,986.45	6,500.00	6,440.15	61.00	24.99	20.65	801.23	-72.01	3,459.47	3,407.24	52.23	66.230		
10,300.00	6,986.37	6,500.00	6,440.15	62.45	24.99	20.65	801.23	-72.01	3,558.06	3,505.77	52.30	68.033		
10,400.00	6,986.29	6,500.00	6,440.15	63.90	24.99	20.65	801.23	-72.01	3,656.73	3,604.37	52.36	69.836		
10,500.00	6,986.21	6,500.00	6,440.15	65.37	24.99	20.65	801.23	-72.01	3,755.47	3,703.05	52.42	71.637		
10,600.00	6,986.14	6,500.00	6,440.15	66.84	24.99	20.65	801.23	-72.01	3,854.28	3,801.79	52.48	73.438		
10,700.00	6,986.06	6,500.00	6,440.15	68.32	24.99	20.65	801.23	-72.01	3,953.14	3,900.60	52.54	75.236		
10,800.00	6,985.98	6,500.00	6,440.15	69.80	24.99	20.65	801.23	-72.01	4,052.06	3,999.46	52.60	77.034		
10,900.00	6,985.90	6,500.00	6,440.15	71.29	24.99	20.65	801.23	-72.01	4,151.03	4,098.37	52.66	78.829		
11,000.00	6,985.82	6,500.00	6,440.15	72.78	24.99	20.65	801.23	-72.01	4,250.05	4,197.34	52.72	80.622		
11,100.00	6,985.75	6,500.00	6,440.15	74.28	24.99	20.65	801.23	-72.01	4,349.12	4,296.34	52.77	82.413		
11,200.00	6,985.67	6,500.00	6,440.15	75.78	24.99	20.65	801.23	-72.01	4,448.22	4,395.39	52.83	84.202		
11,300.00	6,985.59	6,500.00	6,440.15	77.29	24.99	20.65	801.23	-72.01	4,547.37	4,494.48	52.88	85.988		
11,400.00	6,985.51	6,500.00	6,440.15	78.80	24.99	20.65	801.23	-72.01	4,646.55	4,593.61	52.94	87.771		
11,500.00	6,985.43	6,500.00	6,440.15	80.31	24.99	20.65	801.23	-72.01	4,745.77	4,692.77	52.99	89.552		
11,600.00	6,985.35	6,500.00	6,440.15	81.83	24.99	20.65	801.23	-72.01	4,845.02	4,791.97	53.05	91.329		
11,700.00	6,985.28	6,500.00	6,440.15	83.35	24.99	20.65	801.23	-72.01	4,944.29	4,891.19	53.11	93.103		
11,800.00	6,985.20	6,500.00	6,440.15	84.87	24.99	20.65	801.23	-72.01	5,043.60	4,990.44	53.16	94.874		
11,900.00	6,985.12	6,500.00	6,440.15	86.40	24.99	20.65	801.23	-72.01	5,142.94	5,089.72	53.22	96.642		
12,000.00	6,985.04	6,500.00	6,440.15	87.93	24.99	20.65	801.23	-72.01	5,242.30	5,189.02	53.27	98.406		
12,100.00	6,984.96	6,500.00	6,440.15	89.46	24.99	20.65	801.23	-72.01	5,341.68	5,288.35	53.33	100.167		
12,200.00	6,984.88	6,500.00	6,440.15	90.99	24.99	20.65	801.23	-72.01	5,441.09	5,387.70	53.38	101.923		
12,300.00	6,984.81	6,500.00	6,440.15	92.53	24.99	20.65	801.23	-72.01	5,540.51	5,487.07	53.44	103.676		
12,400.00	6,984.73	6,500.00	6,440.15	94.07	24.99	20.65	801.23	-72.01	5,639.96	5,586.46	53.50	105.426		
12,500.00	6,984.65	6,500.00	6,440.15	95.61	24.99	20.65	801.23	-72.01	5,739.43	5,685.87	53.55	107.171		
12,600.00	6,984.57	6,500.00	6,440.15	97.15	24.99	20.65	801.23	-72.01	5,838.91	5,785.30	53.61	108.912		
12,700.00	6,984.49	6,476.72	6,417.05	98.70	24.91	19.77	799.95	-74.57	5,937.99	5,884.41	53.59	110.811		
12,800.00	6,984.41	6,475.71	6,416.04	100.25	24.91	19.73	799.90	-74.67	6,037.48	5,983.84	53.64	112.552		
12,900.00	6,984.34	6,474.72	6,415.06	101.80	24.90	19.70	799.86	-74.76	6,136.97	6,083.28	53.70	114.288		
13,000.00	6,984.26	6,473.77	6,414.11	103.35	24.90	19.66	799.82	-74.84	6,236.49	6,182.73	53.75	116.020		
13,100.00	6,984.18	6,472.84	6,413.19	104.90	24.90	19.63	799.78	-74.93	6,336.01	6,282.20	53.81	117.748		
13,200.00	6,984.10	6,450.00	6,390.43	106.45	24.82	18.87	799.00	-76.60	6,435.92	6,382.13	53.80	119.637		
13,300.00	6,984.02	6,450.00	6,390.43	108.01	24.82	18.87	799.00	-76.60	6,535.45	6,481.59	53.86	121.349		
13,400.00	6,983.94	6,450.00	6,390.43	109.56	24.82	18.87	799.00	-76.60	6,634.98	6,581.07	53.92	123.057		
13,500.00	6,983.87	6,450.00	6,390.43	111.12	24.82	18.87	799.00	-76.60	6,734.54	6,680.56	53.98	124.760		
13,600.00	6,983.79	6,450.00	6,390.43	112.68	24.82	18.87	799.00	-76.60	6,834.10	6,780.06	54.04	126.458		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS				Rule Assigned:				Offset Well Error:		0.00 usft		
Reference		Offset		Semi Maior Axis		Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
13,700.00	6,983.71	6,450.00	6,390.43	114.24	24.82	18.87	799.00	-76.60	6,933.68	6,879.57	54.11	128.151		
13,800.00	6,983.63	6,450.00	6,390.43	115.80	24.82	18.87	799.00	-76.60	7,033.26	6,979.10	54.17	129.840		
13,900.00	6,983.55	6,450.00	6,390.43	117.37	24.82	18.87	799.00	-76.60	7,132.86	7,078.63	54.23	131.524		
14,000.00	6,983.47	6,450.00	6,390.43	118.93	24.82	18.87	799.00	-76.60	7,232.48	7,178.18	54.30	133.202		
14,100.00	6,983.40	6,450.00	6,390.43	120.50	24.82	18.87	799.00	-76.60	7,332.10	7,277.74	54.36	134.876		
14,200.00	6,983.32	6,450.00	6,390.43	122.06	24.82	18.87	799.00	-76.60	7,431.73	7,377.30	54.43	136.545		
14,300.00	6,983.24	6,450.00	6,390.43	123.63	24.82	18.87	799.00	-76.60	7,531.37	7,476.88	54.49	138.209		
14,400.00	6,983.16	6,450.00	6,390.43	125.20	24.82	18.87	799.00	-76.60	7,631.02	7,576.46	54.56	139.867		
14,500.00	6,983.08	6,450.00	6,390.43	126.77	24.82	18.87	799.00	-76.60	7,730.68	7,676.06	54.63	141.520		
14,600.00	6,983.00	6,450.00	6,390.43	128.33	24.82	18.87	799.00	-76.60	7,830.35	7,775.66	54.69	143.168		
14,700.00	6,982.93	6,450.00	6,390.43	129.91	24.82	18.87	799.00	-76.60	7,930.03	7,875.27	54.76	144.811		
14,800.00	6,982.85	6,450.00	6,390.43	131.48	24.82	18.87	799.00	-76.60	8,029.71	7,974.88	54.83	146.449		
14,900.00	6,982.77	6,450.00	6,390.43	133.05	24.82	18.87	799.00	-76.60	8,129.41	8,074.51	54.90	148.081		
15,000.00	6,982.69	6,450.00	6,390.43	134.62	24.82	18.87	799.00	-76.60	8,229.11	8,174.14	54.97	149.708		
15,100.00	6,982.61	6,450.00	6,390.43	136.20	24.82	18.87	799.00	-76.60	8,328.81	8,273.78	55.04	151.329		
15,200.00	6,982.54	6,450.00	6,390.43	137.77	24.82	18.87	799.00	-76.60	8,428.53	8,373.42	55.11	152.945		
15,300.00	6,982.46	6,450.00	6,390.43	139.35	24.82	18.87	799.00	-76.60	8,528.25	8,473.07	55.18	154.556		
15,400.00	6,982.38	6,450.00	6,390.43	140.92	24.82	18.87	799.00	-76.60	8,627.98	8,572.73	55.25	156.161		
15,500.00	6,982.30	6,450.00	6,390.43	142.50	24.82	18.87	799.00	-76.60	8,727.71	8,672.39	55.32	157.760		
15,600.00	6,982.22	6,450.00	6,390.43	144.07	24.82	18.87	799.00	-76.60	8,827.45	8,772.06	55.40	159.354		
15,700.00	6,982.14	6,450.00	6,390.43	145.65	24.82	18.87	799.00	-76.60	8,927.20	8,871.73	55.47	160.943		
15,800.00	6,982.07	6,450.00	6,390.43	147.23	24.82	18.87	799.00	-76.60	9,026.95	8,971.41	55.54	162.525		
15,900.00	6,981.99	6,450.00	6,390.43	148.81	24.82	18.87	799.00	-76.60	9,126.71	9,071.09	55.62	164.102		
16,000.00	6,981.91	6,450.00	6,390.43	150.39	24.82	18.87	799.00	-76.60	9,226.47	9,170.78	55.69	165.674		
16,100.00	6,981.83	6,450.00	6,390.43	151.97	24.82	18.87	799.00	-76.60	9,326.23	9,270.47	55.77	167.240		
16,200.00	6,981.75	6,450.00	6,390.43	153.55	24.82	18.87	799.00	-76.60	9,426.01	9,370.17	55.84	168.800		
16,300.00	6,981.67	6,450.00	6,390.43	155.13	24.82	18.87	799.00	-76.60	9,525.78	9,469.87	55.92	170.354		
16,400.00	6,981.60	6,450.00	6,390.43	156.71	24.82	18.87	799.00	-76.60	9,625.57	9,569.57	55.99	171.903		
16,500.00	6,981.52	6,450.00	6,390.43	158.29	24.82	18.87	799.00	-76.60	9,725.35	9,669.28	56.07	173.445		
16,600.00	6,981.44	6,450.00	6,390.43	159.88	24.82	18.87	799.00	-76.60	9,825.14	9,768.99	56.15	174.982		
16,700.00	6,981.36	6,450.00	6,390.43	161.46	24.82	18.87	799.00	-76.60	9,924.94	9,868.71	56.23	176.514		
16,800.00	6,981.28	6,450.00	6,390.43	163.04	24.82	18.87	799.00	-76.60	10,024.73	9,968.43	56.31	178.039		
16,900.00	6,981.20	6,450.00	6,390.43	164.62	24.82	18.87	799.00	-76.60	10,124.54	10,068.15	56.39	179.559		
17,000.00	6,981.13	6,450.00	6,390.43	166.21	24.82	18.87	799.00	-76.60	10,224.34	10,167.88	56.47	181.073		
17,100.00	6,981.05	6,450.00	6,390.43	167.79	24.82	18.87	799.00	-76.60	10,324.15	10,267.61	56.55	182.581		
17,200.00	6,980.97	6,450.00	6,390.43	169.38	24.82	18.87	799.00	-76.60	10,423.97	10,367.34	56.63	184.083		
17,300.00	6,980.89	6,450.00	6,390.43	170.96	24.82	18.87	799.00	-76.60	10,523.79	10,467.08	56.71	185.579		
17,400.00	6,980.81	6,450.00	6,390.43	172.55	24.82	18.87	799.00	-76.60	10,623.61	10,566.82	56.79	187.070		
17,500.00	6,980.73	6,450.00	6,390.43	174.13	24.82	18.87	799.00	-76.60	10,723.43	10,666.56	56.87	188.554		
17,600.00	6,980.66	6,450.00	6,390.43	175.72	24.82	18.87	799.00	-76.60	10,823.26	10,766.30	56.95	190.033		
17,700.00	6,980.58	6,450.00	6,390.43	177.31	24.82	18.87	799.00	-76.60	10,923.09	10,866.05	57.04	191.506		
17,800.00	6,980.50	6,450.00	6,390.43	178.89	24.82	18.87	799.00	-76.60	11,022.92	10,965.80	57.12	192.973		
17,900.00	6,980.42	6,450.00	6,390.43	180.48	24.82	18.87	799.00	-76.60	11,122.76	11,065.55	57.21	194.434		
18,000.00	6,980.34	6,450.00	6,390.43	182.07	24.82	18.87	799.00	-76.60	11,222.60	11,165.31	57.29	195.889		
18,100.00	6,980.26	6,450.00	6,390.43	183.66	24.82	18.87	799.00	-76.60	11,322.44	11,265.06	57.38	197.338		
18,200.00	6,980.19	6,450.00	6,390.43	185.24	24.82	18.87	799.00	-76.60	11,422.29	11,364.82	57.46	198.781		
18,300.00	6,980.11	6,450.00	6,390.43	186.83	24.82	18.87	799.00	-76.60	11,522.13	11,464.59	57.55	200.219		
18,400.00	6,980.03	6,450.00	6,390.43	188.42	24.82	18.87	799.00	-76.60	11,621.98	11,564.35	57.63	201.650		
18,500.00	6,979.95	6,450.00	6,390.43	190.01	24.82	18.87	799.00	-76.60	11,721.84	11,664.12	57.72	203.076		
18,600.00	6,979.87	6,450.00	6,390.43	191.60	24.82	18.87	799.00	-76.60	11,821.69	11,763.88	57.81	204.496		
18,700.00	6,979.79	6,450.00	6,390.43	193.19	24.82	18.87	799.00	-76.60	11,921.55	11,863.65	57.90	205.910		
18,800.00	6,979.72	6,450.00	6,390.43	194.78	24.82	18.87	799.00	-76.60	12,021.41	11,963.42	57.99	207.318		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,900.00	6,979.64	6,450.00	6,390.43	196.37	24.82	18.87	799.00	-76.60	12,121.27	12,063.20	58.07	208.720	
19,000.00	6,979.56	6,450.00	6,390.43	197.96	24.82	18.87	799.00	-76.60	12,221.14	12,162.97	58.16	210.116	
