

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 692H 9. API Well No. 30-039-31495
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 / 766 FNL / 1960 FEL / LAT 36.919152 / LONG -107.383455 At proposed prod. zone SESE / 933 FSL / 117 FEL / LAT 36.923787 / LONG -107.341137		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) 117 feet 16. No of acres in lease 17. Spacing Unit dedicated to this well 1104.64
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20 feet		19. Proposed Depth 6987 feet / 19469 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* 04/01/2025 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)

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| 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. |
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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 Date 06/05/2025 Office Farmington Field Office

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 an 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 / 766 FNL / 1960 FEL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 36.919152 / LONG: -107.383455 (TVD: 0 feet, MD: 0 feet)

PPP: SWSW / 951 FSL / 0 FWL / TWSP: 31N / RANGE: 5W / SECTION: 3 / LAT: 36.923859 / LONG: -107.358731 (TVD: 0 feet, MD: 0 feet)

PPP: SWSW / 974 FSL / 0 FWL / TWSP: 31N / RANGE: 5W / SECTION: 4 / LAT: 36.92392 / LONG: -107.376757 (TVD: 0 feet, MD: 0 feet)

PPP: SWSW / 977 FSL / 15 FWL / TWSP: 31N / RANGE: 5W / SECTION: 4 / LAT: 36.923931 / LONG: -107.376706 (TVD: 0 feet, MD: 0 feet)

PPP: SESE / 784 FSL / 708 FEL / TWSP: 31N / RANGE: 5W / SECTION: 5 / LAT: 36.923404 / LONG: -107.379179 (TVD: 0 feet, MD: 0 feet)

PPP: SWSE / 331 FSL / 1493 FEL / TWSP: 31N / RANGE: 5W / SECTION: 5 / LAT: 36.922161 / LONG: -107.381861 (TVD: 6987 feet, MD: 7359 feet)

BHL: SESE / 933 FSL / 117 FEL / TWSP: 31N / RANGE: 5W / SECTION: 3 / LAT: 36.923787 / LONG: -107.341137 (TVD: 6987 feet, MD: 19469 feet)

BLM Point of Contact

Name: CHRISTOPHER P WENMAN

Title: Natural Resource Specialist

Phone: (505) 564-7727

Email: cwenman@blm.gov

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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.

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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
#692H ROSA UNIT
Lease: NMSF078763 Unit: NMNM78407E
SH: NW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 8, T.31 N., R.5 W.
Rio Arriba County, New Mexico
BH: SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 3, T.31 N., R.5 W.
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 30-039-31495	Pool Code 97232	Pool Name BASIN MANCOS
Property Code 320608	Property Name ROSA UNIT	Well Number 692H
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 766' NORTH	Feet from E/W Line 1960' EAST	Latitude 36.919152 °N	Longitude -107.383455 °W	County RIO ARriba
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Bottom Hole Location

UL P	Section 3	Township 31N	Range 5W	Lot	Feet from N/S Line 933' SOUTH	Feet from E/W Line 117' EAST	Latitude 36.923787 °N	Longitude -107.341137 °W	County RIO ARriba
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Dedicated Acres 1104.64	Penetrated Spacing Unit: Entire Sections 3, 4 & 5, T31N, R5W	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 O	Section 5	Township 31N	Range 5W	Lot	Feet from N/S Line 16' SOUTH	Feet from E/W Line 2047' EAST	Latitude 36.921298 °N	Longitude -107.383754 °W	County RIO ARriba
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First Take Point (FTP)

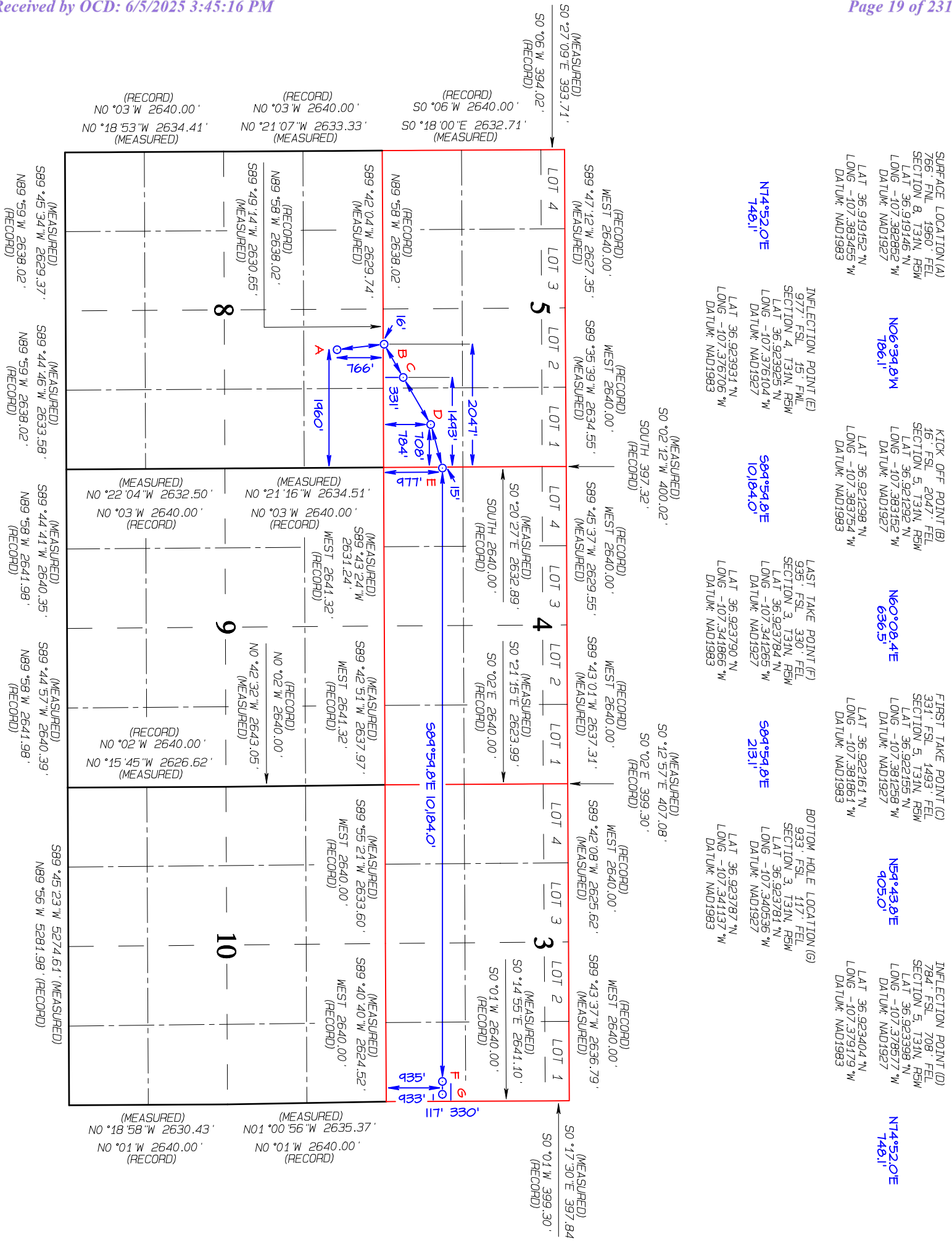
UL O	Section 5	Township 31N	Range 5W	Lot	Feet from N/S Line 331' SOUTH	Feet from E/W Line 1493' EAST	Latitude 36.922161 °N	Longitude -107.381861 °W	County RIO ARriba
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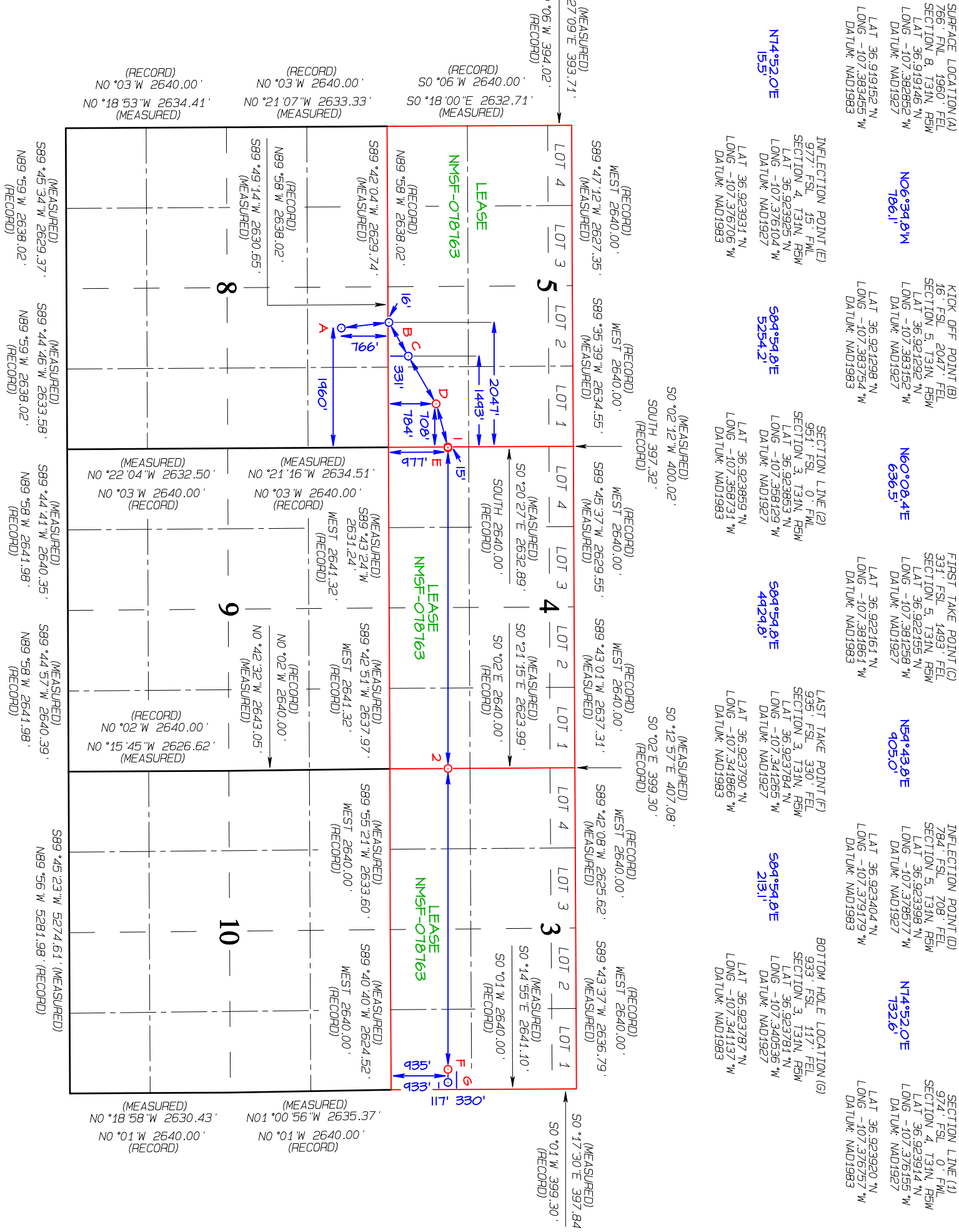
Last Take Point (LTP)

UL P	Section 3	Township 31N	Range 5W	Lot	Feet from N/S Line 935' SOUTH	Feet from E/W Line 330' EAST	Latitude 36.923790 °N	Longitude -107.341866 °W	County RIO ARriba
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Unitized Area or Area of Uniform Interest ROSA UNIT	Spacing Unit Type ☒ Horizontal ☐ Vertical ☐ Directional	Ground Floor Elevation 6317'
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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. Etta Trujillo Signature 1/31/2025 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 NEW MEXICO 15269 12/10/2024 REGISTERED PROFESSIONAL SURVEYOR JASON C. EDWARDS Signature and Seal of Professional Surveyor Certificate Number 15269 Date of Survey DECEMBER 20, 2022
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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

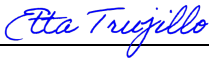
1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(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 11, 2024	Pool:	Basin Mancos
Well Name:	Rosa Unit 692H	GL Elevation:	6347
Surface Location:	Sec 8, T31N, R5W 766' FNL, 1960' FEL (36.919152° N, -107.383455° W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 3, T31N, R5W 933' FSL, 117' FEL (36.923787° N, -107.341137° W – NAD83)	Measured Depth:	19,469' (KB)
Lease Serial CA Serial	# NMSF78763 # NMNM78407E	County:	Rio Arriba

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,457'	2,439'	*POINT LOOKOUT	5,693'	5,635'
KIRTLAND	2,579'	2,559'	*MANCOS	6,298'	6,238'
*FRUITLAND	2,882'	2,858'	KICKOFF POINT	6,408'	6,349'
*PICTURED CLIFFS	3,398'	3,368'	LANDING POINT	7,410'	6,987'
LEWIS	3,502'	3,471'	TD	19,469'	6,987'
CHACRA	4,695'	4,649'			
*CLIFF HOUSE	5,482'	5,426'			
MENEFEE	5,517'	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:** $6987' \text{ TVD} \times 0.43 = 3,004 \text{ psi}$
- 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"	3,448'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,373'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	19,469'	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:

- 1. 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.
- 2. 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
- 3. 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.
- 4. 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	2,848	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	350	2,498	0.6947	1.3	2,256	402	1.90	1187	12.4
Stage 2 Lead - Cased	-	350	1.019	1	357	64	1.90	188	12.4
					3,188	568		1898	
Set Depth	3448								

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	5,873	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,770	1,103	0.3132	1.3	449	80	1.90	236	12.4
					669	119		436	
Stage 2 Tail	4,170	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,348	822	0.3132	1.3	335	60	1.90	176	12.4
Stage 2 Lead - Cased	3,248	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					615	110		350	
Int 2 Totals					1,284	229		786	
Contingency									
Stage 3 Tail	3,448	75	0.3132	1.3	31	5	1.58	19	13.2
Stage 3 Tail - Cased	2,948	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,948	0.3490	1	1,029	183	1.90	542	12.4
Contingency Stage 3 Totals					1,234	220		671	
Set Depth	6373								

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	6,273	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Lead	6,373	13,096	0.2291	1.15	3,456	615	1.59	2,173	13.2
					3,481	620		2,189	

Set depth 19469

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 * 6987' TVD = 1537 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**

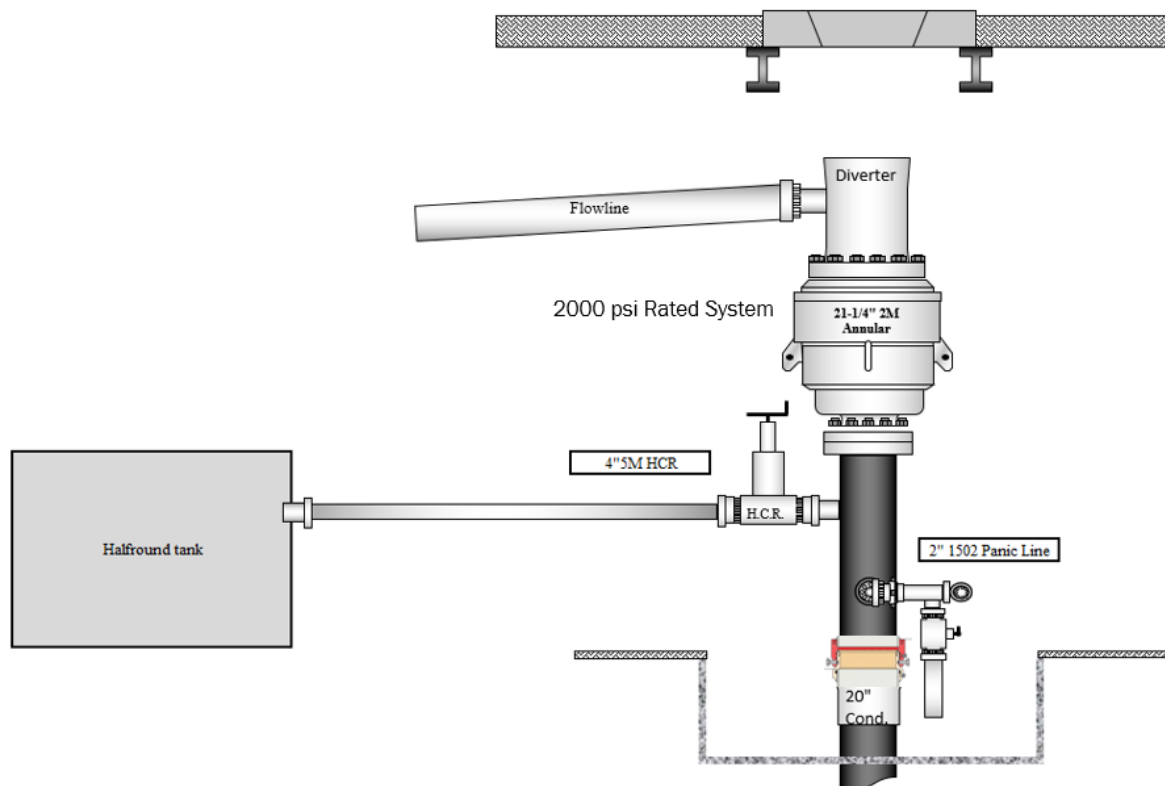
2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-36 months after completion.

*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.



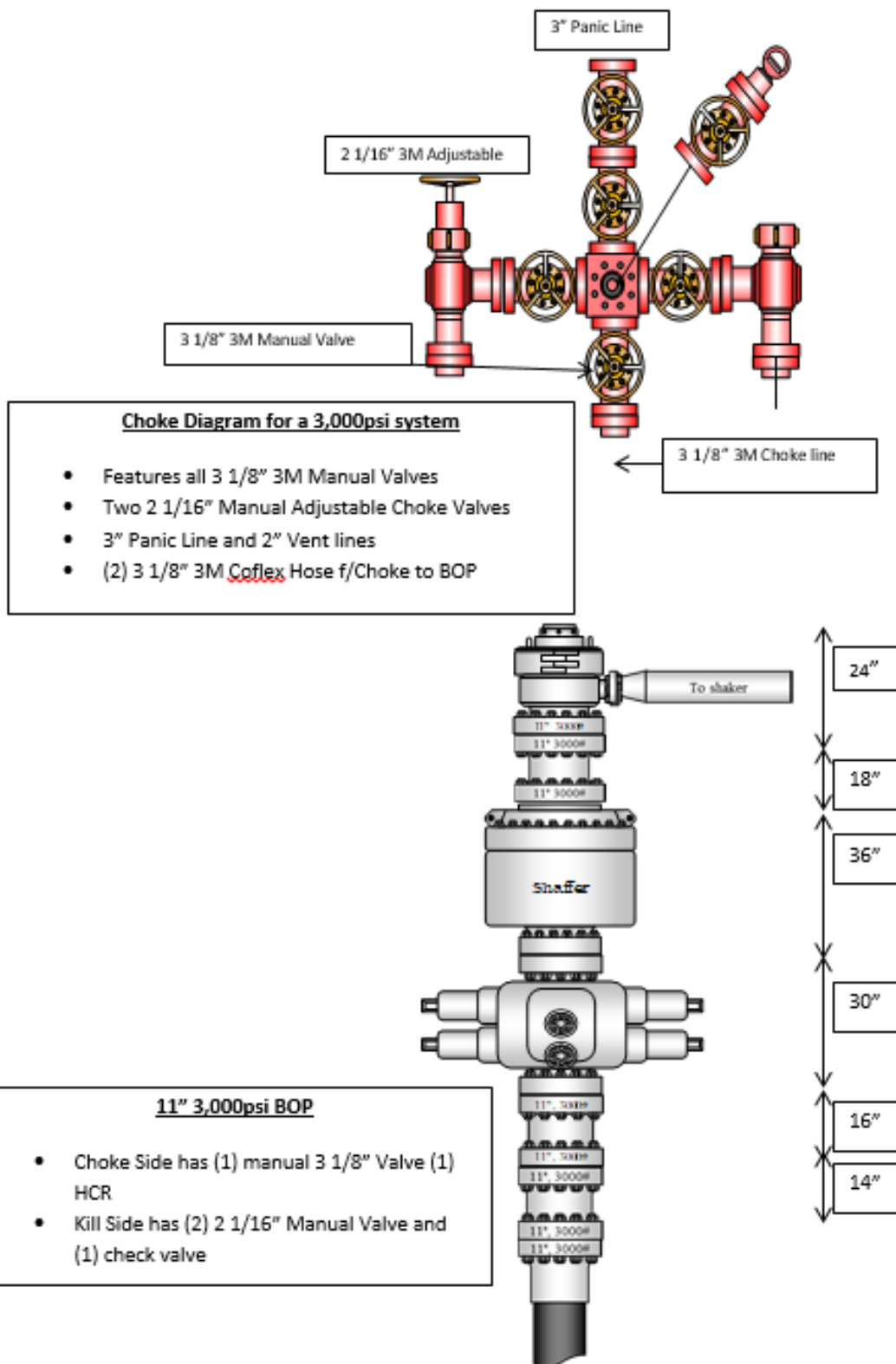
BOP Equipment

Surface Hole Diverter





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



Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 34

Rosa Unit #692H

OH

Prelim 5

Anticollision Report

22 November, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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:	ISCWSA
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	19,468.02	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	15,659.89	7,130.39	1,562.89	1,261.16	5.180	CC, ES, SF
(O) Rosa Unit #041B - OH - OH-SVY	6,223.65	6,537.29	2,977.77	2,913.94	46.651	CC
(O) Rosa Unit #041B - OH - OH-SVY	6,408.05	6,729.11	2,978.24	2,911.78	44.814	ES
(O) Rosa Unit #041B - OH - OH-SVY	6,750.00	7,068.71	3,051.29	2,979.97	42.784	SF
(O) Rosa Unit #041C - OH - OH-SVY	950.79	934.43	29.20	23.59	5.207	CC, ES
(O) Rosa Unit #041C - OH - OH-SVY	8,100.00	7,530.59	305.96	234.49	4.281	SF
(O) Rosa Unit #053 - OH - OH-INC	562.54	551.54	374.09	362.33	31.820	CC
(O) Rosa Unit #053 - OH - OH-INC	800.00	788.28	375.81	358.94	22.272	ES
(O) Rosa Unit #053 - OH - OH-INC	6,600.00	6,527.67	1,138.58	976.83	7.039	SF
(O) Rosa Unit #072C - OH - OH-SVY	6,416.14	6,577.56	6,114.33	6,071.01	141.149	CC, ES
(O) Rosa Unit #072C - OH - OH-SVY	7,100.00	7,122.76	6,379.93	6,332.80	135.383	SF
(O) Rosa Unit #080A - OH - OH-INC	641.05	546.90	1,968.44	1,955.53	152.407	CC
(O) Rosa Unit #080A - OH - OH-INC	900.00	805.89	1,971.25	1,952.45	104.897	ES
(O) Rosa Unit #080A - OH - OH-INC	5,000.00	4,786.00	2,282.92	2,160.00	18.572	SF
(O) Rosa Unit #107 - OH - OH-INC	10,926.50	6,802.61	1,163.66	961.70	5.762	CC, ES
(O) Rosa Unit #107 - OH - OH-INC	11,100.00	6,802.61	1,176.53	969.61	5.686	SF
(O) Rosa Unit #108 - OH - OH-SVY	759.97	657.98	5,135.69	5,125.56	506.809	CC
(O) Rosa Unit #108 - OH - OH-SVY	1,100.00	996.76	5,138.86	5,121.92	303.293	ES
(O) Rosa Unit #108 - OH - OH-SVY	7,100.00	6,811.50	5,613.63	5,452.07	34.748	SF
(O) Rosa Unit #149 - OH - OH-INC	1,887.67	1,784.38	7,970.83	7,920.08	157.084	CC
(O) Rosa Unit #149 - OH - OH-INC	6,100.00	5,949.00	7,994.96	7,787.36	38.512	ES
(O) Rosa Unit #149 - OH - OH-INC	6,450.00	5,949.00	8,004.62	7,796.08	38.385	SF
(O) Rosa Unit #149A - OH - OH-INC	718.33	625.33	9,382.19	9,368.55	688.117	CC
(O) Rosa Unit #149A - OH - OH-INC	6,200.00	6,000.00	9,418.82	9,275.36	65.653	ES
(O) Rosa Unit #149A - OH - OH-INC	6,500.00	6,000.00	9,431.52	9,287.19	65.346	SF
(O) Rosa Unit #149B - OH - OH-INC	4,959.96	4,953.06	11,253.35	11,117.39	82.771	CC
(O) Rosa Unit #149B - OH - OH-INC	6,450.00	6,436.00	11,255.95	11,074.10	61.898	ES
(O) Rosa Unit #149B - OH - OH-INC	7,150.00	6,980.25	11,610.77	11,410.47	57.965	SF
(O) Rosa Unit #149C - OH - OH-SVY	3,700.00	3,769.00	8,596.80	8,564.21	263.796	CC
(O) Rosa Unit #149C - OH - OH-SVY	6,500.00	6,454.45	8,628.77	8,250.36	22.803	ES
(O) Rosa Unit #149C - OH - OH-SVY	7,200.00	6,949.18	9,031.11	8,587.00	20.335	SF
(O) Rosa Unit #164 - OH - OH-SVY	1,300.00	714.75	8,720.92	8,700.55	428.106	CC, ES
(O) Rosa Unit #164 - OH - OH-SVY	8,800.00	1,660.93	11,650.41	11,603.07	246.100	SF
(O) Rosa Unit #164A - OH - OH-INC	6,234.95	6,060.00	8,364.39	8,183.98	46.362	CC, ES
(O) Rosa Unit #164A - OH - OH-INC	6,500.00	6,060.00	8,375.18	8,194.01	46.228	SF
(O) Rosa Unit #164B - OH - OH-SVY	1,307.50	744.00	8,655.23	8,640.20	575.851	CC, ES
(O) Rosa Unit #164B - OH - OH-SVY	8,600.00	1,859.00	11,380.40	11,335.31	252.406	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 #692H
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 #692H	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 #164C - OH - OH-SVY	5,756.24	5,940.29	7,931.78	7,879.71	152.342	CC
(O) Rosa Unit #164C - OH - OH-SVY	5,900.00	6,085.82	7,932.04	7,879.25	150.250	ES
(O) Rosa Unit #164C - OH - OH-SVY	6,950.00	7,086.36	8,129.47	8,071.63	140.551	SF
(O) Rosa Unit #171 - OH - OH-INC	480.54	368.52	4,910.81	4,902.39	582.722	CC
(O) Rosa Unit #171 - OH - OH-INC	1,900.00	1,773.73	4,930.22	4,889.60	121.359	ES
(O) Rosa Unit #171 - OH - OH-INC	6,408.05	6,028.00	5,064.16	4,919.79	35.078	SF
(O) Rosa Unit #171A - OH - OH-SVY	111.00	0.00	4,985.75	4,985.46	10,000.000	CC, ES
(O) Rosa Unit #171A - OH - OH-SVY	5,300.00	3,337.00	6,479.88	6,420.35	108.867	SF
(O) Rosa Unit #171B - OH - OH-SVY	0.00	37.10	4,759.63			
(O) Rosa Unit #171B - OH - OH-SVY	400.00	413.23	4,760.62	4,755.54	936.701	ES
(O) Rosa Unit #171B - OH - OH-SVY	6,650.00	6,388.00	5,516.64	5,457.13	92.709	SF
(O) Rosa Unit #171C - OH - OH-SVY	210.00	249.00	4,785.98	4,780.29	841.432	CC
(O) Rosa Unit #171C - OH - OH-SVY	300.00	311.39	4,786.13	4,779.31	702.308	ES
(O) Rosa Unit #171C - OH - OH-SVY	7,050.00	6,990.00	7,336.51	7,247.68	82.589	SF
(O) Rosa Unit #226 - OH - OH-INC	820.10	693.07	8,872.18	8,856.98	583.843	CC
(O) Rosa Unit #226 - OH - OH-INC	3,300.00	3,135.00	8,882.94	8,807.87	118.335	ES
(O) Rosa Unit #226 - OH - OH-INC	5,400.00	3,135.00	9,145.99	9,064.54	112.295	SF
(O) Rosa Unit #226A - OH - OH-SVY	3,317.40	5,392.00	8,318.74	8,276.67	197.754	CC, ES
(O) Rosa Unit #226A - OH - OH-SVY	6,300.00	5,392.00	8,844.15	8,794.61	178.537	SF
(O) Rosa Unit #228A - OH - OH-SVY	496.99	383.00	5,304.80	5,298.94	904.453	CC
(O) Rosa Unit #228A - OH - OH-SVY	500.00	383.00	5,304.80	5,298.93	902.795	ES
(O) Rosa Unit #228A - OH - OH-SVY	5,455.76	3,253.00	6,443.82	6,403.23	158.744	SF
(O) Rosa Unit #336 - OH - OH-INC	641.13	613.12	138.66	125.00	10.151	CC
(O) Rosa Unit #336 - OH - OH-INC	800.00	771.61	140.47	123.22	8.146	ES
(O) Rosa Unit #336 - OH - OH-INC	3,000.00	2,947.80	456.93	377.14	5.727	SF
(O) Rosa Unit #336A - OH - OH-INC	672.87	594.83	2,527.32	2,513.57	183.803	CC
(O) Rosa Unit #336A - OH - OH-INC	1,000.00	921.52	2,531.17	2,509.35	116.037	ES
(O) Rosa Unit #336A - OH - OH-INC	3,000.00	2,809.00	2,623.80	2,554.30	37.750	SF
(O) Rosa Unit #350A - OH - OH-SVY	15,083.34	3,645.00	4,119.51	4,033.08	47.659	CC
(O) Rosa Unit #350A - OH - OH-SVY	15,100.00	3,645.00	4,119.55	4,033.04	47.621	ES
(O) Rosa Unit #350A - OH - OH-SVY	15,700.00	3,645.00	4,165.41	4,076.81	47.011	SF
(O) Rosa Unit #46 - OH - OH-INC	539.74	503.71	150.79	139.54	13.412	CC
(O) Rosa Unit #46 - OH - OH-INC	800.00	764.02	152.63	135.31	8.811	ES
(O) Rosa Unit #46 - OH - OH-INC	5,600.00	5,494.00	866.27	733.59	6.529	SF
(O) Rosa Unit #80B - OH - OH-SVY	3,426.70	3,500.87	2,523.32	2,494.62	87.922	CC
(O) Rosa Unit #80B - OH - OH-SVY	6,450.00	6,492.44	2,558.44	2,313.35	10.439	ES
(O) Rosa Unit #80B - OH - OH-SVY	6,750.00	6,777.19	2,642.82	2,381.29	10.105	SF
(O) Rosa Unit #95 - OH - OH-INC	13,265.13	5,990.00	2,554.26	2,349.05	12.447	CC, ES
(O) Rosa Unit #95 - OH - OH-INC	13,400.00	5,990.00	2,557.82	2,351.90	12.421	SF
(O) Rosa Unit 072B - OH - OH-SVY	0.00	0.00	4,938.86			
(O) Rosa Unit 072B - OH - OH-SVY	407.88	378.89	4,937.67	4,935.88	2,761.189	CC, ES
(O) Rosa Unit 148 COM - OH - OH-INC	6,363.36	6,268.16	13,972.94	13,783.08	73.595	CC
(O) Rosa Unit 148 COM - OH - OH-INC	6,450.00	6,366.16	13,974.20	13,780.36	72.092	ES
(O) Rosa Unit 148 COM - OH - OH-INC	7,250.00	6,934.36	14,383.25	14,166.24	66.278	SF
Rosa Unit #672H - OH - Prelim 5	500.00	500.00	60.03	56.66	17.814	CC, ES
Rosa Unit #672H - OH - Prelim 5	1,200.00	1,181.38	102.99	94.74	12.483	SF
Rosa Unit #674H - OH - Prelim 5	510.00	510.00	40.06	36.62	11.642	CC
Rosa Unit #674H - OH - Prelim 5	600.00	599.41	40.43	36.35	9.899	ES
Rosa Unit #674H - OH - Prelim 5	5,455.76	5,441.31	262.47	221.74	6.444	SF
Rosa Unit #690H - OH - Prelim 5	600.00	600.00	19.96	15.87	4.885	CC, ES
Rosa Unit #690H - OH - Prelim 5	19,468.80	20,176.02	1,385.12	987.67	3.485	SF
Rosa Unit #694H - OH - Prelim 5	700.00	700.00	19.96	15.16	4.156	CC
Rosa Unit #694H - OH - Prelim 5	900.00	900.80	20.61	14.37	3.304	ES, 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 #692H
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 #692H	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						
Rosa Unit #696H - OH - Prelim 5	700.00	700.00	40.06	35.26	8.341	CC
Rosa Unit #696H - OH - Prelim 5	800.00	800.71	40.59	35.07	7.351	ES
Rosa Unit #696H - OH - Prelim 5	19,468.80	19,218.26	1,281.37	883.32	3.219	SF

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	Offset Wellbore Centre	Distance	Between	Between	Minimum	Separation	Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Major Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor		
0.00	0.00	141.00	141.00	0.00	2.50	89.03	145.48	8,553.45	8,554.69					
100.00	100.00	241.00	241.00	0.25	4.27	89.03	145.48	8,553.45	8,554.69	8,550.17	4.52	1,892.292		
200.00	200.00	341.00	341.00	0.61	6.04	89.03	145.48	8,553.45	8,554.69	8,548.03	6.65	1,286.239		
300.00	300.00	441.00	441.00	0.97	7.81	89.03	145.48	8,553.45	8,554.69	8,545.90	8.78	974.218		
400.00	400.00	541.00	541.00	1.33	9.58	89.03	145.48	8,553.45	8,554.69	8,543.77	10.91	784.025		
500.00	500.00	641.00	641.00	1.68	11.36	89.03	145.48	8,553.45	8,554.69	8,541.64	13.04	655.963		
600.00	600.00	741.12	741.12	2.04	13.13	89.02	145.69	8,553.45	8,554.69	8,539.52	15.17	563.782		
700.00	700.00	841.27	841.26	2.40	14.90	89.03	145.55	8,553.45	8,554.69	8,537.38	17.31	494.306		
704.45	704.45	845.72	845.72	2.42	14.98	95.42	145.54	8,553.45	8,554.69	8,537.29	17.40	491.611		
800.00	799.98	940.99	940.98	2.76	16.67	95.42	145.48	8,553.45	8,554.85	8,535.42	19.43	440.269		
900.00	899.84	1,040.84	1,040.84	3.12	18.44	95.45	145.48	8,553.45	8,555.35	8,533.79	21.56	396.861		
1,000.00	999.45	1,140.53	1,140.52	3.48	20.21	95.49	145.70	8,553.45	8,556.18	8,532.50	23.68	361.282		
1,100.00	1,098.70	1,239.89	1,239.89	3.85	21.97	95.55	145.59	8,553.45	8,557.36	8,531.56	25.81	331.593		
1,153.80	1,151.90	1,293.14	1,293.14	4.04	22.91	95.58	145.49	8,553.45	8,558.15	8,531.20	26.95	317.573		
1,200.00	1,197.53	1,338.54	1,338.53	4.21	23.73	95.63	145.48	8,553.45	8,558.87	8,530.93	27.94	306.368		
1,300.00	1,296.27	1,437.28	1,437.27	4.59	25.50	95.74	145.48	8,553.45	8,560.45	8,530.36	30.09	284.491		
1,400.00	1,395.02	1,536.07	1,536.06	4.97	27.28	95.84	145.68	8,553.45	8,562.06	8,529.81	32.25	265.495		
1,500.00	1,493.77	1,634.87	1,634.86	5.36	29.06	95.94	145.58	8,553.45	8,563.70	8,529.29	34.41	248.855		
1,600.00	1,592.52	1,733.54	1,733.52	5.74	30.83	96.05	145.48	8,553.45	8,565.37	8,528.79	36.58	234.176		
1,700.00	1,691.27	1,832.29	1,832.27	6.14	32.61	96.15	145.79	8,553.45	8,567.06	8,528.32	38.75	221.111		
1,800.00	1,790.01	1,931.06	1,931.04	6.53	34.39	96.25	145.63	8,553.45	8,568.79	8,527.87	40.92	209.420		
1,900.00	1,888.76	2,029.79	2,029.76	6.92	36.19	96.36	145.48	8,553.45	8,570.54	8,527.44	43.11	198.812		
2,000.00	1,987.51	2,128.53	2,128.51	7.32	38.00	96.46	145.48	8,553.45	8,572.33	8,527.01	45.32	189.168		
2,100.00	2,086.26	2,227.26	2,227.23	7.72	39.81	96.56	145.68	8,553.45	8,574.14	8,526.61	47.52	180.419		
2,200.00	2,185.01	2,325.93	2,325.91	8.11	41.62	96.67	145.56	8,553.45	8,575.98	8,526.25	49.73	172.447		
2,300.00	2,283.75	2,424.79	2,424.75	8.51	43.48	96.77	145.48	8,553.45	8,577.85	8,525.86	51.99	164.989		
2,400.00	2,382.50	2,523.54	2,523.50	8.91	45.37	96.87	145.48	8,553.45	8,579.75	8,525.47	54.28	158.068		
2,500.00	2,481.25	2,621.98	2,621.93	9.31	47.26	96.97	145.92	8,553.45	8,581.67	8,525.10	56.56	151.721		
2,600.00	2,580.00	2,721.07	2,721.00	9.71	49.16	97.08	145.48	8,553.45	8,583.63	8,524.76	58.86	145.824		
2,700.00	2,678.75	2,819.82	2,819.75	10.11	51.10	97.18	145.48	8,553.45	8,585.61	8,524.40	61.21	140.270		
2,800.00	2,777.49	2,918.07	2,917.99	10.52	53.04	97.28	145.81	8,553.45	8,587.62	8,524.07	63.54	135.147		
2,900.00	2,876.24	3,017.34	3,017.24	10.92	55.01	97.39	145.48	8,553.45	8,589.66	8,523.74	65.92	130.304		
3,000.00	2,974.99	3,116.09	3,115.99	11.32	57.02	97.49	145.48	8,553.45	8,591.73	8,523.40	68.33	125.742		
3,100.00	3,073.74	3,214.19	3,214.07	11.72	59.02	97.59	146.10	8,553.45	8,593.81	8,523.09	70.72	121.513		
3,200.00	3,172.49	3,311.81	3,311.69	12.13	61.00	97.70	145.52	8,553.45	8,595.95	8,522.84	73.11	117.577		
3,300.00	3,271.23	3,412.39	3,412.23	12.53	63.01	97.80	145.48	8,553.45	8,598.11	8,522.58	75.52	113.845		
3,400.00	3,369.98	3,511.14	3,510.98	12.93	64.99	97.91	145.48	8,553.45	8,600.29	8,522.39	77.90	110.399		
3,500.00	3,468.73	3,608.80	3,608.63	13.34	66.94	98.00	146.14	8,553.45	8,602.48	8,522.22	80.26	107.185		
3,600.00	3,567.48	3,706.31	3,706.14	13.74	68.89	98.11	145.51	8,553.45	8,604.74	8,522.13	82.61	104.160		
3,700.00	3,666.23	3,807.43	3,807.23	14.14	70.92	98.21	145.48	8,553.45	8,607.01	8,521.96	85.05	101.204		

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 #692H
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 #692H	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:		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				
3,800.00	3,764.97	3,906.17	3,905.97	14.55	72.91	98.32	145.48	8,553.45	8,609.30	8,521.87	87.43	98.466					
3,900.00	3,863.72	4,004.50	4,004.30	14.95	74.89	98.41	146.25	8,553.45	8,611.60	8,521.78	89.81	95.883					
4,000.00	3,962.47	4,102.36	4,102.15	15.36	76.85	98.52	146.00	8,553.45	8,613.96	8,521.77	92.18	93.443					
4,100.00	4,061.22	4,202.48	4,202.22	15.76	78.87	98.62	145.48	8,553.45	8,616.36	8,521.76	94.60	91.080					
4,200.00	4,159.97	4,301.22	4,300.97	16.17	80.98	98.73	145.48	8,553.45	8,618.77	8,521.65	97.12	88.747					
4,300.00	4,258.71	4,399.97	4,399.71	16.57	83.09	98.83	145.48	8,553.45	8,621.20	8,521.57	99.63	86.532					
4,400.00	4,357.46	4,497.91	4,497.64	16.98	85.18	98.92	146.47	8,553.45	8,623.62	8,521.50	102.13	84.441					
4,500.00	4,456.21	4,595.17	4,594.90	17.38	87.26	99.03	146.10	8,553.45	8,626.13	8,521.52	104.61	82.461					
4,600.00	4,554.96	4,696.31	4,695.96	17.79	89.46	99.14	145.48	8,553.45	8,628.68	8,521.47	107.21	80.482					
4,700.00	4,653.71	4,795.06	4,794.71	18.19	91.84	99.24	145.48	8,553.45	8,631.23	8,521.24	110.00	78.469					
4,800.00	4,752.45	4,892.04	4,891.68	18.60	94.18	99.33	146.22	8,553.45	8,633.77	8,521.03	112.74	76.584					
4,900.00	4,851.20	4,987.55	4,987.18	19.00	96.48	99.44	145.54	8,553.45	8,636.41	8,520.97	115.44	74.812					
5,000.00	4,949.95	5,091.43	5,090.95	19.41	99.24	99.54	145.48	8,553.45	8,639.05	8,520.45	118.60	72.839					
5,100.00	5,048.70	5,190.18	5,189.70	19.81	101.88	99.65	145.48	8,553.45	8,641.71	8,520.07	121.65	71.040					
5,200.00	5,147.45	5,286.71	5,286.19	20.22	104.46	99.73	147.42	8,553.45	8,644.28	8,519.66	124.63	69.361					
5,300.00	5,246.19	5,381.67	5,381.13	20.62	106.99	99.83	146.68	8,553.45	8,647.05	8,519.48	127.57	67.785					
5,400.00	5,344.94	5,486.71	5,485.94	21.03	109.83	99.95	145.48	8,553.45	8,649.86	8,519.06	130.81	66.127					
5,455.76	5,400.00	5,541.76	5,541.00	21.25	111.39	100.01	145.48	8,553.45	8,651.41	8,518.82	132.59	65.251					
5,500.00	5,443.72	5,585.48	5,584.72	21.43	112.62	100.06	145.48	8,553.45	8,652.61	8,518.61	134.00	64.573					
5,600.00	5,542.71	5,684.47	5,683.71	21.83	115.41	100.18	145.48	8,553.45	8,655.12	8,517.93	137.19	63.091					
5,700.00	5,641.93	5,779.62	5,778.81	22.22	118.10	100.27	147.14	8,553.45	8,657.23	8,516.97	140.26	61.724					
5,800.00	5,741.36	5,874.59	5,873.75	22.60	120.78	100.36	146.13	8,553.45	8,659.22	8,515.91	143.31	60.422					
5,900.00	5,840.96	5,983.03	5,981.96	22.97	124.10	100.44	145.48	8,553.45	8,660.89	8,513.88	147.01	58.914					
6,000.00	5,940.70	6,082.77	6,081.70	23.33	127.31	100.50	145.48	8,553.45	8,662.20	8,511.62	150.58	57.526					
6,100.00	6,040.55	6,176.67	6,175.54	23.68	130.34	100.54	146.80	8,553.45	8,663.11	8,509.16	153.95	56.271					
6,200.00	6,140.48	6,282.92	6,281.48	24.02	133.81	100.58	145.48	8,553.45	8,663.89	8,506.11	157.77	54.913					
6,300.00	6,240.45	6,382.90	6,381.45	24.35	137.39	100.60	145.48	8,553.45	8,664.25	8,502.56	161.69	53.587					
6,408.05	6,348.50	6,490.95	6,489.50	24.69	141.26	-79.40	145.48	8,553.45	8,664.28	8,498.39	165.89	52.229					
6,450.00	6,390.43	6,530.16	6,528.62	24.82	142.66	27.75	148.35	8,553.45	8,662.87	8,495.44	167.43	51.742					
6,500.00	6,440.15	6,576.52	6,574.96	24.99	144.32	31.59	148.03	8,553.45	8,658.48	8,489.23	169.25	51.157					
6,550.00	6,489.32	6,622.33	6,620.75	25.16	145.96	33.04	147.46	8,553.45	8,650.90	8,479.83	171.07	50.569					
6,600.00	6,537.64	6,667.29	6,665.68	25.34	147.57	34.15	146.67	8,553.45	8,640.19	8,467.32	172.86	49.983					
6,650.00	6,584.80	6,727.87	6,725.80	25.52	149.73	35.27	145.48	8,553.45	8,626.40	8,451.19	175.21	49.234					
6,700.00	6,630.52	6,773.59	6,771.52	25.71	151.31	36.50	145.48	8,553.45	8,609.54	8,432.55	176.99	48.644					
6,750.00	6,674.51	6,817.58	6,815.51	25.89	152.84	37.91	145.48	8,553.45	8,589.79	8,411.08	178.71	48.065					
6,800.00	6,716.50	6,859.57	6,857.50	26.08	154.29	39.55	145.48	8,553.45	8,567.30	8,386.93	180.37	47.499					
6,850.00	6,756.24	6,894.98	6,892.85	26.28	155.52	41.44	147.24	8,553.45	8,542.05	8,360.26	181.80	46.987					
6,900.00	6,793.47	6,927.80	6,925.66	26.48	156.66	43.64	146.94	8,553.45	8,514.54	8,331.40	183.14	46.493					
6,950.00	6,827.97	6,958.04	6,955.88	26.69	157.71	46.19	146.49	8,553.45	8,484.79	8,300.40	184.39	46.016					
7,000.00	6,859.53	6,985.49	6,983.31	26.91	158.66	49.14	145.93	8,553.45	8,452.99	8,267.44	185.55	45.557					
7,050.00	6,887.94	7,031.34	7,028.94	27.14	160.23	52.64	145.48	8,553.45	8,419.31	8,231.98	187.33	44.944					
7,100.00	6,913.05	7,056.44	7,054.05	27.38	161.09	56.52	145.48	8,553.45	8,383.97	8,195.57	188.40	44.502					
7,150.00	6,934.68	7,078.07	7,075.68	27.64	161.83	60.89	145.48	8,553.45	8,347.23	8,157.88	189.35	44.085					
7,200.00	6,952.71	7,096.10	7,093.71	27.92	162.44	65.75	145.48	8,553.45	8,309.32	8,119.14	190.17	43.693					
7,250.00	6,967.02	7,110.42	7,108.02	28.21	162.93	71.08	145.48	8,553.45	8,270.48	8,079.61	190.88	43.328					
7,300.00	6,977.54	7,120.93	7,118.54	28.52	163.29	76.78	145.48	8,553.45	8,230.98	8,039.52	191.46	42.991					
7,350.00	6,984.18	7,127.58	7,125.18	28.83	163.52	82.74	145.48	8,553.45	8,191.05	7,999.14	191.90	42.683					
7,400.00	6,986.92	7,130.32	7,127.92	29.16	163.61	88.80	145.48	8,553.45	8,150.94	7,958.72	192.22	42.404					
7,409.89	6,987.00	7,130.39	7,128.00	29.23	163.61	90.00	145.48	8,553.45	8,143.01	7,950.74	192.27	42.352					
7,500.00	6,987.00	7,130.39	7,128.00	29.85	163.61	90.00	145.48	8,553.45	8,070.94	7,878.25	192.69	41.886					
7,600.00	6,987.00	7,130.39	7,128.00	30.61	163.61	90.00	145.48	8,553.45	7,991.39	7,798.20	193.19	41.366					
7,700.00	6,987.00	7,130.39	7,128.00	31.41	163.61	90.00	145.48	8,553.45	7,912.30	7,718.58	193.72	40.844					