19,100.00	6,979.48	6,450.00	6,390.43	199.55	24.82	18.87	799.00	-76.60	12,321.00	12,262.75	58.25	211.506	
19,200.00	6,979.40	6,450.00	6,390.43	201.14	24.82	18.87	799.00	-76.60	12,420.87	12,362.53	58.34	212.890	
19,300.00	6,979.33	6,450.00	6,390.43	202.73	24.82	18.87	799.00	-76.60	12,520.74	12,462.31	58.43	214.269	
19,400.00	6,979.25	6,450.00	6,390.43	204.32	24.82	18.87	799.00	-76.60	12,620.62	12,562.09	58.53	215.642	
19,500.00	6,979.17	6,450.00	6,390.43	205.91	24.82	18.87	799.00	-76.60	12,720.49	12,661.88	58.62	217.009	
19,600.00	6,979.09	6,450.00	6,390.43	207.50	24.82	18.87	799.00	-76.60	12,820.37	12,761.66	58.71	218.369	
19,700.00	6,979.01	6,450.00	6,390.43	209.09	24.82	18.87	799.00	-76.60	12,920.25	12,861.45	58.80	219.725	
19,800.00	6,978.93	6,450.00	6,390.43	210.69	24.82	18.87	799.00	-76.60	13,020.13	12,961.24	58.89	221.074	
19,900.00	6,978.86	6,450.00	6,390.43	212.28	24.82	18.87	799.00	-76.60	13,120.01	13,061.03	58.99	222.417	
20,000.00	6,978.78	6,450.00	6,390.43	213.87	24.82	18.87	799.00	-76.60	13,219.90	13,160.82	59.08	223.755	
20,100.00	6,978.70	6,450.00	6,390.43	215.46	24.82	18.87	799.00	-76.60	13,319.78	13,260.61	59.18	225.087	
20,200.00	6,978.62	6,450.00	6,390.43	217.05	24.82	18.87	799.00	-76.60	13,419.67	13,360.40	59.27	226.413	
20,300.00	6,978.54	6,450.00	6,390.43	218.65	24.82	18.87	799.00	-76.60	13,519.56	13,460.20	59.37	227.733	
20,400.00	6,978.46	6,450.00	6,390.43	220.24	24.82	18.87	799.00	-76.60	13,619.45	13,559.99	59.46	229.048	
20,500.00	6,978.39	6,450.00	6,390.43	221.83	24.82	18.87	799.00	-76.60	13,719.35	13,659.79	59.56	230.356	
20,600.00	6,978.31	6,450.00	6,390.43	223.43	24.82	18.87	799.00	-76.60	13,819.24	13,759.59	59.65	231.659	
20,700.00	6,978.23	6,450.00	6,390.43	225.02	24.82	18.87	799.00	-76.60	13,919.14	13,859.39	59.75	232.956	
20,800.00	6,978.15	6,450.00	6,390.43	226.61	24.82	18.87	799.00	-76.60	14,019.03	13,959.19	59.85	234.248	
20,900.00	6,978.07	6,450.00	6,390.43	228.21	24.82	18.87	799.00	-76.60	14,118.93	14,058.99	59.94	235.534	
21,000.00	6,977.99	6,450.00	6,390.43	229.80	24.82	18.87	799.00	-76.60	14,218.83	14,158.79	60.04	236.814	
21,100.00	6,977.92	6,450.00	6,390.43	231.39	24.82	18.87	799.00	-76.60	14,318.73	14,258.59	60.14	238.088	
21,200.00	6,977.84	6,450.00	6,390.43	232.99	24.82	18.87	799.00	-76.60	14,418.64	14,358.40	60.24	239.357	
21,300.00	6,977.76	6,450.00	6,390.43	234.58	24.82	18.87	799.00	-76.60	14,518.54	14,458.20	60.34	240.620	
21,400.00	6,977.68	6,450.00	6,390.43	236.18	24.82	18.87	799.00	-76.60	14,618.45	14,558.01	60.44	241.877	
21,500.00	6,977.60	6,450.00	6,390.43	237.77	24.82	18.87	799.00	-76.60	14,718.35	14,657.82	60.54	243.129	
21,600.00	6,977.52	6,450.00	6,390.43	239.37	24.82	18.87	799.00	-76.60	14,818.26	14,757.62	60.64	244.375	
21,700.00	6,977.45	6,450.00	6,390.43	240.96	24.82	18.87	799.00	-76.60	14,918.17	14,857.43	60.74	245.616	
21,800.00	6,977.37	6,450.00	6,390.43	242.56	24.82	18.87	799.00	-76.60	15,018.08	14,957.24	60.84	246.851	
21,900.00	6,977.29	6,450.00	6,390.43	244.15	24.82	18.87	799.00	-76.60	15,117.99	15,057.05	60.94	248.080	
22,000.00	6,977.21	6,450.00	6,390.43	245.75	24.82	18.87	799.00	-76.60	15,217.91	15,156.87	61.04	249.304	
22,100.00	6,977.13	6,450.00	6,390.43	247.34	24.82	18.87	799.00	-76.60	15,317.82	15,256.68	61.14	250.523	
22,200.00	6,977.05	6,450.00	6,390.43	248.94	24.82	18.87	799.00	-76.60	15,417.74	15,356.49	61.25	251.735	
22,269.73	6,977.00	6,450.00	6,390.43	250.05	24.82	18.87	799.00	-76.60	15,487.40	15,426.09	61.32	252.578	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #696H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-150.37	-17.48	-9.94	20.10				
100.00	100.00	100.00	100.00	0.25	0.25	-150.37	-17.48	-9.94	20.10	19.60	0.50	40.059	
200.00	200.00	200.00	200.00	0.61	0.61	-150.37	-17.48	-9.94	20.10	18.89	1.22	16.495	
300.00	300.00	300.00	300.00	0.97	0.97	-150.37	-17.48	-9.94	20.10	18.17	1.94	10.386	
400.00	400.00	400.00	400.00	1.33	1.33	-150.37	-17.48	-9.94	20.10	17.45	2.65	7.579	
500.00	500.00	500.00	500.00	1.68	1.68	-150.37	-17.48	-9.94	20.10	16.73	3.37	5.966	
600.00	600.00	600.00	600.00	2.04	2.04	-150.37	-17.48	-9.94	20.10	16.02	4.09	4.920	
700.00	700.00	700.00	700.00	2.40	2.40	-150.37	-17.48	-9.94	20.10	15.30	4.80	4.185 CC	
800.00	799.98	800.35	800.33	2.76	2.76	-138.55	-15.95	-10.82	20.55	15.03	5.52	3.723 ES	
849.89	849.82	850.24	850.19	2.94	2.94	-138.33	-14.45	-11.69	21.33	15.45	5.88	3.629	
900.00	899.86	900.33	900.25	3.12	3.12	-138.87	-12.93	-12.56	22.44	16.20	6.24	3.598	
1,000.00	999.73	1,000.31	1,000.16	3.48	3.48	-139.82	-9.91	-14.31	24.66	17.71	6.95	3.547	
1,100.00	1,099.59	1,100.28	1,100.08	3.84	3.83	-140.61	-6.89	-16.05	26.88	19.21	7.67	3.505	
1,200.00	1,199.45	1,200.26	1,199.99	4.20	4.19	-141.28	-3.87	-17.80	29.11	20.72	8.39	3.471	
1,300.00	1,299.32	1,300.23	1,299.91	4.56	4.55	-141.85	-0.85	-19.54	31.34	22.24	9.11	3.442	
1,400.00	1,399.18	1,400.21	1,399.82	4.92	4.91	-142.35	2.18	-21.28	33.58	23.75	9.83	3.417	
1,500.00	1,499.04	1,500.18	1,499.73	5.28	5.27	-142.78	5.20	-23.03	35.81	25.27	10.55	3.396	
1,600.00	1,598.91	1,600.15	1,599.65	5.64	5.63	-143.17	8.22	-24.77	38.05	26.79	11.26	3.378	
1,700.00	1,698.77	1,700.13	1,699.56	6.00	5.99	-143.51	11.24	-26.52	40.29	28.31	11.98	3.362	
1,800.00	1,798.63	1,800.10	1,799.47	6.36	6.35	-143.81	14.26	-28.26	42.53	29.83	12.71	3.348	
1,900.00	1,898.49	1,900.08	1,899.39	6.72	6.71	-144.09	17.28	-30.01	44.78	31.35	13.43	3.335	
2,000.00	1,998.36	2,000.05	1,999.30	7.09	7.07	-144.34	20.31	-31.75	47.02	32.87	14.15	3.324	
2,100.00	2,098.22	2,100.03	2,099.22	7.45	7.43	-144.56	23.33	-33.50	49.26	34.40	14.87	3.314	
2,200.00	2,198.08	2,200.00	2,199.13	7.81	7.78	-144.77	26.35	-35.24	51.51	35.92	15.59	3.305	
2,300.00	2,297.95	2,299.98	2,299.04	8.17	8.14	-144.96	29.37	-36.99	53.75	37.45	16.31	3.296	
2,400.00	2,397.81	2,399.95	2,398.96	8.53	8.50	-145.13	32.39	-38.73	56.00	38.97	17.03	3.289	
2,500.00	2,497.67	2,499.93	2,498.87	8.90	8.86	-145.29	35.41	-40.47	58.25	40.50	17.75	3.282	
2,600.00	2,597.54	2,599.90	2,598.78	9.26	9.22	-145.44	38.44	-42.22	60.49	42.02	18.47	3.275	
2,700.00	2,697.40	2,699.88	2,698.70	9.62	9.58	-145.58	41.46	-43.96	62.74	43.55	19.19	3.269	
2,800.00	2,797.26	2,799.85	2,798.61	9.98	9.94	-145.71	44.48	-45.71	64.99	45.08	19.91	3.264	
2,900.00	2,897.13	2,899.82	2,898.53	10.35	10.30	-145.83	47.50	-47.45	67.24	46.60	20.63	3.259	
3,000.00	2,996.99	2,999.80	2,998.44	10.71	10.66	-145.94	50.52	-49.20	69.48	48.13	21.35	3.254	
3,100.00	3,096.85	3,099.77	3,098.35	11.07	11.02	-146.04	53.54	-50.94	71.73	49.66	22.07	3.249	
3,200.00	3,196.72	3,199.75	3,198.27	11.43	11.38	-146.14	56.57	-52.69	73.98	51.18	22.80	3.245	
3,300.00	3,296.58	3,299.72	3,298.18	11.80	11.74	-146.24	59.59	-54.43	76.23	52.71	23.52	3.241	
3,400.00	3,396.44	3,399.70	3,398.09	12.16	12.10	-146.32	62.61	-56.18	78.48	54.24	24.24	3.238	
3,500.00	3,496.31	3,499.67	3,498.01	12.52	12.46	-146.41	65.63	-57.92	80.73	55.77	24.96	3.234	
3,600.00	3,596.17	3,599.65	3,597.92	12.88	12.82	-146.48	68.65	-59.66	82.98	57.30	25.68	3.231	
3,700.00	3,696.03	3,699.62	3,697.84	13.25	13.18	-146.56	71.67	-61.41	85.23	58.83	26.40	3.228	
3,800.00	3,795.89	3,799.60	3,797.75	13.61	13.54	-146.63	74.70	-63.15	87.48	60.35	27.12	3.225	
3,900.00	3,895.76	3,899.57	3,897.66	13.97	13.90	-146.70	77.72	-64.90	89.73	61.88	27.84	3.222	
4,000.00	3,995.62	3,999.55	3,997.58	14.34	14.26	-146.76	80.74	-66.64	91.98	63.41	28.57	3.220	
4,100.00	4,095.48	4,099.52	4,097.49	14.70	14.62	-146.82	83.76	-68.39	94.23	64.94	29.29	3.217	
4,200.00	4,195.35	4,199.49	4,197.40	15.06	14.99	-146.88	86.78	-70.13	96.48	66.47	30.01	3.215	
4,300.00	4,295.21	4,299.47	4,297.32	15.42	15.35	-146.93	89.80	-71.88	98.73	68.00	30.73	3.213	
4,400.00	4,395.07	4,399.44	4,397.23	15.79	15.71	-146.98	92.83	-73.62	100.98	69.53	31.45	3.211	
4,500.00	4,494.94	4,499.42	4,497.14	16.15	16.07	-147.03	95.85	-75.37	103.23	71.06	32.17	3.209	
4,600.00	4,594.80	4,599.39	4,597.06	16.51	16.43	-147.08	98.87	-77.11	105.48	72.59	32.89	3.207	
4,700.00	4,694.66	4,699.37	4,697.07	16.87	16.79	-147.13	101.89	-78.85	107.73	74.11	33.61	3.205	
4,800.00	4,794.53	4,799.34	4,797.89	17.24	17.15	-147.17	104.91	-80.60	109.98	75.64	34.34	3.203	
4,900.00	4,894.39	4,899.32	4,897.80	17.60	17.51	-147.21	107.93	-82.34	112.23	77.17	35.06	3.201	
5,000.00	4,994.25	4,999.29	4,997.71	17.96	17.87	-147.26	110.95	-84.09	114.48	78.70	35.78	3.200	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #696H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,100.00	5,094.12	5,099.27	5,096.63	18.33	18.23	-147.29	113.98	-85.83	116.73	80.23	36.50	3.198	
5,200.00	5,193.98	5,199.24	5,196.54	18.69	18.59	-147.33	117.00	-87.58	118.98	81.76	37.22	3.197	
5,300.00	5,293.84	5,299.22	5,296.45	19.05	18.95	-147.37	120.02	-89.32	121.23	83.29	37.94	3.195	
5,336.91	5,330.71	5,336.12	5,333.34	19.19	19.08	-147.38	121.14	-89.97	122.06	83.86	38.21	3.195	
5,400.00	5,393.71	5,399.19	5,396.37	19.41	19.31	-147.36	123.04	-91.07	123.34	84.67	38.66	3.190	
5,500.00	5,493.62	5,498.54	5,495.67	19.77	19.66	-147.30	125.70	-92.60	125.01	85.63	39.38	3.174	
5,600.00	5,593.57	5,597.86	5,594.96	20.13	20.02	-147.34	127.61	-93.70	126.47	86.38	40.09	3.155	
5,700.00	5,693.53	5,697.17	5,694.26	20.49	20.38	-147.47	128.77	-94.38	127.74	86.94	40.80	3.131	
5,800.00	5,793.52	5,796.47	5,793.57	20.85	20.73	-147.69	129.19	-94.62	128.81	87.30	41.51	3.103	
5,900.00	5,893.52	5,896.42	5,893.52	21.20	21.09	-147.87	129.20	-94.62	129.45	87.23	42.22	3.066	
5,936.48	5,930.00	5,932.91	5,930.00	21.33	21.22	-158.64	129.20	-94.62	129.50	87.02	42.48	3.048	
6,000.00	5,993.52	5,996.42	5,993.52	21.56	21.44	-158.64	129.20	-94.62	129.50	86.57	42.93	3.016	