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 #692H
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 #692H	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		Rule Assigned:		Distance		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		
7,800.00	6,987.00	7,130.39	7,128.00	32.27	163.61	90.00	145.48	8,553.45	7,833.69	7,639.41	194.29	40.320		
7,900.00	6,987.00	7,130.39	7,128.00	33.17	163.61	90.00	145.48	8,553.45	7,755.58	7,560.69	194.89	39.795		
8,000.00	6,987.00	7,130.39	7,128.00	34.12	163.61	90.00	145.48	8,553.45	7,677.97	7,482.45	195.52	39.269		
8,100.00	6,987.00	7,130.39	7,128.00	35.10	163.61	90.00	145.48	8,553.45	7,600.89	7,404.70	196.19	38.743		
8,200.00	6,987.00	7,130.39	7,128.00	36.12	163.61	90.00	145.48	8,553.45	7,524.34	7,327.45	196.89	38.216		
8,300.00	6,987.00	7,130.39	7,128.00	37.17	163.61	90.00	145.48	8,553.45	7,448.35	7,250.72	197.63	37.688		
8,314.89	6,987.00	7,130.39	7,128.00	37.33	163.61	90.00	145.48	8,553.45	7,437.09	7,239.34	197.74	37.610		
8,400.00	6,987.00	7,130.39	7,128.00	38.25	163.61	90.00	145.48	8,553.45	7,371.31	7,172.93	198.38	37.157		
8,500.00	6,987.00	7,130.39	7,128.00	39.35	163.61	90.00	145.48	8,553.45	7,290.54	7,091.43	199.11	36.616		
8,600.00	6,987.00	7,130.39	7,128.00	40.45	163.61	90.00	145.48	8,553.45	7,206.27	7,006.47	199.79	36.068		
8,700.00	6,987.00	7,130.39	7,128.00	41.56	163.61	90.00	145.48	8,553.45	7,118.79	6,918.36	200.43	35.517		
8,800.00	6,987.00	7,130.39	7,128.00	42.66	163.61	90.00	145.48	8,553.45	7,028.42	6,827.41	201.02	34.964		
8,900.00	6,987.00	7,130.39	7,128.00	43.75	163.61	90.00	145.48	8,553.45	6,935.50	6,733.96	201.54	34.413		
9,000.00	6,987.00	7,130.39	7,128.00	44.83	163.61	90.00	145.48	8,553.45	6,840.38	6,638.40	201.98	33.867		
9,071.74	6,987.00	7,130.39	7,128.00	45.59	163.61	90.00	145.48	8,553.45	6,770.99	6,568.75	202.25	33.478		
9,100.00	6,987.00	7,130.39	7,128.00	45.89	163.61	90.00	145.48	8,553.45	6,743.50	6,541.15	202.35	33.326		
9,200.00	6,987.00	7,130.39	7,128.00	46.97	163.61	90.00	145.48	8,553.45	6,646.26	6,443.56	202.70	32.789		
9,300.00	6,987.00	7,130.39	7,128.00	48.07	163.61	90.00	145.48	8,553.45	6,549.11	6,346.05	203.06	32.251		
9,400.00	6,987.00	7,130.39	7,128.00	49.20	163.61	90.00	145.48	8,553.45	6,452.04	6,248.60	203.44	31.714		
9,500.00	6,987.00	7,130.39	7,128.00	50.36	163.61	90.00	145.48	8,553.45	6,355.07	6,151.23	203.84	31.177		
9,600.00	6,987.00	7,130.39	7,128.00	51.54	163.61	90.00	145.48	8,553.45	6,258.19	6,053.95	204.24	30.641		
9,700.00	6,987.00	7,130.39	7,128.00	52.74	163.61	90.00	145.48	8,553.45	6,161.41	5,956.74	204.66	30.105		
9,800.00	6,987.00	7,130.39	7,128.00	53.96	163.61	90.00	145.48	8,553.45	6,064.73	5,859.63	205.10	29.569		
9,900.00	6,987.00	7,130.39	7,128.00	55.21	163.61	90.00	145.48	8,553.45	5,968.16	5,762.61	205.56	29.034		
10,000.00	6,987.00	7,130.39	7,128.00	56.47	163.61	90.00	145.48	8,553.45	5,871.71	5,665.69	206.03	28.500		
10,100.00	6,987.00	7,130.39	7,128.00	57.75	163.61	90.00	145.48	8,553.45	5,775.38	5,568.86	206.52	27.966		
10,200.00	6,987.00	7,130.39	7,128.00	59.04	163.61	90.00	145.48	8,553.45	5,679.18	5,472.15	207.02	27.432		
10,300.00	6,987.00	7,130.39	7,128.00	60.35	163.61	90.00	145.48	8,553.45	5,583.11	5,375.55	207.55	26.900		
10,400.00	6,987.00	7,130.39	7,128.00	61.67	163.61	90.00	145.48	8,553.45	5,487.17	5,279.07	208.10	26.368		
10,500.00	6,987.00	7,130.39	7,128.00	63.01	163.61	90.00	145.48	8,553.45	5,391.39	5,182.72	208.67	25.837		
10,600.00	6,987.00	7,130.39	7,128.00	64.36	163.61	90.00	145.48	8,553.45	5,295.76	5,086.50	209.27	25.306		
10,700.00	6,987.00	7,130.39	7,128.00	65.72	163.61	90.00	145.48	8,553.45	5,200.30	4,990.42	209.89	24.777		
10,800.00	6,987.00	7,130.39	7,128.00	67.09	163.61	90.00	145.48	8,553.45	5,105.01	4,894.49	210.53	24.249		
10,900.00	6,987.00	7,130.39	7,128.00	68.47	163.61	90.00	145.48	8,553.45	5,009.91	4,798.71	211.20	23.721		
11,000.00	6,987.00	7,130.39	7,128.00	69.86	163.61	90.00	145.48	8,553.45	4,915.00	4,703.10	211.90	23.195		
11,100.00	6,987.00	7,130.39	7,128.00	71.26	163.61	90.00	145.48	8,553.45	4,820.29	4,607.67	212.63	22.670		
11,200.00	6,987.00	7,130.39	7,128.00	72.67	163.61	90.00	145.48	8,553.45	4,725.81	4,512.42	213.39	22.147		
11,300.00	6,987.00	7,130.39	7,128.00	74.09	163.61	90.00	145.48	8,553.45	4,631.55	4,417.37	214.18	21.625		
11,400.00	6,987.00	7,130.39	7,128.00	75.51	163.61	90.00	145.48	8,553.45	4,537.54	4,322.54	215.01	21.104		
11,500.00	6,987.00	7,130.39	7,128.00	76.94	163.61	90.00	145.48	8,553.45	4,443.80	4,227.92	215.87	20.585		
11,600.00	6,987.00	7,130.39	7,128.00	78.38	163.61	90.00	145.48	8,553.45	4,350.33	4,133.55	216.78	20.068		
11,700.00	6,987.00	7,130.39	7,128.00	79.82	163.61	90.00	145.48	8,553.45	4,257.15	4,039.43	217.72	19.553		
11,800.00	6,987.00	7,130.39	7,128.00	81.27	163.61	90.00	145.48	8,553.45	4,164.30	3,945.59	218.71	19.040		
11,900.00	6,987.00	7,130.39	7,128.00	82.73	163.61	90.00	145.48	8,553.45	4,071.78	3,852.04	219.74	18.530		
12,000.00	6,987.00	7,130.39	7,128.00	84.19	163.61	90.00	145.48	8,553.45	3,979.63	3,758.80	220.83	18.022		
12,100.00	6,987.00	7,130.39	7,128.00	85.66	163.61	90.00	145.48	8,553.45	3,887.86	3,665.90	221.96	17.516		
12,200.00	6,987.00	7,130.39	7,128.00	87.13	163.61	90.00	145.48	8,553.45	3,796.51	3,573.36	223.15	17.013		
12,300.00	6,987.00	7,130.39	7,128.00	88.61	163.61	90.00	145.48	8,553.45	3,705.60	3,481.21	224.40	16.514		
12,400.00	6,987.00	7,130.39	7,128.00	90.09	163.61	90.00	145.48	8,553.45	3,615.18	3,389.47	225.70	16.017		
12,500.00	6,987.00	7,130.39	7,128.00	91.57	163.61	90.00	145.48	8,553.45	3,525.27	3,298.19	227.08	15.524		
12,600.00	6,987.00	7,130.39	7,128.00	93.06	163.61	90.00	145.48	8,553.45	3,435.92	3,207.40	228.52	15.035		
12,700.00	6,987.00	7,130.39	7,128.00	94.55	163.61	90.00	145.48	8,553.45	3,347.18	3,117.14	230.04	14.551		

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 #692H
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 #692H	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		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)			
12,800.00	6,987.00	7,130.39	7,128.00	96.05	163.61	90.00	145.48	8,553.45	3,259.08	3,027.45	231.63	14.070	
12,900.00	6,987.00	7,130.39	7,128.00	97.55	163.61	90.00	145.48	8,553.45	3,171.69	2,938.39	233.30	13.595	
13,000.00	6,987.00	7,130.39	7,128.00	99.05	163.61	90.00	145.48	8,553.45	3,085.07	2,850.01	235.06	13.125	
13,100.00	6,987.00	7,130.39	7,128.00	100.56	163.61	90.00	145.48	8,553.45	2,999.28	2,762.37	236.91	12.660	
13,200.00	6,987.00	7,130.39	7,128.00	102.07	163.61	90.00	145.48	8,553.45	2,914.39	2,675.54	238.86	12.201	
13,300.00	6,987.00	7,130.39	7,128.00	103.58	163.61	90.00	145.48	8,553.45	2,830.50	2,589.60	240.90	11.750	
13,400.00	6,987.00	7,130.39	7,128.00	105.09	163.61	90.00	145.48	8,553.45	2,747.68	2,504.63	243.05	11.305	
13,500.00	6,987.00	7,130.39	7,128.00	106.61	163.61	90.00	145.48	8,553.45	2,666.04	2,420.73	245.31	10.868	
13,600.00	6,987.00	7,130.39	7,128.00	108.13	163.61	90.00	145.48	8,553.45	2,585.69	2,338.01	247.68	10.440	
13,700.00	6,987.00	7,130.39	7,128.00	109.65	163.61	90.00	145.48	8,553.45	2,506.75	2,256.59	250.16	10.020	
13,800.00	6,987.00	7,130.39	7,128.00	111.18	163.61	90.00	145.48	8,553.45	2,429.37	2,176.60	252.77	9.611	
13,900.00	6,987.00	7,130.39	7,128.00	112.71	163.61	90.00	145.48	8,553.45	2,353.69	2,098.20	255.49	9.213	
14,000.00	6,987.00	7,130.39	7,128.00	114.23	163.61	90.00	145.48	8,553.45	2,279.88	2,021.56	258.32	8.826	
14,100.00	6,987.00	7,130.39	7,128.00	115.77	163.61	90.00	145.48	8,553.45	2,208.14	1,946.87	261.28	8.451	
14,200.00	6,987.00	7,130.39	7,128.00	117.30	163.61	90.00	145.48	8,553.45	2,138.67	1,874.34	264.33	8.091	
14,300.00	6,987.00	7,130.39	7,128.00	118.83	163.61	90.00	145.48	8,553.45	2,071.70	1,804.21	267.49	7.745	
14,400.00	6,987.00	7,130.39	7,128.00	120.37	163.61	90.00	145.48	8,553.45	2,007.47	1,736.75	270.72	7.415	
14,500.00	6,987.00	7,130.39	7,128.00	121.91	163.61	90.00	145.48	8,553.45	1,946.27	1,672.26	274.01	7.103	
14,600.00	6,987.00	7,130.39	7,128.00	123.45	163.61	90.00	145.48	8,553.45	1,888.38	1,611.04	277.34	6.809	
14,700.00	6,987.00	7,130.39	7,128.00	124.99	163.61	90.00	145.48	8,553.45	1,834.13	1,553.46	280.66	6.535	
14,800.00	6,987.00	7,130.39	7,128.00	126.53	163.61	90.00	145.48	8,553.45	1,783.83	1,499.88	283.94	6.282	
14,900.00	6,987.00	7,130.39	7,128.00	128.08	163.61	90.00	145.48	8,553.45	1,737.83	1,450.71	287.13	6.052	
15,000.00	6,987.00	7,130.39	7,128.00	129.63	163.61	90.00	145.48	8,553.45	1,696.49	1,406.33	290.16	5.847	
15,100.00	6,987.00	7,130.39	7,128.00	131.17	163.61	90.00	145.48	8,553.45	1,660.15	1,367.18	292.97	5.667	
15,200.00	6,987.00	7,130.39	7,128.00	132.72	163.61	90.00	145.48	8,553.45	1,629.15	1,333.65	295.50	5.513	
15,300.00	6,987.00	7,130.39	7,128.00	134.27	163.61	90.00	145.48	8,553.45	1,603.39	1,306.12	297.68	5.388	
15,400.00	6,987.00	7,130.39	7,128.00	135.83	163.61	90.00	145.48	8,553.45	1,584.35	1,284.91	299.44	5.291	
15,500.00	6,987.00	7,130.39	7,128.00	137.38	163.61	90.00	145.48	8,553.45	1,571.05	1,270.32	300.73	5.224	
15,600.00	6,987.00	7,130.39	7,128.00	138.93	163.61	90.00	145.48	8,553.45	1,564.04	1,262.52	301.52	5.187	
15,659.89	6,987.00	7,130.39	7,128.00	139.86	163.61	90.00	145.48	8,553.45	1,562.89	1,261.16	301.73	5.180 CC, ES, SF	
15,700.00	6,987.00	7,130.39	7,128.00	140.49	163.61	90.00	145.48	8,553.45	1,563.41	1,261.64	301.77	5.181	
15,800.00	6,987.00	7,130.39	7,128.00	142.04	163.61	90.00	145.48	8,553.45	1,569.16	1,267.68	301.48	5.205	
15,900.00	6,987.00	7,130.39	7,128.00	143.60	163.61	90.00	145.48	8,553.45	1,581.23	1,280.56	300.67	5.259	
16,000.00	6,987.00	7,130.39	7,128.00	145.16	163.61	90.00	145.48	8,553.45	1,599.47	1,300.10	299.37	5.343	
16,100.00	6,987.00	7,130.39	7,128.00	146.72	163.61	90.00	145.48	8,553.45	1,623.68	1,326.04	297.64	5.455	
16,200.00	6,987.00	7,130.39	7,128.00	148.28	163.61	90.00	145.48	8,553.45	1,653.59	1,358.06	295.52	5.595	
16,300.00	6,987.00	7,130.39	7,128.00	149.84	163.61	90.00	145.48	8,553.45	1,688.90	1,395.81	293.09	5.762	
16,400.00	6,987.00	7,130.39	7,128.00	151.40	163.61	90.00	145.48	8,553.45	1,729.27	1,438.86	290.41	5.955	
16,500.00	6,987.00	7,130.39	7,128.00	152.97	163.61	90.00	145.48	8,553.45	1,774.38	1,486.83	287.55	6.171	
16,600.00	6,987.00	7,130.39	7,128.00	154.53	163.61	90.00	145.48	8,553.45	1,823.85	1,539.29	284.56	6.409	
16,700.00	6,987.00	7,130.39	7,128.00	156.10	163.61	90.00	145.48	8,553.45	1,877.35	1,595.86	281.49	6.669	
16,800.00	6,987.00	7,130.39	7,128.00	157.66	163.61	90.00	145.48	8,553.45	1,934.55	1,656.14	278.41	6.949	
16,900.00	6,987.00	7,130.39	7,128.00	159.23	163.61	90.00	145.48	8,553.45	1,995.12	1,719.79	275.33	7.246	
17,000.00	6,987.00	7,130.39	7,128.00	160.80	163.61	90.00	145.48	8,553.45	2,058.77	1,786.48	272.29	7.561	
17,100.00	6,987.00	7,130.39	7,128.00	162.36	163.61	90.00	145.48	8,553.45	2,125.22	1,855.90	269.31	7.891	
17,200.00	6,987.00	7,130.39	7,128.00	163.93	163.61	90.00	145.48	8,553.45	2,194.21	1,927.79	266.42	8.236	
17,300.00	6,987.00	7,130.39	7,128.00	165.50	163.61	90.00	145.48	8,553.45	2,265.52	2,001.90	263.62	8.594	
17,400.00	6,987.00	7,130.39	7,128.00	167.07	163.61	90.00	145.48	8,553.45	2,338.93	2,078.01	260.92	8.964	
17,500.00	6,987.00	7,130.39	7,128.00	168.64	163.61	90.00	145.48	8,553.45	2,414.26	2,155.92	258.33	9.346	
17,600.00	6,987.00	7,130.39	7,128.00	170.21	163.61	90.00	145.48	8,553.45	2,491.31	2,235.46	255.85	9.737	
17,700.00	6,987.00	7,130.39	7,128.00	171.78	163.61	90.00	145.48	8,553.45	2,569.96	2,316.47	253.48	10.139	
17,800.00	6,987.00	7,130.39	7,128.00	173.36	163.61	90.00	145.48	8,553.45	2,650.04	2,398.81	251.23	10.548	

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 #692H
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 #692H	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:	
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
17,900.00	6,987.00	7,130.39	7,128.00	174.93	163.61	90.00	145.48	8,553.45	2,731.43	2,482.36	249.08	10.966
18,000.00	6,987.00	7,130.39	7,128.00	176.50	163.61	90.00	145.48	8,553.45	2,814.03	2,566.99	247.03	11.391
18,100.00	6,987.00	7,130.39	7,128.00	178.08	163.61	90.00	145.48	8,553.45	2,897.72	2,652.63	245.09	11.823
18,200.00	6,987.00	7,130.39	7,128.00	179.65	163.61	90.00	145.48	8,553.45	2,982.41	2,739.17	243.24	12.261
18,300.00	6,987.00	7,130.39	7,128.00	181.23	163.61	90.00	145.48	8,553.45	3,068.03	2,826.54	241.49	12.705
18,400.00	6,987.00	7,130.39	7,128.00	182.80	163.61	90.00	145.48	8,553.45	3,154.49	2,914.67	239.82	13.153
18,500.00	6,987.00	7,130.39	7,128.00	184.38	163.61	90.00	145.48	8,553.45	3,241.74	3,003.49	238.25	13.607
18,600.00	6,987.00	7,130.39	7,128.00	185.96	163.61	90.00	145.48	8,553.45	3,329.69	3,092.95	236.75	14.064
18,700.00	6,987.00	7,130.39	7,128.00	187.53	163.61	90.00	145.48	8,553.45	3,418.32	3,182.99	235.33	14.526
18,800.00	6,987.00	7,130.39	7,128.00	189.11	163.61	90.00	145.48	8,553.45	3,507.55	3,273.57	233.98	14.991
18,900.00	6,987.00	7,130.39	7,128.00	190.69	163.61	90.00	145.48	8,553.45	3,597.35	3,364.65	232.70	15.459
19,000.00	6,987.00	7,130.39	7,128.00	192.27	163.61	90.00	145.48	8,553.45	3,687.68	3,456.19	231.48	15.931
19,100.00	6,987.00	7,130.39	7,128.00	193.85	163.61	90.00	145.48	8,553.45	3,778.49	3,548.16	230.33	16.405
19,200.00	6,987.00	7,130.39	7,128.00	195.43	163.61	90.00	145.48	8,553.45	3,869.75	3,640.52	229.23	16.881
19,255.69	6,987.00	7,130.39	7,128.00	196.31	163.61	90.00	145.48	8,553.45	3,920.77	3,692.12	228.65	17.148
19,300.00	6,987.00	7,130.39	7,128.00	197.01	163.61	90.00	145.48	8,553.45	3,961.44	3,733.25	228.19	17.360
19,400.00	6,987.00	7,130.39	7,128.00	198.59	163.61	90.00	145.48	8,553.45	4,053.52	3,826.32	227.20	17.841
19,468.80	6,987.00	7,130.39	7,128.00	199.49	163.61	90.00	145.48	8,553.45	4,117.09	3,888.53	228.56	18.013

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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													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	2,506.96	2,358.87	0.00	14.83	-70.92	1,330.02	-3,844.82	4,683.31				
100.00	100.00	2,551.66	2,397.70	0.25	15.25	-70.87	1,326.14	-3,823.02	4,634.20	4,618.08	16.12	287.476	
200.00	200.00	2,652.83	2,485.76	0.61	16.20	-70.77	1,316.80	-3,774.08	4,585.36	4,568.60	16.76	273.554	
300.00	300.00	2,834.69	2,643.13	0.97	17.90	-70.58	1,299.03	-3,684.70	4,535.80	4,517.94	17.87	253.867	
400.00	400.00	2,939.43	2,733.12	1.33	18.92	-70.49	1,287.02	-3,632.49	4,484.91	4,466.27	18.64	240.655	
500.00	500.00	3,148.93	2,911.34	1.68	21.05	-70.29	1,262.67	-3,525.11	4,432.69	4,412.69	19.99	221.692	
600.00	600.00	3,243.41	2,990.81	2.04	22.04	-70.18	1,252.71	-3,474.98	4,379.02	4,358.23	20.78	210.701	
700.00	700.00	3,322.55	3,057.39	2.40	22.87	-70.09	1,243.77	-3,433.17	4,325.34	4,303.84	21.50	201.156	
800.00	799.98	3,389.00	3,113.39	2.76	23.56	-64.80	1,236.14	-3,398.22	4,271.22	4,249.04	22.18	192.598	
900.00	899.84	3,461.80	3,174.90	3.12	24.32	-65.99	1,227.40	-3,360.26	4,216.12	4,193.23	22.89	184.159	
1,000.00	999.45	3,483.00	3,192.85	3.48	24.54	-67.22	1,224.71	-3,349.31	4,160.48	4,137.12	23.36	178.085	
1,100.00	1,098.70	3,538.69	3,240.32	3.85	25.10	-68.54	1,217.63	-3,321.07	4,104.37	4,080.35	24.02	170.869	
1,153.80	1,151.90	3,574.00	3,270.73	4.04	25.45	-69.29	1,213.24	-3,303.66	4,074.33	4,049.93	24.41	166.942	
1,200.00	1,197.53	3,574.00	3,270.73	4.21	25.45	-69.29	1,213.24	-3,303.66	4,048.47	4,023.90	24.58	164.709	
1,300.00	1,296.27	3,574.00	3,270.73	4.59	25.45	-69.29	1,213.24	-3,303.66	3,993.76	3,968.80	24.96	160.013	
1,400.00	1,395.02	3,633.29	3,322.35	4.97	26.00	-69.42	1,206.11	-3,275.38	3,939.62	3,913.92	25.70	153.292	
1,500.00	1,493.77	3,667.00	3,352.02	5.36	26.31	-69.49	1,202.23	-3,259.87	3,886.91	3,860.62	26.30	147.809	
1,600.00	1,592.52	3,667.00	3,352.02	5.74	26.31	-69.49	1,202.23	-3,259.87	3,835.69	3,808.99	26.70	143.666	
1,700.00	1,691.27	3,717.35	3,396.86	6.14	26.73	-69.60	1,196.85	-3,237.61	3,785.33	3,757.89	27.44	137.954	
1,800.00	1,790.01	3,760.00	3,435.35	6.53	27.09	-69.69	1,192.80	-3,219.69	3,736.71	3,708.58	28.13	132.822	
1,900.00	1,888.76	3,760.00	3,435.35	6.92	27.09	-69.69	1,192.80	-3,219.69	3,689.37	3,660.82	28.55	129.246	
2,000.00	1,987.51	3,821.26	3,491.18	7.32	27.55	-69.82	1,187.48	-3,195.04	3,643.10	3,613.78	29.33	124.230	
2,100.00	2,086.26	3,853.00	3,520.27	7.72	27.79	-69.89	1,184.84	-3,182.64	3,598.09	3,568.16	29.93	120.211	
2,200.00	2,185.01	3,894.47	3,558.53	8.11	28.08	-69.99	1,181.40	-3,167.00	3,554.37	3,523.80	30.58	116.242	
2,300.00	2,283.75	3,944.00	3,604.64	8.51	28.42	-70.11	1,177.13	-3,149.44	3,512.26	3,480.99	31.27	112.319	
2,400.00	2,382.50	3,944.00	3,604.64	8.91	28.42	-70.11	1,177.13	-3,149.44	3,471.55	3,439.87	31.68	109.580	
2,500.00	2,481.25	3,984.67	3,642.88	9.31	28.65	-70.21	1,173.62	-3,136.05	3,432.47	3,400.09	32.38	106.018	
2,600.00	2,580.00	4,038.00	3,693.58	9.71	28.96	-70.36	1,169.22	-3,120.13	3,395.56	3,362.40	33.16	102.390	
2,700.00	2,678.75	4,038.00	3,693.58	10.11	28.96	-70.36	1,169.22	-3,120.13	3,359.81	3,326.25	33.56	100.125	
2,800.00	2,777.49	4,038.00	3,693.58	10.52	28.96	-70.36	1,169.22	-3,120.13	3,326.68	3,292.75	33.93	98.033	
2,900.00	2,876.24	4,088.85	3,742.52	10.92	29.20	-70.50	1,165.71	-3,106.76	3,294.77	3,260.02	34.75	94.802	
3,000.00	2,974.99	4,130.00	3,782.51	11.32	29.38	-70.60	1,163.70	-3,097.31	3,265.44	3,229.96	35.48	92.025	
3,100.00	3,073.74	4,130.00	3,782.51	11.72	29.38	-70.60	1,163.70	-3,097.31	3,237.95	3,202.12	35.83	90.375	
3,200.00	3,172.49	4,167.17	3,818.90	12.13	29.51	-70.70	1,162.37	-3,089.85	3,212.57	3,176.07	36.50	88.018	
3,300.00	3,271.23	4,222.00	3,872.94	12.53	29.69	-70.83	1,160.94	-3,080.70	3,189.77	3,152.44	37.33	85.447	
3,400.00	3,369.98	4,222.00	3,872.94	12.93	29.69	-70.83	1,160.94	-3,080.70	3,168.30	3,130.67	37.63	84.200	
3,500.00	3,468.73	4,258.36	3,908.95	13.34	29.77	-70.92	1,160.23	-3,075.74	3,149.28	3,111.13	38.16	82.538	
3,600.00	3,567.48	4,295.00	3,945.34	13.74	29.85	-71.02	1,159.57	-3,071.47	3,132.23	3,093.56	38.67	80.989	
3,700.00	3,666.23	4,295.00	3,945.34	14.14	29.85	-71.02	1,159.57	-3,071.47	3,117.71	3,078.80	38.91	80.133	
3,800.00	3,764.97	4,415.99	4,065.76	14.55	30.19	-71.35	1,157.24	-3,060.08	3,102.57	3,062.26	40.30	76.981	
3,900.00	3,863.72	4,477.18	4,126.76	14.95	30.37	-71.52	1,155.86	-3,055.47	3,089.58	3,048.46	41.11	75.148	
4,000.00	3,962.47	4,538.46	4,187.90	15.36	30.55	-71.71	1,154.35	-3,051.63	3,077.83	3,035.92	41.92	73.426	
4,100.00	4,061.22	4,599.80	4,249.15	15.76	30.74	-71.90	1,152.70	-3,048.57	3,067.35	3,024.63	42.72	71.810	
4,200.00	4,159.97	4,696.00	4,345.25	16.17	31.03	-72.21	1,149.85	-3,045.34	3,058.44	3,014.60	43.85	69.755	
4,300.00	4,258.71	4,696.00	4,345.25	16.57	31.03	-72.21	1,149.85	-3,045.34	3,050.37	3,006.34	44.02	69.292	
4,400.00	4,357.46	4,821.43	4,470.59	16.98	31.81	-72.62	1,146.30	-3,042.61	3,042.65	2,997.29	45.37	67.067	
4,500.00	4,456.21	4,909.13	4,558.26	17.38	32.35	-72.90	1,144.29	-3,041.00	3,035.65	2,989.29	46.36	65.481	
4,600.00	4,554.96	4,997.00	4,646.10	17.79	32.89	-73.18	1,142.65	-3,039.61	3,029.07	2,981.72	47.35	63.966	
4,700.00	4,653.71	5,085.01	4,734.09	18.19	33.44	-73.45	1,141.40	-3,038.47	3,022.93	2,974.58	48.35	62.520	
4,800.00	4,752.45	5,173.16	4,822.24	18.60	33.99	-73.71	1,140.52	-3,037.56	3,017.21	2,967.86	49.35	61.137	
4,900.00	4,851.20	5,261.46	4,910.53	19.00	34.53	-73.98	1,140.04	-3,036.88	3,011.92	2,961.56	50.35	59.815	
5,000.00	4,949.95	5,349.90	4,998.97	19.41	35.08	-74.23	1,139.93	-3,036.45	3,007.04	2,955.68	51.36	58.550	

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 #692H
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 #692H	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	Warning	
5,100.00	5,048.70	5,438.47	5,087.54	19.81	35.63	-74.48	1,140.22	-3,036.25	3,002.57	2,950.20	52.36	57.340		
5,200.00	5,147.45	5,527.16	5,176.23	20.22	36.18	-74.73	1,140.90	-3,036.30	2,998.51	2,945.13	53.37	56.181		
5,300.00	5,246.19	5,660.00	5,309.05	20.62	37.00	-75.08	1,142.64	-3,036.82	2,995.21	2,940.42	54.79	54.671		
5,400.00	5,344.94	5,710.52	5,359.57	21.03	37.33	-75.22	1,143.42	-3,037.13	2,991.54	2,936.12	55.41	53.985		
5,455.76	5,400.00	5,766.28	5,415.32	21.25	37.68	-75.37	1,144.18	-3,037.47	2,989.73	2,933.73	56.00	53.386		
5,500.00	5,443.72	5,810.52	5,459.56	21.43	37.97	-75.47	1,144.70	-3,037.74	2,988.35	2,931.88	56.47	52.922		
5,600.00	5,542.71	5,910.63	5,559.66	21.83	38.61	-75.69	1,145.61	-3,038.38	2,985.56	2,928.04	57.51	51.912		
5,700.00	5,641.93	6,010.87	5,659.89	22.22	39.25	-75.89	1,146.17	-3,039.03	2,983.21	2,924.66	58.55	50.952		
5,800.00	5,741.36	6,111.22	5,760.24	22.60	39.90	-76.07	1,146.36	-3,039.70	2,981.30	2,921.73	59.58	50.041		
5,900.00	5,840.96	6,211.67	5,860.69	22.97	40.54	-76.23	1,146.18	-3,040.39	2,979.82	2,919.22	60.60	49.175		
6,000.00	5,940.70	6,312.20	5,961.22	23.33	41.19	-76.37	1,145.64	-3,041.11	2,978.74	2,917.13	61.61	48.352		
6,100.00	6,040.55	6,412.81	6,061.82	23.68	41.83	-76.48	1,144.74	-3,041.84	2,978.06	2,915.46	62.61	47.568		
6,200.00	6,140.48	6,513.47	6,162.48	24.02	42.48	-76.58	1,143.46	-3,042.58	2,977.78	2,914.18	63.60	46.821		
6,223.65	6,164.12	6,537.29	6,186.29	24.10	42.63	-76.59	1,143.11	-3,042.76	2,977.77	2,913.94	63.83	46.651	CC	
6,300.00	6,240.45	6,616.48	6,265.46	24.35	43.40	-76.65	1,141.88	-3,043.33	2,977.85	2,912.95	64.90	45.884		
6,408.05	6,348.50	6,729.11	6,378.08	24.69	44.56	103.31	1,140.18	-3,043.99	2,978.24	2,911.78	66.46	44.814	ES	
6,450.00	6,390.43	6,772.81	6,421.77	24.82	45.01	-149.53	1,139.54	-3,044.19	2,979.54	2,912.48	67.06	44.429		
6,500.00	6,440.15	6,824.60	6,473.56	24.99	45.54	-145.77	1,138.79	-3,044.40	2,983.94	2,916.14	67.79	44.015		
6,550.00	6,489.32	6,875.78	6,524.74	25.16	46.07	-144.44	1,138.07	-3,044.56	2,991.41	2,922.89	68.53	43.654		
6,600.00	6,537.64	6,926.05	6,575.00	25.34	46.59	-143.53	1,137.37	-3,044.69	3,001.94	2,932.68	69.26	43.345		
6,650.00	6,584.80	6,975.11	6,624.06	25.52	47.10	-142.67	1,136.70	-3,044.77	3,015.47	2,945.49	69.98	43.091		
6,700.00	6,630.52	7,022.66	6,671.60	25.71	47.59	-141.75	1,136.06	-3,044.82	3,031.95	2,961.26	70.69	42.892		
6,750.00	6,674.51	7,068.71	6,717.65	25.89	48.00	-140.71	1,135.46	-3,044.84	3,051.29	2,979.97	71.32	42.784	SF	
6,800.00	6,716.50	7,114.24	6,763.17	26.08	48.07	-139.52	1,134.93	-3,044.81	3,073.40	3,001.78	71.62	42.914		
6,850.00	6,756.24	7,157.43	6,806.37	26.28	48.14	-138.11	1,134.52	-3,044.71	3,098.16	3,026.25	71.91	43.082		
6,900.00	6,793.47	7,198.05	6,846.98	26.48	48.20	-136.45	1,134.22	-3,044.57	3,125.46	3,053.26	72.20	43.287		
6,950.00	6,827.97	7,235.83	6,884.76	26.69	48.26	-134.49	1,134.02	-3,044.40	3,155.17	3,082.68	72.49	43.527		
7,000.00	6,859.53	7,270.55	6,919.48	26.91	48.31	-132.18	1,133.89	-3,044.19	3,187.12	3,114.36	72.76	43.802		
7,050.00	6,887.94	7,301.99	6,950.92	27.14	48.36	-129.44	1,133.83	-3,043.98	3,221.16	3,148.14	73.03	44.108		
7,100.00	6,913.05	7,329.93	6,978.86	27.38	48.41	-126.20	1,133.81	-3,043.76	3,257.11	3,183.83	73.28	44.445		
7,150.00	6,934.68	7,354.20	7,003.13	27.64	48.44	-122.38	1,133.83	-3,043.55	3,294.77	3,221.25	73.53	44.810		
7,200.00	6,952.71	7,374.62	7,023.54	27.92	48.47	-117.89	1,133.87	-3,043.36	3,333.93	3,260.17	73.76	45.201		
7,250.00	6,967.02	7,391.03	7,039.96	28.21	48.50	-112.68	1,133.91	-3,043.19	3,374.37	3,300.39	73.97	45.615		
7,300.00	6,977.54	7,403.31	7,052.23	28.52	48.52	-106.71	1,133.95	-3,043.07	3,415.84	3,341.66	74.18	46.050		
7,350.00	6,984.18	7,411.35	7,060.27	28.83	48.53	-100.01	1,133.99	-3,042.98	3,458.10	3,383.74	74.36	46.503		
7,400.00	6,986.92	7,415.06	7,063.98	29.16	48.54	-92.72	1,134.00	-3,042.94	3,500.90	3,426.36	74.54	46.969		
7,409.89	6,987.00	7,415.27	7,064.19	29.23	48.54	-91.22	1,134.00	-3,042.94	3,509.40	3,434.84	74.57	47.063		
7,500.00	6,987.00	7,416.45	7,065.37	29.85	48.54	-91.26	1,134.01	-3,042.93	3,587.23	3,512.37	74.86	47.921		
7,600.00	6,987.00	7,417.78	7,066.70	30.61	48.54	-91.30	1,134.01	-3,042.91	3,674.26	3,599.08	75.18	48.876		
7,700.00	6,987.00	7,419.12	7,068.04	31.41	48.54	-91.35	1,134.02	-3,042.90	3,761.93	3,686.44	75.49	49.834		
7,800.00	6,987.00	7,420.47	7,069.40	32.27	48.55	-91.39	1,134.03	-3,042.88	3,850.20	3,774.40	75.80	50.796		
7,900.00	6,987.00	7,421.85	7,070.77	33.17	48.55	-91.43	1,134.03	-3,042.87	3,939.03	3,862.93	76.10	51.761		
8,000.00	6,987.00	7,423.24	7,072.16	34.12	48.55	-91.48	1,134.04	-3,042.85	4,028.38	3,951.99	76.40	52.730		
8,100.00	6,987.00	7,424.64	7,073.56	35.10	48.55	-91.52	1,134.04	-3,042.84	4,118.23	4,041.54	76.69	53.702		
8,200.00	6,987.00	7,426.07	7,074.99	36.12	48.55	-91.57	1,134.05	-3,042.82	4,208.53	4,131.56	76.97	54.677		
8,300.00	6,987.00	7,427.51	7,076.43	37.17	48.56	-91.62	1,134.06	-3,042.80	4,299.26	4,222.01	77.25	55.655		
8,314.89	6,987.00	7,427.72	7,076.64	37.33	48.56	-91.62	1,134.06	-3,042.80	4,312.81	4,235.52	77.29	55.802		
8,400.00	6,987.00	7,428.97	7,077.89	38.25	48.56	-91.92	1,134.07	-3,042.79	4,391.38	4,313.87	77.51	56.659		
8,500.00	6,987.00	7,430.45	7,079.37	39.35	48.56	-92.43	1,134.07	-3,042.77	4,486.21	4,408.49	77.72	57.722		
8,600.00	6,987.00	7,431.95	7,080.87	40.45	48.56	-93.31	1,134.08	-3,042.75	4,583.17	4,505.28	77.89	58.841		
8,700.00	6,987.00	7,433.46	7,082.38	41.56	48.57	-95.12	1,134.09	-3,042.74	4,681.67	4,603.66	78.01	60.011		
8,800.00	6,987.00	7,434.96	7,083.88	42.66	48.57	-100.88	1,134.10	-3,042.72	4,781.16	4,703.07	78.09	61.224		

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 #692H
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 #692H	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)			
8,900.00	6,987.00	7,436.45	7,085.37	43.75	48.57	148.82	1,134.10	-3,042.70	4,881.09	4,802.96	78.13	62.475		
9,000.00	6,987.00	7,437.92	7,086.84	44.83	48.57	99.10	1,134.11	-3,042.68	4,980.98	4,902.85	78.12	63.758		
9,071.74	6,987.00	7,438.96	7,087.88	45.59	48.57	95.61	1,134.12	-3,042.67	5,052.34	4,974.24	78.10	64.693		
9,100.00	6,987.00	7,439.36	7,088.28	45.89	48.57	95.65	1,134.12	-3,042.67	5,080.38	5,002.30	78.08	65.064		
9,200.00	6,987.00	7,440.80	7,089.72	46.97	48.58	95.78	1,134.13	-3,042.65	5,179.62	5,101.58	78.04	66.375		
9,300.00	6,987.00	7,442.26	7,091.18	48.07	48.58	95.91	1,134.14	-3,042.63	5,278.88	5,200.89	77.99	67.685		
9,400.00	6,987.00	7,443.72	7,092.64	49.20	48.58	96.04	1,134.15	-3,042.62	5,378.17	5,300.22	77.95	68.993		
9,500.00	6,987.00	7,445.20	7,094.12	50.36	48.58	96.17	1,134.15	-3,042.60	5,477.49	5,399.57	77.92	70.300		
9,600.00	6,987.00	7,446.68	7,095.60	51.54	48.59	96.31	1,134.16	-3,042.58	5,576.83	5,498.95	77.88	71.606		
9,700.00	6,987.00	7,448.18	7,097.10	52.74	48.59	96.44	1,134.17	-3,042.56	5,676.19	5,598.34	77.85	72.910		
9,800.00	6,987.00	7,449.69	7,098.61	53.96	48.59	96.58	1,134.18	-3,042.54	5,775.58	5,697.75	77.82	74.213		
9,900.00	6,987.00	7,451.21	7,100.13	55.21	48.59	96.72	1,134.19	-3,042.53	5,874.99	5,797.19	77.80	75.514		
10,000.00	6,987.00	7,452.75	7,101.67	56.47	48.60	96.85	1,134.20	-3,042.51	5,974.41	5,896.63	77.78	76.814		
10,100.00	6,987.00	7,454.30	7,103.22	57.75	48.60	96.99	1,134.21	-3,042.49	6,073.85	5,996.10	77.76	78.112		
10,200.00	6,987.00	7,455.85	7,104.77	59.04	48.60	97.13	1,134.22	-3,042.47	6,173.32	6,095.58	77.74	79.409		
10,300.00	6,987.00	7,457.43	7,106.35	60.35	48.60	97.27	1,134.23	-3,042.45	6,272.80	6,195.07	77.73	80.704		
10,400.00	6,987.00	7,459.01	7,107.93	61.67	48.60	97.41	1,134.24	-3,042.43	6,372.29	6,294.58	77.71	81.997		
10,500.00	6,987.00	7,460.61	7,109.53	63.01	48.61	97.56	1,134.25	-3,042.41	6,471.80	6,394.10	77.70	83.288		
10,600.00	6,987.00	7,462.22	7,111.14	64.36	48.61	97.70	1,134.26	-3,042.39	6,571.32	6,493.63	77.70	84.578		
10,700.00	6,987.00	7,463.84	7,112.76	65.72	48.61	97.85	1,134.27	-3,042.37	6,670.86	6,593.17	77.69	85.866		
10,800.00	6,987.00	7,465.48	7,114.40	67.09	48.61	97.99	1,134.28	-3,042.35	6,770.41	6,692.73	77.69	87.152		
10,900.00	6,987.00	7,467.13	7,116.05	68.47	48.62	98.14	1,134.29	-3,042.33	6,869.98	6,792.30	77.68	88.435		
11,000.00	6,987.00	7,468.79	7,117.71	69.86	48.62	98.29	1,134.30	-3,042.31	6,969.56	6,891.87	77.68	89.717		
11,100.00	6,987.00	7,470.47	7,119.39	71.26	48.62	98.44	1,134.32	-3,042.29	7,069.14	6,991.46	77.69	90.997		
11,200.00	6,987.00	7,472.16	7,121.08	72.67	48.63	98.59	1,134.33	-3,042.27	7,168.74	7,091.05	77.69	92.275		
11,300.00	6,987.00	7,473.87	7,122.78	74.09	48.63	98.74	1,134.34	-3,042.24	7,268.35	7,190.66	77.69	93.550		
11,400.00	6,987.00	7,475.59	7,124.50	75.51	48.63	98.89	1,134.35	-3,042.22	7,367.97	7,290.27	77.70	94.824		
11,500.00	6,987.00	7,477.32	7,126.24	76.94	48.63	99.05	1,134.36	-3,042.20	7,467.60	7,389.89	77.71	96.095		
11,600.00	6,987.00	7,479.07	7,127.99	78.38	48.64	99.20	1,134.38	-3,042.18	7,567.24	7,489.52	77.72	97.364		
11,700.00	6,987.00	7,480.83	7,129.75	79.82	48.64	99.36	1,134.39	-3,042.15	7,666.89	7,589.16	77.73	98.631		
11,800.00	6,987.00	7,482.61	7,131.53	81.27	48.64	99.52	1,134.40	-3,042.13	7,766.55	7,688.80	77.75	99.895		
11,900.00	6,987.00	7,484.41	7,133.33	82.73	48.64	99.68	1,134.42	-3,042.11	7,866.22	7,788.45	77.76	101.157		
12,000.00	6,987.00	7,486.22	7,135.14	84.19	48.65	99.84	1,134.43	-3,042.08	7,965.89	7,888.11	77.78	102.417		
12,100.00	6,987.00	7,488.04	7,136.96	85.66	48.65	100.00	1,134.45	-3,042.06	8,065.57	7,987.77	77.80	103.674		
12,200.00	6,987.00	7,489.89	7,138.80	87.13	48.65	100.16	1,134.46	-3,042.04	8,165.26	8,087.44	77.82	104.929		
12,300.00	6,987.00	7,491.74	7,140.66	88.61	48.66	100.33	1,134.48	-3,042.01	8,264.96	8,187.12	77.84	106.181		
12,400.00	6,987.00	7,493.62	7,142.53	90.09	48.66	100.49	1,134.49	-3,041.99	8,364.66	8,286.80	77.86	107.431		
12,500.00	6,987.00	7,495.51	7,144.42	91.57	48.66	100.66	1,134.51	-3,041.96	8,464.37	8,386.49	77.88	108.678		
12,600.00	6,987.00	7,497.42	7,146.33	93.06	48.66	100.83	1,134.52	-3,041.94	8,564.09	8,486.18	77.91	109.923		
12,700.00	6,987.00	7,499.34	7,148.26	94.55	48.67	100.99	1,134.54	-3,041.91	8,663.81	8,585.87	77.94	111.165		
12,800.00	6,987.00	7,501.28	7,150.20	96.05	48.67	101.16	1,134.56	-3,041.88	8,763.54	8,685.58	77.96	112.404		
12,900.00	6,987.00	7,503.24	7,152.16	97.55	48.67	101.34	1,134.57	-3,041.86	8,863.27	8,785.28	77.99	113.641		
13,000.00	6,987.00	7,505.22	7,154.13	99.05	48.68	101.51	1,134.59	-3,041.83	8,963.02	8,884.99	78.02	114.875		
13,100.00	6,987.00	7,507.21	7,156.13	100.56	48.68	101.68	1,134.61	-3,041.80	9,062.76	8,984.70	78.06	116.106		
13,200.00	6,987.00	7,509.22	7,158.14	102.07	48.68	101.86	1,134.62	-3,041.77	9,162.51	9,084.42	78.09	117.334		
13,300.00	6,987.00	7,511.26	7,160.17	103.58	48.69	102.04	1,134.64	-3,041.75	9,262.27	9,184.14	78.12	118.560		
13,400.00	6,987.00	7,513.31	7,162.22	105.09	48.69	102.22	1,134.66	-3,041.72	9,362.03	9,283.87	78.16	119.783		
13,500.00	6,987.00	7,515.37	7,164.29	106.61	48.69	102.40	1,134.68	-3,041.69	9,461.79	9,383.60	78.19	121.003		
13,600.00	6,987.00	7,517.46	7,166.37	108.13	48.69	102.58	1,134.70	-3,041.66	9,561.56	9,483.33	78.23	122.220		
13,700.00	6,987.00	7,519.57	7,168.48	109.65	48.70	102.76	1,134.72	-3,041.63	9,661.34	9,583.07	78.27	123.434		
13,800.00	6,987.00	7,521.70	7,170.61	111.18	48.70	102.95	1,134.74	-3,041.60	9,761.12	9,682.81	78.31	124.646		
13,900.00	6,987.00	7,523.84	7,172.75	112.71	48.70	103.13	1,134.76	-3,041.57	9,860.90	9,782.55	78.35	125.854		

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 #692H
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 #692H	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													Offset Well Error: 0.00 usft
Reference													
Offset													
Semi Major Axis													
Highside													
Offset Wellbore Centre													
Distance													
Between													
Ellipses													
Minimum													
Separation													
Factor													
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
14,000.00	6,987.00	7,526.01	7,174.92	114.23	48.71	103.32	1,134.78	-3,041.54	9,960.69	9,882.29	78.39	127.059	
14,100.00	6,987.00	7,528.20	7,177.11	115.77	48.71	103.51	1,134.80	-3,041.50	10,060.48	9,982.04	78.44	128.262	
14,200.00	6,987.00	7,530.41	7,179.32	117.30	48.71	103.70	1,134.83	-3,041.47	10,160.27	10,081.79	78.48	129.461	
14,300.00	6,987.00	7,532.64	7,181.55	118.83	48.72	103.89	1,134.85	-3,041.44	10,260.07	10,181.55	78.53	130.657	
14,400.00	6,987.00	7,534.89	7,183.80	120.37	48.72	104.08	1,134.87	-3,041.41	10,359.88	10,281.30	78.57	131.850	
14,500.00	6,987.00	7,537.16	7,186.07	121.91	48.73	104.28	1,134.89	-3,041.37	10,459.68	10,381.06	78.62	133.040	
14,600.00	6,987.00	7,539.46	7,188.36	123.45	48.73	104.48	1,134.92	-3,041.34	10,559.49	10,480.82	78.67	134.227	
14,700.00	6,987.00	7,541.77	7,190.68	124.99	48.73	104.67	1,134.94	-3,041.31	10,659.30	10,580.58	78.72	135.411	
14,800.00	6,987.00	7,544.11	7,193.02	126.53	48.74	104.87	1,134.97	-3,041.27	10,759.12	10,680.35	78.77	136.591	
14,900.00	6,987.00	7,546.48	7,195.38	128.08	48.74	105.08	1,134.99	-3,041.23	10,858.94	10,780.12	78.82	137.769	
15,000.00	6,987.00	7,548.86	7,197.77	129.63	48.74	105.28	1,135.02	-3,041.20	10,958.76	10,879.89	78.87	138.943	
15,100.00	6,987.00	7,551.27	7,200.18	131.17	48.75	105.48	1,135.04	-3,041.16	11,058.58	10,979.66	78.93	140.114	
15,200.00	6,987.00	7,553.71	7,202.62	132.72	48.75	105.69	1,135.07	-3,041.13	11,158.41	11,079.43	78.98	141.282	
15,300.00	6,987.00	7,556.17	7,205.07	134.27	48.75	105.90	1,135.10	-3,041.09	11,258.24	11,179.20	79.04	142.446	
15,400.00	6,987.00	7,558.65	7,207.56	135.83	48.76	106.11	1,135.13	-3,041.05	11,358.07	11,278.98	79.09	143.607	
15,500.00	6,987.00	7,561.16	7,210.07	137.38	48.76	106.32	1,135.16	-3,041.01	11,457.91	11,378.76	79.15	144.765	
15,600.00	6,987.00	7,563.70	7,212.60	138.93	48.77	106.53	1,135.18	-3,040.97	11,557.74	11,478.54	79.21	145.920	
15,700.00	6,987.00	7,566.26	7,215.16	140.49	48.77	106.75	1,135.21	-3,040.93	11,657.58	11,578.32	79.27	147.071	
15,800.00	6,987.00	7,568.84	7,217.75	142.04	48.77	106.96	1,135.24	-3,040.89	11,757.43	11,678.10	79.32	148.219	
15,900.00	6,987.00	7,571.46	7,220.36	143.60	48.78	107.18	1,135.28	-3,040.85	11,857.27	11,777.89	79.39	149.363	
16,000.00	6,987.00	7,574.10	7,223.00	145.16	48.78	107.40	1,135.31	-3,040.81	11,957.12	11,877.67	79.45	150.504	
16,100.00	6,987.00	7,576.77	7,225.67	146.72	48.79	107.63	1,135.34	-3,040.76	12,056.97	11,977.46	79.51	151.642	
16,200.00	6,987.00	7,579.47	7,228.37	148.28	48.79	107.85	1,135.37	-3,040.72	12,156.82	12,077.25	79.57	152.776	
16,300.00	6,987.00	7,582.19	7,231.09	149.84	48.79	108.08	1,135.41	-3,040.68	12,256.67	12,177.04	79.64	153.906	
16,400.00	6,987.00	7,584.95	7,233.85	151.40	48.80	108.30	1,135.44	-3,040.63	12,356.53	12,276.83	79.70	155.034	
16,500.00	6,987.00	7,587.73	7,236.63	152.97	48.80	108.53	1,135.48	-3,040.59	12,456.39	12,376.62	79.77	156.157	
16,600.00	6,987.00	7,590.55	7,239.44	154.53	48.81	108.76	1,135.51	-3,040.54	12,556.25	12,476.41	79.83	157.278	
16,700.00	6,987.00	7,593.39	7,242.29	156.10	48.81	109.00	1,135.55	-3,040.49	12,656.11	12,576.20	79.90	158.394	
16,800.00	6,987.00	7,596.27	7,245.16	157.66	48.82	109.23	1,135.59	-3,040.45	12,755.97	12,676.00	79.97	159.508	
16,900.00	6,987.00	7,599.17	7,248.07	159.23	48.82	109.47	1,135.63	-3,040.40	12,855.83	12,775.79	80.04	160.617	
17,000.00	6,987.00	7,602.11	7,251.01	160.80	48.83	109.71	1,135.67	-3,040.35	12,955.70	12,875.59	80.11	161.724	
17,100.00	6,987.00	7,605.08	7,253.98	162.36	48.83	109.95	1,135.71	-3,040.30	13,055.57	12,975.39	80.18	162.826	
17,200.00	6,987.00	7,608.09	7,256.98	163.93	48.83	110.19	1,135.75	-3,040.25	13,155.44	13,075.19	80.25	163.925	
17,300.00	6,987.00	7,611.13	7,260.02	165.50	48.84	110.44	1,135.79	-3,040.20	13,255.31	13,174.99	80.33	165.021	
17,400.00	6,987.00	7,614.20	7,263.09	167.07	48.84	110.68	1,135.83	-3,040.14	13,355.18	13,274.78	80.40	166.113	
17,500.00	6,987.00	7,617.31	7,266.20	168.64	48.85	110.93	1,135.88	-3,040.09	13,455.06	13,374.59	80.47	167.201	
17,600.00	6,987.00	7,620.45	7,269.34	170.21	48.85	111.18	1,135.92	-3,040.04	13,554.93	13,474.39	80.55	168.285	
17,700.00	6,987.00	7,610.53	7,259.43	171.78	49.16	110.38	1,135.61	-3,040.22	13,654.84	13,573.86	80.97	168.637	
17,800.00	6,987.00	7,613.19	7,262.09	173.36	49.17	110.60	1,135.64	-3,040.18	13,754.72	13,673.66	81.06	169.688	
17,900.00	6,987.00	7,615.87	7,264.77	174.93	49.19	110.81	1,135.66	-3,040.13	13,854.60	13,773.45	81.15	170.736	
18,000.00	6,987.00	7,618.57	7,267.47	176.50	49.20	111.03	1,135.69	-3,040.09	13,954.48	13,873.25	81.24	171.779	
18,100.00	6,987.00	7,621.30	7,270.19	178.08	49.21	111.25	1,135.72	-3,040.04	14,054.36	13,973.04	81.32	172.818	
18,200.00	6,987.00	7,624.05	7,272.95	179.65	49.23	111.46	1,135.75	-3,039.99	14,154.25	14,072.84	81.42	173.853	
18,300.00	6,987.00	7,626.83	7,275.72	181.23	49.24	111.68	1,135.77	-3,039.95	14,254.14	14,172.63	81.51	174.884	
18,400.00	6,987.00	7,629.63	7,278.52	182.80	49.26	111.90	1,135.80	-3,039.90	14,354.03	14,272.43	81.60	175.911	
18,500.00	6,987.00	7,632.45	7,281.35	184.38	49.27	112.13	1,135.83	-3,039.85	14,453.91	14,372.22	81.69	176.934	
18,600.00	6,987.00	7,635.30	7,284.20	185.96	49.29	112.35	1,135.86	-3,039.80	14,553.81	14,472.02	81.78	177.952	
18,700.00	6,987.00	7,638.18	7,287.07	187.53	49.31	112.58	1,135.88	-3,039.75	14,653.70	14,571.82	81.88	178.967	
18,800.00	6,987.00	7,641.08	7,289.97	189.11	49.32	112.80	1,135.91	-3,039.70	14,753.59	14,671.62	81.97	179.978	
18,900.00	6,987.00	7,644.01	7,292.90	190.69	49.34	113.03	1,135.94	-3,039.65	14,853.48	14,771.41	82.07	180.984	
19,000.00	6,987.00	7,646.97	7,295.86	192.27	49.35	113.26	1,135.97	-3,039.59	14,953.38	14,871.21	82.17	181.987	
19,100.00	6,987.00	7,649.95	7,298.84	193.85	49.37	113.49	1,136.00	-3,039.54	15,053.27	14,971.01	82.26	182.985	

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 #692H
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 #692H	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													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		
19,200.00	6,987.00	7,652.96	7,301.85	195.43	49.38	113.72	1,136.03	-3,039.49	15,153.17	15,070.81	82.36	183.980		
19,255.69	6,987.00	7,654.65	7,303.54	196.31	49.39	113.85	1,136.05	-3,039.46	15,208.81	15,126.39	82.42	184.532		
19,300.00	6,987.00	7,656.00	7,304.88	197.01	49.40	113.95	1,136.06	-3,039.43	15,253.07	15,170.61	82.46	184.970		
19,400.00	6,987.00	7,659.06	7,307.95	198.59	49.42	114.19	1,136.09	-3,039.38	15,352.97	15,270.41	82.56	185.956		
19,468.80	6,987.00	7,661.19	7,310.08	199.49	49.43	114.35	1,136.11	-3,039.34	15,421.70	15,334.43	87.28	176.700		

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 #692H
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 #692H	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		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	-167.26	-86.65	-19.59	93.45				
100.00	100.00	71.09	71.09	0.25	0.08	-167.27	-86.62	-19.56	88.80	88.47	0.33	268.253	
200.00	200.00	171.21	171.21	0.61	0.19	-167.32	-86.47	-19.45	88.63	87.83	0.80	110.507	
300.00	300.00	271.34	271.34	0.97	0.31	-167.41	-86.19	-19.25	88.32	87.05	1.27	69.377	
400.00	400.00	371.46	371.46	1.33	0.42	-167.53	-85.80	-18.97	87.87	86.12	1.74	50.381	
500.00	500.00	473.79	473.78	1.68	0.63	-167.77	-84.41	-18.30	86.42	84.10	2.31	37.347	
600.00	600.00	577.65	577.46	2.04	0.88	-168.88	-79.23	-15.58	81.00	78.09	2.91	27.830	
700.00	700.00	683.21	682.17	2.40	1.17	-171.93	-67.64	-9.60	69.22	65.70	3.52	19.678	
800.00	799.98	786.65	782.96	2.76	1.54	-175.21	-47.22	1.14	50.42	46.28	4.14	12.174	
900.00	899.84	885.20	877.05	3.12	2.03	157.91	-21.27	14.68	32.76	27.77	4.99	6.560	
950.79	950.47	934.43	923.18	3.31	2.32	131.90	-5.98	22.54	29.20	23.59	5.61	5.207 CC, ES	
1,000.00	999.45	980.99	966.13	3.48	2.63	105.31	10.00	30.76	33.27	27.25	6.02	5.525	
1,100.00	1,098.70	1,073.84	1,050.54	3.85	3.31	76.13	44.20	48.76	57.70	51.26	6.44	8.961	
1,153.80	1,151.90	1,122.12	1,093.53	4.04	3.71	69.34	63.42	59.39	75.17	68.49	6.68	11.248	
1,200.00	1,197.53	1,163.23	1,129.64	4.21	4.06	65.84	80.45	69.19	91.65	84.72	6.93	13.231	
1,300.00	1,296.27	1,248.00	1,202.59	4.59	4.84	60.79	117.88	90.69	131.00	123.56	7.44	17.601	
1,400.00	1,395.02	1,327.23	1,267.90	4.97	5.67	57.17	157.01	112.53	176.30	168.36	7.94	22.214	
1,500.00	1,493.77	1,400.75	1,324.90	5.36	6.52	54.07	198.17	133.98	228.11	219.73	8.38	27.232	
1,600.00	1,592.52	1,472.70	1,378.25	5.74	7.41	51.71	241.04	156.12	284.39	275.53	8.86	32.093	
1,700.00	1,691.27	1,550.20	1,434.46	6.14	8.39	49.88	288.33	180.85	342.94	333.46	9.49	36.156	
1,800.00	1,790.01	1,629.17	1,491.30	6.53	9.37	48.46	337.05	205.98	402.20	392.05	10.15	39.619	
1,900.00	1,888.76	1,705.74	1,546.21	6.92	10.30	47.36	384.66	230.08	461.79	451.00	10.80	42.774	
2,000.00	1,987.51	1,780.98	1,599.77	7.32	11.26	46.61	431.40	254.75	522.28	510.83	11.45	45.631	
2,100.00	2,086.26	1,865.88	1,660.23	7.72	12.30	46.01	483.86	283.02	582.88	570.64	12.24	47.635	
2,200.00	2,185.01	1,957.15	1,726.20	8.11	13.39	45.61	539.00	313.65	642.48	629.38	13.11	49.013	
2,300.00	2,283.75	2,034.00	1,782.24	8.51	14.35	45.41	584.66	339.72	701.46	687.66	13.80	50.817	
2,400.00	2,382.50	2,108.54	1,836.15	8.91	15.30	45.18	629.63	364.76	761.02	746.54	14.48	52.563	
2,500.00	2,481.25	2,186.00	1,891.69	9.31	16.29	44.86	677.38	389.99	821.06	805.87	15.19	54.045	
2,600.00	2,580.00	2,272.82	1,954.02	9.71	17.36	44.49	731.19	417.47	880.84	864.82	16.01	55.007	
2,700.00	2,678.75	2,356.55	2,014.69	10.11	18.38	44.24	782.29	444.29	940.00	923.20	16.80	55.957	
2,800.00	2,777.49	2,442.79	2,077.15	10.52	19.45	44.00	835.03	471.76	999.20	981.59	17.61	56.725	
2,900.00	2,876.24	2,536.37	2,145.76	10.92	20.55	43.84	891.13	501.79	1,057.48	1,038.97	18.51	57.144	
3,000.00	2,974.99	2,615.84	2,204.35	11.32	21.52	43.74	938.33	527.38	1,115.33	1,096.09	19.24	57.960	
3,100.00	3,073.74	2,686.63	2,256.29	11.72	22.41	43.66	980.51	550.49	1,173.65	1,153.76	19.89	59.000	
3,200.00	3,172.49	2,917.44	2,434.82	12.13	25.00	43.73	1,107.36	622.82	1,226.92	1,204.80	22.12	55.464	
3,300.00	3,271.23	3,067.70	2,558.17	12.53	26.52	43.73	1,183.14	662.97	1,273.68	1,250.27	23.41	54.409	
3,400.00	3,369.98	3,227.66	2,694.43	12.93	28.00	43.70	1,258.23	700.08	1,314.74	1,290.06	24.68	53.272	
3,500.00	3,468.73	3,652.98	3,082.93	13.34	31.06	44.37	1,408.42	779.15	1,347.89	1,321.09	26.80	50.291	
3,600.00	3,567.48	3,973.96	3,397.47	13.74	32.23	45.43	1,462.63	808.77	1,356.85	1,329.44	27.40	49.513	
3,700.00	3,666.23	4,152.32	3,575.38	14.14	32.51	46.13	1,473.90	813.38	1,351.56	1,323.76	27.80	48.610	
3,800.00	3,764.97	4,251.75	3,674.66	14.55	32.65	46.50	1,479.12	814.21	1,345.18	1,316.74	28.44	47.296	
3,900.00	3,863.72	4,351.19	3,773.96	14.95	32.79	46.87	1,484.35	815.03	1,338.85	1,309.74	29.10	46.003	
4,000.00	3,962.47	4,450.63	3,873.26	15.36	32.94	47.25	1,489.57	815.86	1,332.57	1,302.81	29.77	44.766	
4,100.00	4,061.22	4,550.07	3,972.56	15.76	33.08	47.63	1,494.79	816.68	1,326.35	1,295.92	30.43	43.583	
4,200.00	4,159.97	4,649.50	4,071.86	16.17	33.23	48.01	1,500.01	817.50	1,320.19	1,289.09	31.10	42.450	
4,300.00	4,258.71	4,748.94	4,171.15	16.57	33.37	48.39	1,505.22	818.33	1,314.09	1,282.32	31.77	41.364	
4,400.00	4,357.46	4,848.38	4,270.45	16.98	33.52	48.78	1,510.44	819.15	1,308.04	1,275.60	32.44	40.322	
4,500.00	4,456.21	4,947.82	4,369.75	17.38	33.67	49.18	1,515.65	819.97	1,302.06	1,268.94	33.11	39.322	
4,600.00	4,554.96	5,047.25	4,469.05	17.79	33.81	49.57	1,520.86	820.80	1,296.13	1,262.34	33.79	38.361	
4,700.00	4,653.71	5,146.69	4,568.34	18.19	33.96	49.97	1,526.07	821.62	1,290.27	1,255.80	34.46	37.438	
4,800.00	4,752.45	5,246.13	4,667.64	18.60	34.11	50.38	1,531.28	822.44	1,284.47	1,249.32	35.14	36.549	
4,900.00	4,851.20	5,345.56	4,766.94	19.00	34.25	50.79	1,536.48	823.26	1,278.73	1,242.91	35.82	35.694	

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 #692H
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 #692H	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		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	4,949.95	5,445.00	4,866.23	19.41	34.40	51.20	1,541.69	824.08	1,273.06	1,236.55	34.871
5,100.00	5,048.70	5,544.43	4,965.53	19.81	34.55	51.61	1,546.89	824.90	1,267.45	1,230.26	34.078
5,200.00	5,147.45	5,643.87	5,064.82	20.22	34.69	52.03	1,552.09	825.72	1,261.91	1,224.03	33.313
5,300.00	5,246.19	5,743.30	5,164.12	20.62	34.84	52.46	1,557.28	826.54	1,256.43	1,217.86	32.575
5,400.00	5,344.94	5,842.74	5,263.41	21.03	34.99	52.88	1,562.48	827.37	1,251.02	1,211.76	31.864
5,455.76	5,400.00	5,898.18	5,318.77	21.25	35.07	53.12	1,565.38	827.82	1,248.04	1,208.39	31.478
5,500.00	5,443.72	5,942.19	5,362.72	21.43	35.13	53.29	1,567.67	828.18	1,245.79	1,205.83	31.181
5,600.00	5,542.71	6,041.78	5,462.18	21.83	35.28	53.63	1,572.87	829.01	1,241.49	1,200.86	30.560
5,700.00	5,641.93	6,141.52	5,561.78	22.22	35.43	53.91	1,578.08	829.83	1,238.27	1,197.00	30.004
5,800.00	5,741.36	6,241.37	5,661.49	22.60	35.58	54.14	1,583.29	830.65	1,236.10	1,194.22	29.510
5,900.00	5,840.96	6,341.30	5,761.28	22.97	35.73	54.32	1,588.50	831.47	1,234.98	1,192.50	29.072
5,959.74	5,900.53	6,401.03	5,820.93	23.18	35.81	54.39	1,591.61	831.96	1,234.80	1,191.98	28.838
6,000.00	5,940.70	6,441.29	5,861.13	23.33	35.87	54.43	1,593.71	832.30	1,234.88	1,191.84	28.690
6,100.00	6,040.55	6,541.30	5,961.00	23.68	36.02	54.49	1,598.92	833.12	1,235.80	1,192.22	28.359
6,200.00	6,140.48	6,641.29	6,060.86	24.02	36.17	54.50	1,604.13	833.94	1,237.73	1,193.64	28.076
6,300.00	6,240.45	6,741.25	6,160.68	24.35	36.32	54.44	1,609.34	834.76	1,240.67	1,196.11	27.841
6,408.05	6,348.50	6,849.18	6,268.45	24.69	36.48	-125.68	1,614.96	835.65	1,244.99	1,199.96	27.646
6,450.00	6,390.43	6,891.08	6,310.30	24.82	36.54	-18.65	1,617.14	835.99	1,245.55	1,200.35	27.554
6,500.00	6,440.15	6,940.90	6,360.05	24.99	36.62	-15.25	1,619.73	836.40	1,242.70	1,197.29	27.369
6,550.00	6,489.32	6,990.30	6,409.38	25.16	36.69	-14.54	1,622.30	836.81	1,236.04	1,190.44	27.110
6,600.00	6,537.64	7,038.97	6,457.98	25.34	36.76	-14.49	1,624.83	837.21	1,225.62	1,179.85	26.780
6,650.00	6,584.80	7,086.61	6,505.55	25.52	36.83	-14.79	1,627.31	837.60	1,211.51	1,165.59	26.382
6,700.00	6,630.52	7,132.93	6,551.81	25.71	36.90	-15.35	1,629.72	837.98	1,193.82	1,147.76	25.921
6,750.00	6,674.51	7,177.64	6,596.45	25.89	36.97	-16.14	1,632.04	838.35	1,172.66	1,126.49	25.400
6,800.00	6,716.50	7,220.46	6,639.22	26.08	37.03	-17.20	1,634.27	838.70	1,148.19	1,101.94	24.823
6,850.00	6,756.24	7,261.14	6,679.84	26.28	37.09	-18.55	1,636.38	839.03	1,120.57	1,074.26	24.196
6,900.00	6,793.47	7,299.42	6,718.07	26.48	37.15	-20.24	1,638.37	839.34	1,089.99	1,043.65	23.521
6,950.00	6,827.97	7,335.07	6,753.67	26.69	37.20	-22.37	1,640.22	839.64	1,056.68	1,010.34	22.805
7,000.00	6,859.53	7,367.86	6,786.41	26.91	37.25	-25.04	1,641.93	839.91	1,020.85	974.55	22.050
7,050.00	6,887.94	7,397.59	6,816.11	27.14	37.30	-28.39	1,643.47	840.15	982.77	936.55	21.262
7,100.00	6,913.05	7,424.09	6,842.56	27.38	37.34	-32.61	1,644.85	840.37	942.71	896.60	20.445
7,150.00	6,934.68	7,447.18	6,865.62	27.64	37.37	-37.90	1,646.05	840.56	900.97	855.01	19.602
7,200.00	6,952.71	7,466.72	6,885.14	27.92	37.40	-44.49	1,647.06	840.72	857.85	812.07	18.739
7,250.00	6,967.02	7,482.60	6,900.99	28.21	37.42	-52.48	1,647.88	840.85	813.68	768.11	17.858
7,300.00	6,977.54	7,494.71	6,913.09	28.52	37.44	-61.77	1,648.51	840.95	768.81	723.48	16.962
7,350.00	6,984.18	7,502.99	6,921.35	28.83	37.45	-71.85	1,648.94	841.01	723.59	678.53	16.055
7,400.00	6,986.92	7,507.37	6,925.73	29.16	37.46	-81.88	1,649.17	841.05	678.42	633.61	15.139
7,409.89	6,987.00	7,507.78	6,926.13	29.23	37.46	-83.77	1,649.19	841.05	669.52	624.76	14.957
7,500.00	6,987.00	7,510.75	6,929.11	29.85	37.46	-84.35	1,649.35	841.08	589.87	545.44	13.277
7,600.00	6,987.00	7,514.06	6,932.41	30.61	37.47	-85.00	1,649.52	841.10	505.58	461.01	11.344
7,700.00	6,987.00	7,517.37	6,935.71	31.41	37.47	-85.64	1,649.69	841.13	428.08	382.11	9.311
7,800.00	6,987.00	7,520.67	6,939.01	32.27	37.48	-86.29	1,649.86	841.16	361.77	311.92	7.257
7,900.00	6,987.00	7,523.98	6,942.31	33.17	37.48	-86.93	1,650.03	841.19	313.81	256.82	5.506
8,000.00	6,987.00	7,527.28	6,945.62	34.12	37.49	-87.58	1,650.20	841.21	293.35	227.73	4.471
8,012.18	6,987.00	7,527.68	6,946.02	34.23	37.49	-87.66	1,650.23	841.22	293.10	226.54	4.404
8,100.00	6,987.00	7,530.59	6,948.92	35.10	37.49	-88.22	1,650.38	841.24	305.96	234.49	4.281 SF
8,200.00	6,987.00	7,533.89	6,952.22	36.12	37.50	-88.87	1,650.55	841.27	348.06	275.16	4.774
8,300.00	6,987.00	7,537.20	6,955.52	37.17	37.50	-89.51	1,650.72	841.29	410.68	338.92	5.723
8,314.89	6,987.00	7,537.69	6,956.01	37.33	37.50	-89.61	1,650.75	841.30	421.24	349.74	5.892
8,400.00	6,987.00	7,540.40	6,958.71	38.25	37.51	-90.15	1,650.89	841.32	487.44	417.52	6.971
8,500.00	6,987.00	7,543.30	6,961.61	39.35	37.51	-90.86	1,651.04	841.34	574.69	506.35	8.409
8,600.00	6,987.00	7,545.90	6,964.20	40.45	37.52	-91.78	1,651.17	841.36	668.03	600.82	9.940

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 #692H
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 #692H	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		Rule Assigned: 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
8,700.00	6,987.00	7,548.16	6,966.47	41.56	37.52	-93.20	1,651.29	841.38	764.88	698.39	66.49	11.504	
8,800.00	6,987.00	7,550.09	6,968.40	42.66	37.52	-96.22	1,651.39	841.40	863.65	797.56	66.09	13.068	
8,900.00	6,987.00	7,551.68	6,969.98	43.75	37.53	-110.59	1,651.47	841.41	963.37	897.43	65.93	14.611	
9,000.00	6,987.00	7,552.91	6,971.21	44.83	37.53	108.81	1,651.54	841.42	1,063.34	997.38	65.96	16.121	
9,071.74	6,987.00	7,553.58	6,971.87	45.59	37.53	98.42	1,651.57	841.43	1,134.94	1,068.88	66.06	17.181	
9,100.00	6,987.00	7,553.80	6,972.10	45.89	37.53	98.56	1,651.58	841.43	1,163.10	1,096.99	66.11	17.594	
9,200.00	6,987.00	7,554.59	6,972.89	46.97	37.53	99.04	1,651.62	841.44	1,262.80	1,196.53	66.27	19.055	
9,300.00	6,987.00	7,555.39	6,973.68	48.07	37.53	99.51	1,651.66	841.44	1,362.54	1,296.12	66.41	20.516	
9,400.00	6,987.00	7,556.18	6,974.48	49.20	37.53	99.99	1,651.71	841.45	1,462.31	1,395.77	66.54	21.978	
9,500.00	6,987.00	7,556.98	6,975.27	50.36	37.53	100.46	1,651.75	841.46	1,562.11	1,495.47	66.65	23.439	
9,600.00	6,987.00	7,557.77	6,976.06	51.54	37.53	100.94	1,651.79	841.46	1,661.94	1,595.19	66.75	24.900	
9,700.00	6,987.00	7,558.57	6,976.86	52.74	37.54	101.41	1,651.83	841.47	1,761.78	1,694.95	66.84	26.359	
9,800.00	6,987.00	7,559.36	6,977.65	53.96	37.54	101.88	1,651.87	841.48	1,861.64	1,794.72	66.92	27.819	
9,900.00	6,987.00	7,560.16	6,978.44	55.21	37.54	102.35	1,651.91	841.48	1,961.52	1,894.52	67.00	29.277	
10,000.00	6,987.00	7,560.95	6,979.24	56.47	37.54	102.82	1,651.95	841.49	2,061.41	1,994.33	67.07	30.734	
10,100.00	6,987.00	7,561.74	6,980.03	57.75	37.54	103.29	1,651.99	841.49	2,161.30	2,094.16	67.14	32.190	
10,200.00	6,987.00	7,562.54	6,980.82	59.04	37.54	103.76	1,652.03	841.50	2,261.21	2,194.00	67.21	33.646	
10,300.00	6,987.00	7,563.33	6,981.62	60.35	37.54	104.22	1,652.08	841.51	2,361.12	2,293.85	67.27	35.099	
10,400.00	6,987.00	7,564.13	6,982.41	61.67	37.54	104.69	1,652.12	841.51	2,461.04	2,393.71	67.33	36.552	
10,500.00	6,987.00	7,564.92	6,983.20	63.01	37.55	105.15	1,652.16	841.52	2,560.97	2,493.58	67.39	38.003	
10,600.00	6,987.00	7,565.72	6,984.00	64.36	37.55	105.61	1,652.20	841.53	2,660.90	2,593.46	67.44	39.453	
10,700.00	6,987.00	7,566.51	6,984.79	65.72	37.55	106.07	1,652.24	841.53	2,760.84	2,693.34	67.50	40.902	
10,800.00	6,987.00	7,567.31	6,985.58	67.09	37.55	106.52	1,652.28	841.54	2,860.78	2,793.22	67.55	42.349	
10,900.00	6,987.00	7,568.10	6,986.38	68.47	37.55	106.98	1,652.32	841.55	2,960.72	2,893.12	67.61	43.794	
11,000.00	6,987.00	7,568.89	6,987.17	69.86	37.55	107.43	1,652.36	841.55	3,060.67	2,993.01	67.66	45.238	
11,100.00	6,987.00	7,569.69	6,987.96	71.26	37.55	107.88	1,652.41	841.56	3,160.62	3,092.91	67.71	46.680	
11,200.00	6,987.00	7,570.48	6,988.76	72.67	37.55	108.33	1,652.45	841.57	3,260.57	3,192.82	67.76	48.120	
11,300.00	6,987.00	7,571.28	6,989.55	74.09	37.55	108.78	1,652.49	841.57	3,360.53	3,292.72	67.81	49.559	
11,400.00	6,987.00	7,572.07	6,990.34	75.51	37.56	109.23	1,652.53	841.58	3,460.49	3,392.63	67.86	50.996	
11,500.00	6,987.00	7,572.87	6,991.14	76.94	37.56	109.67	1,652.57	841.59	3,560.45	3,492.54	67.91	52.431	
11,600.00	6,987.00	7,573.66	6,991.93	78.38	37.56	110.11	1,652.61	841.59	3,660.41	3,592.46	67.96	53.864	
11,700.00	6,987.00	7,574.46	6,992.72	79.82	37.56	110.55	1,652.65	841.60	3,760.38	3,692.37	68.01	55.295	
11,800.00	6,987.00	7,575.25	6,993.52	81.27	37.56	110.99	1,652.69	841.61	3,860.34	3,792.29	68.05	56.724	
11,900.00	6,987.00	7,576.04	6,994.31	82.73	37.56	111.43	1,652.74	841.61	3,960.31	3,892.21	68.10	58.152	
12,000.00	6,987.00	7,576.84	6,995.10	84.19	37.56	111.86	1,652.78	841.62	4,060.28	3,992.13	68.15	59.577	
12,100.00	6,987.00	7,577.63	6,995.90	85.66	37.56	112.29	1,652.82	841.62	4,160.25	4,092.05	68.20	61.000	
12,200.00	6,987.00	7,578.43	6,996.69	87.13	37.57	112.72	1,652.86	841.63	4,260.22	4,191.97	68.25	62.421	
12,300.00	6,987.00	7,579.22	6,997.48	88.61	37.57	113.15	1,652.90	841.64	4,360.20	4,291.90	68.30	63.840	
12,400.00	6,987.00	7,580.02	6,998.28	90.09	37.57	113.57	1,652.94	841.64	4,460.17	4,391.82	68.35	65.257	
12,500.00	6,987.00	7,580.81	6,999.07	91.57	37.57	113.99	1,652.98	841.65	4,560.14	4,491.75	68.40	66.671	
12,600.00	6,987.00	7,581.60	6,999.86	93.06	37.57	114.41	1,653.02	841.66	4,660.12	4,591.67	68.45	68.083	
12,700.00	6,987.00	7,582.40	7,000.66	94.55	37.57	114.83	1,653.07	841.66	4,760.10	4,691.60	68.50	69.493	
12,800.00	6,987.00	7,583.19	7,001.45	96.05	37.57	115.24	1,653.11	841.67	4,860.07	4,791.53	68.55	70.901	
12,900.00	6,987.00	7,583.99	7,002.24	97.55	37.57	115.66	1,653.15	841.68	4,960.05	4,891.45	68.60	72.306	
13,000.00	6,987.00	7,584.78	7,003.04	99.05	37.57	116.07	1,653.19	841.68	5,060.03	4,991.38	68.65	73.709	
13,100.00	6,987.00	7,585.58	7,003.83	100.56	37.58	116.47	1,653.23	841.69	5,160.01	5,091.31	68.70	75.109	
13,200.00	6,987.00	7,586.37	7,004.62	102.07	37.58	116.88	1,653.27	841.70	5,259.99	5,191.24	68.75	76.507	
13,300.00	6,987.00	7,587.16	7,005.42	103.58	37.58	117.28	1,653.31	841.70	5,359.97	5,291.17	68.80	77.902	
13,400.00	6,987.00	7,587.96	7,006.21	105.09	37.58	117.68	1,653.35	841.71	5,459.96	5,391.10	68.86	79.295	
13,500.00	6,987.00	7,588.75	7,007.00	106.61	37.58	118.08	1,653.40	841.72	5,559.94	5,491.03	68.91	80.685	
13,600.00	6,987.00	7,589.55	7,007.79	108.13	37.58	118.47	1,653.44	841.72	5,659.92	5,590.96	68.96	82.073	
13,700.00	6,987.00	7,590.34	7,008.59	109.65	37.58	118.86	1,653.48	841.73	5,759.90	5,690.89	69.02	83.458	

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 #692H
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 #692H	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 (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,800.00	6,987.00	7,591.14	7,009.38	111.18	37.58	119.25	1,653.52	841.74	5,859.89	5,790.82	69.07	84.840		
13,900.00	6,987.00	7,591.93	7,010.17	112.71	37.59	119.64	1,653.56	841.74	5,959.87	5,890.75	69.12	86.220		
14,000.00	6,987.00	7,592.72	7,010.97	114.23	37.59	120.02	1,653.60	841.75	6,059.86	5,990.68	69.18	87.597		
14,100.00	6,987.00	7,593.52	7,011.76	115.77	37.59	120.40	1,653.64	841.75	6,159.84	6,090.61	69.23	88.971		
14,200.00	6,987.00	7,594.31	7,012.55	117.30	37.59	120.78	1,653.68	841.76	6,259.83	6,190.54	69.29	90.343		
14,300.00	6,987.00	7,595.11	7,013.35	118.83	37.59	121.16	1,653.73	841.77	6,359.81	6,290.47	69.35	91.711		
14,400.00	6,987.00	7,595.90	7,014.14	120.37	37.59	121.53	1,653.77	841.77	6,459.80	6,390.40	69.40	93.077		
14,500.00	6,987.00	7,596.70	7,014.93	121.91	37.59	121.90	1,653.81	841.78	6,559.78	6,490.32	69.46	94.440		
14,600.00	6,987.00	7,597.49	7,015.73	123.45	37.59	122.27	1,653.85	841.79	6,659.77	6,590.25	69.52	95.800		
14,700.00	6,987.00	7,598.28	7,016.52	124.99	37.60	122.64	1,653.89	841.79	6,759.76	6,690.18	69.58	97.158		
14,800.00	6,987.00	7,599.08	7,017.31	126.53	37.60	123.00	1,653.93	841.80	6,859.75	6,790.11	69.63	98.512		
14,900.00	6,987.00	7,599.87	7,018.11	128.08	37.60	123.36	1,653.97	841.81	6,959.73	6,890.04	69.69	99.863		
15,000.00	6,987.00	7,600.67	7,018.90	129.63	37.60	123.72	1,654.01	841.81	7,059.72	6,989.97	69.75	101.212		
15,100.00	6,987.00	7,601.46	7,019.69	131.17	37.60	124.08	1,654.06	841.82	7,159.71	7,089.90	69.81	102.557		
15,200.00	6,987.00	7,602.26	7,020.49	132.72	37.60	124.43	1,654.10	841.83	7,259.70	7,189.82	69.87	103.899		
15,300.00	6,987.00	7,603.05	7,021.28	134.27	37.60	124.78	1,654.14	841.83	7,359.69	7,289.75	69.93	105.239		
15,400.00	6,987.00	7,603.84	7,022.07	135.83	37.60	125.12	1,654.18	841.84	7,459.67	7,389.68	69.99	106.575		
15,500.00	6,987.00	7,604.64	7,022.86	137.38	37.60	125.47	1,654.22	841.85	7,559.66	7,489.61	70.06	107.908		
15,600.00	6,987.00	7,605.43	7,023.66	138.93	37.61	125.81	1,654.26	841.85	7,659.65	7,589.53	70.12	109.238		
15,700.00	6,987.00	7,606.23	7,024.45	140.49	37.61	126.15	1,654.30	841.86	7,759.64	7,689.46	70.18	110.565		
15,800.00	6,987.00	7,607.02	7,025.24	142.04	37.61	126.49	1,654.34	841.87	7,859.63	7,789.39	70.25	111.889		
15,900.00	6,987.00	7,607.82	7,026.04	143.60	37.61	126.82	1,654.38	841.87	7,959.62	7,889.31	70.31	113.209		
16,000.00	6,987.00	7,608.61	7,026.83	145.16	37.61	127.15	1,654.43	841.88	8,059.61	7,989.24	70.37	114.527		
16,100.00	6,987.00	7,609.40	7,027.62	146.72	37.61	127.48	1,654.47	841.89	8,159.60	8,089.16	70.44	115.841		
16,200.00	6,987.00	7,610.20	7,028.42	148.28	37.61	127.81	1,654.51	841.89	8,259.59	8,189.09	70.50	117.152		
16,300.00	6,987.00	7,610.99	7,029.21	149.84	37.61	128.13	1,654.55	841.90	8,359.58	8,289.01	70.57	118.459		
16,400.00	6,987.00	7,611.79	7,030.00	151.40	37.62	128.45	1,654.59	841.90	8,459.57	8,388.94	70.64	119.764		
16,500.00	6,987.00	7,612.58	7,030.80	152.97	37.62	128.77	1,654.63	841.91	8,559.56	8,488.86	70.70	121.065		
16,600.00	6,987.00	7,613.37	7,031.59	154.53	37.62	129.09	1,654.67	841.92	8,659.55	8,588.78	70.77	122.363		
16,700.00	6,987.00	7,614.17	7,032.38	156.10	37.62	129.40	1,654.71	841.92	8,759.54	8,688.71	70.84	123.658		
16,800.00	6,987.00	7,614.96	7,033.17	157.66	37.62	129.71	1,654.76	841.93	8,859.54	8,788.63	70.91	124.949		
16,900.00	6,987.00	7,615.76	7,033.97	159.23	37.62	130.02	1,654.80	841.94	8,959.53	8,888.55	70.97	126.237		
17,000.00	6,987.00	7,616.55	7,034.76	160.80	37.62	130.33	1,654.84	841.94	9,059.52	8,988.48	71.04	127.521		
17,100.00	6,987.00	7,617.34	7,035.55	162.36	37.62	130.63	1,654.88	841.95	9,159.51	9,088.40	71.11	128.802		
17,200.00	6,987.00	7,618.14	7,036.35	163.93	37.62	130.93	1,654.92	841.96	9,259.50	9,188.32	71.18	130.080		
17,300.00	6,987.00	7,618.93	7,037.14	165.50	37.63	131.23	1,654.96	841.96	9,359.49	9,288.24	71.25	131.354		
17,400.00	6,987.00	7,619.73	7,037.93	167.07	37.63	131.53	1,655.00	841.97	9,459.48	9,388.16	71.32	132.625		
17,500.00	6,987.00	7,620.52	7,038.73	168.64	37.63	131.82	1,655.04	841.98	9,559.48	9,488.08	71.40	133.893		
17,600.00	6,987.00	7,621.32	7,039.52	170.21	37.63	132.11	1,655.09	841.98	9,659.47	9,588.00	71.47	135.157		
17,700.00	6,987.00	7,622.11	7,040.31	171.78	37.63	132.40	1,655.13	841.99	9,759.46	9,687.92	71.54	136.418		
17,800.00	6,987.00	7,622.90	7,041.10	173.36	37.63	132.69	1,655.17	842.00	9,859.45	9,787.84	71.61	137.675		
17,900.00	6,987.00	7,623.70	7,041.90	174.93	37.63	132.97	1,655.21	842.00	9,959.45	9,887.76	71.69	138.929		
18,000.00	6,987.00	7,624.49	7,042.69	176.50	37.63	133.26	1,655.25	842.01	10,059.44	9,987.68	71.76	140.179		
18,100.00	6,987.00	7,625.29	7,043.48	178.08	37.64	133.54	1,655.29	842.02	10,159.43	10,087.59	71.84	141.426		
18,200.00	6,987.00	7,626.08	7,044.28	179.65	37.64	133.81	1,655.33	842.02	10,259.42	10,187.51	71.91	142.669		
18,300.00	6,987.00	7,626.87	7,045.07	181.23	37.64	134.09	1,655.37	842.03	10,359.42	10,287.43	71.99	143.908		
18,400.00	6,987.00	7,627.67	7,045.86	182.80	37.64	134.36	1,655.42	842.03	10,459.41	10,387.35	72.06	145.145		
18,500.00	6,987.00	7,628.46	7,046.66	184.38	37.64	134.63	1,655.46	842.04	10,559.40	10,487.26	72.14	146.377		
18,600.00	6,987.00	7,629.26	7,047.45	185.96	37.64	134.90	1,655.50	842.05	10,659.39	10,587.18	72.21	147.606		
18,700.00	6,987.00	7,630.05	7,048.24	187.53	37.64	135.17	1,655.54	842.05	10,759.39	10,687.10	72.29	148.832		
18,800.00	6,987.00	7,630.84	7,049.03	189.11	37.64	135.43	1,655.58	842.06	10,859.38	10,787.01	72.37	150.054		
18,900.00	6,987.00	7,631.64	7,049.83	190.69	37.64	135.69	1,655.62	842.07	10,959.37	10,886.93	72.45	151.272		