6,100.00	6,093.52	6,096.42	6,093.52	21.91	21.80	-158.64	129.20	-94.62	129.50	85.86	43.64	2.967	
6,200.00	6,193.52	6,196.42	6,193.52	22.27	22.15	-158.64	129.20	-94.62	129.50	85.15	44.36	2.920	
6,300.00	6,293.52	6,296.42	6,293.52	22.62	22.51	-158.64	129.20	-94.62	129.50	84.43	45.07	2.873	
6,358.48	6,352.00	6,354.91	6,352.00	22.83	22.72	-158.64	129.20	-94.62	129.50	84.02	45.48	2.847	
6,400.00	6,393.49	6,401.28	6,398.34	22.97	22.87	-85.42	129.52	-92.96	128.58	82.78	45.80	2.808	
6,450.00	6,443.20	6,455.36	6,452.04	23.15	23.05	-90.67	130.71	-86.86	125.59	79.48	46.11	2.724	
6,500.00	6,492.36	6,505.72	6,501.41	23.33	23.22	-99.25	132.59	-77.17	122.58	76.14	46.44	2.640	
6,523.10	6,514.79	6,527.33	6,522.33	23.41	23.28	-103.97	133.62	-71.84	122.09	75.49	46.60	2.620 SF	
6,550.00	6,540.64	6,551.01	6,545.01	23.51	23.36	-109.72	134.91	-65.21	122.95	76.17	46.78	2.628	
6,600.00	6,587.77	6,590.46	6,582.22	23.69	23.48	-120.02	137.42	-52.33	130.42	83.47	46.95	2.778	
6,650.00	6,633.44	6,623.86	6,613.03	23.88	23.58	-128.52	139.88	-39.68	147.22	100.47	46.75	3.149	
6,700.00	6,677.37	6,650.00	6,636.64	24.07	23.66	-134.20	142.01	-28.68	173.15	127.00	46.15	3.752	
6,750.00	6,719.30	6,673.44	6,657.41	24.26	23.74	-138.31	144.09	-18.01	206.51	160.91	45.60	4.529	
6,800.00	6,758.97	6,690.54	6,672.30	24.46	23.79	-139.79	145.69	-9.76	245.39	200.38	45.01	5.452	
6,850.00	6,796.12	6,700.00	6,680.44	24.67	23.82	-137.88	146.61	-5.03	288.21	243.88	44.33	6.502	
6,900.00	6,830.54	6,712.10	6,690.75	24.88	23.86	-135.42	147.82	1.19	333.71	289.57	44.13	7.562	
6,950.00	6,862.00	6,717.57	6,695.37	25.11	23.88	-127.84	148.38	4.07	381.04	337.18	43.86	8.688	
7,000.00	6,890.33	6,720.11	6,697.50	25.34	23.89	-113.86	148.64	5.42	429.52	385.84	43.68	9.832	
7,050.00	6,915.33	6,720.09	6,697.48	25.59	23.89	-91.30	148.64	5.41	478.60	435.01	43.59	10.979	
7,100.00	6,936.86	6,717.83	6,695.58	25.85	23.88	-64.98	148.41	4.21	527.86	484.29	43.57	12.115	
7,150.00	6,954.79	6,713.61	6,692.03	26.12	23.87	-44.73	147.97	1.99	576.94	533.33	43.61	13.230	
7,200.00	6,968.99	6,700.00	6,680.44	26.40	23.82	-31.38	146.61	-5.03	625.64	582.19	43.45	14.399	
7,250.00	6,979.40	6,700.00	6,680.44	26.69	23.82	-24.52	146.61	-5.03	673.44	629.62	43.82	15.369	
7,300.00	6,985.94	6,700.00	6,680.44	27.00	23.82	-19.81	146.61	-5.03	720.48	676.26	44.22	16.294	
7,350.00	6,988.56	6,681.52	6,664.47	27.31	23.76	-16.35	144.84	-14.16	766.19	722.01	44.18	17.344	
7,358.93	6,988.62	6,679.63	6,662.82	27.36	23.76	-15.87	144.66	-15.07	774.24	730.02	44.21	17.513	
7,400.00	6,988.59	6,671.06	6,655.32	27.63	23.73	-15.82	143.87	-19.13	811.26	766.88	44.38	18.280	
7,500.00	6,988.52	6,650.00	6,636.64	28.33	23.66	-15.68	142.01	-28.68	902.22	857.51	44.71	20.178	
7,600.00	6,988.45	6,634.66	6,622.84	29.10	23.62	-15.55	140.74	-35.24	994.17	949.10	45.07	22.060	
7,658.93	6,988.41	6,625.39	6,614.42	29.59	23.59	-15.46	140.00	-39.06	1,048.76	1,003.52	45.23	23.185	
7,700.00	6,988.38	6,619.24	6,608.80	29.94	23.57	-17.37	139.52	-41.52	1,086.94	1,041.60	45.34	23.973	
7,800.00	6,988.31	6,600.00	6,591.08	30.84	23.51	-21.77	138.09	-48.88	1,180.16	1,134.66	45.50	25.939	
7,900.00	6,988.24	6,600.00	6,591.08	31.79	23.51	-26.56	138.09	-48.88	1,273.62	1,227.73	45.88	27.758	
8,000.00	6,988.16	6,580.38	6,572.79	32.78	23.45	-30.44	136.74	-55.83	1,367.08	1,321.13	45.96	29.747	
8,100.00	6,988.09	6,569.48	6,562.53	33.82	23.42	-34.39	136.03	-59.46	1,460.63	1,414.52	46.12	31.673	
8,200.00	6,988.01	6,550.00	6,544.06	34.88	23.36	-37.61	134.86	-65.50	1,554.20	1,508.05	46.16	33.673	
8,300.00	6,987.94	6,550.00	6,544.06	35.98	23.36	-41.59	134.86	-65.50	1,647.46	1,601.07	46.39	35.517	
8,400.00	6,987.86	6,550.00	6,544.06	37.11	23.36	-45.32	134.86	-65.50	1,740.66	1,694.08	46.58	37.367	
8,416.35	6,987.85	6,550.00	6,544.06	37.29	23.36	-45.91	134.86	-65.50	1,755.90	1,709.28	46.61	37.670	
8,500.00	6,987.78	6,550.00	6,544.06	38.25	23.36	-45.91	134.86	-65.50	1,834.05	1,787.29	46.76	39.225	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #696H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS				Rule Assigned:					Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
8,600.00	6,987.70	6,526.46	6,521.49	39.43	23.28	-44.58	133.58	-72.07	1,927.55	1,880.83	46.72	41.259		
8,700.00	6,987.62	6,519.75	6,515.01	40.64	23.26	-44.20	133.25	-73.79	2,021.81	1,974.99	46.82	43.187		
8,800.00	6,987.55	6,500.00	6,495.84	41.88	23.20	-43.13	132.34	-78.46	2,116.70	2,069.89	46.81	45.223		
8,900.00	6,987.47	6,500.00	6,495.84	43.14	23.20	-43.13	132.34	-78.46	2,211.70	2,164.76	46.94	47.118		
9,000.00	6,987.39	6,500.00	6,495.84	44.42	23.20	-43.13	132.34	-78.46	2,307.11	2,260.05	47.06	49.023		
9,100.00	6,987.31	6,500.00	6,495.84	45.72	23.20	-43.13	132.34	-78.46	2,402.91	2,355.73	47.17	50.937		
9,200.00	6,987.23	6,500.00	6,495.84	47.04	23.20	-43.13	132.34	-78.46	2,499.03	2,451.75	47.28	52.859		
9,300.00	6,987.15	6,500.00	6,495.84	48.38	23.20	-43.13	132.34	-78.46	2,595.44	2,548.07	47.37	54.786		
9,400.00	6,987.08	6,500.00	6,495.84	49.73	23.20	-43.13	132.34	-78.46	2,692.12	2,644.65	47.47	56.718		
9,500.00	6,987.00	6,500.00	6,495.84	51.10	23.20	-43.13	132.34	-78.46	2,789.03	2,741.48	47.55	58.654		
9,600.00	6,986.92	6,476.55	6,472.90	52.48	23.12	-41.89	131.41	-83.25	2,885.65	2,838.14	47.51	60.744		
9,700.00	6,986.84	6,473.09	6,469.50	53.87	23.11	-41.71	131.28	-83.88	2,982.81	2,935.24	47.57	62.705		
9,800.00	6,986.76	6,450.00	6,446.74	55.28	23.04	-40.54	130.55	-87.66	3,080.48	3,032.95	47.53	64.812		
9,900.00	6,986.68	6,450.00	6,446.74	56.69	23.04	-40.54	130.55	-87.66	3,177.84	3,130.23	47.61	66.750		
10,000.00	6,986.61	6,450.00	6,446.74	58.12	23.04	-40.54	130.55	-87.66	3,275.36	3,227.68	47.68	68.689		
10,100.00	6,986.53	6,450.00	6,446.74	59.55	23.04	-40.54	130.55	-87.66	3,373.03	3,325.27	47.76	70.629		
10,200.00	6,986.45	6,450.00	6,446.74	61.00	23.04	-40.54	130.55	-87.66	3,470.83	3,423.00	47.83	72.570		
10,300.00	6,986.37	6,450.00	6,446.74	62.45	23.04	-40.54	130.55	-87.66	3,568.75	3,520.86	47.90	74.510		
10,400.00	6,986.29	6,450.00	6,446.74	63.90	23.04	-40.54	130.55	-87.66	3,666.79	3,618.83	47.96	76.449		
10,500.00	6,986.21	6,450.00	6,446.74	65.37	23.04	-40.54	130.55	-87.66	3,764.93	3,716.90	48.03	78.387		
10,600.00	6,986.14	6,450.00	6,446.74	66.84	23.04	-40.54	130.55	-87.66	3,863.16	3,815.07	48.09	80.324		
10,700.00	6,986.06	6,450.00	6,446.74	68.32	23.04	-40.54	130.55	-87.66	3,961.48	3,913.32	48.16	82.259		
10,800.00	6,985.98	6,450.00	6,446.74	69.80	23.04	-40.54	130.55	-87.66	4,059.89	4,011.66	48.22	84.193		
10,900.00	6,985.90	6,450.00	6,446.74	71.29	23.04	-40.54	130.55	-87.66	4,158.37	4,110.08	48.28	86.124		
11,000.00	6,985.82	6,450.00	6,446.74	72.78	23.04	-40.54	130.55	-87.66	4,256.92	4,208.57	48.35	88.053		
11,100.00	6,985.75	6,450.00	6,446.74	74.28	23.04	-40.54	130.55	-87.66	4,355.53	4,307.13	48.41	89.978		
11,200.00	6,985.67	6,450.00	6,446.74	75.78	23.04	-40.54	130.55	-87.66	4,454.21	4,405.75	48.47	91.901		
11,300.00	6,985.59	6,450.00	6,446.74	77.29	23.04	-40.54	130.55	-87.66	4,552.95	4,504.42	48.53	93.821		
11,400.00	6,985.51	6,450.00	6,446.74	78.80	23.04	-40.54	130.55	-87.66	4,651.74	4,603.15	48.59	95.738		
11,500.00	6,985.43	6,450.00	6,446.74	80.31	23.04	-40.54	130.55	-87.66	4,750.58	4,701.93	48.65	97.651		
11,600.00	6,985.35	6,450.00	6,446.74	81.83	23.04	-40.54	130.55	-87.66	4,849.47	4,800.76	48.71	99.560		
11,700.00	6,985.28	6,450.00	6,446.74	83.35	23.04	-40.54	130.55	-87.66	4,948.40	4,899.63	48.77	101.465		
11,800.00	6,985.20	6,450.00	6,446.74	84.87	23.04	-40.54	130.55	-87.66	5,047.38	4,998.55	48.83	103.366		
11,900.00	6,985.12	6,427.37	6,424.31	86.40	22.96	-39.43	129.98	-90.58	5,145.96	5,097.14	48.81	105.424		
12,000.00	6,985.04	6,426.11	6,423.06	87.93	22.96	-39.37	129.96	-90.72	5,244.96	5,196.09	48.87	107.326		
12,100.00	6,984.96	6,424.89	6,421.85	89.46	22.95	-39.31	129.93	-90.85	5,344.00	5,295.07	48.93	109.223		
12,200.00	6,984.88	6,423.72	6,420.68	90.99	22.95	-39.25	129.91	-90.97	5,443.07	5,394.08	48.99	111.116		
12,300.00	6,984.81	6,422.58	6,419.55	92.53	22.95	-39.20	129.88	-91.09	5,542.17	5,493.13	49.04	113.004		
12,400.00	6,984.73	6,400.00	6,397.06	94.07	22.87	-38.14	129.50	-93.05	5,641.69	5,592.66	49.03	115.060		
12,500.00	6,984.65	6,400.00	6,397.06	95.61	22.87	-38.14	129.50	-93.05	5,740.81	5,691.71	49.10	116.930		
12,600.00	6,984.57	6,400.00	6,397.06	97.15	22.87	-38.14	129.50	-93.05	5,839.96	5,790.80	49.16	118.795		
12,700.00	6,984.49	6,400.00	6,397.06	98.70	22.87	-38.14	129.50	-93.05	5,939.14	5,889.92	49.22	120.655		
12,800.00	6,984.41	6,400.00	6,397.06	100.25	22.87	-38.14	129.50	-93.05	6,038.35	5,989.06	49.29	122.510		
12,900.00	6,984.34	6,400.00	6,397.06	101.80	22.87	-38.14	129.50	-93.05	6,137.58	6,088.23	49.35	124.359		
13,000.00	6,984.26	6,400.00	6,397.06	103.35	22.87	-38.14	129.50	-93.05	6,236.84	6,187.42	49.42	126.204		
13,100.00	6,984.18	6,400.00	6,397.06	104.90	22.87	-38.14	129.50	-93.05	6,336.12	6,286.63	49.48	128.042		
13,200.00	6,984.10	6,400.00	6,397.06	106.45	22.87	-38.14	129.50	-93.05	6,435.42	6,385.87	49.55	129.876		
13,300.00	6,984.02	6,400.00	6,397.06	108.01	22.87	-38.14	129.50	-93.05	6,534.75	6,485.13	49.62	131.703		
13,400.00	6,983.94	6,400.00	6,397.06	109.56	22.87	-38.14	129.50	-93.05	6,634.09	6,584.41	49.68	133.526		
13,500.00	6,983.87	6,400.00	6,397.06	111.12	22.87	-38.14	129.50	-93.05	6,733.45	6,683.70	49.75	135.342		
13,600.00	6,983.79	6,400.00	6,397.06	112.68	22.87	-38.14	129.50	-93.05	6,832.84	6,783.02	49.82	137.152		