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 #692H
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 #692H	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		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	6,987.00	7,632.43	7,050.62	192.27	37.65	135.95	1,655.66	842.07	11,059.37	10,986.84		72.53	152.487
19,100.00	6,987.00	7,633.23	7,051.41	193.85	37.65	136.21	1,655.70	842.08	11,159.36	11,086.75		72.61	153.699
19,200.00	6,987.00	7,634.02	7,052.21	195.43	37.65	136.46	1,655.74	842.09	11,259.35	11,186.67		72.68	154.906
19,255.69	6,987.00	7,634.46	7,052.65	196.31	37.65	136.60	1,655.77	842.09	11,315.04	11,242.31		72.73	155.577
19,300.00	6,987.00	7,634.81	7,053.00	197.01	37.65	136.72	1,655.79	842.09	11,359.35	11,286.58		72.76	156.110
19,400.00	6,987.00	7,635.61	7,053.79	198.59	37.65	136.97	1,655.83	842.10	11,459.34	11,386.49		72.85	157.311
19,468.80	6,987.00	7,636.15	7,054.34	199.49	37.65	137.14	1,655.86	842.10	11,528.14	11,450.92		77.22	149.290

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Distance		Minimum Separation	Separation Factor	Warning	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	(usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-155.55	-340.77	-154.93	374.50					
100.00	100.00	89.00	89.00	0.25	1.58	-155.55	-340.77	-154.93	374.34	372.51	1.83	204.793		
200.00	200.00	189.00	189.00	0.61	3.35	-155.55	-340.77	-154.93	374.34	370.38	3.96	94.578		
300.00	300.00	289.00	289.00	0.97	5.12	-155.55	-340.77	-154.93	374.34	368.25	6.09	61.487		
400.00	400.00	389.00	389.00	1.33	6.92	-155.55	-340.77	-154.93	374.34	366.09	8.25	45.401		
500.00	500.00	489.00	489.00	1.68	8.72	-155.55	-340.77	-154.93	374.34	363.93	10.41	35.976		
562.54	562.54	551.54	551.54	1.91	9.85	-155.53	-340.50	-154.93	374.09	362.33	11.76	31.820	CC	
600.00	600.00	588.89	588.89	2.04	10.52	-155.53	-340.50	-154.93	374.09	361.53	12.56	29.776		
700.00	700.00	688.60	688.60	2.40	12.32	-155.54	-340.58	-154.93	374.16	359.44	14.72	25.421		
800.00	799.98	788.28	788.28	2.76	14.11	-149.28	-340.74	-154.93	375.81	358.94	16.87	22.272	ES	
900.00	899.84	888.85	888.84	3.12	16.08	-149.64	-340.77	-154.93	380.35	361.15	19.20	19.813		
1,000.00	999.45	988.46	988.45	3.48	18.05	-150.21	-340.77	-154.93	387.90	366.37	21.53	18.018		
1,100.00	1,098.70	1,087.11	1,087.10	3.85	20.00	-150.95	-340.38	-154.93	398.17	374.33	23.84	16.700		
1,153.80	1,151.90	1,139.89	1,139.87	4.04	21.04	-151.43	-340.50	-154.93	405.30	380.22	25.08	16.157		
1,200.00	1,197.53	1,185.12	1,185.11	4.21	21.94	-151.92	-340.65	-154.93	411.87	385.72	26.15	15.752		
1,300.00	1,296.27	1,285.34	1,285.27	4.59	24.11	-152.94	-340.77	-154.93	426.01	397.33	28.68	14.854		
1,400.00	1,395.02	1,381.84	1,381.76	4.97	26.27	-153.83	-340.32	-154.93	439.73	408.52	31.21	14.089		
1,500.00	1,493.77	1,482.90	1,482.77	5.36	28.64	-154.74	-340.77	-154.93	454.40	420.45	33.95	13.385		
1,600.00	1,592.52	1,581.65	1,581.52	5.74	31.08	-155.56	-340.77	-154.93	468.74	431.99	36.75	12.755		
1,700.00	1,691.27	1,678.42	1,678.27	6.14	33.46	-156.28	-339.71	-154.93	482.17	442.67	39.50	12.207		
1,800.00	1,790.01	1,773.87	1,773.71	6.53	35.81	-157.01	-340.45	-154.93	497.42	455.20	42.21	11.783		
1,900.00	1,888.76	1,878.04	1,877.76	6.92	38.37	-157.75	-340.77	-154.93	512.28	467.13	45.15	11.346		
2,000.00	1,987.51	1,976.78	1,976.51	7.32	40.80	-158.40	-340.77	-154.93	526.94	479.00	47.95	10.991		
2,100.00	2,086.26	2,075.42	2,075.11	7.72	43.22	-158.95	-338.70	-154.93	539.66	488.92	50.74	10.636		
2,200.00	2,185.01	2,171.30	2,170.98	8.11	45.58	-159.53	-338.98	-154.93	554.71	501.25	53.46	10.376		
2,300.00	2,283.75	2,267.05	2,266.71	8.51	47.93	-160.09	-339.77	-154.93	570.34	514.16	56.18	10.153		
2,400.00	2,382.50	2,371.96	2,371.50	8.91	50.49	-160.67	-340.77	-154.93	586.16	527.04	59.11	9.916		
2,500.00	2,481.25	2,470.71	2,470.25	9.31	52.85	-161.16	-340.77	-154.93	601.09	539.24	61.85	9.719		
2,600.00	2,580.00	2,568.95	2,568.47	9.71	55.21	-161.61	-339.63	-154.93	614.95	550.38	64.57	9.524		
2,700.00	2,678.75	2,664.63	2,664.15	10.11	57.50	-162.06	-339.96	-154.93	630.28	563.05	67.23	9.376		
2,800.00	2,777.49	2,767.08	2,766.49	10.52	59.95	-162.52	-340.77	-154.93	646.11	576.06	70.05	9.223		
2,900.00	2,876.24	2,865.82	2,865.24	10.92	62.32	-162.93	-340.77	-154.93	661.19	588.39	72.80	9.083		
3,000.00	2,974.99	2,964.57	2,963.99	11.32	64.69	-163.32	-340.77	-154.93	676.30	600.76	75.54	8.953		
3,100.00	3,073.74	3,063.04	3,062.44	11.72	67.06	-163.67	-338.86	-154.93	689.56	611.29	78.27	8.809		
3,200.00	3,172.49	3,158.84	3,158.22	12.13	69.36	-164.02	-339.11	-154.93	704.98	624.03	80.94	8.710		
3,300.00	3,271.23	3,254.51	3,253.88	12.53	71.66	-164.36	-339.76	-154.93	720.84	637.23	83.60	8.622		
3,400.00	3,369.98	3,359.73	3,358.98	12.93	74.13	-164.73	-340.77	-154.93	737.02	650.56	86.46	8.524		
3,500.00	3,468.73	3,458.48	3,457.73	13.34	76.14	-165.04	-340.77	-154.93	752.26	663.42	88.84	8.467		
3,600.00	3,567.48	3,557.23	3,556.48	13.74	78.15	-165.35	-340.77	-154.93	767.53	676.31	91.22	8.414		
3,700.00	3,666.23	3,653.80	3,653.03	14.14	80.12	-165.62	-339.53	-154.93	781.58	688.03	93.55	8.355		
3,800.00	3,764.97	3,749.18	3,748.40	14.55	82.06	-165.90	-340.00	-154.93	797.37	701.51	95.85	8.319		
3,900.00	3,863.72	3,853.53	3,852.72	14.95	84.15	-166.19	-340.77	-154.93	813.43	715.11	98.33	8.273		
4,000.00	3,962.47	3,952.28	3,951.47	15.36	85.98	-166.45	-340.77	-154.93	828.77	728.24	100.53	8.244		
4,100.00	4,061.22	4,051.03	4,050.22	15.76	87.81	-166.70	-340.77	-154.93	844.12	741.39	102.74	8.216		
4,200.00	4,159.97	4,148.69	4,147.87	16.17	89.63	-166.93	-340.29	-154.93	859.01	754.10	104.92	8.187		
4,300.00	4,258.71	4,245.90	4,245.08	16.57	91.43	-167.17	-340.50	-154.93	874.61	767.52	107.09	8.167		
4,400.00	4,357.46	4,347.30	4,346.46	16.98	93.27	-167.40	-340.77	-154.93	890.27	780.97	109.31	8.145		
4,500.00	4,456.21	4,446.05	4,445.21	17.38	94.94	-167.62	-340.77	-154.93	905.68	794.33	111.35	8.134		
4,600.00	4,554.96	4,544.80	4,543.96	17.79	96.62	-167.83	-340.77	-154.93	921.11	807.71	113.40	8.123		
4,700.00	4,653.71	4,641.95	4,641.10	18.19	98.26	-168.02	-339.99	-154.93	935.77	820.36	115.41	8.108		
4,800.00	4,752.45	4,738.34	4,737.49	18.60	99.90	-168.22	-340.28	-154.93	951.50	834.10	117.41	8.104		
4,900.00	4,851.20	4,841.06	4,840.20	19.00	101.69	-168.42	-340.77	-154.93	967.44	847.87	119.58	8.091		

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 #692H
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 #692H	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
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)			
5,000.00	4,949.95	4,939.81	4,938.95	19.41	103.79	-168.60	-340.77	-154.93	982.91	860.86	122.05	8.053	
5,100.00	5,048.70	5,038.55	5,037.70	19.81	105.89	-168.78	-340.77	-154.93	998.38	873.86	124.52	8.018	
5,200.00	5,147.45	5,137.30	5,136.45	20.22	107.99	-168.95	-340.77	-154.93	1,013.87	886.87	126.99	7.984	
5,300.00	5,246.19	5,236.05	5,235.19	20.62	110.09	-169.12	-340.77	-154.93	1,029.36	899.90	129.47	7.951	
5,400.00	5,344.94	5,334.80	5,333.94	21.03	112.19	-169.29	-340.77	-154.93	1,044.86	912.92	131.94	7.919	
5,455.76	5,400.00	5,389.88	5,389.00	21.25	113.37	-169.37	-340.77	-154.93	1,053.51	920.19	133.32	7.902	
5,500.00	5,443.72	5,433.60	5,432.72	21.43	114.30	-169.46	-340.77	-154.93	1,060.21	925.80	134.41	7.888	
5,600.00	5,542.71	5,532.59	5,531.71	21.83	116.40	-169.62	-340.77	-154.93	1,074.13	937.24	136.89	7.847	
5,700.00	5,641.93	5,629.82	5,628.93	22.22	118.47	-169.75	-339.82	-154.93	1,085.40	946.08	139.32	7.791	
5,800.00	5,741.36	5,725.26	5,724.37	22.60	120.50	-169.87	-340.17	-154.93	1,096.28	954.58	141.70	7.736	
5,900.00	5,840.96	5,830.91	5,829.96	22.97	122.75	-169.97	-340.77	-154.93	1,105.67	961.35	144.33	7.661	
6,000.00	5,940.70	5,930.65	5,929.70	23.33	124.87	-170.05	-340.77	-154.93	1,112.77	965.97	146.81	7.580	
6,100.00	6,040.55	6,030.50	6,029.55	23.68	127.00	-170.11	-340.77	-154.93	1,118.16	968.87	149.29	7.490	
6,200.00	6,140.48	6,128.02	6,127.06	24.02	129.07	-170.14	-339.73	-154.93	1,120.79	969.08	151.71	7.388	
6,300.00	6,240.45	6,224.32	6,223.35	24.35	131.12	-170.16	-340.09	-154.93	1,123.12	969.02	154.10	7.288	
6,408.05	6,348.50	6,338.53	6,337.50	24.69	133.57	9.83	-340.77	-154.93	1,123.95	967.04	156.91	7.163	
6,416.94	6,357.39	6,347.42	6,346.39	24.72	133.77	90.07	-340.77	-154.93	1,123.92	966.78	157.14	7.153	
6,450.00	6,390.43	6,380.45	6,379.43	24.82	134.50	116.97	-340.77	-154.93	1,124.39	966.42	157.97	7.118	
6,500.00	6,440.15	6,430.18	6,429.15	24.99	135.60	120.60	-340.77	-154.93	1,126.91	967.67	159.25	7.077	
6,550.00	6,489.32	6,479.35	6,478.32	25.16	136.69	121.66	-340.77	-154.93	1,131.63	971.12	160.51	7.050	
6,600.00	6,537.64	6,527.67	6,526.64	25.34	137.76	122.15	-340.77	-154.93	1,138.58	976.83	161.75	7.039 SF	
6,650.00	6,584.80	6,574.83	6,573.80	25.52	138.80	122.40	-340.77	-154.93	1,147.81	984.84	162.97	7.043	
6,700.00	6,630.52	6,619.65	6,618.61	25.71	139.79	122.47	-339.58	-154.93	1,158.17	994.04	164.14	7.056	
6,750.00	6,674.51	6,662.07	6,661.03	25.89	140.73	122.37	-339.64	-154.93	1,172.15	1,006.91	165.24	7.094	
6,800.00	6,716.50	6,702.53	6,701.49	26.08	141.63	122.10	-339.75	-154.93	1,188.60	1,022.30	166.30	7.147	
6,850.00	6,756.24	6,740.78	6,739.73	26.28	142.47	121.64	-339.91	-154.93	1,207.51	1,040.21	167.30	7.218	
6,900.00	6,793.47	6,776.57	6,775.52	26.48	143.27	120.94	-340.09	-154.93	1,228.90	1,060.66	168.24	7.304	
6,950.00	6,827.97	6,809.69	6,808.64	26.69	144.00	119.98	-340.30	-154.93	1,252.74	1,083.62	169.12	7.407	
7,000.00	6,859.53	6,839.93	6,838.88	26.91	144.67	118.69	-340.52	-154.93	1,278.95	1,109.04	169.92	7.527	
7,050.00	6,887.94	6,878.08	6,876.94	27.14	145.52	117.48	-340.77	-154.93	1,307.45	1,136.53	170.92	7.650	
7,100.00	6,913.05	6,903.18	6,902.05	27.38	146.10	115.47	-340.77	-154.93	1,337.93	1,166.32	171.60	7.797	
7,150.00	6,934.68	6,924.81	6,923.68	27.64	146.60	112.97	-340.77	-154.93	1,370.45	1,198.26	172.20	7.959	
7,200.00	6,952.71	6,942.84	6,941.71	27.92	147.01	109.92	-340.77	-154.93	1,404.86	1,232.16	172.69	8.135	
7,250.00	6,967.02	6,957.16	6,956.02	28.21	147.34	106.24	-340.77	-154.93	1,440.93	1,267.84	173.09	8.325	
7,300.00	6,977.54	6,967.67	6,966.54	28.52	147.58	101.89	-340.77	-154.93	1,478.45	1,305.07	173.38	8.527	
7,350.00	6,984.18	6,974.32	6,973.18	28.83	147.74	96.86	-340.77	-154.93	1,517.16	1,343.60	173.57	8.741	
7,400.00	6,986.92	6,977.06	6,975.92	29.16	147.80	91.19	-340.77	-154.93	1,556.80	1,383.15	173.65	8.965	
7,409.89	6,987.00	6,977.14	6,976.00	29.23	147.80	90.00	-340.77	-154.93	1,564.73	1,391.08	173.65	9.011	
7,500.00	6,987.00	6,977.14	6,976.00	29.85	147.80	90.00	-340.77	-154.93	1,637.94	1,464.26	173.67	9.431	
7,600.00	6,987.00	6,977.14	6,976.00	30.61	147.80	90.00	-340.77	-154.93	1,721.06	1,547.36	173.70	9.908	
7,700.00	6,987.00	6,977.14	6,976.00	31.41	147.80	90.00	-340.77	-154.93	1,805.89	1,632.17	173.73	10.395	
7,800.00	6,987.00	6,977.14	6,976.00	32.27	147.80	90.00	-340.77	-154.93	1,892.21	1,718.45	173.75	10.890	
7,900.00	6,987.00	6,977.14	6,976.00	33.17	147.80	90.00	-340.77	-154.93	1,979.81	1,806.03	173.78	11.393	
8,000.00	6,987.00	6,977.14	6,976.00	34.12	147.80	90.00	-340.77	-154.93	2,068.54	1,894.73	173.81	11.901	
8,100.00	6,987.00	6,977.14	6,976.00	35.10	147.80	90.00	-340.77	-154.93	2,158.25	1,984.41	173.84	12.415	
8,200.00	6,987.00	6,977.14	6,976.00	36.12	147.80	90.00	-340.77	-154.93	2,248.83	2,074.96	173.87	12.934	
8,300.00	6,987.00	6,977.14	6,976.00	37.17	147.80	90.00	-340.77	-154.93	2,340.18	2,166.28	173.90	13.457	
8,314.89	6,987.00	6,977.14	6,976.00	37.33	147.80	90.00	-340.77	-154.93	2,353.85	2,179.94	173.90	13.535	
8,400.00	6,987.00	6,977.14	6,976.00	38.25	147.80	90.00	-340.77	-154.93	2,431.20	2,257.27	173.93	13.978	
8,500.00	6,987.00	6,977.14	6,976.00	39.35	147.80	90.00	-340.77	-154.93	2,519.98	2,346.02	173.96	14.486	
8,600.00	6,987.00	6,977.14	6,976.00	40.45	147.80	90.00	-340.77	-154.93	2,606.32	2,432.32	174.00	14.979	
8,700.00	6,987.00	6,977.14	6,976.00	41.56	147.80	90.00	-340.77	-154.93	2,690.04	2,516.01	174.04	15.457	

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 #692H
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 #692H	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		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			
8,800.00	6,987.00	6,977.14	6,976.00	42.66	147.80	90.00	-340.77	-154.93	2,771.01	2,596.92	174.08	15.918				
8,900.00	6,987.00	6,977.14	6,976.00	43.75	147.80	90.00	-340.77	-154.93	2,849.07	2,674.93	174.14	16.361				
9,000.00	6,987.00	6,977.14	6,976.00	44.83	147.80	90.00	-340.77	-154.93	2,924.09	2,749.90	174.19	16.787				
9,071.74	6,987.00	6,977.14	6,976.00	45.59	147.80	90.00	-340.77	-154.93	2,975.97	2,801.74	174.23	17.080				
9,100.00	6,987.00	6,977.14	6,976.00	45.89	147.80	90.00	-340.77	-154.93	2,996.15	2,821.90	174.25	17.195				
9,200.00	6,987.00	6,977.14	6,976.00	46.97	147.80	90.00	-340.77	-154.93	3,068.57	2,894.25	174.32	17.603				
9,300.00	6,987.00	6,977.14	6,976.00	48.07	147.80	90.00	-340.77	-154.93	3,142.51	2,968.12	174.39	18.020				
9,400.00	6,987.00	6,977.14	6,976.00	49.20	147.80	90.00	-340.77	-154.93	3,217.85	3,043.39	174.46	18.445				
9,500.00	6,987.00	6,977.14	6,976.00	50.36	147.80	90.00	-340.77	-154.93	3,294.51	3,119.98	174.53	18.876				
9,600.00	6,987.00	6,977.14	6,976.00	51.54	147.80	90.00	-340.77	-154.93	3,372.39	3,197.79	174.60	19.315				
9,700.00	6,987.00	6,977.14	6,976.00	52.74	147.80	90.00	-340.77	-154.93	3,451.41	3,276.73	174.67	19.759				
9,800.00	6,987.00	6,977.14	6,976.00	53.96	147.80	90.00	-340.77	-154.93	3,531.49	3,356.75	174.74	20.210				
9,900.00	6,987.00	6,977.14	6,976.00	55.21	147.80	90.00	-340.77	-154.93	3,612.57	3,437.75	174.81	20.665				
10,000.00	6,987.00	6,977.14	6,976.00	56.47	147.80	90.00	-340.77	-154.93	3,694.57	3,519.69	174.88	21.126				
10,100.00	6,987.00	6,977.14	6,976.00	57.75	147.80	90.00	-340.77	-154.93	3,777.44	3,602.49	174.95	21.591				
10,200.00	6,987.00	6,977.14	6,976.00	59.04	147.80	90.00	-340.77	-154.93	3,861.12	3,686.10	175.02	22.061				
10,300.00	6,987.00	6,977.14	6,976.00	60.35	147.80	90.00	-340.77	-154.93	3,945.56	3,770.48	175.09	22.535				
10,400.00	6,987.00	6,977.14	6,976.00	61.67	147.80	90.00	-340.77	-154.93	4,030.72	3,855.56	175.16	23.012				
10,500.00	6,987.00	6,977.14	6,976.00	63.01	147.80	90.00	-340.77	-154.93	4,116.54	3,941.32	175.22	23.493				
10,600.00	6,987.00	6,977.14	6,976.00	64.36	147.80	90.00	-340.77	-154.93	4,202.99	4,027.70	175.29	23.977				
10,700.00	6,987.00	6,977.14	6,976.00	65.72	147.80	90.00	-340.77	-154.93	4,290.03	4,114.67	175.36	24.464				
10,800.00	6,987.00	6,977.14	6,976.00	67.09	147.80	90.00	-340.77	-154.93	4,377.62	4,202.19	175.42	24.954				
10,900.00	6,987.00	6,977.14	6,976.00	68.47	147.80	90.00	-340.77	-154.93	4,465.73	4,290.24	175.49	25.447				
11,000.00	6,987.00	6,977.14	6,976.00	69.86	147.80	90.00	-340.77	-154.93	4,554.34	4,378.78	175.56	25.942				
11,100.00	6,987.00	6,977.14	6,976.00	71.26	147.80	90.00	-340.77	-154.93	4,643.40	4,467.78	175.62	26.440				
11,200.00	6,987.00	6,977.14	6,976.00	72.67	147.80	90.00	-340.77	-154.93	4,732.91	4,557.22	175.69	26.939				
11,300.00	6,987.00	6,977.14	6,976.00	74.09	147.80	90.00	-340.77	-154.93	4,822.82	4,647.07	175.75	27.441				
11,400.00	6,987.00	6,977.14	6,976.00	75.51	147.80	90.00	-340.77	-154.93	4,913.13	4,737.31	175.82	27.945				
11,500.00	6,987.00	6,977.14	6,976.00	76.94	147.80	90.00	-340.77	-154.93	5,003.80	4,827.92	175.88	28.450				
11,600.00	6,987.00	6,977.14	6,976.00	78.38	147.80	90.00	-340.77	-154.93	5,094.83	4,918.88	175.94	28.957				
11,700.00	6,987.00	6,977.14	6,976.00	79.82	147.80	90.00	-340.77	-154.93	5,186.18	5,010.17	176.01	29.465				
11,800.00	6,987.00	6,977.14	6,976.00	81.27	147.80	90.00	-340.77	-154.93	5,277.85	5,101.78	176.07	29.975				
11,900.00	6,987.00	6,977.14	6,976.00	82.73	147.80	90.00	-340.77	-154.93	5,369.81	5,193.68	176.14	30.487				
12,000.00	6,987.00	6,977.14	6,976.00	84.19	147.80	90.00	-340.77	-154.93	5,462.06	5,285.86	176.20	30.999				
12,100.00	6,987.00	6,977.14	6,976.00	85.66	147.80	90.00	-340.77	-154.93	5,554.58	5,378.31	176.26	31.513				
12,200.00	6,987.00	6,977.14	6,976.00	87.13	147.80	90.00	-340.77	-154.93	5,647.35	5,471.02	176.33	32.027				
12,300.00	6,987.00	6,977.14	6,976.00	88.61	147.80	90.00	-340.77	-154.93	5,740.36	5,563.97	176.39	32.543				
12,400.00	6,987.00	6,977.14	6,976.00	90.09	147.80	90.00	-340.77	-154.93	5,833.61	5,657.15	176.46	33.060				
12,500.00	6,987.00	6,977.14	6,976.00	91.57	147.80	90.00	-340.77	-154.93	5,927.07	5,750.55	176.52	33.577				
12,600.00	6,987.00	6,977.14	6,976.00	93.06	147.80	90.00	-340.77	-154.93	6,020.75	5,844.16	176.59	34.095				
12,700.00	6,987.00	6,977.14	6,976.00	94.55	147.80	90.00	-340.77	-154.93	6,114.62	5,937.97	176.65	34.614				
12,800.00	6,987.00	6,977.14	6,976.00	96.05	147.80	90.00	-340.77	-154.93	6,208.69	6,031.97	176.71	35.134				
12,900.00	6,987.00	6,977.14	6,976.00	97.55	147.80	90.00	-340.77	-154.93	6,302.94	6,126.16	176.78	35.654				
13,000.00	6,987.00	6,977.14	6,976.00	99.05	147.80	90.00	-340.77	-154.93	6,397.36	6,220.52	176.84	36.175				
13,100.00	6,987.00	6,977.14	6,976.00	100.56	147.80	90.00	-340.77	-154.93	6,491.95	6,315.04	176.91	36.696				
13,200.00	6,987.00	6,977.14	6,976.00	102.07	147.80	90.00	-340.77	-154.93	6,586.70	6,409.73	176.97	37.218				
13,300.00	6,987.00	6,977.14	6,976.00	103.58	147.80	90.00	-340.77	-154.93	6,681.61	6,504.57	177.04	37.741				
13,400.00	6,987.00	6,977.14	6,976.00	105.09	147.80	90.00	-340.77	-154.93	6,776.66	6,599.55	177.11	38.263				
13,500.00	6,987.00	6,977.14	6,976.00	106.61	147.80	90.00	-340.77	-154.93	6,871.85	6,694.68	177.17	38.786				
13,600.00	6,987.00	6,977.14	6,976.00	108.13	147.80	90.00	-340.77	-154.93	6,967.17	6,789.94	177.24	39.309				
13,700.00	6,987.00	6,977.14	6,976.00	109.65	147.80	90.00	-340.77	-154.93	7,062.63	6,885.32	177.31	39.833				
13,800.00	6,987.00	6,977.14	6,976.00	111.18	147.80	90.00	-340.77	-154.93	7,158.21	6,980.84	177.37	40.357				

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 #692H
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 #692H	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		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	6,987.00	6,977.14	6,976.00	112.71	147.80	90.00	-340.77	-154.93	7,253.91	7,076.47	177.44	40.881	
14,000.00	6,987.00	6,977.14	6,976.00	114.23	147.80	90.00	-340.77	-154.93	7,349.72	7,172.21	177.51	41.405	
14,100.00	6,987.00	6,977.14	6,976.00	115.77	147.80	90.00	-340.77	-154.93	7,445.64	7,268.07	177.58	41.929	
14,200.00	6,987.00	6,977.14	6,976.00	117.30	147.80	90.00	-340.77	-154.93	7,541.67	7,364.03	177.65	42.454	
14,300.00	6,987.00	6,977.14	6,976.00	118.83	147.80	90.00	-340.77	-154.93	7,637.80	7,460.09	177.71	42.978	
14,400.00	6,987.00	6,977.14	6,976.00	120.37	147.80	90.00	-340.77	-154.93	7,734.03	7,556.25	177.78	43.503	
14,500.00	6,987.00	6,977.14	6,976.00	121.91	147.80	90.00	-340.77	-154.93	7,830.35	7,652.50	177.85	44.027	
14,600.00	6,987.00	6,977.14	6,976.00	123.45	147.80	90.00	-340.77	-154.93	7,926.77	7,748.85	177.92	44.552	
14,700.00	6,987.00	6,977.14	6,976.00	124.99	147.80	90.00	-340.77	-154.93	8,023.27	7,845.28	177.99	45.076	
14,800.00	6,987.00	6,977.14	6,976.00	126.53	147.80	90.00	-340.77	-154.93	8,119.86	7,941.79	178.06	45.601	
14,900.00	6,987.00	6,977.14	6,976.00	128.08	147.80	90.00	-340.77	-154.93	8,216.53	8,038.39	178.13	46.125	
15,000.00	6,987.00	6,977.14	6,976.00	129.63	147.80	90.00	-340.77	-154.93	8,313.27	8,135.07	178.21	46.650	
15,100.00	6,987.00	6,977.14	6,976.00	131.17	147.80	90.00	-340.77	-154.93	8,410.10	8,231.82	178.28	47.174	
15,200.00	6,987.00	6,977.14	6,976.00	132.72	147.80	90.00	-340.77	-154.93	8,506.99	8,328.64	178.35	47.698	
15,300.00	6,987.00	6,977.14	6,976.00	134.27	147.80	90.00	-340.77	-154.93	8,603.96	8,425.54	178.42	48.222	
15,400.00	6,987.00	6,977.14	6,976.00	135.83	147.80	90.00	-340.77	-154.93	8,701.00	8,522.50	178.50	48.746	
15,500.00	6,987.00	6,977.14	6,976.00	137.38	147.80	90.00	-340.77	-154.93	8,798.10	8,619.53	178.57	49.270	
15,600.00	6,987.00	6,977.14	6,976.00	138.93	147.80	90.00	-340.77	-154.93	8,895.27	8,716.62	178.64	49.793	
15,700.00	6,987.00	6,977.14	6,976.00	140.49	147.80	90.00	-340.77	-154.93	8,992.50	8,813.78	178.72	50.317	
15,800.00	6,987.00	6,977.14	6,976.00	142.04	147.80	90.00	-340.77	-154.93	9,089.79	8,910.99	178.79	50.840	
15,900.00	6,987.00	6,977.14	6,976.00	143.60	147.80	90.00	-340.77	-154.93	9,187.13	9,008.27	178.87	51.362	
16,000.00	6,987.00	6,977.14	6,976.00	145.16	147.80	90.00	-340.77	-154.93	9,284.54	9,105.59	178.94	51.885	
16,100.00	6,987.00	6,977.14	6,976.00	146.72	147.80	90.00	-340.77	-154.93	9,382.00	9,202.98	179.02	52.407	
16,200.00	6,987.00	6,977.14	6,976.00	148.28	147.80	90.00	-340.77	-154.93	9,479.51	9,300.41	179.10	52.929	
16,300.00	6,987.00	6,977.14	6,976.00	149.84	147.80	90.00	-340.77	-154.93	9,577.07	9,397.90	179.17	53.451	
16,400.00	6,987.00	6,977.14	6,976.00	151.40	147.80	90.00	-340.77	-154.93	9,674.68	9,495.43	179.25	53.973	
16,500.00	6,987.00	6,977.14	6,976.00	152.97	147.80	90.00	-340.77	-154.93	9,772.34	9,593.01	179.33	54.494	
16,600.00	6,987.00	6,977.14	6,976.00	154.53	147.80	90.00	-340.77	-154.93	9,870.05	9,690.64	179.41	55.015	
16,700.00	6,987.00	6,977.14	6,976.00	156.10	147.80	90.00	-340.77	-154.93	9,967.80	9,788.32	179.49	55.535	
16,800.00	6,987.00	6,977.14	6,976.00	157.66	147.80	90.00	-340.77	-154.93	10,065.60	9,886.04	179.57	56.055	
16,900.00	6,987.00	6,977.14	6,976.00	159.23	147.80	90.00	-340.77	-154.93	10,163.44	9,983.80	179.65	56.575	
17,000.00	6,987.00	6,977.14	6,976.00	160.80	147.80	90.00	-340.77	-154.93	10,261.32	10,081.60	179.73	57.094	
17,100.00	6,987.00	6,977.14	6,976.00	162.36	147.80	90.00	-340.77	-154.93	10,359.25	10,179.44	179.81	57.613	
17,200.00	6,987.00	6,977.14	6,976.00	163.93	147.80	90.00	-340.77	-154.93	10,457.21	10,277.32	179.89	58.132	
17,300.00	6,987.00	6,977.14	6,976.00	165.50	147.80	90.00	-340.77	-154.93	10,555.21	10,375.24	179.97	58.650	
17,400.00	6,987.00	6,977.14	6,976.00	167.07	147.80	90.00	-340.77	-154.93	10,653.24	10,473.19	180.05	59.168	
17,500.00	6,987.00	6,977.14	6,976.00	168.64	147.80	90.00	-340.77	-154.93	10,751.32	10,571.19	180.13	59.686	
17,600.00	6,987.00	6,977.14	6,976.00	170.21	147.80	90.00	-340.77	-154.93	10,849.43	10,669.21	180.22	60.203	
17,700.00	6,987.00	6,977.14	6,976.00	171.78	147.80	90.00	-340.77	-154.93	10,947.57	10,767.27	180.30	60.719	
17,800.00	6,987.00	6,977.14	6,976.00	173.36	147.80	90.00	-340.77	-154.93	11,045.74	10,865.36	180.38	61.235	
17,900.00	6,987.00	6,977.14	6,976.00	174.93	147.80	90.00	-340.77	-154.93	11,143.95	10,963.49	180.47	61.751	
18,000.00	6,987.00	6,977.14	6,976.00	176.50	147.80	90.00	-340.77	-154.93	11,242.19	11,061.64	180.55	62.266	
18,100.00	6,987.00	6,977.14	6,976.00	178.08	147.80	90.00	-340.77	-154.93	11,340.46	11,159.83	180.64	62.781	
18,200.00	6,987.00	6,977.14	6,976.00	179.65	147.80	90.00	-340.77	-154.93	11,438.76	11,258.04	180.72	63.295	
18,300.00	6,987.00	6,977.14	6,976.00	181.23	147.80	90.00	-340.77	-154.93	11,537.09	11,356.29	180.81	63.809	
18,400.00	6,987.00	6,977.14	6,976.00	182.80	147.80	90.00	-340.77	-154.93	11,635.45	11,454.56	180.89	64.323	
18,500.00	6,987.00	6,977.14	6,976.00	184.38	147.80	90.00	-340.77	-154.93	11,733.84	11,552.86	180.98	64.835	
18,600.00	6,987.00	6,977.14	6,976.00	185.96	147.80	90.00	-340.77	-154.93	11,832.25	11,651.19	181.07	65.348	
18,700.00	6,987.00	6,977.14	6,976.00	187.53	147.80	90.00	-340.77	-154.93	11,930.69	11,749.54	181.15	65.860	
18,800.00	6,987.00	6,977.14	6,976.00	189.11	147.80	90.00	-340.77	-154.93	12,029.16	11,847.92	181.24	66.371	
18,900.00	6,987.00	6,977.14	6,976.00	190.69	147.80	90.00	-340.77	-154.93	12,127.65	11,946.32	181.33	66.882	
19,000.00	6,987.00	6,977.14	6,976.00	192.27	147.80	90.00	-340.77	-154.93	12,226.16	12,044.74	181.42	67.392	

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 #692H
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 #692H	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
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		
19,100.00	6,987.00	6,977.14	6,976.00	193.85	147.80	90.00	-340.77	-154.93	12,324.70	12,143.19	181.51	67.902		
19,200.00	6,987.00	6,977.14	6,976.00	195.43	147.80	90.00	-340.77	-154.93	12,423.26	12,241.67	181.60	68.411		
19,255.69	6,987.00	6,977.14	6,976.00	196.31	147.80	90.00	-340.77	-154.93	12,478.16	12,296.52	181.65	68.695		
19,300.00	6,987.00	6,977.14	6,976.00	197.01	147.80	90.00	-340.77	-154.93	12,521.85	12,340.16	181.69	68.920		
19,400.00	6,987.00	6,977.14	6,976.00	198.59	147.80	90.00	-340.77	-154.93	12,620.46	12,438.68	181.78	69.428		
19,468.80	6,987.00	6,977.14	6,976.00	199.49	147.80	90.00	-340.77	-154.93	12,688.31	12,502.03	186.29	68.112		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	48.92	48.92	0.00	0.06	-68.95	2,451.25	-6,368.93	6,824.38				
100.00	100.00	1,249.36	1,232.68	0.25	3.54	-69.97	2,306.74	-6,327.03	6,818.69	6,815.04	3.65	1,867.402	
200.00	200.00	1,311.61	1,293.02	0.61	3.82	-70.07	2,292.14	-6,322.41	6,803.36	6,799.20	4.16	1,637.037	
300.00	300.00	1,430.44	1,408.07	0.97	4.40	-70.28	2,263.66	-6,313.84	6,788.13	6,783.15	4.99	1,361.707	
400.00	400.00	1,531.00	1,505.30	1.33	4.91	-70.45	2,239.08	-6,306.48	6,772.70	6,766.93	5.77	1,174.272	
500.00	500.00	1,594.00	1,566.21	1.68	5.21	-70.56	2,223.63	-6,301.92	6,757.45	6,751.08	6.37	1,060.043	
600.00	600.00	1,658.00	1,628.34	2.04	5.48	-70.67	2,208.96	-6,297.53	6,743.03	6,736.06	6.96	968.630	
700.00	700.00	1,696.02	1,665.38	2.40	5.64	-70.73	2,200.76	-6,295.06	6,729.31	6,721.85	7.46	902.549	
800.00	799.98	1,792.66	1,759.56	2.76	6.06	-64.76	2,179.95	-6,288.92	6,715.26	6,707.08	8.18	820.452	
900.00	899.84	1,934.45	1,897.52	3.12	6.72	-65.34	2,148.62	-6,279.59	6,699.40	6,690.28	9.12	734.213	
1,000.00	999.45	2,074.91	2,033.69	3.48	7.40	-66.01	2,115.42	-6,270.40	6,681.81	6,671.72	10.09	662.259	
1,100.00	1,098.70	2,213.55	2,167.84	3.85	8.08	-66.76	2,082.01	-6,259.90	6,661.68	6,650.63	11.05	602.904	
1,153.80	1,151.90	2,265.25	2,217.80	4.04	8.35	-67.13	2,069.27	-6,256.06	6,650.40	6,638.92	11.48	579.263	
1,200.00	1,197.53	2,307.57	2,258.68	4.21	8.56	-67.27	2,058.78	-6,252.91	6,640.56	6,628.72	11.84	560.951	
1,300.00	1,296.27	2,383.65	2,332.32	4.59	8.91	-67.50	2,040.58	-6,247.12	6,619.50	6,606.97	12.53	528.401	
1,400.00	1,395.02	2,456.41	2,402.81	4.97	9.24	-67.72	2,023.39	-6,241.71	6,598.87	6,585.67	13.21	499.668	
1,500.00	1,493.77	2,539.00	2,482.80	5.36	9.65	-67.98	2,003.69	-6,235.77	6,578.57	6,564.62	13.95	471.473	
1,600.00	1,592.52	2,601.00	2,542.96	5.74	9.93	-68.17	1,989.36	-6,231.42	6,558.79	6,544.19	14.60	449.094	
1,700.00	1,691.27	2,664.00	2,604.23	6.14	10.21	-68.36	1,975.33	-6,227.19	6,539.67	6,524.42	15.25	428.846	
1,800.00	1,790.01	2,758.05	2,695.71	6.53	10.63	-68.64	1,954.44	-6,220.81	6,520.71	6,504.69	16.02	407.009	
1,900.00	1,888.76	2,873.11	2,807.62	6.92	11.14	-68.99	1,928.88	-6,213.03	6,501.96	6,485.08	16.88	385.086	
2,000.00	1,987.51	2,994.03	2,925.09	7.32	11.72	-69.36	1,901.45	-6,204.54	6,483.03	6,465.23	17.80	364.314	
2,100.00	2,086.26	3,091.35	3,019.47	7.72	12.18	-69.67	1,878.82	-6,197.44	6,463.85	6,445.23	18.62	347.194	
2,200.00	2,185.01	3,154.82	3,081.09	8.11	12.46	-69.86	1,864.34	-6,192.87	6,445.05	6,425.77	19.28	334.221	
2,300.00	2,283.75	3,199.05	3,124.12	8.51	12.65	-70.00	1,854.52	-6,189.87	6,426.99	6,407.11	19.87	323.385	
2,400.00	2,382.50	3,229.00	3,153.32	8.91	12.78	-70.09	1,848.15	-6,187.97	6,409.86	6,389.44	20.41	314.028	
2,500.00	2,481.25	3,291.00	3,214.03	9.31	13.02	-70.27	1,836.06	-6,184.45	6,393.74	6,372.69	21.05	303.720	
2,600.00	2,580.00	3,327.47	3,249.87	9.71	13.16	-70.37	1,829.59	-6,182.54	6,378.45	6,356.85	21.59	295.378	
2,700.00	2,678.75	3,387.16	3,308.63	10.11	13.37	-70.53	1,819.59	-6,179.43	6,363.81	6,341.61	22.21	286.574	
2,800.00	2,777.49	3,417.00	3,338.06	10.52	13.47	-70.61	1,814.83	-6,177.97	6,349.99	6,327.27	22.72	279.432	
2,900.00	2,876.24	3,480.00	3,400.32	10.92	13.67	-70.77	1,805.57	-6,175.56	6,337.27	6,313.94	23.34	271.576	
3,000.00	2,974.99	3,505.71	3,425.78	11.32	13.75	-70.83	1,802.04	-6,174.81	6,325.43	6,301.59	23.83	265.389	
3,100.00	3,073.74	3,603.05	3,522.21	11.72	14.05	-71.07	1,789.08	-6,171.82	6,314.06	6,289.52	24.53	257.368	
3,200.00	3,172.49	3,670.00	3,588.67	12.13	14.23	-71.23	1,781.38	-6,169.53	6,302.92	6,277.79	25.13	250.855	
3,300.00	3,271.23	3,732.00	3,650.34	12.53	14.39	-71.36	1,775.34	-6,167.61	6,292.49	6,266.80	25.69	244.917	
3,400.00	3,369.98	3,760.50	3,678.73	12.93	14.45	-71.42	1,773.00	-6,166.90	6,282.97	6,256.79	26.17	240.056	
3,500.00	3,468.73	3,801.25	3,719.39	13.34	14.54	-71.50	1,770.33	-6,166.08	6,274.44	6,247.77	26.67	235.221	
3,600.00	3,567.48	3,856.00	3,774.07	13.74	14.64	-71.60	1,767.63	-6,165.22	6,266.75	6,239.56	27.19	230.492	
3,700.00	3,666.23	3,908.00	3,826.01	14.14	14.73	-71.69	1,765.34	-6,164.54	6,259.64	6,231.95	27.70	226.016	
3,800.00	3,764.97	4,045.98	3,963.85	14.55	14.97	-71.93	1,759.33	-6,162.76	6,252.33	6,223.97	28.36	220.479	
3,900.00	3,863.72	4,142.05	4,059.82	14.95	15.14	-72.09	1,755.22	-6,161.53	6,245.24	6,216.30	28.95	215.755	
4,000.00	3,962.47	4,238.15	4,155.83	15.36	15.31	-72.26	1,751.16	-6,160.33	6,238.24	6,208.71	29.53	211.222	
4,100.00	4,061.22	4,334.27	4,251.86	15.76	15.48	-72.42	1,747.16	-6,159.14	6,231.33	6,201.21	30.12	206.868	
4,200.00	4,159.97	4,430.41	4,347.91	16.17	15.65	-72.59	1,743.22	-6,157.97	6,224.50	6,193.79	30.71	202.682	
4,300.00	4,258.71	4,526.58	4,444.00	16.57	15.82	-72.76	1,739.34	-6,156.81	6,217.76	6,186.46	31.30	198.656	
4,400.00	4,357.46	4,622.77	4,540.11	16.98	16.00	-72.92	1,735.51	-6,155.68	6,211.10	6,179.22	31.89	194.781	
4,500.00	4,456.21	4,718.99	4,636.25	17.38	16.17	-73.09	1,731.74	-6,154.56	6,204.53	6,172.05	32.48	191.048	
4,600.00	4,554.96	4,815.23	4,732.41	17.79	16.34	-73.26	1,728.02	-6,153.45	6,198.04	6,164.98	33.06	187.450	
4,700.00	4,653.71	4,911.50	4,828.60	18.19	16.51	-73.42	1,724.37	-6,152.37	6,191.64	6,157.98	33.65	183.980	
4,800.00	4,752.45	5,007.79	4,924.82	18.60	16.68	-73.59	1,720.77	-6,151.30	6,185.32	6,151.07	34.24	180.632	
4,900.00	4,851.20	5,104.11	5,021.06	19.00	16.85	-73.75	1,717.23	-6,150.25	6,179.08	6,144.25	34.83	177.399	
5,000.00	4,949.95	5,200.44	5,117.33	19.41	17.02	-73.92	1,713.74	-6,149.21	6,172.93	6,137.50	35.42	174.275	