13,700.00	6,983.71	6,400.00	6,397.06	114.24	22.87	-38.14	129.50	-93.05	6,932.24	6,882.35	49.89	138.957		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #696H - OH - Prelim 5												Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor
13,800.00	6,983.63	6,400.00	6,397.06	115.80	22.87	-38.14	129.50	-93.05	7,031.65	6,981.70	49.96	140.756	
13,900.00	6,983.55	6,400.00	6,397.06	117.37	22.87	-38.14	129.50	-93.05	7,131.09	7,081.06	50.03	142.548	
14,000.00	6,983.47	6,400.00	6,397.06	118.93	22.87	-38.14	129.50	-93.05	7,230.54	7,180.44	50.10	144.335	
14,100.00	6,983.40	6,400.00	6,397.06	120.50	22.87	-38.14	129.50	-93.05	7,330.00	7,279.83	50.17	146.115	
14,200.00	6,983.32	6,400.00	6,397.06	122.06	22.87	-38.14	129.50	-93.05	7,429.48	7,379.24	50.24	147.889	
14,300.00	6,983.24	6,400.00	6,397.06	123.63	22.87	-38.14	129.50	-93.05	7,528.97	7,478.66	50.31	149.657	
14,400.00	6,983.16	6,400.00	6,397.06	125.20	22.87	-38.14	129.50	-93.05	7,628.48	7,578.10	50.38	151.419	
14,500.00	6,983.08	6,400.00	6,397.06	126.77	22.87	-38.14	129.50	-93.05	7,727.99	7,677.54	50.45	153.174	
14,600.00	6,983.00	6,400.00	6,397.06	128.33	22.87	-38.14	129.50	-93.05	7,827.52	7,777.00	50.53	154.923	
14,700.00	6,982.93	6,400.00	6,397.06	129.91	22.87	-38.14	129.50	-93.05	7,927.07	7,876.47	50.60	156.665	
14,800.00	6,982.85	6,400.00	6,397.06	131.48	22.87	-38.14	129.50	-93.05	8,026.62	7,975.95	50.67	158.401	
14,900.00	6,982.77	6,400.00	6,397.06	133.05	22.87	-38.14	129.50	-93.05	8,126.18	8,075.44	50.75	160.131	
15,000.00	6,982.69	6,400.00	6,397.06	134.62	22.87	-38.14	129.50	-93.05	8,225.76	8,174.94	50.82	161.853	
15,100.00	6,982.61	6,400.00	6,397.06	136.20	22.87	-38.14	129.50	-93.05	8,325.35	8,274.45	50.90	163.570	
15,200.00	6,982.54	6,400.00	6,397.06	137.77	22.87	-38.14	129.50	-93.05	8,424.94	8,373.97	50.97	165.279	
15,300.00	6,982.46	6,400.00	6,397.06	139.35	22.87	-38.14	129.50	-93.05	8,524.55	8,473.49	51.05	166.982	
15,400.00	6,982.38	6,400.00	6,397.06	140.92	22.87	-38.14	129.50	-93.05	8,624.16	8,573.03	51.13	168.679	
15,500.00	6,982.30	6,400.00	6,397.06	142.50	22.87	-38.14	129.50	-93.05	8,723.78	8,672.58	51.21	170.368	
15,600.00	6,982.22	6,400.00	6,397.06	144.07	22.87	-38.14	129.50	-93.05	8,823.41	8,772.13	51.28	172.051	
15,700.00	6,982.14	6,400.00	6,397.06	145.65	22.87	-38.14	129.50	-93.05	8,923.05	8,871.69	51.36	173.727	
15,800.00	6,982.07	6,400.00	6,397.06	147.23	22.87	-38.14	129.50	-93.05	9,022.70	8,971.26	51.44	175.396	
15,900.00	6,981.99	6,400.00	6,397.06	148.81	22.87	-38.14	129.50	-93.05	9,122.36	9,070.83	51.52	177.059	
16,000.00	6,981.91	6,400.00	6,397.06	150.39	22.87	-38.14	129.50	-93.05	9,222.02	9,170.42	51.60	178.714	
16,100.00	6,981.83	6,400.00	6,397.06	151.97	22.87	-38.14	129.50	-93.05	9,321.69	9,270.00	51.68	180.363	
16,200.00	6,981.75	6,400.00	6,397.06	153.55	22.87	-38.14	129.50	-93.05	9,421.36	9,369.60	51.76	182.005	
16,300.00	6,981.67	6,400.00	6,397.06	155.13	22.87	-38.14	129.50	-93.05	9,521.05	9,469.20	51.85	183.640	
16,400.00	6,981.60	6,400.00	6,397.06	156.71	22.87	-38.14	129.50	-93.05	9,620.74	9,568.81	51.93	185.268	
16,500.00	6,981.52	6,400.00	6,397.06	158.29	22.87	-38.14	129.50	-93.05	9,720.43	9,668.42	52.01	186.889	
16,600.00	6,981.44	6,400.00	6,397.06	159.88	22.87	-38.14	129.50	-93.05	9,820.14	9,768.04	52.10	188.504	
16,700.00	6,981.36	6,400.00	6,397.06	161.46	22.87	-38.14	129.50	-93.05	9,919.85	9,867.67	52.18	190.111	
16,800.00	6,981.28	6,400.00	6,397.06	163.04	22.87	-38.14	129.50	-93.05	10,019.56	9,967.30	52.26	191.711	
16,900.00	6,981.20	6,400.00	6,397.06	164.62	22.87	-38.14	129.50	-93.05	10,119.28	10,066.93	52.35	193.305	
17,000.00	6,981.13	6,400.00	6,397.06	166.21	22.87	-38.14	129.50	-93.05	10,219.01	10,166.57	52.43	194.891	
17,100.00	6,981.05	6,400.00	6,397.06	167.79	22.87	-38.14	129.50	-93.05	10,318.74	10,266.22	52.52	196.471	
17,200.00	6,980.97	6,400.00	6,397.06	169.38	22.87	-38.14	129.50	-93.05	10,418.47	10,365.87	52.61	198.043	
17,300.00	6,980.89	6,400.00	6,397.06	170.96	22.87	-38.14	129.50	-93.05	10,518.21	10,465.52	52.69	199.609	
17,400.00	6,980.81	6,400.00	6,397.06	172.55	22.87	-38.14	129.50	-93.05	10,617.96	10,565.18	52.78	201.168	
17,500.00	6,980.73	6,400.00	6,397.06	174.13	22.87	-38.14	129.50	-93.05	10,717.71	10,664.84	52.87	202.719	
17,600.00	6,980.66	6,400.00	6,397.06	175.72	22.87	-38.14	129.50	-93.05	10,817.47	10,764.51	52.96	204.264	
17,700.00	6,980.58	6,400.00	6,397.06	177.31	22.87	-38.14	129.50	-93.05	10,917.23	10,864.18	53.05	205.802	
17,800.00	6,980.50	6,400.00	6,397.06	178.89	22.87	-38.14	129.50	-93.05	11,016.99	10,963.85	53.14	207.333	
17,900.00	6,980.42	6,400.00	6,397.06	180.48	22.87	-38.14	129.50	-93.05	11,116.76	11,063.53	53.23	208.856	
18,000.00	6,980.34	6,400.00	6,397.06	182.07	22.87	-38.14	129.50	-93.05	11,216.53	11,163.21	53.32	210.373	
18,100.00	6,980.26	6,400.00	6,397.06	183.66	22.87	-38.14	129.50	-93.05	11,316.31	11,262.90	53.41	211.883	
18,200.00	6,980.19	6,400.00	6,397.06	185.24	22.87	-38.14	129.50	-93.05	11,416.09	11,362.59	53.50	213.386	
18,300.00	6,980.11	6,400.00	6,397.06	186.83	22.87	-38.14	129.50	-93.05	11,515.87	11,462.28	53.59	214.882	
18,400.00	6,980.03	6,400.00	6,397.06	188.42	22.87	-38.14	129.50	-93.05	11,615.66	11,561.98	53.68	216.371	
18,500.00	6,979.95	6,400.00	6,397.06	190.01	22.87	-38.14	129.50	-93.05	11,715.45	11,661.68	53.78	217.853	
18,600.00	6,979.87	6,400.00	6,397.06	191.60	22.87	-38.14	129.50	-93.05	11,815.25	11,761.38	53.87	219.328	
18,700.00	6,979.79	6,400.00	6,397.06	193.19	22.87	-38.14	129.50	-93.05	11,915.05	11,861.08	53.96	220.797	
18,800.00	6,979.72	6,400.00	6,397.06	194.78	22.87	-38.14	129.50	-93.05	12,014.85	11,960.79	54.06	222.258	
18,900.00	6,979.64	6,400.00	6,397.06	196.37	22.87	-38.14	129.50	-93.05	12,114.65	12,060.50	54.15	223.713	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #696H - OH - Prelim 5												Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HRGM+MS				Rule Assigned:								Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
19,000.00	6,979.56	6,400.00	6,397.06	197.96	22.87	-38.14	129.50	-93.05	12,214.46	12,160.21	54.25	225.160	
19,100.00	6,979.48	6,400.00	6,397.06	199.55	22.87	-38.14	129.50	-93.05	12,314.27	12,259.93	54.34	226.601	
19,200.00	6,979.40	6,400.00	6,397.06	201.14	22.87	-38.14	129.50	-93.05	12,414.09	12,359.65	54.44	228.035	
19,300.00	6,979.33	6,400.00	6,397.06	202.73	22.87	-38.14	129.50	-93.05	12,513.90	12,459.37	54.54	229.462	
19,400.00	6,979.25	6,400.00	6,397.06	204.32	22.87	-38.14	129.50	-93.05	12,613.73	12,559.09	54.63	230.882	
19,500.00	6,979.17	6,400.00	6,397.06	205.91	22.87	-38.14	129.50	-93.05	12,713.55	12,658.82	54.73	232.296	
19,600.00	6,979.09	6,400.00	6,397.06	207.50	22.87	-38.14	129.50	-93.05	12,813.37	12,758.55	54.83	233.703	
19,700.00	6,979.01	6,400.00	6,397.06	209.09	22.87	-38.14	129.50	-93.05	12,913.20	12,858.28	54.93	235.102	
19,800.00	6,978.93	6,400.00	6,397.06	210.69	22.87	-38.14	129.50	-93.05	13,013.03	12,958.01	55.02	236.496	
19,900.00	6,978.86	6,400.00	6,397.06	212.28	22.87	-38.14	129.50	-93.05	13,112.87	13,057.74	55.12	237.882	
20,000.00	6,978.78	6,400.00	6,397.06	213.87	22.87	-38.14	129.50	-93.05	13,212.70	13,157.48	55.22	239.262	
20,100.00	6,978.70	6,400.00	6,397.06	215.46	22.87	-38.14	129.50	-93.05	13,312.54	13,257.22	55.32	240.635	
20,200.00	6,978.62	6,400.00	6,397.06	217.05	22.87	-38.14	129.50	-93.05	13,412.38	13,356.96	55.42	242.001	
20,300.00	6,978.54	6,400.00	6,397.06	218.65	22.87	-38.14	129.50	-93.05	13,512.23	13,456.70	55.52	243.361	
20,400.00	6,978.46	6,400.00	6,397.06	220.24	22.87	-38.14	129.50	-93.05	13,612.07	13,556.45	55.62	244.714	
20,500.00	6,978.39	6,400.00	6,397.06	221.83	22.87	-38.14	129.50	-93.05	13,711.92	13,656.20	55.73	246.061	
20,600.00	6,978.31	6,400.00	6,397.06	223.43	22.87	-38.14	129.50	-93.05	13,811.77	13,755.94	55.83	247.400	
20,700.00	6,978.23	6,400.00	6,397.06	225.02	22.87	-38.14	129.50	-93.05	13,911.62	13,855.69	55.93	248.734	
20,800.00	6,978.15	6,400.00	6,397.06	226.61	22.87	-38.14	129.50	-93.05	14,011.48	13,955.45	56.03	250.060	
20,900.00	6,978.07	6,400.00	6,397.06	228.21	22.87	-38.14	129.50	-93.05	14,111.34	14,055.20	56.14	251.381	
21,000.00	6,977.99	6,400.00	6,397.06	229.80	22.87	-38.14	129.50	-93.05	14,211.19	14,154.96	56.24	252.694	
21,100.00	6,977.92	6,400.00	6,397.06	231.39	22.87	-38.14	129.50	-93.05	14,311.05	14,254.71	56.34	254.002	
21,200.00	6,977.84	6,400.00	6,397.06	232.99	22.87	-38.14	129.50	-93.05	14,410.92	14,354.47	56.45	255.302	
21,300.00	6,977.76	6,400.00	6,397.06	234.58	22.87	-38.14	129.50	-93.05	14,510.78	14,454.23	56.55	256.597	
21,400.00	6,977.68	6,400.00	6,397.06	236.18	22.87	-38.14	129.50	-93.05	14,610.65	14,553.99	56.66	257.884	
21,500.00	6,977.60	6,400.00	6,397.06	237.77	22.87	-38.14	129.50	-93.05	14,710.52	14,653.76	56.76	259.166	
21,600.00	6,977.52	6,400.00	6,397.06	239.37	22.87	-38.14	129.50	-93.05	14,810.39	14,753.52	56.87	260.441	
21,700.00	6,977.45	6,400.00	6,397.06	240.96	22.87	-38.14	129.50	-93.05	14,910.26	14,853.29	56.97	261.710	
21,800.00	6,977.37	6,400.00	6,397.06	242.56	22.87	-38.14	129.50	-93.05	15,010.13	14,953.05	57.08	262.972	
21,900.00	6,977.29	6,400.00	6,397.06	244.15	22.87	-38.14	129.50	-93.05	15,110.01	15,052.82	57.19	264.229	
22,000.00	6,977.21	6,400.00	6,397.06	245.75	22.87	-38.14	129.50	-93.05	15,209.88	15,152.59	57.29	265.478	
22,100.00	6,977.13	6,400.00	6,397.06	247.34	22.87	-38.14	129.50	-93.05	15,309.76	15,252.36	57.40	266.722	
22,200.00	6,977.05	6,400.00	6,397.06	248.94	22.87	-38.14	129.50	-93.05	15,409.64	15,352.13	57.51	267.960	
22,269.73	6,977.00	6,400.00	6,397.06	250.05	22.87	-38.14	129.50	-93.05	15,479.28	15,421.70	57.58	268.819	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 6347+30 @ 6377.00usft (H&P 530)

Coordinates are relative to: Rosa Unit #694H

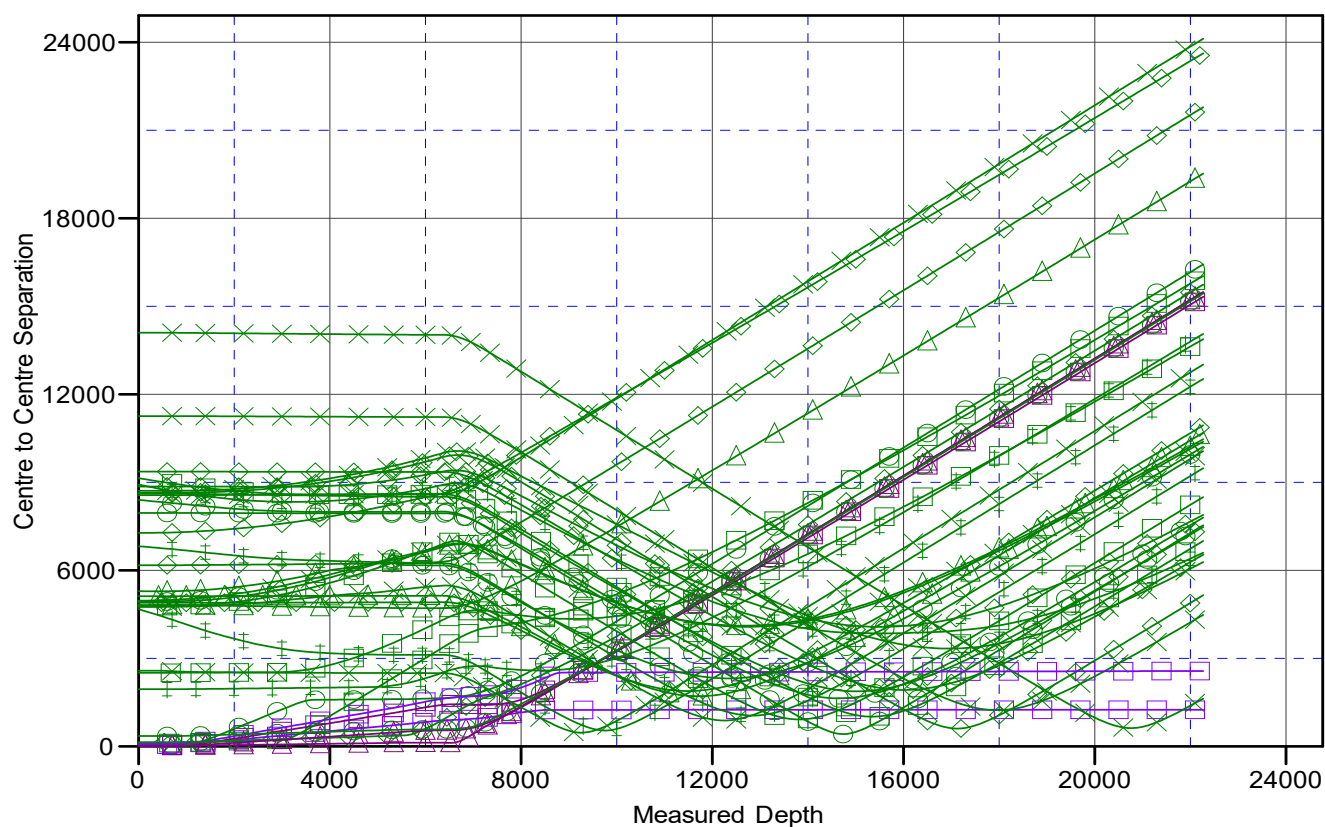
Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, New Mexico Western Zone

Central Meridian is -107.833334

Grid Convergence at Surface is: 0.27°

Ladder Plot



LEGEND

(C) Rosa Unit #674H, OH, Prelim 5 V0	(C) Rosa Unit #171B, OH, OH-SVY V0	(C) Rosa Unit #228A, OH, OH-SVY V0
(C) Rosa Unit #65, OH, OH-INC V0	(C) Rosa Unit 148 COM, OH, OH-INC V0	(C) Rosa Unit #46, OH, OH-INC V0
(C) Rosa Unit #149B, OH, OH-INC V0	(C) Rosa Unit #336, OH, OH-INC V0	Rosa Unit #692H, OH, Prelim 5 V0
(C) Rosa Unit #108, OH, OH-SVY V0	(C) Rosa Unit #041C, OH, OH-SVY V0	(C) Rosa Unit #149A, OH, OH-INC V0
(C) Rosa Unit #160C, OH, OH-SVY V0	(C) Rosa Unit #160B, OH, OH-SVY V0	(C) Rosa Unit #171A, OH, OH-SVY V0
(C) Rosa Unit #149C, OH, OH-SVY V0	(C) Rosa Unit #16A, OH, OH-SVY V0	(C) Rosa Unit #107, OH, OH-INC V0
Rosa Unit #696H, OH, Prelim 5 V0	(C) Rosa Unit #164A, OH, OH-INC V0	(C) Rosa Unit #149, OH, OH-INC V0
(C) Rosa Unit #080A, OH, OH-INC V0	(C) Rosa Unit #041B, OH, OH-SVY V0	(C) Rosa Unit #171C, OH, OH-SVY V0
(C) Carson #1, OH, OH-INC V0	(C) Rosa Unit #336A, OH, OH-INC V0	(C) Rosa Unit #171, OH, OH-INC V0
Rosa Unit #690H, OH, Prelim 5 V0	Rosa Unit #672H, OH, Prelim 5 V0	(C) Rosa Unit #053, OH, OH-INC V0
(C) Rosa Unit #072C, OH, OH-SVY V0	(C) Rosa Unit #072B, OH, OH-SVY V0	(C) Rosa Unit #00B, OH, OH-SVY V0
(C) Rosa Unit #228A, OH, OH-SVY V0	(C) Rosa Unit #650A, OH, OH-SVY V0	(C) Rosa Unit #228, OH, OH-INC V0

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #694H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 6347+30 @ 6377.00usft (H&P 530)