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 #692H
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 #692H	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		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				
5,100.00	5,048.70	5,296.81	5,213.63	19.81	17.19	-74.08	1,710.32	-6,148.19	6,166.85	6,130.84	36.01	171.255				
5,200.00	5,147.45	5,393.19	5,309.95	20.22	17.37	-74.25	1,706.95	-6,147.19	6,160.86	6,124.27	36.60	168.335				
5,300.00	5,246.19	5,489.60	5,406.30	20.62	17.54	-74.41	1,703.64	-6,146.21	6,154.96	6,117.77	37.19	165.509				
5,400.00	5,344.94	5,586.04	5,502.67	21.03	17.71	-74.58	1,700.38	-6,145.24	6,149.13	6,111.36	37.78	162.773				
5,455.76	5,400.00	5,639.81	5,556.42	21.25	17.81	-74.67	1,698.59	-6,144.71	6,145.92	6,107.81	38.11	161.285				
5,500.00	5,443.72	5,682.52	5,599.10	21.43	17.88	-74.72	1,697.19	-6,144.29	6,143.43	6,105.07	38.37	160.128				
5,600.00	5,542.71	5,779.30	5,695.82	21.83	18.05	-74.82	1,694.04	-6,143.36	6,138.20	6,099.25	38.95	157.606				
5,700.00	5,641.93	5,876.38	5,792.84	22.22	18.23	-74.91	1,690.94	-6,142.44	6,133.49	6,093.97	39.52	155.208				
5,800.00	5,741.36	5,973.73	5,890.14	22.60	18.40	-74.99	1,687.89	-6,141.53	6,129.29	6,089.21	40.08	152.927				
5,900.00	5,840.96	6,071.31	5,987.68	22.97	18.58	-75.06	1,684.90	-6,140.64	6,125.60	6,084.97	40.63	150.756				
6,000.00	5,940.70	6,169.11	6,085.43	23.33	18.75	-75.12	1,681.96	-6,139.77	6,122.40	6,081.23	41.18	148.691				
6,100.00	6,040.55	6,267.08	6,183.35	23.68	18.93	-75.16	1,679.07	-6,138.91	6,119.70	6,077.99	41.71	146.725				
6,200.00	6,140.48	6,365.18	6,281.41	24.02	19.10	-75.20	1,676.24	-6,138.07	6,117.47	6,075.24	42.23	144.852				
6,300.00	6,240.45	6,463.40	6,379.58	24.35	19.28	-75.23	1,673.47	-6,137.25	6,115.72	6,072.97	42.75	143.068				
6,408.05	6,348.50	6,569.60	6,485.74	24.69	19.47	104.76	1,670.54	-6,136.37	6,114.37	6,071.09	43.28	141.280				
6,416.14	6,356.60	6,577.56	6,493.69	24.72	19.48	-178.31	1,670.32	-6,136.31	6,114.33	6,071.01	43.32	141.149	CC, ES			
6,450.00	6,390.43	6,610.81	6,526.93	24.82	19.54	-148.11	1,669.42	-6,136.04	6,115.03	6,071.55	43.49	140.623				
6,500.00	6,440.15	6,659.67	6,575.77	24.99	19.63	-144.35	1,668.11	-6,135.65	6,118.66	6,074.92	43.75	139.866				
6,550.00	6,489.32	6,707.96	6,624.04	25.16	19.71	-143.00	1,666.83	-6,135.27	6,125.36	6,081.34	44.02	139.156				
6,600.00	6,537.64	6,755.38	6,671.45	25.34	19.80	-142.03	1,665.59	-6,134.90	6,135.08	6,090.79	44.30	138.501				
6,650.00	6,584.80	6,801.65	6,717.71	25.52	19.88	-141.10	1,664.39	-6,134.55	6,147.79	6,103.21	44.58	137.904				
6,700.00	6,630.52	6,846.49	6,762.52	25.71	19.96	-140.08	1,663.24	-6,134.20	6,163.41	6,118.54	44.87	137.368				
6,750.00	6,674.51	6,889.60	6,805.62	25.89	20.04	-138.92	1,662.14	-6,133.88	6,181.85	6,136.70	45.16	136.896				
6,800.00	6,716.50	6,930.73	6,846.74	26.08	20.11	-137.56	1,661.11	-6,133.57	6,203.03	6,157.59	45.45	136.489				
6,850.00	6,756.24	6,969.63	6,885.62	26.28	20.18	-135.98	1,660.14	-6,133.29	6,226.83	6,181.09	45.74	136.148				
6,900.00	6,793.47	7,006.05	6,922.03	26.48	20.25	-134.13	1,659.25	-6,133.02	6,253.11	6,207.09	46.02	135.871				
6,950.00	6,827.97	7,039.78	6,955.75	26.69	20.31	-131.98	1,658.42	-6,132.77	6,281.73	6,235.42	46.31	135.658				
7,000.00	6,859.53	7,070.59	6,986.55	26.91	20.36	-129.47	1,657.68	-6,132.55	6,312.53	6,265.94	46.58	135.507				
7,050.00	6,887.94	7,098.31	7,014.26	27.14	20.41	-126.56	1,657.01	-6,132.36	6,345.32	6,298.46	46.86	135.416				
7,100.00	6,913.05	7,122.76	7,038.70	27.38	20.46	-123.20	1,656.43	-6,132.18	6,379.93	6,332.80	47.12	135.383	SF			
7,150.00	6,934.68	7,143.79	7,059.73	27.64	20.49	-119.34	1,655.93	-6,132.03	6,416.15	6,368.76	47.38	135.405				
7,200.00	6,952.71	7,161.26	7,077.20	27.92	20.52	-114.93	1,655.52	-6,131.91	6,453.76	6,406.12	47.64	135.479				
7,250.00	6,967.02	7,175.08	7,091.01	28.21	20.55	-109.97	1,655.19	-6,131.82	6,492.54	6,444.66	47.88	135.601				
7,300.00	6,977.54	7,185.16	7,101.08	28.52	20.57	-104.46	1,654.96	-6,131.75	6,532.26	6,484.15	48.11	135.768				
7,350.00	6,984.18	7,191.42	7,107.34	28.83	20.58	-98.49	1,654.81	-6,131.70	6,572.68	6,524.34	48.34	135.976				
7,400.00	6,986.92	7,193.84	7,109.76	29.16	20.58	-92.17	1,654.75	-6,131.68	6,613.54	6,564.99	48.55	136.220				
7,409.89	6,987.00	7,193.86	7,109.78	29.23	20.58	-90.89	1,654.75	-6,131.68	6,621.65	6,573.06	48.59	136.272				
7,500.00	6,987.00	7,193.36	7,109.28	29.85	20.58	-90.88	1,654.77	-6,131.69	6,695.80	6,646.84	48.97	136.746				
7,600.00	6,987.00	7,192.80	7,108.72	30.61	20.58	-90.87	1,654.78	-6,131.69	6,778.54	6,729.15	49.39	137.256				
7,700.00	6,987.00	7,192.24	7,108.16	31.41	20.58	-90.87	1,654.79	-6,131.70	6,861.74	6,811.93	49.81	137.753				
7,800.00	6,987.00	7,191.68	7,107.61	32.27	20.58	-90.86	1,654.80	-6,131.70	6,945.38	6,895.14	50.24	138.243				
7,900.00	6,987.00	7,191.12	7,107.05	33.17	20.58	-90.85	1,654.82	-6,131.70	7,029.45	6,978.78	50.67	138.727				
8,000.00	6,987.00	7,190.57	7,106.49	34.12	20.58	-90.84	1,654.83	-6,131.71	7,113.93	7,062.83	51.10	139.208				
8,100.00	6,987.00	7,190.01	7,105.93	35.10	20.58	-90.83	1,654.84	-6,131.71	7,198.81	7,147.28	51.53	139.689				
8,200.00	6,987.00	7,189.45	7,105.37	36.12	20.58	-90.82	1,654.86	-6,131.72	7,284.07	7,232.11	51.97	140.172				
8,300.00	6,987.00	7,188.89	7,104.82	37.17	20.57	-90.81	1,654.87	-6,131.72	7,369.71	7,317.31	52.39	140.658				
8,314.89	6,987.00	7,188.81	7,104.73	37.33	20.57	-90.81	1,654.87	-6,131.72	7,382.49	7,330.03	52.46	140.731				
8,400.00	6,987.00	7,188.39	7,104.32	38.25	20.57	-90.90	1,654.88	-6,131.72	7,456.94	7,404.13	52.81	141.213				
8,500.00	6,987.00	7,188.06	7,103.98	39.35	20.57	-91.04	1,654.89	-6,131.72	7,547.59	7,494.42	53.17	141.954				
8,600.00	6,987.00	7,187.89	7,103.81	40.45	20.57	-91.25	1,654.89	-6,131.73	7,641.14	7,587.66	53.48	142.886				
8,700.00	6,987.00	7,187.88	7,103.81	41.56	20.57	-91.58	1,654.89	-6,131.73	7,737.04	7,683.31	53.73	144.006				
8,800.00	6,987.00	7,188.05	7,103.97	42.66	20.57	-92.20	1,654.89	-6,131.72	7,834.75	7,780.83	53.92	145.307				

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 #692H
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 #692H	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)
8,900.00	6,987.00	7,188.38	7,104.31	43.75	20.57	-93.65	1,654.88	-6,131.72	7,933.73	7,879.68	54.05	146.784	
9,000.00	6,987.00	7,188.88	7,104.80	44.83	20.57	-100.86	1,654.87	-6,131.72	8,033.46	7,979.34	54.12	148.427	
9,071.74	6,987.00	7,189.34	7,105.26	45.59	20.57	113.68	1,654.86	-6,131.72	8,105.19	8,051.05	54.14	149.704	
9,100.00	6,987.00	7,189.53	7,105.46	45.89	20.58	113.75	1,654.85	-6,131.71	8,133.44	8,079.30	54.14	150.223	
9,200.00	6,987.00	7,190.23	7,106.15	46.97	20.58	114.02	1,654.84	-6,131.71	8,233.43	8,179.28	54.15	152.057	
9,300.00	6,987.00	7,190.92	7,106.85	48.07	20.58	114.28	1,654.82	-6,131.71	8,333.42	8,279.26	54.15	153.888	
9,400.00	6,987.00	7,191.62	7,107.54	49.20	20.58	114.55	1,654.81	-6,131.70	8,433.40	8,379.24	54.16	155.716	
9,500.00	6,987.00	7,192.31	7,108.23	50.36	20.58	114.81	1,654.79	-6,131.70	8,533.39	8,479.22	54.17	157.540	
9,600.00	6,987.00	7,193.00	7,108.93	51.54	20.58	115.07	1,654.77	-6,131.69	8,633.38	8,579.20	54.17	159.361	
9,700.00	6,987.00	7,193.70	7,109.62	52.74	20.58	115.33	1,654.76	-6,131.69	8,733.37	8,679.18	54.18	161.179	
9,800.00	6,987.00	7,194.39	7,110.31	53.96	20.58	115.59	1,654.74	-6,131.68	8,833.35	8,779.16	54.19	162.993	
9,900.00	6,987.00	7,195.08	7,111.00	55.21	20.59	115.85	1,654.73	-6,131.68	8,933.34	8,879.14	54.21	164.804	
10,000.00	6,987.00	7,195.77	7,111.70	56.47	20.59	116.10	1,654.71	-6,131.67	9,033.33	8,979.11	54.22	166.611	
10,100.00	6,987.00	7,196.47	7,112.39	57.75	20.59	116.36	1,654.69	-6,131.67	9,133.32	9,079.09	54.23	168.415	
10,200.00	6,987.00	7,197.16	7,113.08	59.04	20.59	116.61	1,654.68	-6,131.66	9,233.31	9,179.06	54.25	170.215	
10,300.00	6,987.00	7,197.85	7,113.77	60.35	20.59	116.86	1,654.66	-6,131.66	9,333.30	9,279.04	54.26	172.011	
10,400.00	6,987.00	7,198.54	7,114.46	61.67	20.59	117.11	1,654.64	-6,131.65	9,433.28	9,379.01	54.28	173.803	
10,500.00	6,987.00	7,199.23	7,115.15	63.01	20.59	117.36	1,654.63	-6,131.65	9,533.27	9,478.98	54.29	175.591	
10,600.00	6,987.00	7,199.92	7,115.85	64.36	20.59	117.61	1,654.61	-6,131.64	9,633.26	9,578.95	54.31	177.375	
10,700.00	6,987.00	7,200.61	7,116.54	65.72	20.60	117.86	1,654.60	-6,131.64	9,733.25	9,678.92	54.33	179.155	
10,800.00	6,987.00	7,201.31	7,117.23	67.09	20.60	118.10	1,654.58	-6,131.63	9,833.24	9,778.89	54.35	180.932	
10,900.00	6,987.00	7,202.00	7,117.92	68.47	20.60	118.35	1,654.56	-6,131.63	9,933.23	9,878.86	54.37	182.704	
11,000.00	6,987.00	7,202.69	7,118.61	69.86	20.60	118.59	1,654.55	-6,131.62	10,033.22	9,978.83	54.39	184.471	
11,100.00	6,987.00	7,203.37	7,119.30	71.26	20.60	118.83	1,654.53	-6,131.62	10,133.21	10,078.80	54.41	186.235	
11,200.00	6,987.00	7,204.06	7,119.98	72.67	20.60	119.07	1,654.52	-6,131.61	10,233.20	10,178.77	54.43	187.994	
11,300.00	6,987.00	7,204.75	7,120.67	74.09	20.60	119.31	1,654.50	-6,131.61	10,333.19	10,278.74	54.46	189.749	
11,400.00	6,987.00	7,205.44	7,121.36	75.51	20.60	119.55	1,654.48	-6,131.60	10,433.18	10,378.70	54.48	191.500	
11,500.00	6,987.00	7,206.13	7,122.05	76.94	20.61	119.79	1,654.47	-6,131.60	10,533.17	10,478.67	54.51	193.246	
11,600.00	6,987.00	7,206.82	7,122.74	78.38	20.61	120.02	1,654.45	-6,131.60	10,633.17	10,578.63	54.53	194.987	
11,700.00	6,987.00	7,207.51	7,123.43	79.82	20.61	120.26	1,654.44	-6,131.59	10,733.16	10,678.60	54.56	196.724	
11,800.00	6,987.00	7,208.20	7,124.11	81.27	20.61	120.49	1,654.42	-6,131.59	10,833.15	10,778.56	54.59	198.456	
11,900.00	6,987.00	7,208.88	7,124.80	82.73	20.61	120.72	1,654.40	-6,131.58	10,933.14	10,878.52	54.62	200.184	
12,000.00	6,987.00	7,209.57	7,125.49	84.19	20.61	120.95	1,654.39	-6,131.58	11,033.13	10,978.49	54.64	201.906	
12,100.00	6,987.00	7,210.26	7,126.18	85.66	20.61	121.18	1,654.37	-6,131.57	11,133.12	11,078.45	54.67	203.625	
12,200.00	6,987.00	7,210.94	7,126.86	87.13	20.61	121.41	1,654.36	-6,131.57	11,233.11	11,178.41	54.71	205.338	
12,300.00	6,987.00	7,211.63	7,127.55	88.61	20.61	121.64	1,654.34	-6,131.56	11,333.10	11,278.37	54.74	207.046	
12,400.00	6,987.00	7,212.32	7,128.24	90.09	20.62	121.86	1,654.32	-6,131.56	11,433.10	11,378.33	54.77	208.750	
12,500.00	6,987.00	7,213.00	7,128.92	91.57	20.62	122.08	1,654.31	-6,131.55	11,533.09	11,478.29	54.80	210.448	
12,600.00	6,987.00	7,213.69	7,129.61	93.06	20.62	122.31	1,654.29	-6,131.55	11,633.08	11,578.24	54.84	212.142	
12,700.00	6,987.00	7,214.37	7,130.29	94.55	20.62	122.53	1,654.28	-6,131.54	11,733.07	11,678.20	54.87	213.830	
12,800.00	6,987.00	7,215.06	7,130.98	96.05	20.62	122.75	1,654.26	-6,131.54	11,833.06	11,778.16	54.91	215.513	
12,900.00	6,987.00	7,215.75	7,131.66	97.55	20.62	122.97	1,654.24	-6,131.53	11,933.06	11,878.11	54.94	217.192	
13,000.00	6,987.00	7,216.43	7,132.35	99.05	20.62	123.19	1,654.23	-6,131.53	12,033.05	11,978.07	54.98	218.865	
13,100.00	6,987.00	7,217.11	7,133.03	100.56	20.62	123.40	1,654.21	-6,131.52	12,133.04	12,078.02	55.02	220.533	
13,200.00	6,987.00	7,217.80	7,133.72	102.07	20.63	123.62	1,654.20	-6,131.52	12,233.03	12,177.98	55.06	222.195	
13,300.00	6,987.00	7,218.48	7,134.40	103.58	20.63	123.83	1,654.18	-6,131.51	12,333.03	12,277.93	55.09	223.853	
13,400.00	6,987.00	7,219.17	7,135.08	105.09	20.63	124.05	1,654.17	-6,131.51	12,433.02	12,377.89	55.13	225.505	
13,500.00	6,987.00	7,219.85	7,135.77	106.61	20.63	124.26	1,654.15	-6,131.51	12,533.01	12,477.84	55.17	227.151	
13,600.00	6,987.00	7,220.53	7,136.45	108.13	20.63	124.47	1,654.13	-6,131.50	12,633.01	12,577.79	55.22	228.793	
13,700.00	6,987.00	7,221.22	7,137.13	109.65	20.63	124.68	1,654.12	-6,131.50	12,733.00	12,677.74	55.26	230.428	
13,800.00	6,987.00	7,221.90	7,137.81	111.18	20.63	124.89	1,654.10	-6,131.49	12,832.99	12,777.69	55.30	232.059	
13,900.00	6,987.00	7,222.58	7,138.50	112.71	20.63	125.10	1,654.09	-6,131.49	12,932.98	12,877.64	55.34	233.684	

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 #692H
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 #692H	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		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)			
14,000.00	6,987.00	7,223.26	7,139.18	114.23	20.64	125.30	1,654.07	-6,131.48	13,032.98	12,977.59	55.39	235.303	
14,100.00	6,987.00	7,223.95	7,139.86	115.77	20.64	125.51	1,654.06	-6,131.48	13,132.97	13,077.54	55.43	236.917	
14,200.00	6,987.00	7,224.63	7,140.54	117.30	20.64	125.71	1,654.04	-6,131.47	13,232.96	13,177.49	55.48	238.525	
14,300.00	6,987.00	7,225.31	7,141.22	118.83	20.64	125.91	1,654.02	-6,131.47	13,332.96	13,277.43	55.52	240.128	
14,400.00	6,987.00	7,225.99	7,141.90	120.37	20.64	126.12	1,654.01	-6,131.46	13,432.95	13,377.38	55.57	241.725	
14,500.00	6,987.00	7,226.67	7,142.59	121.91	20.64	126.32	1,653.99	-6,131.46	13,532.94	13,477.32	55.62	243.316	
14,600.00	6,987.00	7,227.35	7,143.27	123.45	20.64	126.52	1,653.98	-6,131.45	13,632.94	13,577.27	55.67	244.902	
14,700.00	6,987.00	7,228.03	7,143.95	124.99	20.64	126.71	1,653.96	-6,131.45	13,732.93	13,677.22	55.72	246.482	
14,800.00	6,987.00	7,228.71	7,144.63	126.53	20.65	126.91	1,653.94	-6,131.44	13,832.92	13,777.16	55.77	248.056	
14,900.00	6,987.00	7,229.39	7,145.31	128.08	20.65	127.11	1,653.93	-6,131.44	13,932.92	13,877.10	55.82	249.625	
15,000.00	6,987.00	7,230.07	7,145.99	129.63	20.65	127.30	1,653.91	-6,131.43	14,032.91	13,977.05	55.87	251.187	
15,100.00	6,987.00	7,230.75	7,146.66	131.17	20.65	127.49	1,653.90	-6,131.43	14,132.91	14,076.99	55.92	252.744	
15,200.00	6,987.00	7,231.43	7,147.34	132.72	20.65	127.69	1,653.88	-6,131.43	14,232.90	14,176.93	55.97	254.295	
15,300.00	6,987.00	7,232.11	7,148.02	134.27	20.65	127.88	1,653.87	-6,131.42	14,332.89	14,276.87	56.02	255.841	
15,400.00	6,987.00	7,232.79	7,148.70	135.83	20.65	128.07	1,653.85	-6,131.42	14,432.89	14,376.81	56.08	257.380	
15,500.00	6,987.00	7,233.47	7,149.38	137.38	20.65	128.26	1,653.84	-6,131.41	14,532.88	14,476.75	56.13	258.913	
15,600.00	6,987.00	7,234.15	7,150.06	138.93	20.66	128.45	1,653.82	-6,131.41	14,632.88	14,576.69	56.18	260.441	
15,700.00	6,987.00	7,234.82	7,150.74	140.49	20.66	128.63	1,653.80	-6,131.40	14,732.87	14,676.63	56.24	261.963	
15,800.00	6,987.00	7,235.50	7,151.41	142.04	20.66	128.82	1,653.79	-6,131.40	14,832.86	14,776.57	56.30	263.478	
15,900.00	6,987.00	7,236.18	7,152.09	143.60	20.66	129.00	1,653.77	-6,131.39	14,932.86	14,876.50	56.35	264.988	
16,000.00	6,987.00	7,236.86	7,152.77	145.16	20.66	129.19	1,653.76	-6,131.39	15,032.85	14,976.44	56.41	266.492	
16,100.00	6,987.00	7,237.53	7,153.44	146.72	20.66	129.37	1,653.74	-6,131.38	15,132.85	15,076.38	56.47	267.990	
16,200.00	6,987.00	7,238.21	7,154.12	148.28	20.66	129.55	1,653.73	-6,131.38	15,232.84	15,176.31	56.53	269.482	
16,300.00	6,987.00	7,238.89	7,154.80	149.84	20.66	129.73	1,653.71	-6,131.37	15,332.83	15,276.25	56.59	270.967	
16,400.00	6,987.00	7,239.56	7,155.47	151.40	20.66	129.91	1,653.69	-6,131.37	15,432.83	15,376.18	56.65	272.447	
16,500.00	6,987.00	7,240.24	7,156.15	152.97	20.67	130.09	1,653.68	-6,131.37	15,532.82	15,476.12	56.71	273.921	
16,600.00	6,987.00	7,240.92	7,156.82	154.53	20.67	130.27	1,653.66	-6,131.36	15,632.82	15,576.05	56.77	275.389	
16,700.00	6,987.00	7,241.59	7,157.50	156.10	20.67	130.44	1,653.65	-6,131.36	15,732.81	15,675.99	56.83	276.851	
16,800.00	6,987.00	7,242.27	7,158.17	157.66	20.67	130.62	1,653.63	-6,131.35	15,832.81	15,775.92	56.89	278.306	
16,900.00	6,987.00	7,242.94	7,158.85	159.23	20.67	130.79	1,653.62	-6,131.35	15,932.80	15,875.85	56.95	279.756	
17,000.00	6,987.00	7,243.62	7,159.52	160.80	20.67	130.97	1,653.60	-6,131.34	16,032.80	15,975.78	57.02	281.199	
17,100.00	6,987.00	7,244.29	7,160.20	162.36	20.67	131.14	1,653.59	-6,131.34	16,132.79	16,075.71	57.08	282.637	
17,200.00	6,987.00	7,244.96	7,160.87	163.93	20.67	131.31	1,653.57	-6,131.33	16,232.79	16,175.64	57.14	284.068	
17,300.00	6,987.00	7,245.64	7,161.55	165.50	20.68	131.48	1,653.55	-6,131.33	16,332.78	16,275.57	57.21	285.494	
17,400.00	6,987.00	7,246.31	7,162.22	167.07	20.68	131.65	1,653.54	-6,131.32	16,432.78	16,375.50	57.27	286.913	
17,500.00	6,987.00	7,246.99	7,162.89	168.64	20.68	131.82	1,653.52	-6,131.32	16,532.77	16,475.43	57.34	288.326	
17,600.00	6,987.00	7,247.66	7,163.57	170.21	20.68	131.98	1,653.51	-6,131.31	16,632.77	16,575.36	57.41	289.733	
17,700.00	6,987.00	7,248.33	7,164.24	171.78	20.68	132.15	1,653.49	-6,131.31	16,732.76	16,675.29	57.47	291.134	
17,800.00	6,987.00	7,249.00	7,164.91	173.36	20.68	132.32	1,653.48	-6,131.31	16,832.76	16,775.21	57.54	292.529	
17,900.00	6,987.00	7,249.68	7,165.58	174.93	20.68	132.48	1,653.46	-6,131.30	16,932.75	16,875.14	57.61	293.918	
18,000.00	6,987.00	7,250.35	7,166.26	176.50	20.68	132.64	1,653.45	-6,131.30	17,032.75	16,975.07	57.68	295.300	
18,100.00	6,987.00	7,251.02	7,166.93	178.08	20.69	132.81	1,653.43	-6,131.29	17,132.74	17,074.99	57.75	296.677	
18,200.00	6,987.00	7,251.69	7,167.60	179.65	20.69	132.97	1,653.42	-6,131.29	17,232.74	17,174.92	57.82	298.048	
18,300.00	6,987.00	7,252.36	7,168.27	181.23	20.69	133.13	1,653.40	-6,131.28	17,332.73	17,274.84	57.89	299.412	
18,400.00	6,987.00	7,253.04	7,168.94	182.80	20.69	133.29	1,653.38	-6,131.28	17,432.73	17,374.77	57.96	300.770	
18,500.00	6,987.00	7,253.71	7,169.61	184.38	20.69	133.45	1,653.37	-6,131.27	17,532.72	17,474.69	58.03	302.122	
18,600.00	6,987.00	7,254.38	7,170.28	185.96	20.69	133.60	1,653.35	-6,131.27	17,632.72	17,574.61	58.10	303.469	
18,700.00	6,987.00	7,255.05	7,170.95	187.53	20.69	133.76	1,653.34	-6,131.26	17,732.71	17,674.53	58.18	304.809	
18,800.00	6,987.00	7,255.72	7,171.62	189.11	20.69	133.92	1,653.32	-6,131.26	17,832.71	17,774.46	58.25	306.143	
18,900.00	6,987.00	7,256.39	7,172.29	190.69	20.70	134.07	1,653.31	-6,131.26	17,932.70	17,874.38	58.32	307.471	
19,000.00	6,987.00	7,257.06	7,172.96	192.27	20.70	134.23	1,653.29	-6,131.25	18,032.70	17,974.30	58.40	308.792	
19,100.00	6,987.00	7,257.73	7,173.63	193.85	20.70	134.38	1,653.28	-6,131.25	18,132.69	18,074.22	58.47	310.108	

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 #692H
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 #692H	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		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		
19,200.00	6,987.00	7,258.40	7,174.30	195.43	20.70	134.53	1,653.26	-6,131.24	18,232.69	18,174.14	58.55	311.418		
19,255.69	6,987.00	7,258.77	7,174.67	196.31	20.70	134.62	1,653.25	-6,131.24	18,288.38	18,229.79	58.59	312.145		
19,300.00	6,987.00	7,259.07	7,174.97	197.01	20.70	134.68	1,653.25	-6,131.24	18,332.68	18,274.06	58.62	312.722		
19,400.00	6,987.00	7,259.74	7,175.64	198.59	20.70	134.83	1,653.23	-6,131.23	18,432.68	18,373.98	58.70	314.019		
19,468.80	6,987.00	7,260.20	7,176.10	199.49	20.70	134.94	1,653.22	-6,131.23	18,501.48	18,438.42	63.06	293.417		

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 #692H
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 #692H	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		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	-117.66	-914.05	-1,743.65	1,970.95				
100.00	100.00	6.00	6.00	0.25	0.13	-117.66	-914.05	-1,743.65	1,968.70	1,968.32	0.38	5,196.975	
200.00	200.00	106.00	106.00	0.61	2.24	-117.66	-914.05	-1,743.65	1,968.70	1,965.86	2.85	691.386	
281.73	281.73	187.72	187.71	0.90	3.84	-117.65	-913.65	-1,743.65	1,968.52	1,963.77	4.75	414.819	
300.00	300.00	204.54	204.53	0.97	4.17	-117.65	-913.66	-1,743.65	1,968.52	1,963.38	5.14	382.878	
400.00	400.00	306.02	306.00	1.33	6.15	-117.66	-914.05	-1,743.65	1,968.70	1,961.23	7.48	263.323	
500.00	500.00	406.02	406.00	1.68	8.05	-117.66	-914.05	-1,743.65	1,968.70	1,958.97	9.73	202.245	
600.00	600.00	506.02	506.00	2.04	9.95	-117.66	-914.05	-1,743.65	1,968.70	1,956.71	11.99	164.166	
641.05	641.05	546.90	546.88	2.19	10.73	-117.65	-913.50	-1,743.65	1,968.44	1,955.53	12.92	152.407 CC	
700.00	700.00	604.95	604.93	2.40	11.83	-117.65	-913.54	-1,743.65	1,968.46	1,954.23	14.23	138.335	
800.00	799.98	703.40	703.37	2.76	13.70	-111.30	-913.73	-1,743.65	1,969.19	1,952.73	16.46	119.652	
900.00	899.84	805.89	805.84	3.12	15.67	-111.42	-914.05	-1,743.65	1,971.25	1,952.45	18.79	104.897 ES	
1,000.00	999.45	905.50	905.45	3.48	17.78	-111.59	-914.05	-1,743.65	1,974.45	1,953.19	21.26	92.882	
1,100.00	1,098.70	1,004.75	1,004.70	3.85	19.88	-111.83	-914.05	-1,743.65	1,978.99	1,955.27	23.72	83.434	
1,153.80	1,151.90	1,057.96	1,057.90	4.04	21.00	-111.99	-914.05	-1,743.65	1,982.00	1,956.96	25.04	79.146	
1,200.00	1,197.53	1,102.61	1,102.55	4.21	21.95	-112.16	-913.19	-1,743.65	1,984.36	1,958.20	26.16	75.861	
1,300.00	1,296.27	1,199.07	1,199.01	4.59	23.98	-112.57	-913.41	-1,743.65	1,990.53	1,961.96	28.57	69.668	
1,400.00	1,395.02	1,295.47	1,295.40	4.97	26.02	-112.98	-913.84	-1,743.65	1,996.93	1,965.94	30.99	64.442	
1,500.00	1,493.77	1,399.91	1,399.77	5.36	28.35	-113.42	-914.05	-1,743.65	2,003.31	1,969.61	33.70	59.450	
1,600.00	1,592.52	1,498.65	1,498.52	5.74	30.60	-113.83	-914.05	-1,743.65	2,009.70	1,973.36	36.34	55.305	
1,700.00	1,691.27	1,596.58	1,596.43	6.14	32.84	-114.20	-912.71	-1,743.65	2,015.50	1,976.53	38.96	51.730	
1,800.00	1,790.01	1,690.99	1,690.83	6.53	35.00	-114.59	-912.98	-1,743.65	2,022.23	1,980.72	41.51	48.721	
1,900.00	1,888.76	1,785.29	1,785.12	6.92	37.15	-114.99	-913.64	-1,743.65	2,029.28	1,985.23	44.05	46.068	
2,000.00	1,987.51	1,893.76	1,893.51	7.32	39.64	-115.44	-914.05	-1,743.65	2,036.27	1,989.35	46.93	43.391	
2,100.00	2,086.26	1,992.51	1,992.26	7.72	41.91	-115.83	-914.05	-1,743.65	2,043.17	1,993.58	49.59	41.202	
2,200.00	2,185.01	2,090.17	2,089.90	8.11	44.16	-116.19	-912.75	-1,743.65	2,049.45	1,997.23	52.23	39.242	
2,300.00	2,283.75	2,184.14	2,183.87	8.51	46.32	-116.57	-913.04	-1,743.65	2,056.70	2,001.93	54.78	37.547	
2,400.00	2,382.50	2,278.00	2,277.71	8.91	48.47	-116.95	-913.73	-1,743.65	2,064.29	2,006.96	57.33	36.010	
2,500.00	2,481.25	2,387.62	2,387.25	9.31	51.07	-117.39	-914.05	-1,743.65	2,071.72	2,011.41	60.32	34.348	
2,600.00	2,580.00	2,486.37	2,486.00	9.71	53.44	-117.77	-914.05	-1,743.65	2,079.10	2,016.02	63.07	32.963	
2,700.00	2,678.75	2,583.85	2,583.46	10.11	55.77	-118.12	-912.71	-1,743.65	2,085.80	2,019.99	65.80	31.698	
2,800.00	2,777.49	2,677.66	2,677.26	10.52	58.02	-118.48	-913.00	-1,743.65	2,093.53	2,025.09	68.44	30.589	
2,900.00	2,876.24	2,771.35	2,770.95	10.92	60.26	-118.85	-913.68	-1,743.65	2,101.59	2,030.51	71.08	29.568	
3,000.00	2,974.99	2,881.50	2,880.99	11.32	62.98	-119.27	-914.05	-1,743.65	2,109.52	2,035.34	74.18	28.436	
3,100.00	3,073.74	2,980.25	2,979.74	11.72	65.44	-119.64	-914.05	-1,743.65	2,117.35	2,040.31	77.04	27.482	
3,200.00	3,172.49	3,079.00	3,078.49	12.13	67.91	-120.01	-914.05	-1,743.65	2,125.27	2,045.37	79.90	26.598	
3,300.00	3,271.23	3,172.99	3,172.45	12.53	70.26	-120.32	-912.35	-1,743.65	2,132.26	2,049.62	82.64	25.801	
3,400.00	3,369.98	3,266.14	3,265.58	12.93	72.58	-120.67	-912.90	-1,743.65	2,140.70	2,055.34	85.36	25.079	
3,500.00	3,468.73	3,359.16	3,358.59	13.34	74.91	-121.03	-913.84	-1,743.65	2,149.48	2,061.41	88.07	24.406	
3,600.00	3,567.48	3,474.19	3,473.48	13.74	77.33	-121.45	-914.05	-1,743.65	2,157.82	2,066.93	90.89	23.742	
3,700.00	3,666.23	3,572.93	3,572.23	14.14	79.33	-121.80	-914.05	-1,743.65	2,166.16	2,072.88	93.29	23.221	
3,800.00	3,764.97	3,671.68	3,670.97	14.55	81.34	-122.15	-914.05	-1,743.65	2,174.59	2,078.91	95.68	22.727	
3,900.00	3,863.72	3,770.43	3,769.72	14.95	83.35	-122.50	-914.05	-1,743.65	2,183.10	2,085.02	98.08	22.258	
4,000.00	3,962.47	3,869.18	3,868.47	15.36	85.36	-122.84	-914.05	-1,743.65	2,191.69	2,091.21	100.48	21.812	
4,100.00	4,061.22	3,967.93	3,967.22	15.76	87.37	-123.18	-914.05	-1,743.65	2,200.36	2,097.48	102.88	21.387	
4,200.00	4,159.97	4,066.67	4,066.97	16.17	89.37	-123.52	-914.05	-1,743.65	2,209.11	2,103.83	105.28	20.983	
4,300.00	4,258.71	4,165.42	4,164.71	16.57	91.38	-123.86	-914.05	-1,743.65	2,217.94	2,110.26	107.68	20.598	
4,400.00	4,357.46	4,264.17	4,263.46	16.98	93.39	-124.19	-914.05	-1,743.65	2,226.84	2,116.77	110.07	20.230	
4,500.00	4,456.21	4,362.92	4,362.21	17.38	95.40	-124.53	-914.05	-1,743.65	2,235.82	2,123.35	112.47	19.879	
4,600.00	4,554.96	4,461.67	4,460.96	17.79	97.41	-124.85	-914.05	-1,743.65	2,244.88	2,130.01	114.87	19.543	
4,700.00	4,653.71	4,560.41	4,559.71	18.19	99.41	-125.18	-914.05	-1,743.65	2,254.00	2,136.74	117.27	19.221	
4,800.00	4,752.45	4,659.16	4,658.45	18.60	101.42	-125.50	-914.05	-1,743.65	2,263.21	2,143.54	119.66	18.913	

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 #692H
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 #692H	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	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)			
4,900.00	4,851.20	4,757.91	4,757.20	19.00	103.43	-125.83	-914.05	-1,743.65	2,272.48	2,150.42	122.06	18.618	
5,000.00	4,949.95	4,786.00	4,785.10	19.41	104.00	-125.92	-914.05	-1,743.65	2,282.92	2,160.00	122.93	18.572	SF
5,100.00	5,048.70	4,786.00	4,785.10	19.81	104.00	-125.92	-914.05	-1,743.65	2,297.51	2,174.51	123.00	18.680	
5,200.00	5,147.45	4,786.00	4,785.10	20.22	104.00	-125.92	-914.05	-1,743.65	2,316.32	2,193.47	122.85	18.854	
5,300.00	5,246.19	4,786.00	4,785.10	20.62	104.00	-125.92	-914.05	-1,743.65	2,339.26	2,216.75	122.51	19.094	
5,400.00	5,344.94	4,786.00	4,785.10	21.03	104.00	-125.92	-914.05	-1,743.65	2,366.21	2,244.23	121.98	19.398	
5,455.76	5,400.00	4,786.00	4,785.10	21.25	104.00	-125.92	-914.05	-1,743.65	2,382.93	2,261.32	121.61	19.595	
5,500.00	5,443.72	4,786.00	4,785.10	21.43	104.00	-126.03	-914.05	-1,743.65	2,396.93	2,275.66	121.28	19.764	
5,600.00	5,542.71	4,786.00	4,785.10	21.83	104.00	-126.32	-914.05	-1,743.65	2,430.58	2,310.16	120.41	20.185	
5,700.00	5,641.93	4,786.00	4,785.10	22.22	104.00	-126.64	-914.05	-1,743.65	2,466.86	2,347.46	119.40	20.661	
5,800.00	5,741.36	4,786.00	4,785.10	22.60	104.00	-126.97	-914.05	-1,743.65	2,505.66	2,387.41	118.25	21.190	
5,900.00	5,840.96	4,786.00	4,785.10	22.97	104.00	-127.33	-914.05	-1,743.65	2,546.85	2,429.87	116.98	21.772	
6,000.00	5,940.70	4,786.00	4,785.10	23.33	104.00	-127.72	-914.05	-1,743.65	2,590.31	2,474.70	115.60	22.407	
6,100.00	6,040.55	4,786.00	4,785.10	23.68	104.00	-128.12	-914.05	-1,743.65	2,635.90	2,521.76	114.14	23.094	
6,200.00	6,140.48	4,786.00	4,785.10	24.02	104.00	-128.55	-914.05	-1,743.65	2,683.51	2,570.91	112.60	23.833	
6,300.00	6,240.45	4,786.00	4,785.10	24.35	104.00	-128.99	-914.05	-1,743.65	2,733.01	2,622.02	110.99	24.624	
6,408.05	6,348.50	4,786.00	4,785.10	24.69	104.00	50.51	-914.05	-1,743.65	2,788.50	2,679.32	109.19	25.539	
6,450.00	6,390.43	4,786.00	4,785.10	24.82	104.00	156.92	-914.05	-1,743.65	2,811.77	2,703.28	108.49	25.917	
6,500.00	6,440.15	4,786.00	4,785.10	24.99	104.00	159.46	-914.05	-1,743.65	2,842.82	2,735.11	107.71	26.393	
6,550.00	6,489.32	4,786.00	4,785.10	25.16	104.00	159.15	-914.05	-1,743.65	2,877.20	2,770.21	106.99	26.892	
6,600.00	6,537.64	4,786.00	4,785.10	25.34	104.00	157.91	-914.05	-1,743.65	2,914.59	2,808.25	106.34	27.409	
6,650.00	6,584.80	4,786.00	4,785.10	25.52	104.00	155.95	-914.05	-1,743.65	2,954.63	2,848.88	105.75	27.940	
6,700.00	6,630.52	4,786.00	4,785.10	25.71	104.00	153.16	-914.05	-1,743.65	2,996.99	2,891.75	105.23	28.479	
6,750.00	6,674.51	4,786.00	4,785.10	25.89	104.00	149.24	-914.05	-1,743.65	3,041.31	2,936.51	104.80	29.020	
6,800.00	6,716.50	4,786.00	4,785.10	26.08	104.00	143.66	-914.05	-1,743.65	3,087.23	2,982.79	104.44	29.559	
6,850.00	6,756.24	4,786.00	4,785.10	26.28	104.00	135.50	-914.05	-1,743.65	3,134.42	3,030.25	104.17	30.089	
6,900.00	6,793.47	4,786.00	4,785.10	26.48	104.00	123.39	-914.05	-1,743.65	3,182.53	3,078.55	103.98	30.607	
6,950.00	6,827.97	4,786.00	4,785.10	26.69	104.00	105.98	-914.05	-1,743.65	3,231.23	3,127.36	103.87	31.109	
7,000.00	6,859.53	4,786.00	4,785.10	26.91	104.00	84.44	-914.05	-1,743.65	3,280.19	3,176.36	103.84	31.590	
7,050.00	6,887.94	4,786.00	4,785.10	27.14	104.00	63.93	-914.05	-1,743.65	3,329.12	3,225.24	103.88	32.048	
7,100.00	6,913.05	4,786.00	4,785.10	27.38	104.00	48.43	-914.05	-1,743.65	3,377.72	3,273.73	104.00	32.479	
7,150.00	6,934.68	4,786.00	4,785.10	27.64	104.00	37.84	-914.05	-1,743.65	3,425.71	3,321.53	104.19	32.880	
7,200.00	6,952.71	4,786.00	4,785.10	27.92	104.00	30.64	-914.05	-1,743.65	3,472.83	3,368.38	104.44	33.251	
7,250.00	6,967.02	4,786.00	4,785.10	28.21	104.00	25.61	-914.05	-1,743.65	3,518.82	3,414.05	104.76	33.588	
7,300.00	6,977.54	4,786.00	4,785.10	28.52	104.00	21.96	-914.05	-1,743.65	3,563.45	3,458.30	105.15	33.890	
7,350.00	6,984.18	4,786.00	4,785.10	28.83	104.00	19.23	-914.05	-1,743.65	3,606.50	3,500.91	105.59	34.157	
7,400.00	6,986.92	4,786.00	4,785.10	29.16	104.00	17.13	-914.05	-1,743.65	3,647.76	3,541.68	106.08	34.387	
7,409.89	6,987.00	4,786.00	4,785.10	29.23	104.00	16.78	-914.05	-1,743.65	3,655.70	3,549.52	106.18	34.429	
7,500.00	6,987.00	4,786.00	4,785.10	29.85	104.00	16.78	-914.05	-1,743.65	3,728.03	3,620.90	107.13	34.800	
7,600.00	6,987.00	4,786.00	4,785.10	30.61	104.00	16.78	-914.05	-1,743.65	3,809.19	3,701.06	108.13	35.229	
7,700.00	6,987.00	4,786.00	4,785.10	31.41	104.00	16.78	-914.05	-1,743.65	3,891.22	3,782.15	109.07	35.675	
7,800.00	6,987.00	4,786.00	4,785.10	32.27	104.00	16.78	-914.05	-1,743.65	3,974.08	3,864.11	109.97	36.137	
7,900.00	6,987.00	4,786.00	4,785.10	33.17	104.00	16.78	-914.05	-1,743.65	4,057.71	3,946.88	110.83	36.613	
8,000.00	6,987.00	4,786.00	4,785.10	34.12	104.00	16.78	-914.05	-1,743.65	4,142.07	4,030.43	111.64	37.103	
8,100.00	6,987.00	4,786.00	4,785.10	35.10	104.00	16.78	-914.05	-1,743.65	4,227.11	4,114.70	112.41	37.606	
8,200.00	6,987.00	4,786.00	4,785.10	36.12	104.00	16.78	-914.05	-1,743.65	4,312.79	4,199.65	113.14	38.120	
8,300.00	6,987.00	4,786.00	4,785.10	37.17	104.00	16.78	-914.05	-1,743.65	4,399.07	4,285.24	113.83	38.644	
8,314.89	6,987.00	4,786.00	4,785.10	37.33	104.00	16.78	-914.05	-1,743.65	4,411.97	4,298.04	113.94	38.723	
8,400.00	6,987.00	4,786.00	4,785.10	38.25	104.00	22.29	-914.05	-1,743.65	4,485.53	4,371.03	114.49	39.177	
8,500.00	6,987.00	4,786.00	4,785.10	39.35	104.00	28.30	-914.05	-1,743.65	4,571.22	4,456.12	115.11	39.713	
8,600.00	6,987.00	4,786.00	4,785.10	40.45	104.00	33.73	-914.05	-1,743.65	4,655.79	4,540.11	115.68	40.246	
8,700.00	6,987.00	4,786.00	4,785.10	41.56	104.00	38.55	-914.05	-1,743.65	4,738.88	4,622.66	116.22	40.774	