Offset Depths are relative to Offset Datum

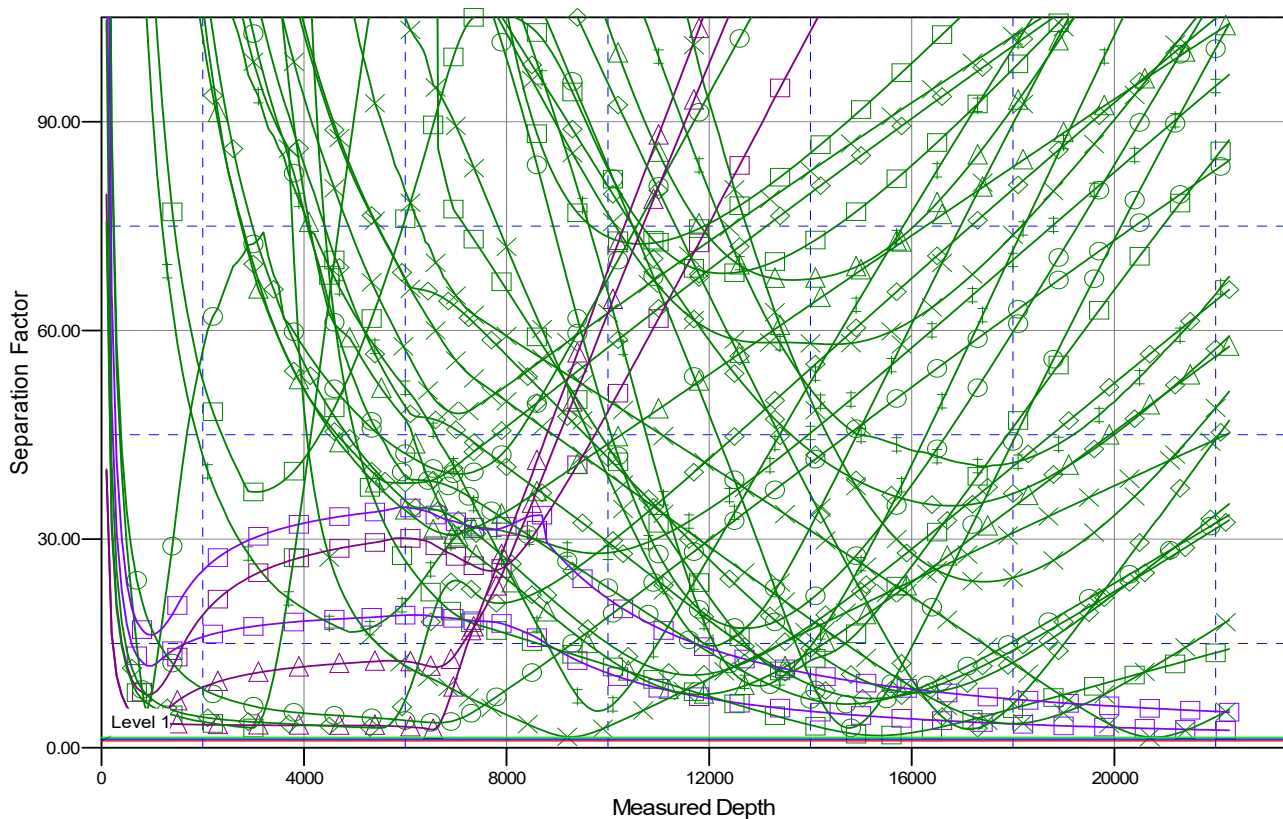
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit #694H

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.27°

Separation Factor Plot



LEGEND

(C) Rosa Unit #674H, OH, Prelim 5 V0	(C) Rosa Unit #171B, OH, OH-SVY V0	(C) Rosa Unit #228A, OH, OH-SVY V0
(C) Rosa Unit #65, OH, OH-INC V0	(C) Rosa Unit 148 COM, OH, OH-INC V0	(C) Rosa Unit #46, OH, OH-INC V0
(C) Rosa Unit #140B, OH, OH-INC V0	(C) Rosa Unit #336, OH, OH-INC V0	Rosa Unit #692H, OH, Prelim 5 V0
(C) Rosa Unit #108, OH, OH-SVY V0	(C) Rosa Unit #041C, OH, OH-SVY V0	(C) Rosa Unit #149A, OH, OH-INC V0
(C) Rosa Unit #164C, OH, OH-SVY V0	(C) Rosa Unit #168B, OH, OH-SVY V0	(C) Rosa Unit #171A, OH, OH-SVY V0
(C) Rosa Unit #149C, OH, OH-SVY V0	(C) Rosa Unit #164, OH, OH-SVY V0	(C) Rosa Unit #107, OH, OH-INC V0
Rosa Unit #696H, OH, Prelim 5 V0	(C) Rosa Unit #164A, OH, OH-INC V0	(C) Rosa Unit #149, OH, OH-INC V0
(C) Rosa Unit #080A, OH, OH-INC V0	(C) Rosa Unit #041B, OH, OH-SVY V0	(C) Rosa Unit #171C, OH, OH-SVY V0
(C) Carson #1, OH, OH-INC V0	(C) Rosa Unit #336A, OH, OH-INC V0	(C) Rosa Unit #171, OH, OH-INC V0
Rosa Unit #690H, OH, Prelim 5 V0	Rosa Unit #672H, OH, Prelim 5 V0	(C) Rosa Unit #053, OH, OH-INC V0
(C) Rosa Unit #072C, OH, OH-SVY V0	(C) Rosa Unit #072B, OH, OH-SVY V0	(C) Rosa Unit #69B, OH, OH-SVY V0
(C) Rosa Unit #226A, OH, OH-SVY V0	(C) Rosa Unit #850A, OH, OH-SVY V0	(C) Rosa Unit #226, OH, OH-INC V0

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 34

Rosa Unit #694H

OH

Plan: Prelim 5

Standard Planning Report

22 November, 2024

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Project	Rio Arriba, NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Rosa Unit 34				
Site Position:		Northing:	2,154,213.35 usft	Latitude:	36.919164
From:	Lat/Long	Easting:	2,854,601.45 usft	Longitude:	-107.383447
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well	Rosa Unit #694H					
Well Position	+N/-S	0.00 usft	Northing:	2,154,191.45 usft	Latitude:	36.919104
	+E/-W	0.00 usft	Easting:	2,854,589.57 usft	Longitude:	-107.383488
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,347.00 usft
Grid Convergence:		0.27 °				

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/16/2024	8.40	63.46	49,423.14295432

Design	Prelim 5				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.00	0.00	0.00	270.25

Plan Survey Tool Program	Date	11/22/2024			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	22,269.73 Prelim 5 (OH)	MWD+HRGM+MS		
			MWD + HRGM + Multi-Station		

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
849.89	3.00	349.25	849.82	3.85	-0.73	2.00	2.00	0.00	349.25	
5,336.91	3.00	349.25	5,330.71	234.39	-44.52	0.00	0.00	0.00	0.00	
5,936.48	0.00	0.00	5,930.00	249.80	-47.45	0.50	-0.50	0.00	180.00	
6,358.48	0.00	0.00	6,352.00	249.80	-47.45	0.00	0.00	0.00	0.00	
7,358.93	90.04	285.40	6,988.62	418.98	-661.64	9.00	9.00	0.00	285.40	
7,658.93	90.04	285.40	6,988.41	498.64	-950.87	0.00	0.00	0.00	0.00	
8,416.35	90.04	270.25	6,987.85	601.47	-1,699.05	2.00	0.00	-2.00	-89.98	
22,269.73	90.04	270.25	6,977.00	662.28	-15,552.29	0.00	0.00	0.00	0.00	RU #694 PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
800.00	2.00	349.25	799.98	1.71	-0.33	0.33	2.00	2.00	0.00
849.89	3.00	349.25	849.82	3.85	-0.73	0.75	2.00	2.00	0.00
Start 4487.02 hold at 849.89 MD									
900.00	3.00	349.25	899.86	6.43	-1.22	1.25	0.00	0.00	0.00
1,000.00	3.00	349.25	999.73	11.56	-2.20	2.25	0.00	0.00	0.00
1,100.00	3.00	349.25	1,099.59	16.70	-3.17	3.25	0.00	0.00	0.00
1,200.00	3.00	349.25	1,199.45	21.84	-4.15	4.24	0.00	0.00	0.00
1,300.00	3.00	349.25	1,299.32	26.98	-5.12	5.24	0.00	0.00	0.00
1,400.00	3.00	349.25	1,399.18	32.12	-6.10	6.24	0.00	0.00	0.00
1,500.00	3.00	349.25	1,499.04	37.25	-7.08	7.24	0.00	0.00	0.00
1,600.00	3.00	349.25	1,598.91	42.39	-8.05	8.24	0.00	0.00	0.00
1,700.00	3.00	349.25	1,698.77	47.53	-9.03	9.24	0.00	0.00	0.00
1,800.00	3.00	349.25	1,798.63	52.67	-10.00	10.23	0.00	0.00	0.00
1,900.00	3.00	349.25	1,898.49	57.81	-10.98	11.23	0.00	0.00	0.00
2,000.00	3.00	349.25	1,998.36	62.94	-11.96	12.23	0.00	0.00	0.00
2,100.00	3.00	349.25	2,098.22	68.08	-12.93	13.23	0.00	0.00	0.00
2,200.00	3.00	349.25	2,198.08	73.22	-13.91	14.23	0.00	0.00	0.00
2,300.00	3.00	349.25	2,297.95	78.36	-14.88	15.23	0.00	0.00	0.00
2,400.00	3.00	349.25	2,397.81	83.50	-15.86	16.22	0.00	0.00	0.00
2,441.25	3.00	349.25	2,439.00	85.61	-16.26	16.64	0.00	0.00	0.00
Ojo Alamo									
2,500.00	3.00	349.25	2,497.67	88.63	-16.84	17.22	0.00	0.00	0.00
2,561.41	3.00	349.25	2,559.00	91.79	-17.43	17.83	0.00	0.00	0.00
Kirtland									
2,600.00	3.00	349.25	2,597.54	93.77	-17.81	18.22	0.00	0.00	0.00
2,700.00	3.00	349.25	2,697.40	98.91	-18.79	19.22	0.00	0.00	0.00
2,800.00	3.00	349.25	2,797.26	104.05	-19.76	20.22	0.00	0.00	0.00
2,860.82	3.00	349.25	2,858.00	107.17	-20.36	20.82	0.00	0.00	0.00
Fruitland									
2,900.00	3.00	349.25	2,897.13	109.19	-20.74	21.22	0.00	0.00	0.00
3,000.00	3.00	349.25	2,996.99	114.32	-21.71	22.21	0.00	0.00	0.00
3,004.02	3.00	349.25	3,001.00	114.53	-21.75	22.25	0.00	0.00	0.00
Top of Coals									
3,100.00	3.00	349.25	3,096.85	119.46	-22.69	23.21	0.00	0.00	0.00
3,170.24	3.00	349.25	3,167.00	123.07	-23.38	23.91	0.00	0.00	0.00
Base of Coals									
3,200.00	3.00	349.25	3,196.72	124.60	-23.67	24.21	0.00	0.00	0.00
3,300.00	3.00	349.25	3,296.58	129.74	-24.64	25.21	0.00	0.00	0.00
3,371.52	3.00	349.25	3,368.00	133.41	-25.34	25.92	0.00	0.00	0.00
Pictured Cliffs									
3,400.00	3.00	349.25	3,396.44	134.88	-25.62	26.21	0.00	0.00	0.00
3,474.66	3.00	349.25	3,471.00	138.71	-26.35	26.95	0.00	0.00	0.00
Lewis									
3,500.00	3.00	349.25	3,496.31	140.01	-26.59	27.21	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,600.00	3.00	349.25	3,596.17	145.15	-27.57	28.20	0.00	0.00	0.00
3,700.00	3.00	349.25	3,696.03	150.29	-28.55	29.20	0.00	0.00	0.00
3,800.00	3.00	349.25	3,795.89	155.43	-29.52	30.20	0.00	0.00	0.00
3,900.00	3.00	349.25	3,895.76	160.57	-30.50	31.20	0.00	0.00	0.00
4,000.00	3.00	349.25	3,995.62	165.70	-31.47	32.20	0.00	0.00	0.00
4,100.00	3.00	349.25	4,095.48	170.84	-32.45	33.20	0.00	0.00	0.00
4,200.00	3.00	349.25	4,195.35	175.98	-33.43	34.19	0.00	0.00	0.00
4,300.00	3.00	349.25	4,295.21	181.12	-34.40	35.19	0.00	0.00	0.00
4,400.00	3.00	349.25	4,395.07	186.25	-35.38	36.19	0.00	0.00	0.00
4,500.00	3.00	349.25	4,494.94	191.39	-36.35	37.19	0.00	0.00	0.00
4,600.00	3.00	349.25	4,594.80	196.53	-37.33	38.19	0.00	0.00	0.00
4,654.27	3.00	349.25	4,649.00	199.32	-37.86	38.73	0.00	0.00	0.00
Chacra									
4,700.00	3.00	349.25	4,694.66	201.67	-38.31	39.19	0.00	0.00	0.00
4,800.00	3.00	349.25	4,794.53	206.81	-39.28	40.18	0.00	0.00	0.00
4,900.00	3.00	349.25	4,894.39	211.94	-40.26	41.18	0.00	0.00	0.00
5,000.00	3.00	349.25	4,994.25	217.08	-41.23	42.18	0.00	0.00	0.00
5,100.00	3.00	349.25	5,094.12	222.22	-42.21	43.18	0.00	0.00	0.00
5,116.91	3.00	349.25	5,111.00	223.09	-42.37	43.35	0.00	0.00	0.00
Upper Cliff House									
5,200.00	3.00	349.25	5,193.98	227.36	-43.19	44.18	0.00	0.00	0.00
5,300.00	3.00	349.25	5,293.84	232.50	-44.16	45.18	0.00	0.00	0.00
5,336.91	3.00	349.25	5,330.71	234.39	-44.52	45.54	0.00	0.00	0.00
Start Drop -0.50									
5,400.00	2.68	349.25	5,393.71	237.46	-45.10	46.14	0.50	-0.50	0.00
5,432.32	2.52	349.25	5,426.00	238.91	-45.38	46.42	0.50	-0.50	0.00
Cliff House									
5,467.35	2.35	349.25	5,461.00	240.37	-45.66	46.70	0.50	-0.50	0.00
Menefee									
5,500.00	2.18	349.25	5,493.62	241.63	-45.90	46.95	0.50	-0.50	0.00
5,600.00	1.68	349.25	5,593.57	244.95	-46.53	47.59	0.50	-0.50	0.00
5,641.45	1.48	349.25	5,635.00	246.07	-46.74	47.81	0.50	-0.50	0.00
Point Lookout									
5,700.00	1.18	349.25	5,693.53	247.40	-46.99	48.07	0.50	-0.50	0.00
5,800.00	0.68	349.25	5,793.52	249.00	-47.30	48.38	0.50	-0.50	0.00
5,900.00	0.18	349.25	5,893.52	249.74	-47.44	48.53	0.50	-0.50	0.00
5,936.48	0.00	0.00	5,930.00	249.80	-47.45	48.54	0.50	-0.50	0.00
Start 422.00 hold at 5936.48 MD									
6,000.00	0.00	0.00	5,993.52	249.80	-47.45	48.54	0.00	0.00	0.00
6,100.00	0.00	0.00	6,093.52	249.80	-47.45	48.54	0.00	0.00	0.00
6,200.00	0.00	0.00	6,193.52	249.80	-47.45	48.54	0.00	0.00	0.00
6,244.48	0.00	0.00	6,238.00	249.80	-47.45	48.54	0.00	0.00	0.00
Mancos									
6,300.00	0.00	0.00	6,293.52	249.80	-47.45	48.54	0.00	0.00	0.00
6,358.48	0.00	0.00	6,352.00	249.80	-47.45	48.54	0.00	0.00	0.00
Start Build 9.00									
6,400.00	3.74	285.40	6,393.49	250.16	-48.75	49.84	9.00	9.00	0.00
6,450.00	8.24	285.40	6,443.20	251.54	-53.78	54.88	9.00	9.00	0.00
6,500.00	12.74	285.40	6,492.36	253.96	-62.55	63.66	9.00	9.00	0.00
6,550.00	17.24	285.40	6,540.64	257.39	-75.01	76.13	9.00	9.00	0.00
6,600.00	21.74	285.40	6,587.77	261.82	-91.09	92.23	9.00	9.00	0.00
6,650.00	26.24	285.40	6,633.44	267.22	-110.68	111.84	9.00	9.00	0.00
6,700.00	30.74	285.40	6,677.37	273.55	-133.67	134.86	9.00	9.00	0.00

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,750.00	35.24	285.40	6,719.30	280.78	-159.90	161.13	9.00	9.00	0.00	
6,800.00	39.74	285.40	6,758.97	288.85	-189.23	190.49	9.00	9.00	0.00	
6,850.00	44.24	285.40	6,796.12	297.73	-221.47	222.77	9.00	9.00	0.00	
6,879.83	46.92	285.40	6,817.00	303.39	-242.01	243.33	9.00	9.00	0.00	
Black Top										
6,900.00	48.74	285.40	6,830.54	307.36	-256.42	257.76	9.00	9.00	0.00	
6,950.00	53.24	285.40	6,862.00	317.67	-293.87	295.25	9.00	9.00	0.00	
7,000.00	57.74	285.40	6,890.33	328.61	-333.58	335.01	9.00	9.00	0.00	
7,050.00	62.24	285.40	6,915.33	340.11	-375.31	376.79	9.00	9.00	0.00	
7,100.00	66.74	285.40	6,936.86	352.09	-418.80	420.33	9.00	9.00	0.00	
7,150.00	71.24	285.40	6,954.79	364.48	-463.79	465.37	9.00	9.00	0.00	
7,200.00	75.74	285.40	6,969.00	377.21	-509.99	511.63	9.00	9.00	0.00	
7,250.00	80.24	285.40	6,979.40	390.19	-557.13	558.83	9.00	9.00	0.00	
7,300.00	84.74	285.40	6,985.94	403.35	-604.91	606.66	9.00	9.00	0.00	
7,350.00	89.24	285.40	6,988.56	416.61	-653.03	654.84	9.00	9.00	0.00	
7,358.93	90.04	285.40	6,988.62	418.98	-661.64	663.46	9.00	9.00	0.00	
Start 300.00 hold at 7358.93 MD										
7,400.00	90.04	285.40	6,988.59	429.88	-701.24	703.11	0.00	0.00	0.00	
7,500.00	90.04	285.40	6,988.52	456.44	-797.65	799.63	0.00	0.00	0.00	
7,600.00	90.04	285.40	6,988.45	482.99	-894.06	896.15	0.00	0.00	0.00	
7,658.93	90.04	285.40	6,988.41	498.64	-950.87	953.03	0.00	0.00	0.00	
Start DLS 2.00 TFO -89.98										
7,700.00	90.04	284.58	6,988.38	509.27	-990.54	992.75	2.00	0.00	-2.00	
7,800.00	90.04	282.58	6,988.31	532.74	-1,087.74	1,090.06	2.00	0.00	-2.00	
7,900.00	90.04	280.58	6,988.24	552.81	-1,185.70	1,188.10	2.00	0.00	-2.00	
8,000.00	90.04	278.58	6,988.16	569.45	-1,284.30	1,286.78	2.00	0.00	-2.00	
8,100.00	90.04	276.58	6,988.09	582.64	-1,383.42	1,385.95	2.00	0.00	-2.00	
8,200.00	90.04	274.58	6,988.01	592.36	-1,482.95	1,485.52	2.00	0.00	-2.00	
8,300.00	90.04	272.58	6,987.94	598.60	-1,582.75	1,585.34	2.00	0.00	-2.00	
8,400.00	90.04	270.58	6,987.86	601.36	-1,682.70	1,685.31	2.00	0.00	-2.00	
8,416.35	90.04	270.25	6,987.85	601.47	-1,699.05	1,701.66	2.00	0.00	-2.00	
Start 13853.37 hold at 8416.35 MD										
8,500.00	90.04	270.25	6,987.78	601.84	-1,782.70	1,785.31	0.00	0.00	0.00	
8,600.00	90.04	270.25	6,987.70	602.28	-1,882.70	1,885.31	0.00	0.00	0.00	
8,700.00	90.04	270.25	6,987.62	602.72	-1,982.70	1,985.31	0.00	0.00	0.00	
8,800.00	90.04	270.25	6,987.55	603.16	-2,082.70	2,085.31	0.00	0.00	0.00	
8,900.00	90.04	270.25	6,987.47	603.60	-2,182.70	2,185.31	0.00	0.00	0.00	
9,000.00	90.04	270.25	6,987.39	604.04	-2,282.70	2,285.31	0.00	0.00	0.00	
9,100.00	90.04	270.25	6,987.31	604.47	-2,382.70	2,385.31	0.00	0.00	0.00	
9,200.00	90.04	270.25	6,987.23	604.91	-2,482.69	2,485.31	0.00	0.00	0.00	
9,300.00	90.04	270.25	6,987.15	605.35	-2,582.69	2,585.31	0.00	0.00	0.00	
9,400.00	90.04	270.25	6,987.08	605.79	-2,682.69	2,685.31	0.00	0.00	0.00	
9,500.00	90.04	270.25	6,987.00	606.23	-2,782.69	2,785.31	0.00	0.00	0.00	
9,600.00	90.04	270.25	6,986.92	606.67	-2,882.69	2,885.31	0.00	0.00	0.00	
9,700.00	90.04	270.25	6,986.84	607.11	-2,982.69	2,985.31	0.00	0.00	0.00	
9,800.00	90.04	270.25	6,986.76	607.55	-3,082.69	3,085.31	0.00	0.00	0.00	
9,900.00	90.04	270.25	6,986.68	607.99	-3,182.69	3,185.31	0.00	0.00	0.00	
10,000.00	90.04	270.25	6,986.61	608.43	-3,282.69	3,285.31	0.00	0.00	0.00	
10,100.00	90.04	270.25	6,986.53	608.86	-3,382.69	3,385.31	0.00	0.00	0.00	
10,200.00	90.04	270.25	6,986.45	609.30	-3,482.68	3,485.31	0.00	0.00	0.00	
10,300.00	90.04	270.25	6,986.37	609.74	-3,582.68	3,585.31	0.00	0.00	0.00	
10,400.00	90.04	270.25	6,986.29	610.18	-3,682.68	3,685.31	0.00	0.00	0.00	
10,500.00	90.04	270.25	6,986.21	610.62	-3,782.68	3,785.31	0.00	0.00	0.00	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,600.00	90.04	270.25	6,986.14	611.06	-3,882.68	3,885.31	0.00	0.00	0.00	
10,700.00	90.04	270.25	6,986.06	611.50	-3,982.68	3,985.31	0.00	0.00	0.00	
10,800.00	90.04	270.25	6,985.98	611.94	-4,082.68	4,085.31	0.00	0.00	0.00	
10,900.00	90.04	270.25	6,985.90	612.38	-4,182.68	4,185.31	0.00	0.00	0.00	
11,000.00	90.04	270.25	6,985.82	612.81	-4,282.68	4,285.31	0.00	0.00	0.00	
11,100.00	90.04	270.25	6,985.75	613.25	-4,382.68	4,385.31	0.00	0.00	0.00	
11,200.00	90.04	270.25	6,985.67	613.69	-4,482.67	4,485.31	0.00	0.00	0.00	
11,300.00	90.04	270.25	6,985.59	614.13	-4,582.67	4,585.31	0.00	0.00	0.00	
11,400.00	90.04	270.25	6,985.51	614.57	-4,682.67	4,685.31	0.00	0.00	0.00	
11,500.00	90.04	270.25	6,985.43	615.01	-4,782.67	4,785.31	0.00	0.00	0.00	
11,600.00	90.04	270.25	6,985.35	615.45	-4,882.67	4,885.31	0.00	0.00	0.00	
11,700.00	90.04	270.25	6,985.28	615.89	-4,982.67	4,985.31	0.00	0.00	0.00	
11,800.00	90.04	270.25	6,985.20	616.33	-5,082.67	5,085.31	0.00	0.00	0.00	
11,900.00	90.04	270.25	6,985.12	616.76	-5,182.67	5,185.31	0.00	0.00	0.00	
12,000.00	90.04	270.25	6,985.04	617.20	-5,282.67	5,285.31	0.00	0.00	0.00	
12,100.00	90.04	270.25	6,984.96	617.64	-5,382.67	5,385.31	0.00	0.00	0.00	
12,200.00	90.04	270.25	6,984.88	618.08	-5,482.66	5,485.31	0.00	0.00	0.00	
12,300.00	90.04	270.25	6,984.81	618.52	-5,582.66	5,585.31	0.00	0.00	0.00	
12,400.00	90.04	270.25	6,984.73	618.96	-5,682.66	5,685.31	0.00	0.00	0.00	
12,500.00	90.04	270.25	6,984.65	619.40	-5,782.66	5,785.31	0.00	0.00	0.00	
12,600.00	90.04	270.25	6,984.57	619.84	-5,882.66	5,885.31	0.00	0.00	0.00	
12,700.00	90.04	270.25	6,984.49	620.28	-5,982.66	5,985.31	0.00	0.00	0.00	
12,800.00	90.04	270.25	6,984.41	620.71	-6,082.66	6,085.31	0.00	0.00	0.00	
12,900.00	90.04	270.25	6,984.34	621.15	-6,182.66	6,185.31	0.00	0.00	0.00	
13,000.00	90.04	270.25	6,984.26	621.59	-6,282.66	6,285.31	0.00	0.00	0.00	
13,100.00	90.04	270.25	6,984.18	622.03	-6,382.66	6,385.31	0.00	0.00	0.00	
13,200.00	90.04	270.25	6,984.10	622.47	-6,482.65	6,485.31	0.00	0.00	0.00	
13,300.00	90.04	270.25	6,984.02	622.91	-6,582.65	6,585.31	0.00	0.00	0.00	
13,400.00	90.04	270.25	6,983.94	623.35	-6,682.65	6,685.31	0.00	0.00	0.00	
13,500.00	90.04	270.25	6,983.87	623.79	-6,782.65	6,785.31	0.00	0.00	0.00	
13,600.00	90.04	270.25	6,983.79	624.23	-6,882.65	6,885.31	0.00	0.00	0.00	
13,700.00	90.04	270.25	6,983.71	624.66	-6,982.65	6,985.31	0.00	0.00	0.00	
13,800.00	90.04	270.25	6,983.63	625.10	-7,082.65	7,085.31	0.00	0.00	0.00	
13,900.00	90.04	270.25	6,983.55	625.54	-7,182.65	7,185.31	0.00	0.00	0.00	
14,000.00	90.04	270.25	6,983.47	625.98	-7,282.65	7,285.31	0.00	0.00	0.00	
14,100.00	90.04	270.25	6,983.40	626.42	-7,382.65	7,385.31	0.00	0.00	0.00	
14,200.00	90.04	270.25	6,983.32	626.86	-7,482.64	7,485.31	0.00	0.00	0.00	
14,300.00	90.04	270.25	6,983.24	627.30	-7,582.64	7,585.31	0.00	0.00	0.00	
14,400.00	90.04	270.25	6,983.16	627.74	-7,682.64	7,685.31	0.00	0.00	0.00	
14,500.00	90.04	270.25	6,983.08	628.18	-7,782.64	7,785.31	0.00	0.00	0.00	
14,600.00	90.04	270.25	6,983.00	628.61	-7,882.64	7,885.31	0.00	0.00	0.00	
14,700.00	90.04	270.25	6,982.93	629.05	-7,982.64	7,985.31	0.00	0.00	0.00	
14,800.00	90.04	270.25	6,982.85	629.49	-8,082.64	8,085.31	0.00	0.00	0.00	
14,900.00	90.04	270.25	6,982.77	629.93	-8,182.64	8,185.31	0.00	0.00	0.00	
15,000.00	90.04	270.25	6,982.69	630.37	-8,282.64	8,285.31	0.00	0.00	0.00	
15,100.00	90.04	270.25	6,982.61	630.81	-8,382.64	8,385.31	0.00	0.00	0.00	
15,200.00	90.04	270.25	6,982.54	631.25	-8,482.63	8,485.31	0.00	0.00	0.00	
15,300.00	90.04	270.25	6,982.46	631.69	-8,582.63	8,585.31	0.00	0.00	0.00	
15,400.00	90.04	270.25	6,982.38	632.13	-8,682.63	8,685.31	0.00	0.00	0.00	
15,500.00	90.04	270.25	6,982.30	632.57	-8,782.63	8,785.31	0.00	0.00	0.00	
15,600.00	90.04	270.25	6,982.22	633.00	-8,882.63	8,885.31	0.00	0.00	0.00	
15,700.00	90.04	270.25	6,982.14	633.44	-8,982.63	8,985.31	0.00	0.00	0.00	
15,800.00	90.04	270.25	6,982.07	633.88	-9,082.63	9,085.31	0.00	0.00	0.00	
15,900.00	90.04	270.25	6,981.99	634.32	-9,182.63	9,185.31	0.00	0.00	0.00	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,000.00	90.04	270.25	6,981.91	634.76	-9,282.63	9,285.31	0.00	0.00	0.00
16,100.00	90.04	270.25	6,981.83	635.20	-9,382.63	9,385.31	0.00	0.00	0.00
16,200.00	90.04	270.25	6,981.75	635.64	-9,482.62	9,485.31	0.00	0.00	0.00
16,300.00	90.04	270.25	6,981.67	636.08	-9,582.62	9,585.31	0.00	0.00	0.00
16,400.00	90.04	270.25	6,981.60	636.52	-9,682.62	9,685.31	0.00	0.00	0.00
16,500.00	90.04	270.25	6,981.52	636.95	-9,782.62	9,785.31	0.00	0.00	0.00
16,600.00	90.04	270.25	6,981.44	637.39	-9,882.62	9,885.31	0.00	0.00	0.00
16,700.00	90.04	270.25	6,981.36	637.83	-9,982.62	9,985.31	0.00	0.00	0.00
16,800.00	90.04	270.25	6,981.28	638.27	-10,082.62	10,085.31	0.00	0.00	0.00
16,900.00	90.04	270.25	6,981.20	638.71	-10,182.62	10,185.31	0.00	0.00	0.00
17,000.00	90.04	270.25	6,981.13	639.15	-10,282.62	10,285.31	0.00	0.00	0.00
17,100.00	90.04	270.25	6,981.05	639.59	-10,382.62	10,385.31	0.00	0.00	0.00
17,200.00	90.04	270.25	6,980.97	640.03	-10,482.62	10,485.31	0.00	0.00	0.00
17,300.00	90.04	270.25	6,980.89	640.47	-10,582.61	10,585.31	0.00	0.00	0.00
17,400.00	90.04	270.25	6,980.81	640.90	-10,682.61	10,685.31	0.00	0.00	0.00
17,500.00	90.04	270.25	6,980.73	641.34	-10,782.61	10,785.31	0.00	0.00	0.00
17,600.00	90.04	270.25	6,980.66	641.78	-10,882.61	10,885.31	0.00	0.00	0.00
17,700.00	90.04	270.25	6,980.58	642.22	-10,982.61	10,985.31	0.00	0.00	0.00
17,800.00	90.04	270.25	6,980.50	642.66	-11,082.61	11,085.31	0.00	0.00	0.00
17,900.00	90.04	270.25	6,980.42	643.10	-11,182.61	11,185.31	0.00	0.00	0.00
18,000.00	90.04	270.25	6,980.34	643.54	-11,282.61	11,285.31	0.00	0.00	0.00
18,100.00	90.04	270.25	6,980.26	643.98	-11,382.61	11,385.31	0.00	0.00	0.00
18,200.00	90.04	270.25	6,980.19	644.42	-11,482.61	11,485.31	0.00	0.00	0.00
18,300.00	90.04	270.25	6,980.11	644.85	-11,582.60	11,585.31	0.00	0.00	0.00
18,400.00	90.04	270.25	6,980.03	645.29	-11,682.60	11,685.31	0.00	0.00	0.00
18,500.00	90.04	270.25	6,979.95	645.73	-11,782.60	11,785.31	0.00	0.00	0.00
18,600.00	90.04	270.25	6,979.87	646.17	-11,882.60	11,885.31	0.00	0.00	0.00
18,700.00	90.04	270.25	6,979.79	646.61	-11,982.60	11,985.31	0.00	0.00	0.00
18,800.00	90.04	270.25	6,979.72	647.05	-12,082.60	12,085.31	0.00	0.00	0.00
18,900.00	90.04	270.25	6,979.64	647.49	-12,182.60	12,185.31	0.00	0.00	0.00
19,000.00	90.04	270.25	6,979.56	647.93	-12,282.60	12,285.31	0.00	0.00	0.00
19,100.00	90.04	270.25	6,979.48	648.37	-12,382.60	12,385.31	0.00	0.00	0.00
19,200.00	90.04	270.25	6,979.40	648.80	-12,482.60	12,485.31	0.00	0.00	0.00
19,300.00	90.04	270.25	6,979.33	649.24	-12,582.59	12,585.31	0.00	0.00	0.00
19,400.00	90.04	270.25	6,979.25	649.68	-12,682.59	12,685.31	0.00	0.00	0.00
19,500.00	90.04	270.25	6,979.17	650.12	-12,782.59	12,785.31	0.00	0.00	0.00
19,600.00	90.04	270.25	6,979.09	650.56	-12,882.59	12,885.31	0.00	0.00	0.00
19,700.00	90.04	270.25	6,979.01	651.00	-12,982.59	12,985.31	0.00	0.00	0.00
19,800.00	90.04	270.25	6,978.93	651.44	-13,082.59	13,085.31	0.00	0.00	0.00
19,900.00	90.04	270.25	6,978.86	651.88	-13,182.59	13,185.31	0.00	0.00	0.00
20,000.00	90.04	270.25	6,978.78	652.32	-13,282.59	13,285.31	0.00	0.00	0.00
20,100.00	90.04	270.25	6,978.70	652.75	-13,382.59	13,385.31	0.00	0.00	0.00
20,200.00	90.04	270.25	6,978.62	653.19	-13,482.59	13,485.31	0.00	0.00	0.00
20,300.00	90.04	270.25	6,978.54	653.63	-13,582.58	13,585.31	0.00	0.00	0.00
20,400.00	90.04	270.25	6,978.46	654.07	-13,682.58	13,685.31	0.00	0.00	0.00
20,500.00	90.04	270.25	6,978.39	654.51	-13,782.58	13,785.31	0.00	0.00	0.00
20,600.00	90.04	270.25	6,978.31	654.95	-13,882.58	13,885.31	0.00	0.00	0.00
20,700.00	90.04	270.25	6,978.23	655.39	-13,982.58	13,985.31	0.00	0.00	0.00
20,800.00	90.04	270.25	6,978.15	655.83	-14,082.58	14,085.31	0.00	0.00	0.00
20,900.00	90.04	270.25	6,978.07	656.27	-14,182.58	14,185.31	0.00	0.00	0.00
21,000.00	90.04	270.25	6,977.99	656.71	-14,282.58	14,285.31	0.00	0.00	0.00
21,100.00	90.04	270.25	6,977.92	657.14	-14,382.58	14,385.31	0.00	0.00	0.00
21,200.00	90.04	270.25	6,977.84	657.58	-14,482.58	14,485.31	0.00	0.00	0.00
21,300.00	90.04	270.25	6,977.76	658.02	-14,582.57	14,585.31	0.00	0.00	0.00