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 #692H
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 #692H	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: Reference		95-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	
8,800.00	6,987.00	4,786.00	4,785.10	42.66	104.00	42.79	-914.05	-1,743.65	4,820.19	4,703.46	116.73	41.294		
8,900.00	6,987.00	4,786.00	4,785.10	43.75	104.00	46.48	-914.05	-1,743.65	4,899.40	4,782.20	117.21	41.801		
9,000.00	6,987.00	4,786.00	4,785.10	44.83	104.00	49.69	-914.05	-1,743.65	4,976.26	4,858.60	117.66	42.294		
9,071.74	6,987.00	4,786.00	4,785.10	45.59	104.00	51.73	-914.05	-1,743.65	5,029.79	4,911.82	117.97	42.636		
9,100.00	6,987.00	4,786.00	4,785.10	45.89	104.00	51.73	-914.05	-1,743.65	5,050.63	4,932.54	118.09	42.769		
9,200.00	6,987.00	4,786.00	4,785.10	46.97	104.00	51.73	-914.05	-1,743.65	5,124.97	5,006.45	118.52	43.241		
9,300.00	6,987.00	4,786.00	4,785.10	48.07	104.00	51.73	-914.05	-1,743.65	5,200.16	5,081.22	118.95	43.718		
9,400.00	6,987.00	4,786.00	4,785.10	49.20	104.00	51.73	-914.05	-1,743.65	5,276.18	5,156.81	119.37	44.200		
9,500.00	6,987.00	4,786.00	4,785.10	50.36	104.00	51.73	-914.05	-1,743.65	5,352.99	5,233.20	119.79	44.687		
9,600.00	6,987.00	4,786.00	4,785.10	51.54	104.00	51.73	-914.05	-1,743.65	5,430.55	5,310.35	120.20	45.179		
9,700.00	6,987.00	4,786.00	4,785.10	52.74	104.00	51.73	-914.05	-1,743.65	5,508.84	5,388.23	120.61	45.676		
9,800.00	6,987.00	4,786.00	4,785.10	53.96	104.00	51.73	-914.05	-1,743.65	5,587.82	5,466.81	121.01	46.177		
9,900.00	6,987.00	4,786.00	4,785.10	55.21	104.00	51.73	-914.05	-1,743.65	5,667.46	5,546.06	121.40	46.683		
10,000.00	6,987.00	4,786.00	4,785.10	56.47	104.00	51.73	-914.05	-1,743.65	5,747.74	5,625.95	121.79	47.193		
10,100.00	6,987.00	4,786.00	4,785.10	57.75	104.00	51.73	-914.05	-1,743.65	5,828.63	5,706.46	122.17	47.708		
10,200.00	6,987.00	4,786.00	4,785.10	59.04	104.00	51.73	-914.05	-1,743.65	5,910.10	5,787.56	122.55	48.227		
10,300.00	6,987.00	4,786.00	4,785.10	60.35	104.00	51.73	-914.05	-1,743.65	5,992.14	5,869.23	122.91	48.750		
10,400.00	6,987.00	4,786.00	4,785.10	61.67	104.00	51.73	-914.05	-1,743.65	6,074.71	5,951.44	123.28	49.278		
10,500.00	6,987.00	4,786.00	4,785.10	63.01	104.00	51.73	-914.05	-1,743.65	6,157.80	6,034.17	123.63	49.809		
10,600.00	6,987.00	4,786.00	4,785.10	64.36	104.00	51.73	-914.05	-1,743.65	6,241.39	6,117.41	123.98	50.343		
10,700.00	6,987.00	4,786.00	4,785.10	65.72	104.00	51.73	-914.05	-1,743.65	6,325.45	6,201.14	124.32	50.882		
10,800.00	6,987.00	4,786.00	4,785.10	67.09	104.00	51.73	-914.05	-1,743.65	6,409.97	6,285.32	124.65	51.424		
10,900.00	6,987.00	4,786.00	4,785.10	68.47	104.00	51.73	-914.05	-1,743.65	6,494.93	6,369.96	124.98	51.969		
11,000.00	6,987.00	4,786.00	4,785.10	69.86	104.00	51.73	-914.05	-1,743.65	6,580.32	6,455.02	125.30	52.517		
11,100.00	6,987.00	4,786.00	4,785.10	71.26	104.00	51.73	-914.05	-1,743.65	6,666.11	6,540.49	125.61	53.069		
11,200.00	6,987.00	4,786.00	4,785.10	72.67	104.00	51.73	-914.05	-1,743.65	6,752.29	6,626.37	125.92	53.623		
11,300.00	6,987.00	4,786.00	4,785.10	74.09	104.00	51.73	-914.05	-1,743.65	6,838.84	6,712.62	126.22	54.181		
11,400.00	6,987.00	4,786.00	4,785.10	75.51	104.00	51.73	-914.05	-1,743.65	6,925.76	6,799.24	126.52	54.741		
11,500.00	6,987.00	4,786.00	4,785.10	76.94	104.00	51.73	-914.05	-1,743.65	7,013.03	6,886.22	126.81	55.304		
11,600.00	6,987.00	4,786.00	4,785.10	78.38	104.00	51.73	-914.05	-1,743.65	7,100.63	6,973.54	127.09	55.870		
11,700.00	6,987.00	4,786.00	4,785.10	79.82	104.00	51.73	-914.05	-1,743.65	7,188.56	7,061.19	127.37	56.438		
11,800.00	6,987.00	4,786.00	4,785.10	81.27	104.00	51.73	-914.05	-1,743.65	7,276.80	7,149.15	127.65	57.008		
11,900.00	6,987.00	4,786.00	4,785.10	82.73	104.00	51.73	-914.05	-1,743.65	7,365.34	7,237.42	127.91	57.581		
12,000.00	6,987.00	4,786.00	4,785.10	84.19	104.00	51.73	-914.05	-1,743.65	7,454.17	7,325.99	128.18	58.155		
12,100.00	6,987.00	4,786.00	4,785.10	85.66	104.00	51.73	-914.05	-1,743.65	7,543.28	7,414.84	128.43	58.732		
12,200.00	6,987.00	4,786.00	4,785.10	87.13	104.00	51.73	-914.05	-1,743.65	7,632.65	7,503.97	128.69	59.311		
12,300.00	6,987.00	4,786.00	4,785.10	88.61	104.00	51.73	-914.05	-1,743.65	7,722.29	7,593.36	128.94	59.892		
12,400.00	6,987.00	4,786.00	4,785.10	90.09	104.00	51.73	-914.05	-1,743.65	7,812.18	7,683.00	129.18	60.475		
12,500.00	6,987.00	4,786.00	4,785.10	91.57	104.00	51.73	-914.05	-1,743.65	7,902.32	7,772.90	129.42	61.059		
12,600.00	6,987.00	4,786.00	4,785.10	93.06	104.00	51.73	-914.05	-1,743.65	7,992.69	7,863.03	129.66	61.646		
12,700.00	6,987.00	4,786.00	4,785.10	94.55	104.00	51.73	-914.05	-1,743.65	8,083.28	7,953.39	129.89	62.233		
12,800.00	6,987.00	4,786.00	4,785.10	96.05	104.00	51.73	-914.05	-1,743.65	8,174.10	8,043.98	130.11	62.822		
12,900.00	6,987.00	4,786.00	4,785.10	97.55	104.00	51.73	-914.05	-1,743.65	8,265.12	8,134.78	130.34	63.413		
13,000.00	6,987.00	4,786.00	4,785.10	99.05	104.00	51.73	-914.05	-1,743.65	8,356.35	8,225.80	130.56	64.005		
13,100.00	6,987.00	4,786.00	4,785.10	100.56	104.00	51.73	-914.05	-1,743.65	8,447.78	8,317.01	130.77	64.599		
13,200.00	6,987.00	4,786.00	4,785.10	102.07	104.00	51.73	-914.05	-1,743.65	8,539.41	8,408.42	130.99	65.193		
13,300.00	6,987.00	4,786.00	4,785.10	103.58	104.00	51.73	-914.05	-1,743.65	8,631.21	8,500.02	131.19	65.789		
13,400.00	6,987.00	4,786.00	4,785.10	105.09	104.00	51.73	-914.05	-1,743.65	8,723.20	8,591.80	131.40	66.386		
13,500.00	6,987.00	4,786.00	4,785.10	106.61	104.00	51.73	-914.05	-1,743.65	8,815.37	8,683.76	131.60	66.984		
13,600.00	6,987.00	4,786.00	4,785.10	108.13	104.00	51.73	-914.05	-1,743.65	8,907.70	8,775.89	131.80	67.583		
13,700.00	6,987.00	4,786.00	4,785.10	109.65	104.00	51.73	-914.05	-1,743.65	9,000.19	8,868.19	132.00	68.183		
13,800.00	6,987.00	4,786.00	4,785.10	111.18	104.00	51.73	-914.05	-1,743.65	9,092.85	8,960.65	132.19	68.784		

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 #692H
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 #692H	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)
13,900.00	6,987.00	4,786.00	4,785.10	112.71	104.00	51.73	-914.05	-1,743.65	9,185.66	9,053.27	132.38	69.386	
14,000.00	6,987.00	4,786.00	4,785.10	114.23	104.00	51.73	-914.05	-1,743.65	9,278.61	9,146.04	132.57	69.989	
14,100.00	6,987.00	4,786.00	4,785.10	115.77	104.00	51.73	-914.05	-1,743.65	9,371.72	9,238.96	132.76	70.592	
14,200.00	6,987.00	4,786.00	4,785.10	117.30	104.00	51.73	-914.05	-1,743.65	9,464.96	9,332.02	132.94	71.196	
14,300.00	6,987.00	4,786.00	4,785.10	118.83	104.00	51.73	-914.05	-1,743.65	9,558.34	9,425.22	133.12	71.801	
14,400.00	6,987.00	4,786.00	4,785.10	120.37	104.00	51.73	-914.05	-1,743.65	9,651.86	9,518.55	133.30	72.407	
14,500.00	6,987.00	4,786.00	4,785.10	121.91	104.00	51.73	-914.05	-1,743.65	9,745.50	9,612.02	133.48	73.013	
14,600.00	6,987.00	4,786.00	4,785.10	123.45	104.00	51.73	-914.05	-1,743.65	9,839.26	9,705.61	133.65	73.619	
14,700.00	6,987.00	4,786.00	4,785.10	124.99	104.00	51.73	-914.05	-1,743.65	9,933.15	9,799.33	133.82	74.226	
14,800.00	6,987.00	4,786.00	4,785.10	126.53	104.00	51.73	-914.05	-1,743.65	10,027.16	9,893.17	133.99	74.834	
14,900.00	6,987.00	4,786.00	4,785.10	128.08	104.00	51.73	-914.05	-1,743.65	10,121.28	9,987.12	134.16	75.441	
15,000.00	6,987.00	4,786.00	4,785.10	129.63	104.00	51.73	-914.05	-1,743.65	10,215.51	10,081.19	134.33	76.050	
15,100.00	6,987.00	4,786.00	4,785.10	131.17	104.00	51.73	-914.05	-1,743.65	10,309.86	10,175.37	134.49	76.658	
15,200.00	6,987.00	4,786.00	4,785.10	132.72	104.00	51.73	-914.05	-1,743.65	10,404.30	10,269.65	134.65	77.267	
15,300.00	6,987.00	4,786.00	4,785.10	134.27	104.00	51.73	-914.05	-1,743.65	10,498.85	10,364.04	134.81	77.877	
15,400.00	6,987.00	4,786.00	4,785.10	135.83	104.00	51.73	-914.05	-1,743.65	10,593.50	10,458.53	134.97	78.486	
15,500.00	6,987.00	4,786.00	4,785.10	137.38	104.00	51.73	-914.05	-1,743.65	10,688.25	10,553.12	135.13	79.096	
15,600.00	6,987.00	4,786.00	4,785.10	138.93	104.00	51.73	-914.05	-1,743.65	10,783.10	10,647.81	135.29	79.706	
15,700.00	6,987.00	4,786.00	4,785.10	140.49	104.00	51.73	-914.05	-1,743.65	10,878.03	10,742.59	135.44	80.316	
15,800.00	6,987.00	4,786.00	4,785.10	142.04	104.00	51.73	-914.05	-1,743.65	10,973.06	10,837.46	135.59	80.926	
15,900.00	6,987.00	4,786.00	4,785.10	143.60	104.00	51.73	-914.05	-1,743.65	11,068.17	10,932.42	135.75	81.536	
16,000.00	6,987.00	4,786.00	4,785.10	145.16	104.00	51.73	-914.05	-1,743.65	11,163.37	11,027.47	135.90	82.147	
16,100.00	6,987.00	4,786.00	4,785.10	146.72	104.00	51.73	-914.05	-1,743.65	11,258.65	11,122.60	136.04	82.757	
16,200.00	6,987.00	4,786.00	4,785.10	148.28	104.00	51.73	-914.05	-1,743.65	11,354.01	11,217.82	136.19	83.367	
16,300.00	6,987.00	4,786.00	4,785.10	149.84	104.00	51.73	-914.05	-1,743.65	11,449.45	11,313.11	136.34	83.978	
16,400.00	6,987.00	4,786.00	4,785.10	151.40	104.00	51.73	-914.05	-1,743.65	11,544.97	11,408.49	136.48	84.588	
16,500.00	6,987.00	4,786.00	4,785.10	152.97	104.00	51.73	-914.05	-1,743.65	11,640.57	11,503.94	136.63	85.199	
16,600.00	6,987.00	4,786.00	4,785.10	154.53	104.00	51.73	-914.05	-1,743.65	11,736.23	11,599.46	136.77	85.809	
16,700.00	6,987.00	4,786.00	4,785.10	156.10	104.00	51.73	-914.05	-1,743.65	11,831.97	11,695.06	136.91	86.419	
16,800.00	6,987.00	4,786.00	4,785.10	157.66	104.00	51.73	-914.05	-1,743.65	11,927.78	11,790.73	137.05	87.029	
16,900.00	6,987.00	4,786.00	4,785.10	159.23	104.00	51.73	-914.05	-1,743.65	12,023.66	11,886.47	137.19	87.639	
17,000.00	6,987.00	4,786.00	4,785.10	160.80	104.00	51.73	-914.05	-1,743.65	12,119.60	11,982.27	137.33	88.249	
17,100.00	6,987.00	4,786.00	4,785.10	162.36	104.00	51.73	-914.05	-1,743.65	12,215.61	12,078.14	137.47	88.859	
17,200.00	6,987.00	4,786.00	4,785.10	163.93	104.00	51.73	-914.05	-1,743.65	12,311.69	12,174.08	137.61	89.468	
17,300.00	6,987.00	4,786.00	4,785.10	165.50	104.00	51.73	-914.05	-1,743.65	12,407.82	12,270.07	137.75	90.077	
17,400.00	6,987.00	4,786.00	4,785.10	167.07	104.00	51.73	-914.05	-1,743.65	12,504.02	12,366.13	137.88	90.686	
17,500.00	6,987.00	4,786.00	4,785.10	168.64	104.00	51.73	-914.05	-1,743.65	12,600.27	12,462.25	138.02	91.295	
17,600.00	6,987.00	4,786.00	4,785.10	170.21	104.00	51.73	-914.05	-1,743.65	12,696.58	12,558.43	138.15	91.904	
17,700.00	6,987.00	4,786.00	4,785.10	171.78	104.00	51.73	-914.05	-1,743.65	12,792.95	12,654.67	138.28	92.512	
17,800.00	6,987.00	4,786.00	4,785.10	173.36	104.00	51.73	-914.05	-1,743.65	12,889.38	12,750.96	138.42	93.120	
17,900.00	6,987.00	4,786.00	4,785.10	174.93	104.00	51.73	-914.05	-1,743.65	12,985.86	12,847.31	138.55	93.727	
18,000.00	6,987.00	4,786.00	4,785.10	176.50	104.00	51.73	-914.05	-1,743.65	13,082.39	12,943.71	138.68	94.334	
18,100.00	6,987.00	4,786.00	4,785.10	178.08	104.00	51.73	-914.05	-1,743.65	13,178.97	13,040.16	138.81	94.941	
18,200.00	6,987.00	4,786.00	4,785.10	179.65	104.00	51.73	-914.05	-1,743.65	13,275.60	13,136.66	138.94	95.548	
18,300.00	6,987.00	4,786.00	4,785.10	181.23	104.00	51.73	-914.05	-1,743.65	13,372.29	13,233.22	139.07	96.154	
18,400.00	6,987.00	4,786.00	4,785.10	182.80	104.00	51.73	-914.05	-1,743.65	13,469.02	13,329.82	139.20	96.760	
18,500.00	6,987.00	4,786.00	4,785.10	184.38	104.00	51.73	-914.05	-1,743.65	13,565.80	13,426.47	139.33	97.365	
18,600.00	6,987.00	4,786.00	4,785.10	185.96	104.00	51.73	-914.05	-1,743.65	13,662.62	13,523.17	139.46	97.970	
18,700.00	6,987.00	4,786.00	4,785.10	187.53	104.00	51.73	-914.05	-1,743.65	13,759.49	13,619.91	139.58	98.575	
18,800.00	6,987.00	4,786.00	4,785.10	189.11	104.00	51.73	-914.05	-1,743.65	13,856.41	13,716.70	139.71	99.179	
18,900.00	6,987.00	4,786.00	4,785.10	190.69	104.00	51.73	-914.05	-1,743.65	13,953.37	13,813.53	139.84	99.782	
19,000.00	6,987.00	4,786.00	4,785.10	192.27	104.00	51.73	-914.05	-1,743.65	14,050.37	13,910.41	139.96	100.385	

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 #692H
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 #692H	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		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		
19,100.00	6,987.00	4,786.00	4,785.10	193.85	104.00	51.73	-914.05	-1,743.65	14,147.41	14,007.32	140.09	100.988		
19,200.00	6,987.00	4,786.00	4,785.10	195.43	104.00	51.73	-914.05	-1,743.65	14,244.50	14,104.28	140.22	101.590		
19,255.69	6,987.00	4,786.00	4,785.10	196.31	104.00	51.73	-914.05	-1,743.65	14,298.58	14,158.30	140.28	101.925		
19,300.00	6,987.00	4,786.00	4,785.10	197.01	104.00	51.73	-914.05	-1,743.65	14,341.62	14,201.28	140.34	102.192		
19,400.00	6,987.00	4,786.00	4,785.10	198.59	104.00	51.73	-914.05	-1,743.65	14,438.78	14,298.32	140.46	102.793		
19,468.80	6,987.00	4,786.00	4,785.10	199.49	104.00	51.73	-914.05	-1,743.65	14,505.66	14,361.78	143.88	100.817		

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 #692H
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 #692H	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	52.94	2,894.63	3,833.12	4,806.87				
100.00	100.00	0.00	0.00	0.25	0.00	52.94	2,894.63	3,833.12	4,804.06	4,803.80	0.25	N/A	
200.00	200.00	15.00	15.00	0.61	0.28	52.94	2,894.63	3,833.12	4,803.31	4,802.42	0.89	5,416.052	
300.00	300.00	115.00	115.00	0.97	2.13	52.94	2,894.63	3,833.12	4,803.31	4,800.21	3.09	1,552.581	
400.00	400.00	215.00	215.00	1.33	4.10	52.94	2,894.63	3,833.12	4,803.31	4,797.88	5.43	885.276	
500.00	500.00	318.46	318.46	1.68	6.27	52.94	2,894.88	3,833.12	4,803.45	4,795.50	7.96	603.798	
600.00	600.00	415.04	415.00	2.04	8.31	52.94	2,894.63	3,833.12	4,803.31	4,792.95	10.35	464.052	
700.00	700.00	515.04	515.00	2.40	10.52	52.94	2,894.63	3,833.12	4,803.31	4,790.39	12.92	371.789	
800.00	799.98	615.02	614.98	2.76	12.73	59.36	2,894.63	3,833.12	4,802.42	4,786.93	15.49	310.086	
900.00	899.84	714.88	714.84	3.12	14.93	59.46	2,894.63	3,833.12	4,799.75	4,781.70	18.05	265.870	
1,000.00	999.45	815.66	815.58	3.48	17.16	59.61	2,897.23	3,833.12	4,796.88	4,776.24	20.64	232.400	
1,100.00	1,098.70	925.30	925.21	3.85	19.59	59.86	2,896.99	3,833.12	4,790.57	4,767.14	23.43	204.481	
1,153.80	1,151.90	984.03	983.93	4.04	20.88	60.02	2,896.70	3,833.12	4,786.37	4,761.45	24.92	192.036	
1,200.00	1,197.53	1,034.36	1,034.26	4.21	22.00	60.11	2,896.36	3,833.12	4,782.51	4,756.31	26.21	182.485	
1,300.00	1,296.27	1,143.22	1,143.10	4.59	24.40	60.30	2,895.33	3,833.12	4,774.04	4,745.05	28.99	164.698	
1,400.00	1,395.02	1,210.22	1,210.02	4.97	25.86	60.41	2,894.63	3,833.12	4,765.63	4,734.81	30.82	154.617	
1,500.00	1,493.77	1,308.97	1,308.77	5.36	27.79	60.58	2,894.63	3,833.12	4,757.79	4,724.66	33.14	143.585	
1,600.00	1,592.52	1,407.72	1,407.52	5.74	29.73	60.74	2,894.63	3,833.12	4,749.99	4,714.54	35.45	133.984	
1,700.00	1,691.27	1,509.32	1,509.11	6.14	31.71	60.90	2,895.48	3,833.12	4,742.72	4,704.90	37.83	125.382	
1,800.00	1,790.01	1,615.24	1,615.03	6.53	33.79	61.08	2,895.24	3,833.12	4,734.86	4,694.58	40.29	117.530	
1,900.00	1,888.76	1,721.07	1,720.86	6.92	35.86	61.27	2,894.71	3,833.12	4,726.90	4,684.15	42.75	110.580	
2,000.00	1,987.51	1,802.76	1,802.51	7.32	37.57	61.40	2,894.63	3,833.12	4,719.17	4,674.32	44.85	105.214	
2,100.00	2,086.26	1,901.50	1,901.26	7.72	39.68	61.57	2,894.63	3,833.12	4,711.57	4,664.22	47.35	99.515	
2,200.00	2,185.01	2,000.25	2,000.01	8.11	41.78	61.74	2,894.63	3,833.12	4,704.01	4,654.17	49.84	94.385	
2,300.00	2,283.75	2,102.13	2,101.88	8.51	43.94	61.90	2,895.62	3,833.12	4,697.05	4,644.65	52.40	89.641	
2,400.00	2,382.50	2,206.71	2,206.45	8.91	46.17	62.08	2,895.39	3,833.12	4,689.44	4,634.42	55.02	85.236	
2,500.00	2,481.25	2,311.21	2,310.95	9.31	48.39	62.27	2,894.92	3,833.12	4,681.75	4,624.12	57.63	81.232	
2,600.00	2,580.00	2,395.34	2,395.00	9.71	50.15	62.41	2,894.63	3,833.12	4,674.17	4,614.38	59.79	78.176	
2,700.00	2,678.75	2,494.09	2,493.75	10.11	52.17	62.58	2,894.63	3,833.12	4,666.81	4,604.61	62.20	75.024	
2,800.00	2,777.49	2,592.84	2,592.49	10.52	54.19	62.75	2,894.63	3,833.12	4,659.49	4,594.88	64.62	72.107	
2,900.00	2,876.24	2,694.58	2,694.21	10.92	56.27	62.91	2,896.27	3,833.12	4,653.13	4,586.04	67.09	69.352	
3,000.00	2,974.99	2,803.39	2,803.02	11.32	58.49	63.11	2,895.93	3,833.12	4,645.73	4,576.01	69.71	66.639	
3,100.00	3,073.74	2,912.08	2,911.70	11.72	60.71	63.30	2,895.17	3,833.12	4,638.15	4,565.82	72.33	64.123	
3,200.00	3,172.49	2,987.90	2,987.49	12.13	62.23	63.44	2,894.63	3,833.12	4,630.66	4,556.41	74.25	62.366	
3,300.00	3,271.23	3,086.65	3,086.23	12.53	64.09	63.61	2,894.63	3,833.12	4,623.55	4,547.04	76.51	60.430	
3,400.00	3,369.98	3,185.40	3,184.98	12.93	65.95	63.79	2,894.63	3,833.12	4,616.49	4,537.72	78.77	58.605	
3,500.00	3,468.73	3,284.15	3,283.73	13.34	67.82	63.96	2,894.63	3,833.12	4,609.48	4,528.44	81.03	56.883	
3,600.00	3,567.48	3,382.90	3,382.48	13.74	69.68	64.14	2,894.63	3,833.12	4,602.50	4,519.21	83.30	55.254	
3,700.00	3,666.23	3,481.64	3,481.23	14.14	71.54	64.31	2,894.63	3,833.12	4,595.57	4,510.01	85.56	53.712	
3,800.00	3,764.97	3,580.39	3,579.97	14.55	73.41	64.49	2,894.63	3,833.12	4,588.69	4,500.86	87.82	52.249	
3,900.00	3,863.72	3,679.14	3,678.72	14.95	75.27	64.66	2,894.63	3,833.12	4,581.85	4,491.76	90.09	50.860	
4,000.00	3,962.47	3,777.89	3,777.47	15.36	77.13	64.84	2,894.63	3,833.12	4,575.05	4,482.70	92.35	49.540	
4,100.00	4,061.22	3,877.66	3,877.24	15.76	79.01	65.00	2,896.43	3,833.12	4,569.24	4,474.60	94.63	48.284	
4,200.00	4,159.97	3,977.66	3,977.23	16.17	80.90	65.18	2,896.36	3,833.12	4,562.49	4,465.57	96.92	47.074	
4,300.00	4,258.71	4,077.64	4,077.21	16.57	82.79	65.36	2,896.24	3,833.12	4,555.76	4,456.55	99.21	45.921	
4,400.00	4,357.46	4,177.61	4,177.17	16.98	84.67	65.55	2,896.06	3,833.12	4,549.04	4,447.55	101.50	44.820	
4,500.00	4,456.21	4,277.55	4,277.12	17.38	86.56	65.73	2,895.84	3,833.12	4,542.35	4,438.57	103.78	43.768	
4,600.00	4,554.96	4,377.49	4,377.05	17.79	88.44	65.91	2,895.56	3,833.12	4,535.68	4,429.61	106.07	42.761	
4,700.00	4,653.71	4,477.40	4,476.97	18.19	90.33	66.10	2,895.23	3,833.12	4,529.02	4,420.67	108.36	41.797	
4,800.00	4,752.45	4,577.30	4,576.86	18.60	92.21	66.29	2,894.84	3,833.12	4,522.39	4,411.75	110.65	40.873	
4,900.00	4,851.20	4,666.72	4,666.20	19.00	93.93	66.45	2,894.63	3,833.12	4,515.89	4,403.12	112.77	40.045	
5,000.00	4,949.95	4,765.47	4,764.95	19.41	95.88	66.64	2,894.63	3,833.12	4,509.54	4,394.42	115.12	39.174	

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 #692H
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 #692H	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	5,048.70	4,864.22	4,863.70	19.81	97.82	66.82	2,894.63	3,833.12	4,503.24	4,385.78	117.46	38.337		
5,200.00	5,147.45	4,962.96	4,962.45	20.22	99.76	67.00	2,894.63	3,833.12	4,496.99	4,377.18	119.81	37.534		
5,300.00	5,246.19	5,061.71	5,061.19	20.62	101.71	67.18	2,894.63	3,833.12	4,490.78	4,368.62	122.16	36.762		
5,400.00	5,344.94	5,160.46	5,159.94	21.03	103.65	67.37	2,894.63	3,833.12	4,484.62	4,360.12	124.51	36.019		
5,455.76	5,400.00	5,216.74	5,216.21	21.25	104.76	67.45	2,896.40	3,833.12	4,482.07	4,356.23	125.84	35.617		
5,500.00	5,443.72	5,261.64	5,261.10	21.43	105.64	67.51	2,896.36	3,833.12	4,479.42	4,352.52	126.90	35.299		
5,600.00	5,542.71	5,363.27	5,362.74	21.83	107.65	67.63	2,896.19	3,833.12	4,473.89	4,344.59	129.30	34.601		
5,700.00	5,641.93	5,465.12	5,464.58	22.22	109.65	67.74	2,895.89	3,833.12	4,469.00	4,337.31	131.69	33.936		
5,800.00	5,741.36	5,567.16	5,566.61	22.60	111.66	67.83	2,895.46	3,833.12	4,464.74	4,330.66	134.08	33.300		
5,900.00	5,840.96	5,669.35	5,668.80	22.97	113.67	67.92	2,894.91	3,833.12	4,461.10	4,324.64	136.46	32.692		
6,000.00	5,940.70	5,756.31	5,755.70	23.33	115.42	67.97	2,894.63	3,833.12	4,458.23	4,319.66	138.57	32.174		
6,100.00	6,040.55	5,856.16	5,855.55	23.68	117.46	68.01	2,894.63	3,833.12	4,456.18	4,315.22	140.96	31.613		
6,200.00	6,140.48	5,956.09	5,955.48	24.02	119.50	68.04	2,894.63	3,833.12	4,454.79	4,311.44	143.35	31.076		
6,300.00	6,240.45	6,056.07	6,055.45	24.35	121.54	68.06	2,894.63	3,833.12	4,454.05	4,308.32	145.73	30.564		
6,363.36	6,303.81	6,119.42	6,118.81	24.55	122.84	61.67	2,894.63	3,833.12	4,453.92	4,306.69	147.22	30.253		
6,408.05	6,348.50	6,164.11	6,163.50	24.69	123.75	-111.94	2,894.63	3,833.12	4,453.98	4,305.71	148.28	30.038		
6,450.00	6,390.43	6,206.04	6,205.43	24.82	124.61	-4.83	2,894.63	3,833.12	4,452.72	4,303.46	149.26	29.831		
6,500.00	6,440.15	6,255.76	6,255.15	24.99	125.63	-1.22	2,894.63	3,833.12	4,447.62	4,297.18	150.44	29.563		
6,550.00	6,489.32	6,304.94	6,304.32	25.16	126.63	-0.17	2,894.63	3,833.12	4,438.64	4,287.02	151.61	29.276		
6,600.00	6,537.64	6,353.25	6,352.64	25.34	127.62	0.35	2,894.63	3,833.12	4,425.82	4,273.05	152.77	28.971		
6,650.00	6,584.80	6,400.41	6,399.80	25.52	128.58	0.68	2,894.63	3,833.12	4,409.26	4,255.36	153.89	28.651		
6,700.00	6,630.52	6,446.13	6,445.52	25.71	129.52	0.93	2,894.63	3,833.12	4,389.04	4,234.06	154.99	28.319		
6,750.00	6,674.51	6,490.12	6,489.51	25.89	130.42	1.14	2,894.63	3,833.12	4,365.31	4,209.27	156.04	27.976		
6,800.00	6,716.50	6,532.11	6,531.50	26.08	131.27	1.34	2,894.63	3,833.12	4,338.19	4,181.15	157.04	27.624		
6,850.00	6,756.24	6,571.85	6,571.24	26.28	132.09	1.55	2,894.63	3,833.12	4,307.87	4,149.87	158.00	27.266		
6,900.00	6,793.47	6,609.08	6,608.47	26.48	132.85	1.78	2,894.63	3,833.12	4,274.52	4,115.64	158.89	26.903		
6,950.00	6,827.97	6,643.58	6,642.97	26.69	133.55	2.04	2,894.63	3,833.12	4,238.36	4,078.65	159.71	26.538		
7,000.00	6,859.53	6,675.14	6,674.53	26.91	134.20	2.36	2,894.63	3,833.12	4,199.61	4,039.14	160.46	26.172		
7,050.00	6,887.94	6,703.56	6,702.94	27.14	134.78	2.76	2,894.63	3,833.12	4,158.49	3,997.35	161.14	25.807		
7,100.00	6,913.05	6,728.66	6,728.05	27.38	135.29	3.28	2,894.63	3,833.12	4,115.28	3,953.55	161.74	25.444		
7,150.00	6,934.68	6,750.29	6,749.68	27.64	135.73	4.01	2,894.63	3,833.12	4,070.23	3,907.98	162.25	25.086		
7,200.00	6,952.71	6,768.32	6,767.71	27.92	136.10	5.08	2,894.63	3,833.12	4,023.63	3,860.95	162.68	24.734		
7,250.00	6,967.02	6,782.64	6,782.02	28.21	136.40	6.83	2,894.63	3,833.12	3,975.76	3,812.74	163.02	24.388		
7,300.00	6,977.54	6,793.15	6,792.54	28.52	136.61	10.14	2,894.63	3,833.12	3,926.91	3,763.64	163.27	24.051		
7,350.00	6,984.18	6,799.80	6,799.18	28.83	136.75	18.64	2,894.63	3,833.12	3,877.39	3,713.96	163.43	23.724		
7,400.00	6,986.92	6,802.54	6,801.92	29.16	136.80	64.57	2,894.63	3,833.12	3,827.51	3,664.00	163.51	23.408		
7,409.89	6,987.00	6,802.61	6,802.00	29.23	136.80	90.00	2,894.63	3,833.12	3,817.62	3,654.11	163.51	23.347		
7,500.00	6,987.00	6,802.61	6,802.00	29.85	136.80	90.00	2,894.63	3,833.12	3,727.56	3,564.02	163.54	22.793		
7,600.00	6,987.00	6,802.61	6,802.00	30.61	136.80	90.00	2,894.63	3,833.12	3,627.62	3,464.05	163.57	22.178		
7,700.00	6,987.00	6,802.61	6,802.00	31.41	136.80	90.00	2,894.63	3,833.12	3,527.68	3,364.08	163.60	21.563		
7,800.00	6,987.00	6,802.61	6,802.00	32.27	136.80	90.00	2,894.63	3,833.12	3,427.75	3,264.11	163.64	20.947		
7,900.00	6,987.00	6,802.61	6,802.00	33.17	136.80	90.00	2,894.63	3,833.12	3,327.82	3,164.14	163.67	20.332		
8,000.00	6,987.00	6,802.61	6,802.00	34.12	136.80	90.00	2,894.63	3,833.12	3,227.89	3,064.18	163.71	19.717		
8,100.00	6,987.00	6,802.61	6,802.00	35.10	136.80	90.00	2,894.63	3,833.12	3,127.97	2,964.21	163.75	19.102		
8,200.00	6,987.00	6,802.61	6,802.00	36.12	136.80	90.00	2,894.63	3,833.12	3,028.05	2,864.25	163.80	18.487		
8,300.00	6,987.00	6,802.61	6,802.00	37.17	136.80	90.00	2,894.63	3,833.12	2,928.14	2,764.29	163.85	17.871		
8,314.89	6,987.00	6,802.61	6,802.00	37.33	136.80	90.00	2,894.63	3,833.12	2,913.26	2,749.41	163.85	17.780		
8,400.00	6,987.00	6,802.61	6,802.00	38.25	136.80	-90.00	2,894.63	3,833.12	2,828.17	2,664.30	163.88	17.258		
8,500.00	6,987.00	6,802.61	6,802.00	39.35	136.80	-90.00	2,894.63	3,833.12	2,728.33	2,564.47	163.85	16.651		
8,600.00	6,987.00	6,802.61	6,802.00	40.45	136.80	-90.00	2,894.63	3,833.12	2,629.13	2,465.35	163.77	16.053		
8,700.00	6,987.00	6,802.61	6,802.00	41.56	136.80	-90.00	2,894.63	3,833.12	2,531.16	2,367.52	163.64	15.468		
8,800.00	6,987.00	6,802.61	6,802.00	42.66	136.80	-90.00	2,894.63	3,833.12	2,435.07	2,271.62	163.45	14.898		

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 #692H
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 #692H	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)			
8,900.00	6,987.00	6,802.61	6,802.00	43.75	136.80	-90.00	2,894.63	3,833.12	2,341.60	2,178.37	163.23	14.346	
9,000.00	6,987.00	6,802.61	6,802.00	44.83	136.80	-90.00	2,894.63	3,833.12	2,251.55	2,088.56	163.00	13.813	
9,071.74	6,987.00	6,802.61	6,802.00	45.59	136.80	-90.00	2,894.63	3,833.12	2,189.56	2,026.70	162.85	13.445	
9,100.00	6,987.00	6,802.61	6,802.00	45.89	136.80	-90.00	2,894.63	3,833.12	2,165.67	2,002.86	162.81	13.302	
9,200.00	6,987.00	6,802.61	6,802.00	46.97	136.80	-90.00	2,894.63	3,833.12	2,082.03	1,919.30	162.73	12.794	
9,300.00	6,987.00	6,802.61	6,802.00	48.07	136.80	-90.00	2,894.63	3,833.12	1,999.88	1,837.09	162.79	12.285	
9,400.00	6,987.00	6,802.61	6,802.00	49.20	136.80	-90.00	2,894.63	3,833.12	1,919.44	1,756.40	163.04	11.773	
9,500.00	6,987.00	6,802.61	6,802.00	50.36	136.80	-90.00	2,894.63	3,833.12	1,840.91	1,677.41	163.50	11.259	
9,600.00	6,987.00	6,802.61	6,802.00	51.54	136.80	-90.00	2,894.63	3,833.12	1,764.55	1,600.33	164.23	10.745	
9,700.00	6,987.00	6,802.61	6,802.00	52.74	136.80	-90.00	2,894.63	3,833.12	1,690.67	1,525.41	165.26	10.231	
9,800.00	6,987.00	6,802.61	6,802.00	53.96	136.80	-90.00	2,894.63	3,833.12	1,619.59	1,452.96	166.62	9.720	
9,900.00	6,987.00	6,802.61	6,802.00	55.21	136.80	-90.00	2,894.63	3,833.12	1,551.70	1,383.34	168.36	9.217	
10,000.00	6,987.00	6,802.61	6,802.00	56.47	136.80	-90.00	2,894.63	3,833.12	1,487.44	1,316.96	170.47	8.725	
10,100.00	6,987.00	6,802.61	6,802.00	57.75	136.80	-90.00	2,894.63	3,833.12	1,427.30	1,254.32	172.98	8.251	
10,200.00	6,987.00	6,802.61	6,802.00	59.04	136.80	-90.00	2,894.63	3,833.12	1,371.82	1,195.96	175.85	7.801	
10,300.00	6,987.00	6,802.61	6,802.00	60.35	136.80	-90.00	2,894.63	3,833.12	1,321.58	1,142.52	179.07	7.380	
10,400.00	6,987.00	6,802.61	6,802.00	61.67	136.80	-90.00	2,894.63	3,833.12	1,277.22	1,094.65	182.57	6.996	
10,500.00	6,987.00	6,802.61	6,802.00	63.01	136.80	-90.00	2,894.63	3,833.12	1,239.35	1,053.07	186.28	6.653	
10,600.00	6,987.00	6,802.61	6,802.00	64.36	136.80	-90.00	2,894.63	3,833.12	1,208.59	1,018.49	190.10	6.358	
10,700.00	6,987.00	6,802.61	6,802.00	65.72	136.80	-90.00	2,894.63	3,833.12	1,185.50	991.56	193.93	6.113	
10,800.00	6,987.00	6,802.61	6,802.00	67.09	136.80	-90.00	2,894.63	3,833.12	1,170.51	972.88	197.64	5.923	
10,900.00	6,987.00	6,802.61	6,802.00	68.47	136.80	-90.00	2,894.63	3,833.12	1,163.96	962.86	201.10	5.788	
10,926.50	6,987.00	6,802.61	6,802.00	68.84	136.80	-90.00	2,894.63	3,833.12	1,163.66	961.70	201.97	5.762 CC, ES	
11,000.00	6,987.00	6,802.61	6,802.00	69.86	136.80	-90.00	2,894.63	3,833.12	1,165.98	961.76	204.22	5.709	
11,100.00	6,987.00	6,802.61	6,802.00	71.26	136.80	-90.00	2,894.63	3,833.12	1,176.53	969.61	206.91	5.686 SF	
11,200.00	6,987.00	6,802.61	6,802.00	72.67	136.80	-90.00	2,894.63	3,833.12	1,195.37	986.24	209.14	5.716	
11,300.00	6,987.00	6,802.61	6,802.00	74.09	136.80	-90.00	2,894.63	3,833.12	1,222.14	1,011.26	210.88	5.795	
11,400.00	6,987.00	6,802.61	6,802.00	75.51	136.80	-90.00	2,894.63	3,833.12	1,256.32	1,044.15	212.16	5.921	
11,500.00	6,987.00	6,802.61	6,802.00	76.94	136.80	-90.00	2,894.63	3,833.12	1,297.32	1,084.29	213.03	6.090	
11,600.00	6,987.00	6,802.61	6,802.00	78.38	136.80	-90.00	2,894.63	3,833.12	1,344.52	1,130.99	213.53	6.297	
11,700.00	6,987.00	6,802.61	6,802.00	79.82	136.80	-90.00	2,894.63	3,833.12	1,397.30	1,183.57	213.73	6.538	
11,800.00	6,987.00	6,802.61	6,802.00	81.27	136.80	-90.00	2,894.63	3,833.12	1,455.04	1,241.36	213.68	6.809	
11,900.00	6,987.00	6,802.61	6,802.00	82.73	136.80	-90.00	2,894.63	3,833.12	1,517.19	1,303.74	213.44	7.108	
12,000.00	6,987.00	6,802.61	6,802.00	84.19	136.80	-90.00	2,894.63	3,833.12	1,583.21	1,370.15	213.06	7.431	
12,100.00	6,987.00	6,802.61	6,802.00	85.66	136.80	-90.00	2,894.63	3,833.12	1,652.65	1,440.08	212.58	7.774	
12,200.00	6,987.00	6,802.61	6,802.00	87.13	136.80	-90.00	2,894.63	3,833.12	1,725.10	1,513.08	212.02	8.137	
12,300.00	6,987.00	6,802.61	6,802.00	88.61	136.80	-90.00	2,894.63	3,833.12	1,800.19	1,588.78	211.41	8.515	
12,400.00	6,987.00	6,802.61	6,802.00	90.09	136.80	-90.00	2,894.63	3,833.12	1,877.60	1,666.82	210.77	8.908	
12,500.00	6,987.00	6,802.61	6,802.00	91.57	136.80	-90.00	2,894.63	3,833.12	1,957.06	1,746.93	210.13	9.314	
12,600.00	6,987.00	6,802.61	6,802.00	93.06	136.80	-90.00	2,894.63	3,833.12	2,038.33	1,828.85	209.48	9.731	
12,700.00	6,987.00	6,802.61	6,802.00	94.55	136.80	-90.00	2,894.63	3,833.12	2,121.20	1,912.37	208.83	10.158	
12,800.00	6,987.00	6,802.61	6,802.00	96.05	136.80	-90.00	2,894.63	3,833.12	2,205.49	1,997.29	208.20	10.593	
12,900.00	6,987.00	6,802.61	6,802.00	97.55	136.80	-90.00	2,894.63	3,833.12	2,291.05	2,083.46	207.58	11.037	
13,000.00	6,987.00	6,802.61	6,802.00	99.05	136.80	-90.00	2,894.63	3,833.12	2,377.73	2,170.74	206.99	11.487	
13,100.00	6,987.00	6,802.61	6,802.00	100.56	136.80	-90.00	2,894.63	3,833.12	2,465.42	2,259.01	206.41	11.944	
13,200.00	6,987.00	6,802.61	6,802.00	102.07	136.80	-90.00	2,894.63	3,833.12	2,554.02	2,348.16	205.85	12.407	
13,300.00	6,987.00	6,802.61	6,802.00	103.58	136.80	-90.00	2,894.63	3,833.12	2,643.43	2,438.11	205.32	12.874	
13,400.00	6,987.00	6,802.61	6,802.00	105.09	136.80	-90.00	2,894.63	3,833.12	2,733.57	2,528.76	204.81	13.347	
13,500.00	6,987.00	6,802.61	6,802.00	106.61	136.80	-90.00	2,894.63	3,833.12	2,824.38	2,620.05	204.33	13.823	
13,600.00	6,987.00	6,802.61	6,802.00	108.13	136.80	-90.00	2,894.63	3,833.12	2,915.79	2,711.93	203.86	14.303	
13,700.00	6,987.00	6,802.61	6,802.00	109.65	136.80	-90.00	2,894.63	3,833.12	3,007.75	2,804.33	203.42	14.786	
13,800.00	6,987.00	6,802.61	6,802.00	111.18	136.80	-90.00	2,894.63	3,833.12	3,100.20	2,897.21	202.99	15.273	

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 #692H
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 #692H	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	
13,900.00	6,987.00	6,802.61	6,802.00	112.71	136.80	-90.00	2,894.63	3,833.12	3,193.11	2,990.52	202.59	15.762		
14,000.00	6,987.00	6,802.61	6,802.00	114.23	136.80	-90.00	2,894.63	3,833.12	3,286.43	3,084.23	202.20	16.253		
14,100.00	6,987.00	6,802.61	6,802.00	115.77	136.80	-90.00	2,894.63	3,833.12	3,380.14	3,178.31	201.83	16.747		
14,200.00	6,987.00	6,802.61	6,802.00	117.30	136.80	-90.00	2,894.63	3,833.12	3,474.20	3,272.72	201.48	17.243		
14,300.00	6,987.00	6,802.61	6,802.00	118.83	136.80	-90.00	2,894.63	3,833.12	3,568.58	3,367.43	201.15	17.741		
14,400.00	6,987.00	6,802.61	6,802.00	120.37	136.80	-90.00	2,894.63	3,833.12	3,663.26	3,462.43	200.83	18.241		
14,500.00	6,987.00	6,802.61	6,802.00	121.91	136.80	-90.00	2,894.63	3,833.12	3,758.21	3,557.69	200.52	18.742		
14,600.00	6,987.00	6,802.61	6,802.00	123.45	136.80	-90.00	2,894.63	3,833.12	3,853.42	3,653.19	200.23	19.245		
14,700.00	6,987.00	6,802.61	6,802.00	124.99	136.80	-90.00	2,894.63	3,833.12	3,948.87	3,748.91	199.96	19.749		
14,800.00	6,987.00	6,802.61	6,802.00	126.53	136.80	-90.00	2,894.63	3,833.12	4,044.54	3,844.84	199.69	20.254		
14,900.00	6,987.00	6,802.61	6,802.00	128.08	136.80	-90.00	2,894.63	3,833.12	4,140.41	3,940.97	199.44	20.760		
15,000.00	6,987.00	6,802.61	6,802.00	129.63	136.80	-90.00	2,894.63	3,833.12	4,236.47	4,037.27	199.20	21.267		
15,100.00	6,987.00	6,802.61	6,802.00	131.17	136.80	-90.00	2,894.63	3,833.12	4,332.71	4,133.74	198.97	21.776		
15,200.00	6,987.00	6,802.61	6,802.00	132.72	136.80	-90.00	2,894.63	3,833.12	4,429.12	4,230.37	198.75	22.285		
15,300.00	6,987.00	6,802.61	6,802.00	134.27	136.80	-90.00	2,894.63	3,833.12	4,525.68	4,327.14	198.54	22.795		
15,400.00	6,987.00	6,802.61	6,802.00	135.83	136.80	-90.00	2,894.63	3,833.12	4,622.39	4,424.05	198.34	23.305		
15,500.00	6,987.00	6,802.61	6,802.00	137.38	136.80	-90.00	2,894.63	3,833.12	4,719.24	4,521.09	198.15	23.817		
15,600.00	6,987.00	6,802.61	6,802.00	138.93	136.80	-90.00	2,894.63	3,833.12	4,816.21	4,618.25	197.97	24.328		
15,700.00	6,987.00	6,802.61	6,802.00	140.49	136.80	-90.00	2,894.63	3,833.12	4,913.31	4,715.52	197.79	24.841		
15,800.00	6,987.00	6,802.61	6,802.00	142.04	136.80	-90.00	2,894.63	3,833.12	5,010.52	4,812.89	197.63	25.353		
15,900.00	6,987.00	6,802.61	6,802.00	143.60	136.80	-90.00	2,894.63	3,833.12	5,107.84	4,910.37	197.47	25.867		
16,000.00	6,987.00	6,802.61	6,802.00	145.16	136.80	-90.00	2,894.63	3,833.12	5,205.26	5,007.94	197.32	26.380		
16,100.00	6,987.00	6,802.61	6,802.00	146.72	136.80	-90.00	2,894.63	3,833.12	5,302.78	5,105.61	197.17	26.894		
16,200.00	6,987.00	6,802.61	6,802.00	148.28	136.80	-90.00	2,894.63	3,833.12	5,400.38	5,203.35	197.03	27.409		
16,300.00	6,987.00	6,802.61	6,802.00	149.84	136.80	-90.00	2,894.63	3,833.12	5,498.08	5,301.18	196.90	27.923		
16,400.00	6,987.00	6,802.61	6,802.00	151.40	136.80	-90.00	2,894.63	3,833.12	5,595.85	5,399.08	196.77	28.438		
16,500.00	6,987.00	6,802.61	6,802.00	152.97	136.80	-90.00	2,894.63	3,833.12	5,693.70	5,497.05	196.65	28.953		
16,600.00	6,987.00	6,802.61	6,802.00	154.53	136.80	-90.00	2,894.63	3,833.12	5,791.63	5,595.09	196.54	29.468		
16,700.00	6,987.00	6,802.61	6,802.00	156.10	136.80	-90.00	2,894.63	3,833.12	5,889.62	5,693.20	196.43	29.984		
16,800.00	6,987.00	6,802.61	6,802.00	157.66	136.80	-90.00	2,894.63	3,833.12	5,987.68	5,791.36	196.32	30.499		
16,900.00	6,987.00	6,802.61	6,802.00	159.23	136.80	-90.00	2,894.63	3,833.12	6,085.81	5,889.59	196.22	31.015		
17,000.00	6,987.00	6,802.61	6,802.00	160.80	136.80	-90.00	2,894.63	3,833.12	6,183.99	5,987.87	196.13	31.531		
17,100.00	6,987.00	6,802.61	6,802.00	162.36	136.80	-90.00	2,894.63	3,833.12	6,282.24	6,086.20	196.04	32.046		
17,200.00	6,987.00	6,802.61	6,802.00	163.93	136.80	-90.00	2,894.63	3,833.12	6,380.53	6,184.58	195.95	32.562		
17,300.00	6,987.00	6,802.61	6,802.00	165.50	136.80	-90.00	2,894.63	3,833.12	6,478.88	6,283.01	195.87	33.078		
17,400.00	6,987.00	6,802.61	6,802.00	167.07	136.80	-90.00	2,894.63	3,833.12	6,577.28	6,381.49	195.79	33.594		
17,500.00	6,987.00	6,802.61	6,802.00	168.64	136.80	-90.00	2,894.63	3,833.12	6,675.72	6,480.01	195.71	34.110		
17,600.00	6,987.00	6,802.61	6,802.00	170.21	136.80	-90.00	2,894.63	3,833.12	6,774.22	6,578.57	195.64	34.626		
17,700.00	6,987.00	6,802.61	6,802.00	171.78	136.80	-90.00	2,894.63	3,833.12	6,872.75	6,677.18	195.57	35.141		
17,800.00	6,987.00	6,802.61	6,802.00	173.36	136.80	-90.00	2,894.63	3,833.12	6,971.33	6,775.82	195.51	35.657		
17,900.00	6,987.00	6,802.61	6,802.00	174.93	136.80	-90.00	2,894.63	3,833.12	7,069.94	6,874.49	195.45	36.173		
18,000.00	6,987.00	6,802.61	6,802.00	176.50	136.80	-90.00	2,894.63	3,833.12	7,168.60	6,973.21	195.39	36.688		
18,100.00	6,987.00	6,802.61	6,802.00	178.08	136.80	-90.00	2,894.63	3,833.12	7,267.29	7,071.95	195.34	37.203		
18,200.00	6,987.00	6,802.61	6,802.00	179.65	136.80	-90.00	2,894.63	3,833.12	7,366.02	7,170.73	195.29	37.719		
18,300.00	6,987.00	6,802.61	6,802.00	181.23	136.80	-90.00	2,894.63	3,833.12	7,464.78	7,269.54	195.24	38.234		
18,400.00	6,987.00	6,802.61	6,802.00	182.80	136.80	-90.00	2,894.63	3,833.12	7,563.57	7,368.38	195.20	38.749		
18,500.00	6,987.00	6,802.61	6,802.00	184.38	136.80	-90.00	2,894.63	3,833.12	7,662.40	7,467.25	195.15	39.264		
18,600.00	6,987.00	6,802.61	6,802.00	185.96	136.80	-90.00	2,894.63	3,833.12	7,761.25	7,566.14	195.11	39.778		
18,700.00	6,987.00	6,802.61	6,802.00	187.53	136.80	-90.00	2,894.63	3,833.12	7,860.14	7,665.06	195.08	40.293		
18,800.00	6,987.00	6,802.61	6,802.00	189.11	136.80	-90.00	2,894.63	3,833.12	7,959.05	7,764.01	195.04	40.807		
18,900.00	6,987.00	6,802.61	6,802.00	190.69	136.80	-90.00	2,894.63	3,833.12	8,057.99	7,862.98	195.01	41.321		
19,000.00	6,987.00	6,802.61	6,802.00	192.27	136.80	-90.00	2,894.63	3,833.12	8,156.95	7,961.97	194.98	41.835		

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 #692H
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 #692H	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		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		
19,100.00	6,987.00	6,802.61	6,802.00	193.85	136.80	-90.00	2,894.63	3,833.12	8,255.94	8,060.99	194.95	42.349		
19,200.00	6,987.00	6,802.61	6,802.00	195.43	136.80	-90.00	2,894.63	3,833.12	8,354.96	8,160.03	194.93	42.862		
19,255.69	6,987.00	6,802.61	6,802.00	196.31	136.80	-90.00	2,894.63	3,833.12	8,410.11	8,215.19	194.91	43.148		
19,300.00	6,987.00	6,802.61	6,802.00	197.01	136.80	-90.00	2,894.63	3,833.12	8,453.99	8,259.09	194.90	43.375		
19,400.00	6,987.00	6,802.61	6,802.00	198.59	136.80	-90.00	2,894.63	3,833.12	8,553.05	8,358.17	194.88	43.888		
19,468.80	6,987.00	6,802.61	6,802.00	199.49	136.80	-90.00	2,894.63	3,833.12	8,621.22	8,423.41	197.81	43.584		

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 #692H
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 #692H	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	-102.54	-1,115.02	-5,013.30	5,136.81						
100.00	100.00	0.00	0.00	0.25	0.00	-102.54	-1,115.02	-5,013.30	5,135.80	5,135.55	0.25	N/A			
134.01	134.01	32.01	32.01	0.37	0.20	-102.54	-1,115.02	-5,013.30	5,135.80	5,135.23	0.57	9,004.984			
200.00	200.00	98.00	98.00	0.61	0.61	-102.54	-1,115.02	-5,013.30	5,135.80	5,134.59	1.21	4,232.284			
268.03	268.03	166.03	166.02	0.85	1.17	-102.54	-1,114.83	-5,013.30	5,135.76	5,133.77	1.99	2,577.010			
300.00	300.00	194.48	194.48	0.97	1.40	-102.54	-1,114.88	-5,013.30	5,135.77	5,133.43	2.34	2,195.743			
400.00	400.00	298.01	298.00	1.33	2.23	-102.54	-1,115.02	-5,013.30	5,135.80	5,132.30	3.50	1,467.869			
417.54	417.54	315.54	315.54	1.39	2.37	-102.54	-1,114.92	-5,013.30	5,135.78	5,132.08	3.69	1,390.101			
500.00	500.00	395.85	395.84	1.68	3.00	-102.54	-1,115.00	-5,013.30	5,135.80	5,131.20	4.60	1,116.827			
600.00	600.00	498.02	498.00	2.04	4.74	-102.54	-1,115.02	-5,013.30	5,135.80	5,129.11	6.69	768.048			
700.00	700.00	598.02	598.00	2.40	6.55	-102.54	-1,115.02	-5,013.30	5,135.80	5,126.96	8.84	580.868			
759.97	759.97	657.98	657.96	2.62	7.63	-96.15	-1,114.20	-5,013.30	5,135.69	5,125.56	10.13	506.809 CC			
800.00	799.98	696.87	696.85	2.76	8.34	-96.16	-1,114.22	-5,013.30	5,135.81	5,124.84	10.98	467.948			
900.00	899.84	793.91	793.88	3.12	10.09	-96.20	-1,114.44	-5,013.30	5,136.43	5,123.35	13.08	392.818			
1,000.00	999.45	890.66	890.63	3.48	11.84	-96.28	-1,114.90	-5,013.30	5,137.48	5,122.31	15.17	338.587			
1,100.00	1,098.70	996.76	996.70	3.85	13.27	-96.40	-1,115.02	-5,013.30	5,138.86	5,121.92	16.94	303.293 ES			
1,153.80	1,151.90	1,049.96	1,049.90	4.04	13.93	-96.47	-1,115.02	-5,013.30	5,139.77	5,121.97	17.79	288.890			
1,200.00	1,197.53	1,095.58	1,095.53	4.21	14.49	-96.55	-1,115.02	-5,013.30	5,140.60	5,122.08	18.52	277.563			
1,300.00	1,296.27	1,191.45	1,191.38	4.59	15.68	-96.71	-1,114.45	-5,013.30	5,142.32	5,122.25	20.07	256.245			
1,400.00	1,395.02	1,286.55	1,286.48	4.97	16.86	-96.88	-1,114.83	-5,013.30	5,144.30	5,122.69	21.61	238.043			
1,500.00	1,493.77	1,391.85	1,391.77	5.36	17.65	-97.06	-1,115.02	-5,013.30	5,146.28	5,123.51	22.77	226.040			
1,600.00	1,592.52	1,490.09	1,490.00	5.74	18.18	-97.23	-1,114.69	-5,013.30	5,148.19	5,124.53	23.66	217.584			
1,700.00	1,691.27	1,585.53	1,585.44	6.14	18.70	-97.40	-1,114.85	-5,013.30	5,150.26	5,125.72	24.54	209.853			
1,800.00	1,790.01	1,688.10	1,688.01	6.53	19.35	-97.58	-1,115.02	-5,013.30	5,152.38	5,126.82	25.56	201.587			
1,900.00	1,888.76	1,786.85	1,786.76	6.92	20.05	-97.75	-1,115.02	-5,013.30	5,154.51	5,127.88	26.63	193.572			
2,000.00	1,987.51	1,885.16	1,885.07	7.32	20.74	-97.92	-1,114.79	-5,013.30	5,156.63	5,128.94	27.70	186.186			
2,100.00	2,086.26	1,982.64	1,982.55	7.72	21.43	-98.09	-1,114.87	-5,013.30	5,158.88	5,130.12	28.76	179.381			
2,200.00	2,185.01	2,083.11	2,083.01	8.11	22.10	-98.26	-1,115.02	-5,013.30	5,161.19	5,131.39	29.80	173.218			
2,300.00	2,283.75	2,181.86	2,181.75	8.51	22.45	-98.43	-1,115.02	-5,013.30	5,163.51	5,133.00	30.51	169.250			
2,400.00	2,382.50	2,275.03	2,274.92	8.91	22.79	-98.59	-1,114.78	-5,013.30	5,165.81	5,134.61	31.20	165.553			
2,500.00	2,481.25	2,379.39	2,379.25	9.31	23.18	-98.78	-1,115.02	-5,013.30	5,168.29	5,136.34	31.95	161.783			
2,600.00	2,580.00	2,478.14	2,478.00	9.71	23.55	-98.95	-1,115.02	-5,013.30	5,170.75	5,138.07	32.68	158.233			
2,700.00	2,678.75	2,571.45	2,571.30	10.11	23.91	-99.10	-1,114.42	-5,013.30	5,173.09	5,139.70	33.39	154.917			
2,800.00	2,777.49	2,675.68	2,675.49	10.52	24.38	-99.29	-1,115.02	-5,013.30	5,175.81	5,141.58	34.22	151.239			
2,900.00	2,876.24	2,774.43	2,774.24	10.92	25.62	-99.46	-1,115.02	-5,013.30	5,178.41	5,142.57	35.84	144.479			
3,000.00	2,974.99	2,873.18	2,872.99	11.32	26.85	-99.63	-1,115.02	-5,013.30	5,181.06	5,143.59	37.46	138.303			
3,100.00	3,073.74	2,971.93	2,971.74	11.72	28.09	-99.80	-1,115.02	-5,013.30	5,183.75	5,144.67	39.08	132.639			
3,200.00	3,172.49	3,067.93	3,067.72	12.13	29.29	-99.95	-1,113.65	-5,013.30	5,186.10	5,145.43	40.67	127.524			
3,300.00	3,271.23	3,162.93	3,162.72	12.53	30.48	-100.11	-1,113.95	-5,013.30	5,188.97	5,146.73	42.24	122.840			
3,400.00	3,369.98	3,257.86	3,257.64	12.93	31.67	-100.28	-1,114.48	-5,013.30	5,191.96	5,148.15	43.81	118.497			
3,500.00	3,468.73	3,366.98	3,366.73	13.34	33.82	-100.48	-1,115.02	-5,013.30	5,194.99	5,148.63	46.37	112.044			
3,600.00	3,567.48	3,465.73	3,465.48	13.74	37.01	-100.64	-1,115.02	-5,013.30	5,197.92	5,147.95	49.97	104.030			
3,700.00	3,666.23	3,564.48	3,564.23	14.14	40.19	-100.81	-1,115.02	-5,013.30	5,200.89	5,147.32	53.57	97.093			
3,800.00	3,764.97	3,663.22	3,662.97	14.55	43.38	-100.98	-1,115.02	-5,013.30	5,203.91	5,146.74	57.17	91.031			
3,900.00	3,863.72	3,761.97	3,761.72	14.95	46.57	-101.15	-1,115.02	-5,013.30	5,206.97	5,146.21	60.77	85.689			
4,000.00	3,962.47	3,860.72	3,860.47	15.36	49.75	-101.32	-1,115.02	-5,013.30	5,210.08	5,145.72	64.37	80.944			
4,100.00	4,061.22	3,958.43	3,958.17	15.76	52.91	-101.47	-1,113.85	-5,013.30	5,212.88	5,144.94	67.93	76.736			
4,200.00	4,159.97	4,055.91	4,055.65	16.17	56.05	-101.64	-1,113.95	-5,013.30	5,216.11	5,144.62	71.49	72.960			
4,300.00	4,258.71	4,153.37	4,153.11	16.57	59.20	-101.81	-1,114.13	-5,013.30	5,219.41	5,144.36	75.05	69.545			
4,400.00	4,357.46	4,250.81	4,250.55	16.98	62.34	-101.97	-1,114.38	-5,013.30	5,222.78	5,144.17	78.61	66.441			
4,500.00	4,456.21	4,348.22	4,347.96	17.38	65.48	-102.14	-1,114.70	-5,013.30	5,226.22	5,144.06	82.17	63.606			
4,600.00	4,554.96	4,453.30	4,452.96	17.79	68.19	-102.32	-1,115.02	-5,013.30	5,229.71	5,144.43	85.28	61.322			

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 #692H
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 #692H	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
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
4,700.00	4,653.71	4,552.05	4,551.71	18.19	68.83	-102.49	-1,115.02	-5,013.30	5,233.14	5,146.84	86.30	60.640	
4,800.00	4,752.45	4,648.90	4,648.55	18.60	69.45	-102.64	-1,114.18	-5,013.30	5,236.34	5,149.03	87.30	59.980	
4,900.00	4,851.20	4,740.59	4,740.23	19.00	70.04	-102.80	-1,114.46	-5,013.30	5,239.96	5,151.68	88.27	59.362	
5,000.00	4,949.95	4,848.33	4,847.95	19.41	71.01	-102.99	-1,115.02	-5,013.30	5,243.70	5,154.08	89.62	58.509	
5,100.00	5,048.70	4,947.08	4,946.70	19.81	72.64	-103.15	-1,115.02	-5,013.30	5,247.31	5,155.67	91.64	57.262	
5,200.00	5,147.45	5,045.83	5,045.45	20.22	74.26	-103.32	-1,115.02	-5,013.30	5,250.97	5,157.31	93.65	56.068	
5,300.00	5,246.19	5,144.58	5,144.19	20.62	75.89	-103.49	-1,115.02	-5,013.30	5,254.67	5,159.00	95.67	54.925	
5,400.00	5,344.94	5,243.32	5,242.94	21.03	77.51	-103.65	-1,115.02	-5,013.30	5,258.41	5,160.72	97.69	53.830	
5,455.76	5,400.00	5,298.38	5,298.00	21.25	78.42	-103.74	-1,115.02	-5,013.30	5,260.52	5,161.71	98.81	53.239	
5,500.00	5,443.72	5,342.10	5,341.72	21.43	79.14	-103.83	-1,115.02	-5,013.30	5,262.16	5,162.46	99.70	52.780	
5,600.00	5,542.71	5,440.42	5,440.04	21.83	80.76	-104.00	-1,113.78	-5,013.30	5,265.16	5,163.46	101.70	51.771	
5,700.00	5,641.93	5,538.26	5,537.87	22.22	82.37	-104.16	-1,113.86	-5,013.30	5,268.23	5,164.54	103.69	50.810	
5,800.00	5,741.36	5,636.28	5,635.89	22.60	83.98	-104.29	-1,114.00	-5,013.30	5,270.92	5,165.26	105.66	49.884	
5,900.00	5,840.96	5,734.46	5,734.07	22.97	85.59	-104.41	-1,114.22	-5,013.30	5,273.23	5,165.59	107.64	48.991	
6,000.00	5,940.70	5,832.78	5,832.38	23.33	87.21	-104.51	-1,114.51	-5,013.30	5,275.14	5,165.54	109.60	48.130	
6,100.00	6,040.55	5,931.20	5,930.80	23.68	88.83	-104.58	-1,114.88	-5,013.30	5,276.65	5,165.09	111.56	47.299	
6,200.00	6,140.48	6,038.93	6,038.48	24.02	93.43	-104.64	-1,115.02	-5,013.30	5,277.63	5,161.13	116.51	45.299	
6,300.00	6,240.45	6,138.91	6,138.45	24.35	98.90	-104.66	-1,115.02	-5,013.30	5,278.13	5,155.81	122.32	43.151	
6,408.05	6,348.50	6,246.95	6,246.50	24.69	104.81	75.34	-1,115.02	-5,013.30	5,278.18	5,149.60	128.58	41.051	
6,409.94	6,350.39	6,248.84	6,248.39	24.70	104.91	97.68	-1,115.02	-5,013.30	5,278.18	5,149.49	128.69	41.016	
6,450.00	6,390.43	6,288.88	6,288.43	24.82	107.10	-177.53	-1,115.02	-5,013.30	5,279.46	5,148.46	131.00	40.300	
6,500.00	6,440.15	6,338.60	6,338.15	24.99	109.82	-173.87	-1,115.02	-5,013.30	5,284.55	5,150.65	133.89	39.469	
6,550.00	6,489.32	6,387.77	6,387.32	25.16	112.51	-172.73	-1,115.02	-5,013.30	5,293.47	5,156.72	136.75	38.708	
6,600.00	6,537.64	6,436.09	6,435.64	25.34	115.16	-172.07	-1,115.02	-5,013.30	5,306.18	5,166.61	139.57	38.018	
6,650.00	6,584.80	6,483.25	6,482.80	25.52	117.74	-171.56	-1,115.02	-5,013.30	5,322.59	5,180.27	142.32	37.398	
6,700.00	6,630.52	6,528.97	6,528.52	25.71	120.24	-171.08	-1,115.02	-5,013.30	5,342.62	5,197.62	144.99	36.847	
6,750.00	6,674.51	6,572.96	6,572.51	25.89	122.64	-170.58	-1,115.02	-5,013.30	5,366.12	5,218.55	147.56	36.365	
6,800.00	6,716.50	6,614.95	6,614.50	26.08	124.94	-170.01	-1,115.02	-5,013.30	5,392.96	5,242.94	150.02	35.948	
6,850.00	6,756.24	6,654.69	6,654.24	26.28	127.11	-169.35	-1,115.02	-5,013.30	5,422.98	5,270.63	152.35	35.596	
6,900.00	6,793.47	6,691.92	6,691.47	26.48	129.15	-168.57	-1,115.02	-5,013.30	5,455.99	5,301.46	154.53	35.307	
6,950.00	6,827.97	6,726.42	6,725.97	26.69	131.04	-167.60	-1,115.02	-5,013.30	5,491.78	5,335.23	156.55	35.079	
7,000.00	6,859.53	6,757.98	6,757.53	26.91	132.76	-166.40	-1,115.02	-5,013.30	5,530.15	5,371.74	158.41	34.911	
7,050.00	6,887.94	6,786.39	6,785.94	27.14	134.32	-164.85	-1,115.02	-5,013.30	5,570.85	5,410.77	160.08	34.801	
7,100.00	6,913.05	6,811.50	6,811.05	27.38	135.69	-162.82	-1,115.02	-5,013.30	5,613.63	5,452.07	161.55	34.748 SF	
7,150.00	6,934.68	6,833.13	6,832.68	27.64	136.87	-160.04	-1,115.02	-5,013.30	5,658.23	5,495.40	162.83	34.749	
7,200.00	6,952.71	6,851.16	6,850.71	27.92	137.86	-156.07	-1,115.02	-5,013.30	5,704.37	5,540.48	163.90	34.804	
7,250.00	6,967.02	6,865.47	6,865.02	28.21	138.64	-150.07	-1,115.02	-5,013.30	5,751.78	5,587.03	164.75	34.912	
7,300.00	6,977.54	6,875.99	6,875.54	28.52	139.22	-140.33	-1,115.02	-5,013.30	5,800.16	5,634.77	165.39	35.070	
7,350.00	6,984.18	6,882.64	6,882.18	28.83	139.58	-123.52	-1,115.02	-5,013.30	5,849.21	5,683.41	165.80	35.278	
7,400.00	6,986.92	6,885.37	6,884.92	29.16	139.73	-96.28	-1,115.02	-5,013.30	5,898.63	5,732.64	166.00	35.535	
7,409.89	6,987.00	6,885.45	6,885.00	29.23	139.74	-90.00	-1,115.02	-5,013.30	5,908.42	5,742.42	166.01	35.591	
7,500.00	6,987.00	6,885.45	6,885.00	29.85	139.74	-90.00	-1,115.02	-5,013.30	5,997.66	5,831.59	166.07	36.114	
7,600.00	6,987.00	6,885.45	6,885.00	30.61	139.74	-90.00	-1,115.02	-5,013.30	6,096.73	5,930.58	166.15	36.694	
7,700.00	6,987.00	6,885.45	6,885.00	31.41	139.74	-90.00	-1,115.02	-5,013.30	6,195.82	6,029.60	166.22	37.274	
7,800.00	6,987.00	6,885.45	6,885.00	32.27	139.74	-90.00	-1,115.02	-5,013.30	6,294.94	6,128.65	166.30	37.854	
7,900.00	6,987.00	6,885.45	6,885.00	33.17	139.74	-90.00	-1,115.02	-5,013.30	6,394.09	6,227.72	166.37	38.433	
8,000.00	6,987.00	6,885.45	6,885.00	34.12	139.74	-90.00	-1,115.02	-5,013.30	6,493.27	6,326.83	166.44	39.012	
8,100.00	6,987.00	6,885.45	6,885.00	35.10	139.74	-90.00	-1,115.02	-5,013.30	6,592.47	6,425.96	166.52	39.591	
8,200.00	6,987.00	6,885.45	6,885.00	36.12	139.74	-90.00	-1,115.02	-5,013.30	6,691.70	6,525.11	166.59	40.169	
8,300.00	6,987.00	6,885.45	6,885.00	37.17	139.74	-90.00	-1,115.02	-5,013.30	6,790.94	6,624.28	166.66	40.747	
8,314.89	6,987.00	6,885.45	6,885.00	37.33	139.74	-90.00	-1,115.02	-5,013.30	6,805.73	6,639.05	166.67	40.833	
8,400.00	6,987.00	6,885.45	6,885.00	38.25	139.74	-90.00	-1,115.02	-5,013.30	6,890.47	6,723.75	166.72	41.329	

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 #692H
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 #692H	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												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)			
8,500.00	6,987.00	6,885.45	6,885.00	39.35	139.74	90.00	-1,115.02	-5,013.30	6,990.41	6,823.66	166.75	41.921	
8,600.00	6,987.00	6,885.45	6,885.00	40.45	139.74	90.00	-1,115.02	-5,013.30	7,090.30	6,923.55	166.75	42.520	
8,700.00	6,987.00	6,885.45	6,885.00	41.56	139.74	90.00	-1,115.02	-5,013.30	7,189.65	7,022.93	166.72	43.124	
8,800.00	6,987.00	6,885.45	6,885.00	42.66	139.74	90.00	-1,115.02	-5,013.30	7,288.00	7,121.34	166.66	43.730	
8,900.00	6,987.00	6,885.45	6,885.00	43.75	139.74	90.00	-1,115.02	-5,013.30	7,384.95	7,218.37	166.58	44.334	
9,000.00	6,987.00	6,885.45	6,885.00	44.83	139.74	90.00	-1,115.02	-5,013.30	7,480.06	7,313.59	166.47	44.933	
9,071.74	6,987.00	6,885.45	6,885.00	45.59	139.74	90.00	-1,115.02	-5,013.30	7,546.95	7,380.57	166.39	45.358	
9,100.00	6,987.00	6,885.45	6,885.00	45.89	139.74	90.00	-1,115.02	-5,013.30	7,573.07	7,406.72	166.35	45.525	
9,200.00	6,987.00	6,885.45	6,885.00	46.97	139.74	90.00	-1,115.02	-5,013.30	7,665.61	7,499.37	166.24	46.112	
9,300.00	6,987.00	6,885.45	6,885.00	48.07	139.74	90.00	-1,115.02	-5,013.30	7,758.33	7,592.19	166.13	46.699	
9,400.00	6,987.00	6,885.45	6,885.00	49.20	139.74	90.00	-1,115.02	-5,013.30	7,851.23	7,685.19	166.04	47.285	
9,500.00	6,987.00	6,885.45	6,885.00	50.36	139.74	90.00	-1,115.02	-5,013.30	7,944.30	7,778.35	165.96	47.870	
9,600.00	6,987.00	6,885.45	6,885.00	51.54	139.74	90.00	-1,115.02	-5,013.30	8,037.54	7,871.66	165.88	48.454	
9,700.00	6,987.00	6,885.45	6,885.00	52.74	139.74	90.00	-1,115.02	-5,013.30	8,130.94	7,965.13	165.81	49.036	
9,800.00	6,987.00	6,885.45	6,885.00	53.96	139.74	90.00	-1,115.02	-5,013.30	8,224.50	8,058.74	165.75	49.618	
9,900.00	6,987.00	6,885.45	6,885.00	55.21	139.74	90.00	-1,115.02	-5,013.30	8,318.20	8,152.50	165.70	50.200	
10,000.00	6,987.00	6,885.45	6,885.00	56.47	139.74	90.00	-1,115.02	-5,013.30	8,412.05	8,246.39	165.66	50.780	
10,100.00	6,987.00	6,885.45	6,885.00	57.75	139.74	90.00	-1,115.02	-5,013.30	8,506.04	8,340.42	165.62	51.359	
10,200.00	6,987.00	6,885.45	6,885.00	59.04	139.74	90.00	-1,115.02	-5,013.30	8,600.17	8,434.58	165.59	51.937	
10,300.00	6,987.00	6,885.45	6,885.00	60.35	139.74	90.00	-1,115.02	-5,013.30	8,694.42	8,528.86	165.56	52.514	
10,400.00	6,987.00	6,885.45	6,885.00	61.67	139.74	90.00	-1,115.02	-5,013.30	8,788.81	8,623.26	165.55	53.090	
10,500.00	6,987.00	6,885.45	6,885.00	63.01	139.74	90.00	-1,115.02	-5,013.30	8,883.32	8,717.78	165.53	53.665	
10,600.00	6,987.00	6,885.45	6,885.00	64.36	139.74	90.00	-1,115.02	-5,013.30	8,977.94	8,812.42	165.52	54.239	
10,700.00	6,987.00	6,885.45	6,885.00	65.72	139.74	90.00	-1,115.02	-5,013.30	9,072.68	8,907.16	165.52	54.813	
10,800.00	6,987.00	6,885.45	6,885.00	67.09	139.74	90.00	-1,115.02	-5,013.30	9,167.53	9,002.01	165.52	55.385	
10,900.00	6,987.00	6,885.45	6,885.00	68.47	139.74	90.00	-1,115.02	-5,013.30	9,262.50	9,096.96	165.53	55.956	
11,000.00	6,987.00	6,885.45	6,885.00	69.86	139.74	90.00	-1,115.02	-5,013.30	9,357.56	9,192.02	165.54	56.526	
11,100.00	6,987.00	6,885.45	6,885.00	71.26	139.74	90.00	-1,115.02	-5,013.30	9,452.73	9,287.17	165.56	57.096	
11,200.00	6,987.00	6,885.45	6,885.00	72.67	139.74	90.00	-1,115.02	-5,013.30	9,548.00	9,382.42	165.58	57.664	
11,300.00	6,987.00	6,885.45	6,885.00	74.09	139.74	90.00	-1,115.02	-5,013.30	9,643.36	9,477.76	165.60	58.232	
11,400.00	6,987.00	6,885.45	6,885.00	75.51	139.74	90.00	-1,115.02	-5,013.30	9,738.81	9,573.18	165.63	58.798	
11,500.00	6,987.00	6,885.45	6,885.00	76.94	139.74	90.00	-1,115.02	-5,013.30	9,834.36	9,668.70	165.66	59.364	
11,600.00	6,987.00	6,885.45	6,885.00	78.38	139.74	90.00	-1,115.02	-5,013.30	9,929.99	9,764.30	165.70	59.928	
11,700.00	6,987.00	6,885.45	6,885.00	79.82	139.74	90.00	-1,115.02	-5,013.30	10,025.71	9,859.98	165.74	60.492	
11,800.00	6,987.00	6,885.45	6,885.00	81.27	139.74	90.00	-1,115.02	-5,013.30	10,121.51	9,955.74	165.78	61.055	
11,900.00	6,987.00	6,885.45	6,885.00	82.73	139.74	90.00	-1,115.02	-5,013.30	10,217.40	10,051.57	165.82	61.617	
12,000.00	6,987.00	6,885.45	6,885.00	84.19	139.74	90.00	-1,115.02	-5,013.30	10,313.36	10,147.49	165.87	62.178	
12,100.00	6,987.00	6,885.45	6,885.00	85.66	139.74	90.00	-1,115.02	-5,013.30	10,409.39	10,243.47	165.92	62.738	
12,200.00	6,987.00	6,885.45	6,885.00	87.13	139.74	90.00	-1,115.02	-5,013.30	10,505.50	10,339.53	165.97	63.297	
12,300.00	6,987.00	6,885.45	6,885.00	88.61	139.74	90.00	-1,115.02	-5,013.30	10,601.68	10,435.66	166.03	63.856	
12,400.00	6,987.00	6,885.45	6,885.00	90.09	139.74	90.00	-1,115.02	-5,013.30	10,697.94	10,531.85	166.08	64.413	
12,500.00	6,987.00	6,885.45	6,885.00	91.57	139.74	90.00	-1,115.02	-5,013.30	10,794.26	10,628.12	166.14	64.970	
12,600.00	6,987.00	6,885.45	6,885.00	93.06	139.74	90.00	-1,115.02	-5,013.30	10,890.64	10,724.44	166.20	65.526	
12,700.00	6,987.00	6,885.45	6,885.00	94.55	139.74	90.00	-1,115.02	-5,013.30	10,987.10	10,820.83	166.27	66.081	
12,800.00	6,987.00	6,885.45	6,885.00	96.05	139.74	90.00	-1,115.02	-5,013.30	11,083.61	10,917.28	166.33	66.635	
12,900.00	6,987.00	6,885.45	6,885.00	97.55	139.74	90.00	-1,115.02	-5,013.30	11,180.18	11,013.78	166.40	67.188	
13,000.00	6,987.00	6,885.45	6,885.00	99.05	139.74	90.00	-1,115.02	-5,013.30	11,276.82	11,110.35	166.47	67.741	
13,100.00	6,987.00	6,885.45	6,885.00	100.56	139.74	90.00	-1,115.02	-5,013.30	11,373.51	11,206.97	166.54	68.292	
13,200.00	6,987.00	6,885.45	6,885.00	102.07	139.74	90.00	-1,115.02	-5,013.30	11,470.26	11,303.65	166.61	68.843	
13,300.00	6,987.00	6,885.45	6,885.00	103.58	139.74	90.00	-1,115.02	-5,013.30	11,567.07	11,400.38	166.69	69.393	
13,400.00	6,987.00	6,885.45	6,885.00	105.09	139.74	90.00	-1,115.02	-5,013.30	11,663.93	11,497.16	166.77	69.942	
13,500.00	6,987.00	6,885.45	6,885.00	106.61	139.74	90.00	-1,115.02	-5,013.30	11,760.84	11,594.00	166.84	70.491	

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 #692H
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 #692H	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
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 Between Centres (usft)		Minimum Separation (usft)	Separation Factor
							+N/-S (usft)	+E/-W (usft)				Warning
13,600.00	6,987.00	6,885.45	6,885.00	108.13	139.74	90.00	-1,115.02	-5,013.30	11,857.80	11,690.88	166.92	71.038
13,700.00	6,987.00	6,885.45	6,885.00	109.65	139.74	90.00	-1,115.02	-5,013.30	11,954.82	11,787.81	167.00	71.585
13,800.00	6,987.00	6,885.45	6,885.00	111.18	139.74	90.00	-1,115.02	-5,013.30	12,051.88	11,884.79	167.08	72.131
13,900.00	6,987.00	6,885.45	6,885.00	112.71	139.74	90.00	-1,115.02	-5,013.30	12,148.99	11,981.82	167.17	72.676
14,000.00	6,987.00	6,885.45	6,885.00	114.23	139.74	90.00	-1,115.02	-5,013.30	12,246.14	12,078.89	167.25	73.221
14,100.00	6,987.00	6,885.45	6,885.00	115.77	139.74	90.00	-1,115.02	-5,013.30	12,343.34	12,176.01	167.33	73.764
14,200.00	6,987.00	6,885.45	6,885.00	117.30	139.74	90.00	-1,115.02	-5,013.30	12,440.59	12,273.17	167.42	74.307
14,300.00	6,987.00	6,885.45	6,885.00	118.83	139.74	90.00	-1,115.02	-5,013.30	12,537.88	12,370.37	167.51	74.849
14,400.00	6,987.00	6,885.45	6,885.00	120.37	139.74	90.00	-1,115.02	-5,013.30	12,635.21	12,467.61	167.60	75.391
14,500.00	6,987.00	6,885.45	6,885.00	121.91	139.74	90.00	-1,115.02	-5,013.30	12,732.58	12,564.90	167.69	75.931
14,600.00	6,987.00	6,885.45	6,885.00	123.45	139.74	90.00	-1,115.02	-5,013.30	12,830.00	12,662.22	167.78	76.471
14,700.00	6,987.00	6,885.45	6,885.00	124.99	139.74	90.00	-1,115.02	-5,013.30	12,927.45	12,759.58	167.87	77.010
14,800.00	6,987.00	6,885.45	6,885.00	126.53	139.74	90.00	-1,115.02	-5,013.30	13,024.94	12,856.98	167.96	77.549
14,900.00	6,987.00	6,885.45	6,885.00	128.08	139.74	90.00	-1,115.02	-5,013.30	13,122.47	12,954.42	168.05	78.086
15,000.00	6,987.00	6,885.45	6,885.00	129.63	139.74	90.00	-1,115.02	-5,013.30	13,220.04	13,051.89	168.14	78.623
15,100.00	6,987.00	6,885.45	6,885.00	131.17	139.74	90.00	-1,115.02	-5,013.30	13,317.64	13,149.40	168.24	79.159
15,200.00	6,987.00	6,885.45	6,885.00	132.72	139.74	90.00	-1,115.02	-5,013.30	13,415.28	13,246.94	168.33	79.695
15,300.00	6,987.00	6,885.45	6,885.00	134.27	139.74	90.00	-1,115.02	-5,013.30	13,512.95	13,344.52	168.43	80.229
15,400.00	6,987.00	6,885.45	6,885.00	135.83	139.74	90.00	-1,115.02	-5,013.30	13,610.65	13,442.13	168.53	80.763
15,500.00	6,987.00	6,885.45	6,885.00	137.38	139.74	90.00	-1,115.02	-5,013.30	13,708.39	13,539.77	168.62	81.296
15,600.00	6,987.00	6,885.45	6,885.00	138.93	139.74	90.00	-1,115.02	-5,013.30	13,806.16	13,637.44	168.72	81.829
15,700.00	6,987.00	6,885.45	6,885.00	140.49	139.74	90.00	-1,115.02	-5,013.30	13,903.97	13,735.15	168.82	82.361
15,800.00	6,987.00	6,885.45	6,885.00	142.04	139.74	90.00	-1,115.02	-5,013.30	14,001.80	13,832.88	168.92	82.892
15,900.00	6,987.00	6,885.45	6,885.00	143.60	139.74	90.00	-1,115.02	-5,013.30	14,099.67	13,930.65	169.02	83.422
16,000.00	6,987.00	6,885.45	6,885.00	145.16	139.74	90.00	-1,115.02	-5,013.30	14,197.56	14,028.44	169.12	83.951
16,100.00	6,987.00	6,885.45	6,885.00	146.72	139.74	90.00	-1,115.02	-5,013.30	14,295.48	14,126.27	169.22	84.480
16,200.00	6,987.00	6,885.45	6,885.00	148.28	139.74	90.00	-1,115.02	-5,013.30	14,393.44	14,224.12	169.32	85.008
16,300.00	6,987.00	6,885.45	6,885.00	149.84	139.74	90.00	-1,115.02	-5,013.30	14,491.42	14,322.00	169.42	85.536
16,400.00	6,987.00	6,885.45	6,885.00	151.40	139.74	90.00	-1,115.02	-5,013.30	14,589.42	14,419.90	169.52	86.062
16,500.00	6,987.00	6,885.45	6,885.00	152.97	139.74	90.00	-1,115.02	-5,013.30	14,687.46	14,517.83	169.62	86.588
16,600.00	6,987.00	6,885.45	6,885.00	154.53	139.74	90.00	-1,115.02	-5,013.30	14,785.52	14,615.79	169.73	87.113
16,700.00	6,987.00	6,885.45	6,885.00	156.10	139.74	90.00	-1,115.02	-5,013.30	14,883.60	14,713.77	169.83	87.638
16,800.00	6,987.00	6,885.45	6,885.00	157.66	139.74	90.00	-1,115.02	-5,013.30	14,981.72	14,811.78	169.93	88.162
16,900.00	6,987.00	6,885.45	6,885.00	159.23	139.74	90.00	-1,115.02	-5,013.30	15,079.85	14,909.81	170.04	88.685
17,000.00	6,987.00	6,885.45	6,885.00	160.80	139.74	90.00	-1,115.02	-5,013.30	15,178.01	15,007.87	170.14	89.207
17,100.00	6,987.00	6,885.45	6,885.00	162.36	139.74	90.00	-1,115.02	-5,013.30	15,276.20	15,105.95	170.25	89.729
17,200.00	6,987.00	6,885.45	6,885.00	163.93	139.74	90.00	-1,115.02	-5,013.30	15,374.41	15,204.05	170.35	90.250
17,300.00	6,987.00	6,885.45	6,885.00	165.50	139.74	90.00	-1,115.02	-5,013.30	15,472.64	15,302.18	170.46	90.770
17,400.00	6,987.00	6,885.45	6,885.00	167.07	139.74	90.00	-1,115.02	-5,013.30	15,570.89	15,400.32	170.57	91.289
17,500.00	6,987.00	6,885.45	6,885.00	168.64	139.74	90.00	-1,115.02	-5,013.30	15,669.17	15,498.49	170.67	91.808
17,600.00	6,987.00	6,885.45	6,885.00	170.21	139.74	90.00	-1,115.02	-5,013.30	15,767.46	15,596.68	170.78	92.326
17,700.00	6,987.00	6,885.45	6,885.00	171.78	139.74	90.00	-1,115.02	-5,013.30	15,865.78	15,694.89	170.89	92.843
17,800.00	6,987.00	6,885.45	6,885.00	173.36	139.74	90.00	-1,115.02	-5,013.30	15,964.12	15,793.13	171.00	93.360
17,900.00	6,987.00	6,885.45	6,885.00	174.93	139.74	90.00	-1,115.02	-5,013.30	16,062.48	15,891.38	171.10	93.876
18,000.00	6,987.00	6,885.45	6,885.00	176.50	139.74	90.00	-1,115.02	-5,013.30	16,160.86	15,989.65	171.21	94.391
18,100.00	6,987.00	6,885.45	6,885.00	178.08	139.74	90.00	-1,115.02	-5,013.30	16,259.26	16,087.94	171.32	94.906
18,200.00	6,987.00	6,885.45	6,885.00	179.65	139.74	90.00	-1,115.02	-5,013.30	16,357.68	16,186.25	171.43	95.419
18,300.00	6,987.00	6,885.45	6,885.00	181.23	139.74	90.00	-1,115.02	-5,013.30	16,456.12	16,284.58	171.54	95.933
18,400.00	6,987.00	6,885.45	6,885.00	182.80	139.74	90.00	-1,115.02	-5,013.30	16,554.58	16,382.93	171.65	96.445
18,500.00	6,987.00	6,885.45	6,885.00	184.38	139.74	90.00	-1,115.02	-5,013.30	16,653.05	16,481.29	171.76	96.957
18,600.00	6,987.00	6,885.45	6,885.00	185.96	139.74	90.00	-1,115.02	-5,013.30	16,751.54	16,579.68	171.87	97.468
18,700.00	6,987.00	6,885.45	6,885.00	187.53	139.74	90.00	-1,115.02	-5,013.30	16,850.06	16,678.08	171.98	97.978