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
21,400.00	90.04	270.25	6,977.68	658.46	-14,682.57	14,685.31	0.00	0.00	0.00	
21,500.00	90.04	270.25	6,977.60	658.90	-14,782.57	14,785.31	0.00	0.00	0.00	
21,600.00	90.04	270.25	6,977.52	659.34	-14,882.57	14,885.31	0.00	0.00	0.00	
21,700.00	90.04	270.25	6,977.45	659.78	-14,982.57	14,985.31	0.00	0.00	0.00	
21,800.00	90.04	270.25	6,977.37	660.22	-15,082.57	15,085.31	0.00	0.00	0.00	
21,900.00	90.04	270.25	6,977.29	660.66	-15,182.57	15,185.31	0.00	0.00	0.00	
22,000.00	90.04	270.25	6,977.21	661.09	-15,282.57	15,285.31	0.00	0.00	0.00	
22,100.00	90.04	270.25	6,977.13	661.53	-15,382.57	15,385.31	0.00	0.00	0.00	
22,200.00	90.04	270.25	6,977.05	661.97	-15,482.57	15,485.31	0.00	0.00	0.00	
22,269.73	90.04	270.25	6,977.00	662.28	-15,552.29	15,555.03	0.00	0.00	0.00	
TD at 22269.73										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target - Shape										
RU #694 SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,154,191.45	2,854,589.57	36.919104	-107.383488	
RU #694 KOP - plan hits target center - Point	0.00	0.00	6,352.00	249.80	-47.45	2,154,441.02	2,854,540.95	36.919790	-107.383651	
RU #694 PBHL - plan hits target center - Point	0.00	0.00	6,977.00	662.28	-15,552.29	2,154,780.36	2,839,034.33	36.920911	-107.436692	
RU #694 IP2 - plan hits target center - Point	0.00	0.00	6,987.85	601.47	-1,699.06	2,154,784.90	2,852,887.70	36.920756	-107.389301	
RU #694 IP1 - plan hits target center - Point	0.00	0.00	6,988.41	498.64	-950.87	2,154,685.60	2,853,636.36	36.920474	-107.386741	
RU #694 POE - plan hits target center - Point	0.00	0.00	6,988.62	418.98	-661.64	2,154,607.30	2,853,925.96	36.920255	-107.385752	

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #694H
Company:	Logos Operating LLC	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site:	Rosa Unit 34	North Reference:	True
Well:	Rosa Unit #694H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,441.25	2,439.00	Ojo Alamo				
2,561.41	2,559.00	Kirtland				
2,860.82	2,858.00	Fruitland				
3,004.02	3,001.00	Top of Coals				
3,170.24	3,167.00	Base of Coals				
3,371.52	3,368.00	Pictured Cliffs				
3,474.66	3,471.00	Lewis				
4,654.27	4,649.00	Chacra				
5,116.91	5,111.00	Upper Cliff House				
5,432.32	5,426.00	Cliff House				
5,467.35	5,461.00	Menefee				
5,641.45	5,635.00	Point Lookout				
6,244.48	6,238.00	Mancos				
6,879.83	6,817.00	Black Top				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
700.00	700.00	0.00	0.00	Start Build 2.00	
849.89	849.82	3.85	-0.73	Start 4487.02 hold at 849.89 MD	
5,336.91	5,330.71	234.39	-44.52	Start Drop -0.50	
5,936.48	5,930.00	249.80	-47.45	Start 422.00 hold at 5936.48 MD	
6,358.48	6,352.00	249.80	-47.45	Start Build 9.00	
7,358.93	6,988.62	418.98	-661.64	Start 300.00 hold at 7358.93 MD	
7,658.93	6,988.41	498.64	-950.87	Start DLS 2.00 TFO -89.98	
8,416.35	6,987.85	601.47	-1,699.05	Start 13853.37 hold at 8416.35 MD	
22,269.73	6,977.00	662.28	-15,552.29	TD at 22269.73	

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/ocd/contact-us>

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 471725

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 471725
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
etta trujillo	Cement is required to circulate on both surface and intermediate1 strings of casing.	6/6/2025
etta trujillo	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.	6/6/2025
ward.rikala	Notify the OCD 24 hours prior to casing & cement.	7/15/2025
ward.rikala	File As Drilled C-102 and a directional Survey with C-104 completion packet.	7/15/2025
ward.rikala	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string.	7/15/2025
ward.rikala	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.	7/15/2025