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 #692H
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 #692H	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		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	
18,800.00	6,987.00	6,885.45	6,885.00	189.11	139.74	90.00	-1,115.02	-5,013.30	16,948.58	16,776.50	172.09	98.487	
18,900.00	6,987.00	6,885.45	6,885.00	190.69	139.74	90.00	-1,115.02	-5,013.30	17,047.13	16,874.93	172.20	98.996	
19,000.00	6,987.00	6,885.45	6,885.00	192.27	139.74	90.00	-1,115.02	-5,013.30	17,145.69	16,973.38	172.31	99.504	
19,100.00	6,987.00	6,885.45	6,885.00	193.85	139.74	90.00	-1,115.02	-5,013.30	17,244.27	17,071.85	172.42	100.012	
19,200.00	6,987.00	6,885.45	6,885.00	195.43	139.74	90.00	-1,115.02	-5,013.30	17,342.87	17,170.33	172.53	100.519	
19,255.69	6,987.00	6,885.45	6,885.00	196.31	139.74	90.00	-1,115.02	-5,013.30	17,397.78	17,225.19	172.60	100.801	
19,300.00	6,987.00	6,885.45	6,885.00	197.01	139.74	90.00	-1,115.02	-5,013.30	17,441.48	17,268.83	172.65	101.025	
19,400.00	6,987.00	6,885.45	6,885.00	198.59	139.74	90.00	-1,115.02	-5,013.30	17,540.11	17,367.35	172.76	101.530	
19,468.80	6,987.00	6,885.45	6,885.00	199.49	139.74	90.00	-1,115.02	-5,013.30	17,607.97	17,430.69	177.29	99.318	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		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	-95.23	-726.86	-7,939.39	7,973.12				
100.00	100.00	9.00	9.00	0.25	0.18	-95.23	-726.86	-7,939.39	7,972.60	7,972.17	0.43	N/A	
200.00	200.00	109.00	109.00	0.61	2.15	-95.23	-726.86	-7,939.39	7,972.60	7,969.84	2.76	2,892.112	
300.00	300.00	209.00	209.00	0.97	4.61	-95.23	-726.86	-7,939.39	7,972.60	7,967.02	5.57	1,430.427	
400.00	400.00	309.00	309.00	1.33	7.11	-95.23	-726.86	-7,939.39	7,972.60	7,964.16	8.43	945.418	
435.82	435.82	343.99	343.98	1.45	7.98	-95.23	-726.25	-7,939.39	7,972.54	7,963.10	9.44	844.892	
500.00	500.00	406.62	406.61	1.68	9.55	-95.23	-726.39	-7,939.39	7,972.55	7,961.32	11.23	709.765	
600.00	600.00	509.15	509.00	2.04	12.15	-95.23	-726.86	-7,939.39	7,972.60	7,958.41	14.19	561.843	
700.00	700.00	609.15	609.00	2.40	15.22	-95.23	-726.86	-7,939.39	7,972.60	7,954.98	17.62	452.504	
738.18	738.18	644.80	644.63	2.54	16.31	-88.83	-725.72	-7,939.39	7,972.49	7,953.64	18.85	422.942	
800.00	799.98	700.08	699.89	2.76	18.01	-88.85	-726.16	-7,939.39	7,972.50	7,951.73	20.77	383.872	
900.00	899.84	809.15	808.84	3.12	21.08	-88.89	-726.86	-7,939.39	7,972.46	7,948.26	24.19	329.529	
1,000.00	999.45	905.04	904.70	3.48	23.61	-88.95	-725.86	-7,939.39	7,972.20	7,945.12	27.08	294.365	
1,100.00	1,098.70	1,008.12	1,007.70	3.85	26.28	-89.05	-726.86	-7,939.39	7,972.08	7,941.96	30.12	264.686	
1,153.80	1,151.90	1,061.32	1,060.90	4.04	27.51	-89.11	-726.86	-7,939.39	7,971.95	7,940.41	31.54	252.730	
1,200.00	1,197.53	1,106.94	1,106.53	4.21	28.56	-89.16	-726.86	-7,939.39	7,971.84	7,939.07	32.77	243.291	
1,300.00	1,296.27	1,205.69	1,205.27	4.59	30.83	-89.27	-726.86	-7,939.39	7,971.62	7,936.20	35.42	225.063	
1,400.00	1,395.02	1,302.32	1,301.89	4.97	33.06	-89.37	-725.59	-7,939.39	7,971.31	7,933.28	38.03	209.616	
1,500.00	1,493.77	1,397.63	1,397.19	5.36	35.25	-89.49	-726.04	-7,939.39	7,971.20	7,930.59	40.61	196.287	
1,600.00	1,592.52	1,502.05	1,501.52	5.74	37.65	-89.61	-726.86	-7,939.39	7,971.15	7,927.76	43.39	183.699	
1,700.00	1,691.27	1,600.80	1,600.27	6.14	39.82	-89.72	-726.86	-7,939.39	7,971.06	7,925.10	45.96	173.438	
1,800.00	1,790.01	1,699.55	1,699.01	6.53	42.00	-89.83	-726.86	-7,939.39	7,971.00	7,922.47	48.53	164.257	
1,887.67	1,876.59	1,784.38	1,783.83	6.87	43.87	-89.92	-725.55	-7,939.39	7,970.83	7,920.08	50.74	157.084 CC	
1,900.00	1,888.76	1,796.10	1,795.55	6.92	44.13	-89.93	-725.58	-7,939.39	7,970.83	7,919.78	51.05	156.140	
2,000.00	1,987.51	1,891.11	1,890.55	7.32	46.22	-90.04	-726.01	-7,939.39	7,970.88	7,917.34	53.54	148.882	
2,100.00	2,086.26	1,995.89	1,995.26	7.72	48.51	-90.17	-726.86	-7,939.39	7,971.00	7,914.77	56.23	141.763	
2,200.00	2,185.01	2,094.64	2,094.01	8.11	50.49	-90.28	-726.86	-7,939.39	7,971.06	7,912.46	58.60	136.017	
2,300.00	2,283.75	2,193.38	2,192.75	8.51	52.47	-90.39	-726.86	-7,939.39	7,971.16	7,910.18	60.98	130.717	
2,326.82	2,310.24	2,219.85	2,219.21	8.62	53.00	-90.42	-725.85	-7,939.39	7,971.07	7,909.45	61.62	129.364	
2,400.00	2,382.50	2,289.61	2,288.97	8.91	54.39	-90.50	-725.94	-7,939.39	7,971.17	7,907.87	63.31	125.913	
2,500.00	2,481.25	2,384.84	2,384.19	9.31	56.30	-90.61	-726.37	-7,939.39	7,971.38	7,905.77	65.61	121.489	
2,600.00	2,580.00	2,489.68	2,489.00	9.71	58.41	-90.73	-726.86	-7,939.39	7,971.63	7,903.51	68.12	117.024	
2,700.00	2,678.75	2,588.43	2,587.75	10.11	60.40	-90.84	-726.86	-7,939.39	7,971.85	7,901.33	70.51	113.059	
2,800.00	2,777.49	2,687.18	2,686.49	10.52	62.39	-90.95	-726.86	-7,939.39	7,972.10	7,899.19	72.90	109.354	
2,900.00	2,876.24	2,783.82	2,783.13	10.92	64.33	-91.06	-726.11	-7,939.39	7,972.28	7,897.03	75.25	105.942	
3,000.00	2,974.99	2,879.94	2,879.25	11.32	66.27	-91.17	-726.43	-7,939.39	7,972.63	7,895.04	77.59	102.753	
3,100.00	3,073.74	2,983.48	2,982.74	11.72	68.34	-91.29	-726.86	-7,939.39	7,973.03	7,892.97	80.06	99.590	
3,200.00	3,172.49	3,082.23	3,081.49	12.13	70.24	-91.40	-726.86	-7,939.39	7,973.41	7,891.04	82.36	96.806	
3,300.00	3,271.23	3,180.98	3,180.23	12.53	72.14	-91.51	-726.86	-7,939.39	7,973.81	7,889.14	84.67	94.174	
3,400.00	3,369.98	3,278.38	3,277.62	12.93	74.02	-91.61	-725.66	-7,939.39	7,974.08	7,887.13	86.95	91.706	
3,500.00	3,468.73	3,373.77	3,373.01	13.34	75.86	-91.72	-725.92	-7,939.39	7,974.59	7,885.39	89.19	89.407	
3,600.00	3,567.48	3,469.08	3,468.31	13.74	77.70	-91.84	-726.46	-7,939.39	7,975.17	7,883.73	91.44	87.222	
3,700.00	3,666.23	3,576.02	3,575.23	14.14	79.87	-91.96	-726.86	-7,939.39	7,975.75	7,881.74	94.01	84.839	
3,800.00	3,764.97	3,673.23	3,672.44	14.55	81.93	-92.07	-726.63	-7,939.39	7,976.28	7,879.80	96.48	82.673	
3,900.00	3,863.72	3,773.55	3,772.72	14.95	84.31	-92.18	-726.86	-7,939.39	7,976.91	7,877.65	99.26	80.366	
4,000.00	3,962.47	3,872.30	3,871.47	15.36	87.77	-92.30	-726.86	-7,939.39	7,977.53	7,874.41	103.12	77.359	
4,100.00	4,061.22	3,971.05	3,970.22	15.76	91.23	-92.41	-726.86	-7,939.39	7,978.18	7,871.19	106.99	74.569	
4,200.00	4,159.97	4,065.86	4,065.01	16.17	94.55	-92.50	-725.33	-7,939.39	7,978.63	7,867.91	110.72	72.062	
4,300.00	4,258.71	4,158.50	4,157.62	16.57	97.80	-92.61	-725.85	-7,939.39	7,979.44	7,865.06	114.37	69.768	
4,400.00	4,357.46	4,267.91	4,266.46	16.98	101.81	-92.74	-726.86	-7,939.39	7,980.34	7,861.56	118.78	67.184	
4,500.00	4,456.21	4,346.66	4,345.15	17.38	105.61	-92.83	-725.98	-7,939.39	7,981.00	7,858.01	122.99	64.890	
4,600.00	4,554.96	4,446.55	4,444.70	17.79	110.48	-92.94	-726.07	-7,939.39	7,981.82	7,853.56	128.27	62.229	

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 #692H
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 #692H	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)				
4,700.00	4,653.71	4,544.41	4,542.32	18.19	115.16	-93.05	-726.20	-7,939.39	7,982.69	7,849.34	133.34	59.865			
4,800.00	4,752.45	4,653.12	4,650.78	18.60	120.51	-93.17	-725.76	-7,939.39	7,983.47	7,844.36	139.10	57.393			
4,900.00	4,851.20	4,757.33	4,754.63	19.00	125.73	-93.29	-725.94	-7,939.39	7,984.39	7,839.66	144.73	55.167			
5,000.00	4,949.95	4,861.87	4,858.95	19.41	130.95	-93.41	-726.86	-7,939.39	7,985.48	7,835.13	150.35	53.112			
5,100.00	5,048.70	4,961.00	4,957.70	19.81	135.88	-93.52	-726.86	-7,939.39	7,986.45	7,830.76	155.69	51.298			
5,200.00	5,147.45	5,037.18	5,033.82	20.22	139.77	-93.60	-725.94	-7,939.39	7,987.32	7,827.33	159.99	49.925			
5,300.00	5,246.19	5,158.83	5,155.19	20.62	145.83	-93.75	-726.86	-7,939.39	7,988.47	7,822.02	166.45	47.993			
5,400.00	5,344.94	5,257.58	5,253.94	21.03	150.70	-93.86	-726.86	-7,939.39	7,989.53	7,817.81	171.72	46.526			
5,433.33	5,377.85	5,290.49	5,286.70	21.16	152.32	-93.87	-722.81	-7,939.39	7,989.17	7,815.69	173.48	46.053			
5,455.76	5,400.00	5,308.34	5,304.53	21.25	153.20	-93.89	-722.84	-7,939.39	7,989.42	7,814.97	174.45	45.798			
5,500.00	5,443.72	5,343.53	5,339.70	21.43	154.93	-93.93	-723.05	-7,939.39	7,989.93	7,813.57	176.36	45.304			
5,600.00	5,542.71	5,423.10	5,419.18	21.83	158.85	-94.03	-724.30	-7,939.39	7,991.22	7,810.54	180.68	44.229			
5,700.00	5,641.93	5,555.64	5,550.93	22.22	165.30	-94.18	-726.86	-7,939.39	7,992.52	7,805.01	187.51	42.624			
5,800.00	5,741.36	5,655.07	5,650.36	22.60	170.01	-94.26	-726.86	-7,939.39	7,993.31	7,800.71	192.60	41.502			
5,900.00	5,840.96	5,754.67	5,749.96	22.97	174.72	-94.33	-726.86	-7,939.39	7,993.98	7,796.30	197.68	40.438			
6,000.00	5,940.70	5,854.41	5,849.70	23.33	179.45	-94.39	-726.86	-7,939.39	7,994.53	7,791.77	202.77	39.427			
6,100.00	6,040.55	5,949.00	5,943.35	23.68	183.92	-94.43	-726.86	-7,939.39	7,994.96	7,787.36	207.60	38.512 ES			
6,200.00	6,140.48	5,949.00	5,943.35	24.02	183.92	-94.44	-726.86	-7,939.39	7,995.95	7,788.03	207.92	38.457			
6,300.00	6,240.45	5,949.00	5,943.35	24.35	183.92	-94.46	-726.86	-7,939.39	7,998.05	7,789.85	208.20	38.415			
6,408.05	6,348.50	5,949.00	5,943.35	24.69	183.92	85.50	-726.86	-7,939.39	8,001.58	7,793.13	208.45	38.386			
6,450.00	6,390.43	5,949.00	5,943.35	24.82	183.92	-167.30	-726.86	-7,939.39	8,004.62	7,796.08	208.53	38.385 SF			
6,500.00	6,440.15	5,949.00	5,943.35	24.99	183.92	-163.48	-726.86	-7,939.39	8,011.90	7,803.26	208.64	38.401			
6,550.00	6,489.32	5,949.00	5,943.35	25.16	183.92	-162.11	-726.86	-7,939.39	8,023.13	7,814.39	208.74	38.435			
6,600.00	6,537.64	5,949.00	5,943.35	25.34	183.92	-161.14	-726.86	-7,939.39	8,038.21	7,829.37	208.84	38.489			
6,650.00	6,584.80	5,949.00	5,943.35	25.52	183.92	-160.21	-726.86	-7,939.39	8,057.03	7,848.09	208.94	38.561			
6,700.00	6,630.52	5,949.00	5,943.35	25.71	183.92	-159.21	-726.86	-7,939.39	8,079.44	7,870.41	209.03	38.651			
6,750.00	6,674.51	5,949.00	5,943.35	25.89	183.92	-158.06	-726.86	-7,939.39	8,105.29	7,896.17	209.12	38.758			
6,800.00	6,716.50	5,949.00	5,943.35	26.08	183.92	-156.68	-726.86	-7,939.39	8,134.37	7,925.17	209.21	38.882			
6,850.00	6,756.24	5,949.00	5,943.35	26.28	183.92	-155.03	-726.86	-7,939.39	8,166.48	7,957.19	209.29	39.020			
6,900.00	6,793.47	5,949.00	5,943.35	26.48	183.92	-153.01	-726.86	-7,939.39	8,201.39	7,992.02	209.37	39.172			
6,950.00	6,827.97	5,949.00	5,943.35	26.69	183.92	-150.52	-726.86	-7,939.39	8,238.83	8,029.39	209.44	39.337			
7,000.00	6,859.53	5,949.00	5,943.35	26.91	183.92	-147.40	-726.86	-7,939.39	8,278.56	8,069.04	209.52	39.512			
7,050.00	6,887.94	5,949.00	5,943.35	27.14	183.92	-143.45	-726.86	-7,939.39	8,320.29	8,110.70	209.59	39.698			
7,100.00	6,913.05	5,949.00	5,943.35	27.38	183.92	-138.39	-726.86	-7,939.39	8,363.74	8,154.07	209.67	39.891			
7,150.00	6,934.68	5,949.00	5,943.35	27.64	183.92	-131.85	-726.86	-7,939.39	8,408.61	8,198.87	209.74	40.091			
7,200.00	6,952.71	5,949.00	5,943.35	27.92	183.92	-123.41	-726.86	-7,939.39	8,454.62	8,244.80	209.82	40.295			
7,250.00	6,967.02	5,949.00	5,943.35	28.21	183.92	-112.75	-726.86	-7,939.39	8,501.45	8,291.56	209.90	40.503			
7,300.00	6,977.54	5,949.00	5,943.35	28.52	183.92	-99.97	-726.86	-7,939.39	8,548.82	8,338.83	209.98	40.712			
7,350.00	6,984.18	5,949.00	5,943.35	28.83	183.92	-86.03	-726.86	-7,939.39	8,596.41	8,386.34	210.07	40.921			
7,400.00	6,986.92	5,949.00	5,943.35	29.16	183.92	-72.54	-726.86	-7,939.39	8,643.94	8,433.77	210.17	41.128			
7,409.89	6,987.00	5,949.00	5,943.35	29.23	183.92	-70.05	-726.86	-7,939.39	8,653.31	8,443.12	210.19	41.169			
7,500.00	6,987.00	5,949.00	5,943.35	29.85	183.92	-70.05	-726.86	-7,939.39	8,738.65	8,528.27	210.38	41.538			
7,600.00	6,987.00	5,949.00	5,943.35	30.61	183.92	-70.05	-726.86	-7,939.39	8,833.47	8,622.88	210.58	41.948			
7,700.00	6,987.00	5,949.00	5,943.35	31.41	183.92	-70.05	-726.86	-7,939.39	8,928.39	8,717.60	210.79	42.356			
7,800.00	6,987.00	5,949.00	5,943.35	32.27	183.92	-70.05	-726.86	-7,939.39	9,023.43	8,812.43	211.00	42.765			
7,900.00	6,987.00	5,949.00	5,943.35	33.17	183.92	-70.05	-726.86	-7,939.39	9,118.58	8,907.37	211.21	43.173			
8,000.00	6,987.00	5,949.00	5,943.35	34.12	183.92	-70.05	-726.86	-7,939.39	9,213.83	9,002.40	211.42	43.580			
8,100.00	6,987.00	5,949.00	5,943.35	35.10	183.92	-70.05	-726.86	-7,939.39	9,309.17	9,097.54	211.63	43.987			
8,200.00	6,987.00	5,949.00	5,943.35	36.12	183.92	-70.05	-726.86	-7,939.39	9,404.62	9,192.77	211.85	44.394			
8,300.00	6,987.00	5,949.00	5,943.35	37.17	183.92	-70.05	-726.86	-7,939.39	9,500.16	9,288.10	212.06	44.800			
8,314.89	6,987.00	5,949.00	5,943.35	37.33	183.92	-70.05	-726.86	-7,939.39	9,514.39	9,302.30	212.09	44.861			
8,400.00	6,987.00	5,949.00	5,943.35	38.25	183.92	-65.36	-726.86	-7,939.39	9,596.43	9,384.17	212.25	45.212			

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 #692H
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 #692H	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
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 Between Centres (usft)		Minimum Separation (usft)	Separation Factor
							+N/-S (usft)	+E/-W (usft)	Between Ellipses (usft)			Warning
8,500.00	6,987.00	5,949.00	5,943.35	39.35	183.92	-56.12	-726.86	-7,939.39	9,694.25	9,481.84	212.41	45.640
8,600.00	6,987.00	5,949.00	5,943.35	40.45	183.92	-38.06	-726.86	-7,939.39	9,793.13	9,580.61	212.52	46.081
8,700.00	6,987.00	5,949.00	5,943.35	41.56	183.92	-3.77	-726.86	-7,939.39	9,892.55	9,679.97	212.58	46.535
8,800.00	6,987.00	5,949.00	5,943.35	42.66	183.92	33.38	-726.86	-7,939.39	9,992.03	9,779.43	212.60	46.998
8,900.00	6,987.00	5,949.00	5,943.35	43.75	183.92	54.23	-726.86	-7,939.39	10,091.09	9,878.50	212.58	47.469
9,000.00	6,987.00	5,949.00	5,943.35	44.83	183.92	64.72	-726.86	-7,939.39	10,189.25	9,976.74	212.52	47.945
9,071.74	6,987.00	5,949.00	5,943.35	45.59	183.92	69.25	-726.86	-7,939.39	10,258.88	10,046.43	212.45	48.289
9,100.00	6,987.00	5,949.00	5,943.35	45.89	183.92	69.25	-726.86	-7,939.39	10,286.16	10,073.74	212.42	48.424
9,200.00	6,987.00	5,949.00	5,943.35	46.97	183.92	69.25	-726.86	-7,939.39	10,382.71	10,170.40	212.31	48.903
9,300.00	6,987.00	5,949.00	5,943.35	48.07	183.92	69.25	-726.86	-7,939.39	10,479.34	10,267.12	212.22	49.380
9,400.00	6,987.00	5,949.00	5,943.35	49.20	183.92	69.25	-726.86	-7,939.39	10,576.02	10,363.90	212.12	49.858
9,500.00	6,987.00	5,949.00	5,943.35	50.36	183.92	69.25	-726.86	-7,939.39	10,672.76	10,460.73	212.04	50.334
9,600.00	6,987.00	5,949.00	5,943.35	51.54	183.92	69.25	-726.86	-7,939.39	10,769.57	10,557.61	211.96	50.810
9,700.00	6,987.00	5,949.00	5,943.35	52.74	183.92	69.25	-726.86	-7,939.39	10,866.43	10,654.55	211.88	51.286
9,800.00	6,987.00	5,949.00	5,943.35	53.96	183.92	69.25	-726.86	-7,939.39	10,963.35	10,751.54	211.81	51.760
9,900.00	6,987.00	5,949.00	5,943.35	55.21	183.92	69.25	-726.86	-7,939.39	11,060.32	10,848.58	211.74	52.235
10,000.00	6,987.00	5,949.00	5,943.35	56.47	183.92	69.25	-726.86	-7,939.39	11,157.35	10,945.67	211.68	52.708
10,100.00	6,987.00	5,949.00	5,943.35	57.75	183.92	69.25	-726.86	-7,939.39	11,254.43	11,042.81	211.62	53.181
10,200.00	6,987.00	5,949.00	5,943.35	59.04	183.92	69.25	-726.86	-7,939.39	11,351.56	11,139.99	211.57	53.654
10,300.00	6,987.00	5,949.00	5,943.35	60.35	183.92	69.25	-726.86	-7,939.39	11,448.74	11,237.22	211.52	54.125
10,400.00	6,987.00	5,949.00	5,943.35	61.67	183.92	69.25	-726.86	-7,939.39	11,545.97	11,334.49	211.48	54.597
10,500.00	6,987.00	5,949.00	5,943.35	63.01	183.92	69.25	-726.86	-7,939.39	11,643.24	11,431.80	211.44	55.067
10,600.00	6,987.00	5,949.00	5,943.35	64.36	183.92	69.25	-726.86	-7,939.39	11,740.56	11,529.16	211.40	55.537
10,700.00	6,987.00	5,949.00	5,943.35	65.72	183.92	69.25	-726.86	-7,939.39	11,837.93	11,626.56	211.37	56.006
10,800.00	6,987.00	5,949.00	5,943.35	67.09	183.92	69.25	-726.86	-7,939.39	11,935.34	11,724.00	211.34	56.475
10,900.00	6,987.00	5,949.00	5,943.35	68.47	183.92	69.25	-726.86	-7,939.39	12,032.79	11,821.47	211.31	56.943
11,000.00	6,987.00	5,949.00	5,943.35	69.86	183.92	69.25	-726.86	-7,939.39	12,130.28	11,918.99	211.29	57.410
11,100.00	6,987.00	5,949.00	5,943.35	71.26	183.92	69.25	-726.86	-7,939.39	12,227.81	12,016.54	211.27	57.876
11,200.00	6,987.00	5,949.00	5,943.35	72.67	183.92	69.25	-726.86	-7,939.39	12,325.39	12,114.13	211.26	58.342
11,300.00	6,987.00	5,949.00	5,943.35	74.09	183.92	69.25	-726.86	-7,939.39	12,423.00	12,211.75	211.25	58.808
11,400.00	6,987.00	5,949.00	5,943.35	75.51	183.92	69.25	-726.86	-7,939.39	12,520.65	12,309.41	211.24	59.272
11,500.00	6,987.00	5,949.00	5,943.35	76.94	183.92	69.25	-726.86	-7,939.39	12,618.33	12,407.10	211.23	59.736
11,600.00	6,987.00	5,949.00	5,943.35	78.38	183.92	69.25	-726.86	-7,939.39	12,716.05	12,504.82	211.23	60.199
11,700.00	6,987.00	5,949.00	5,943.35	79.82	183.92	69.25	-726.86	-7,939.39	12,813.81	12,602.58	211.23	60.662
11,800.00	6,987.00	5,949.00	5,943.35	81.27	183.92	69.25	-726.86	-7,939.39	12,911.60	12,700.36	211.24	61.124
11,900.00	6,987.00	5,949.00	5,943.35	82.73	183.92	69.25	-726.86	-7,939.39	13,009.43	12,798.18	211.24	61.585
12,000.00	6,987.00	5,949.00	5,943.35	84.19	183.92	69.25	-726.86	-7,939.39	13,107.28	12,896.03	211.25	62.046
12,100.00	6,987.00	5,949.00	5,943.35	85.66	183.92	69.25	-726.86	-7,939.39	13,205.17	12,993.91	211.26	62.506
12,200.00	6,987.00	5,949.00	5,943.35	87.13	183.92	69.25	-726.86	-7,939.39	13,303.09	13,091.82	211.28	62.965
12,300.00	6,987.00	5,949.00	5,943.35	88.61	183.92	69.25	-726.86	-7,939.39	13,401.05	13,189.75	211.29	63.423
12,400.00	6,987.00	5,949.00	5,943.35	90.09	183.92	69.25	-726.86	-7,939.39	13,499.03	13,287.71	211.31	63.881
12,500.00	6,987.00	5,949.00	5,943.35	91.57	183.92	69.25	-726.86	-7,939.39	13,597.04	13,385.70	211.34	64.339
12,600.00	6,987.00	5,949.00	5,943.35	93.06	183.92	69.25	-726.86	-7,939.39	13,695.08	13,483.72	211.36	64.795
12,700.00	6,987.00	5,949.00	5,943.35	94.55	183.92	69.25	-726.86	-7,939.39	13,793.15	13,581.76	211.39	65.251
12,800.00	6,987.00	5,949.00	5,943.35	96.05	183.92	69.25	-726.86	-7,939.39	13,891.24	13,679.83	211.41	65.706
12,900.00	6,987.00	5,949.00	5,943.35	97.55	183.92	69.25	-726.86	-7,939.39	13,989.36	13,777.92	211.44	66.161
13,000.00	6,987.00	5,949.00	5,943.35	99.05	183.92	69.25	-726.86	-7,939.39	14,087.51	13,876.04	211.48	66.615
13,100.00	6,987.00	5,949.00	5,943.35	100.56	183.92	69.25	-726.86	-7,939.39	14,185.69	13,974.18	211.51	67.068
13,200.00	6,987.00	5,949.00	5,943.35	102.07	183.92	69.25	-726.86	-7,939.39	14,283.89	14,072.34	211.55	67.521
13,300.00	6,987.00	5,949.00	5,943.35	103.58	183.92	69.25	-726.86	-7,939.39	14,382.11	14,170.53	211.59	67.972
13,400.00	6,987.00	5,949.00	5,943.35	105.09	183.92	69.25	-726.86	-7,939.39	14,480.36	14,268.74	211.63	68.424
13,500.00	6,987.00	5,949.00	5,943.35	106.61	183.92	69.25	-726.86	-7,939.39	14,578.64	14,366.97	211.67	68.874

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 #692H
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 #692H	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)		
13,600.00	6,987.00	5,949.00	5,943.35	108.13	183.92	69.25	-726.86	-7,939.39	14,676.93	14,465.22	211.71	69.324			
13,700.00	6,987.00	5,949.00	5,943.35	109.65	183.92	69.25	-726.86	-7,939.39	14,775.25	14,563.49	211.76	69.774			
13,800.00	6,987.00	5,949.00	5,943.35	111.18	183.92	69.25	-726.86	-7,939.39	14,873.59	14,661.79	211.81	70.222			
13,900.00	6,987.00	5,949.00	5,943.35	112.71	183.92	69.25	-726.86	-7,939.39	14,971.96	14,760.10	211.86	70.670			
14,000.00	6,987.00	5,949.00	5,943.35	114.23	183.92	69.25	-726.86	-7,939.39	15,070.34	14,858.43	211.91	71.117			
14,100.00	6,987.00	5,949.00	5,943.35	115.77	183.92	69.25	-726.86	-7,939.39	15,168.75	14,956.79	211.96	71.564			
14,200.00	6,987.00	5,949.00	5,943.35	117.30	183.92	69.25	-726.86	-7,939.39	15,267.18	15,055.16	212.01	72.010			
14,300.00	6,987.00	5,949.00	5,943.35	118.83	183.92	69.25	-726.86	-7,939.39	15,365.62	15,153.55	212.07	72.455			
14,400.00	6,987.00	5,949.00	5,943.35	120.37	183.92	69.25	-726.86	-7,939.39	15,464.09	15,251.96	212.13	72.900			
14,500.00	6,987.00	5,949.00	5,943.35	121.91	183.92	69.25	-726.86	-7,939.39	15,562.58	15,350.39	212.19	73.344			
14,600.00	6,987.00	5,949.00	5,943.35	123.45	183.92	69.25	-726.86	-7,939.39	15,661.08	15,448.84	212.25	73.788			
14,700.00	6,987.00	5,949.00	5,943.35	124.99	183.92	69.25	-726.86	-7,939.39	15,759.61	15,547.30	212.31	74.230			
14,800.00	6,987.00	5,949.00	5,943.35	126.53	183.92	69.25	-726.86	-7,939.39	15,858.15	15,645.78	212.37	74.673			
14,900.00	6,987.00	5,949.00	5,943.35	128.08	183.92	69.25	-726.86	-7,939.39	15,956.71	15,744.28	212.43	75.114			
15,000.00	6,987.00	5,949.00	5,943.35	129.63	183.92	69.25	-726.86	-7,939.39	16,055.29	15,842.79	212.50	75.555			
15,100.00	6,987.00	5,949.00	5,943.35	131.17	183.92	69.25	-726.86	-7,939.39	16,153.89	15,941.32	212.56	75.995			
15,200.00	6,987.00	5,949.00	5,943.35	132.72	183.92	69.25	-726.86	-7,939.39	16,252.50	16,039.87	212.63	76.435			
15,300.00	6,987.00	5,949.00	5,943.35	134.27	183.92	69.25	-726.86	-7,939.39	16,351.13	16,138.43	212.70	76.874			
15,400.00	6,987.00	5,949.00	5,943.35	135.83	183.92	69.25	-726.86	-7,939.39	16,449.78	16,237.01	212.77	77.312			
15,500.00	6,987.00	5,949.00	5,943.35	137.38	183.92	69.25	-726.86	-7,939.39	16,548.44	16,335.60	212.84	77.750			
15,600.00	6,987.00	5,949.00	5,943.35	138.93	183.92	69.25	-726.86	-7,939.39	16,647.12	16,434.21	212.92	78.187			
15,700.00	6,987.00	5,949.00	5,943.35	140.49	183.92	69.25	-726.86	-7,939.39	16,745.82	16,532.83	212.99	78.623			
15,800.00	6,987.00	5,949.00	5,943.35	142.04	183.92	69.25	-726.86	-7,939.39	16,844.53	16,631.47	213.06	79.059			
15,900.00	6,987.00	5,949.00	5,943.35	143.60	183.92	69.25	-726.86	-7,939.39	16,943.25	16,730.12	213.14	79.494			
16,000.00	6,987.00	5,949.00	5,943.35	145.16	183.92	69.25	-726.86	-7,939.39	17,042.00	16,828.78	213.22	79.929			
16,100.00	6,987.00	5,949.00	5,943.35	146.72	183.92	69.25	-726.86	-7,939.39	17,140.75	16,927.46	213.29	80.363			
16,200.00	6,987.00	5,949.00	5,943.35	148.28	183.92	69.25	-726.86	-7,939.39	17,239.52	17,026.15	213.37	80.796			
16,300.00	6,987.00	5,949.00	5,943.35	149.84	183.92	69.25	-726.86	-7,939.39	17,338.30	17,124.85	213.45	81.229			
16,400.00	6,987.00	5,949.00	5,943.35	151.40	183.92	69.25	-726.86	-7,939.39	17,437.10	17,223.57	213.53	81.661			
16,500.00	6,987.00	5,949.00	5,943.35	152.97	183.92	69.25	-726.86	-7,939.39	17,535.91	17,322.30	213.61	82.092			
16,600.00	6,987.00	5,949.00	5,943.35	154.53	183.92	69.25	-726.86	-7,939.39	17,634.74	17,421.04	213.69	82.523			
16,700.00	6,987.00	5,949.00	5,943.35	156.10	183.92	69.25	-726.86	-7,939.39	17,733.57	17,519.80	213.78	82.953			
16,800.00	6,987.00	5,949.00	5,943.35	157.66	183.92	69.25	-726.86	-7,939.39	17,832.42	17,618.56	213.86	83.383			
16,900.00	6,987.00	5,949.00	5,943.35	159.23	183.92	69.25	-726.86	-7,939.39	17,931.29	17,717.34	213.95	83.812			
17,000.00	6,987.00	5,949.00	5,943.35	160.80	183.92	69.25	-726.86	-7,939.39	18,030.16	17,816.13	214.03	84.240			
17,100.00	6,987.00	5,949.00	5,943.35	162.36	183.92	69.25	-726.86	-7,939.39	18,129.05	17,914.93	214.12	84.668			
17,200.00	6,987.00	5,949.00	5,943.35	163.93	183.92	69.25	-726.86	-7,939.39	18,227.95	18,013.75	214.21	85.095			
17,300.00	6,987.00	5,949.00	5,943.35	165.50	183.92	69.25	-726.86	-7,939.39	18,326.86	18,112.57	214.29	85.522			
17,400.00	6,987.00	5,949.00	5,943.35	167.07	183.92	69.25	-726.86	-7,939.39	18,425.79	18,211.40	214.38	85.948			
17,500.00	6,987.00	5,949.00	5,943.35	168.64	183.92	69.25	-726.86	-7,939.39	18,524.72	18,310.25	214.47	86.373			
17,600.00	6,987.00	5,949.00	5,943.35	170.21	183.92	69.25	-726.86	-7,939.39	18,623.67	18,409.11	214.56	86.798			
17,700.00	6,987.00	5,949.00	5,943.35	171.78	183.92	69.25	-726.86	-7,939.39	18,722.63	18,507.97	214.65	87.222			
17,800.00	6,987.00	5,949.00	5,943.35	173.36	183.92	69.25	-726.86	-7,939.39	18,821.60	18,606.85	214.75	87.646			
17,900.00	6,987.00	5,949.00	5,943.35	174.93	183.92	69.25	-726.86	-7,939.39	18,920.58	18,705.74	214.84	88.069			
18,000.00	6,987.00	5,949.00	5,943.35	176.50	183.92	69.25	-726.86	-7,939.39	19,019.57	18,804.64	214.93	88.492			
18,100.00	6,987.00	5,949.00	5,943.35	178.08	183.92	69.25	-726.86	-7,939.39	19,118.57	18,903.54	215.02	88.913			
18,200.00	6,987.00	5,949.00	5,943.35	179.65	183.92	69.25	-726.86	-7,939.39	19,217.58	19,002.46	215.12	89.335			
18,300.00	6,987.00	5,949.00	5,943.35	181.23	183.92	69.25	-726.86	-7,939.39	19,316.60	19,101.39	215.21	89.755			
18,400.00	6,987.00	5,949.00	5,943.35	182.80	183.92	69.25	-726.86	-7,939.39	19,415.63	19,200.32	215.31	90.175			
18,500.00	6,987.00	5,949.00	5,943.35	184.38	183.92	69.25	-726.86	-7,939.39	19,514.68	19,299.27	215.41	90.595			
18,600.00	6,987.00	5,949.00	5,943.35	185.96	183.92	69.25	-726.86	-7,939.39	19,613.73	19,398.22	215.50	91.014			
18,700.00	6,987.00	5,949.00	5,943.35	187.53	183.92	69.25	-726.86	-7,939.39	19,712.79	19,497.19	215.60	91.432			

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 #692H
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 #692H	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		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
18,800.00	6,987.00	5,949.00	5,943.35	189.11	183.92	69.25	-726.86	-7,939.39	19,811.86	19,596.16		215.70	91.850
18,900.00	6,987.00	5,949.00	5,943.35	190.69	183.92	69.25	-726.86	-7,939.39	19,910.94	19,695.14		215.80	92.267
19,000.00	6,987.00	5,949.00	5,943.35	192.27	183.92	69.25	-726.86	-7,939.39	20,010.03	19,794.13		215.90	92.684
19,100.00	6,987.00	5,949.00	5,943.35	193.85	183.92	69.25	-726.86	-7,939.39	20,109.12	19,893.13		216.00	93.100
19,200.00	6,987.00	5,949.00	5,943.35	195.43	183.92	69.25	-726.86	-7,939.39	20,208.23	19,992.13		216.10	93.515
19,255.69	6,987.00	5,949.00	5,943.35	196.31	183.92	69.25	-726.86	-7,939.39	20,263.43	20,047.28		216.15	93.746
19,300.00	6,987.00	5,949.00	5,943.35	197.01	183.92	69.25	-726.86	-7,939.39	20,307.35	20,091.15		216.20	93.930
19,400.00	6,987.00	5,949.00	5,943.35	198.59	183.92	69.25	-726.86	-7,939.39	20,406.47	20,190.17		216.30	94.344
19,468.80	6,987.00	5,949.00	5,943.35	199.49	183.92	69.25	-726.86	-7,939.39	20,474.68	20,253.80		220.87	92.699

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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												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	-96.67	-1,089.56	-9,318.73	9,382.67				
100.00	100.00	7.00	7.00	0.25	0.12	-96.67	-1,089.56	-9,318.73	9,382.21	9,381.83	0.38	N/A	
200.00	200.00	107.00	107.00	0.61	1.90	-96.67	-1,089.56	-9,318.73	9,382.21	9,379.70	2.51	3,745.048	
300.00	300.00	207.00	207.00	0.97	3.67	-96.67	-1,089.56	-9,318.73	9,382.21	9,377.57	4.64	2,024.070	
400.00	400.00	307.00	307.00	1.33	5.44	-96.67	-1,089.56	-9,318.73	9,382.21	9,375.44	6.77	1,386.779	
456.81	456.81	363.80	363.80	1.53	6.45	-96.67	-1,089.43	-9,318.73	9,382.19	9,374.22	7.98	1,176.375	
500.00	500.00	406.14	406.14	1.68	7.20	-96.67	-1,089.45	-9,318.73	9,382.19	9,373.31	8.88	1,056.500	
600.00	600.00	507.00	507.00	2.04	9.00	-96.67	-1,089.56	-9,318.73	9,382.21	9,371.16	11.04	849.741	
700.00	700.00	607.00	607.00	2.40	10.83	-96.67	-1,089.56	-9,318.73	9,382.21	9,368.97	13.23	708.996	
718.33	718.33	625.33	625.32	2.47	11.17	-90.28	-1,089.40	-9,318.73	9,382.19	9,368.55	13.63	688.117 CC	
800.00	799.98	705.64	705.63	2.76	12.64	-90.29	-1,089.45	-9,318.73	9,382.20	9,366.80	15.40	609.265	
900.00	899.84	806.85	806.84	3.12	14.52	-90.32	-1,089.56	-9,318.73	9,382.24	9,364.61	17.63	532.085	
1,000.00	999.45	906.47	906.45	3.48	16.40	-90.37	-1,089.56	-9,318.73	9,382.30	9,362.42	19.87	472.149	
1,100.00	1,098.70	1,005.72	1,005.70	3.85	18.27	-90.44	-1,089.56	-9,318.73	9,382.38	9,360.28	22.11	424.395	
1,115.64	1,114.19	1,021.05	1,021.03	3.90	18.56	-90.45	-1,088.75	-9,318.73	9,382.30	9,359.85	22.45	417.833	
1,153.80	1,151.90	1,057.68	1,057.66	4.04	19.25	-90.49	-1,088.77	-9,318.73	9,382.35	9,359.07	23.29	402.910	
1,200.00	1,197.53	1,101.97	1,101.95	4.21	20.08	-90.53	-1,088.84	-9,318.73	9,382.43	9,358.13	24.29	386.200	
1,300.00	1,296.27	1,197.79	1,197.76	4.59	21.89	-90.62	-1,089.18	-9,318.73	9,382.63	9,356.15	26.48	354.338	
1,400.00	1,395.02	1,302.07	1,302.02	4.97	23.86	-90.73	-1,089.56	-9,318.73	9,382.87	9,354.03	28.83	325.426	
1,500.00	1,493.77	1,400.81	1,400.77	5.36	25.74	-90.82	-1,089.56	-9,318.73	9,383.08	9,351.99	31.09	301.792	
1,600.00	1,592.52	1,499.56	1,499.52	5.74	27.61	-90.92	-1,089.56	-9,318.73	9,383.32	9,349.97	33.35	281.335	
1,700.00	1,691.27	1,596.51	1,596.46	6.14	29.45	-91.01	-1,089.08	-9,318.73	9,383.53	9,347.95	35.58	263.711	
1,800.00	1,790.01	1,693.15	1,693.10	6.53	31.28	-91.10	-1,089.31	-9,318.73	9,383.86	9,346.05	37.81	248.194	
1,900.00	1,888.76	1,795.84	1,795.76	6.92	33.31	-91.20	-1,089.56	-9,318.73	9,384.21	9,343.98	40.23	233.239	
2,000.00	1,987.51	1,894.58	1,894.51	7.32	35.41	-91.30	-1,089.56	-9,318.73	9,384.56	9,341.82	42.73	219.607	
2,100.00	2,086.26	1,993.33	1,993.26	7.72	37.52	-91.39	-1,089.56	-9,318.73	9,384.93	9,339.70	45.23	207.477	
2,200.00	2,185.01	2,089.40	2,089.32	8.11	39.56	-91.48	-1,088.82	-9,318.73	9,385.23	9,337.56	47.68	196.848	
2,300.00	2,283.75	2,184.86	2,184.78	8.51	41.60	-91.57	-1,089.14	-9,318.73	9,385.71	9,335.60	50.11	187.304	
2,400.00	2,382.50	2,289.68	2,289.50	8.91	43.84	-91.68	-1,089.56	-9,318.73	9,386.22	9,333.46	52.75	177.931	
2,500.00	2,481.25	2,388.42	2,388.25	9.31	45.98	-91.77	-1,089.56	-9,318.73	9,386.70	9,331.41	55.29	169.770	
2,600.00	2,580.00	2,487.17	2,487.00	9.71	48.12	-91.87	-1,089.56	-9,318.73	9,387.20	9,329.37	57.83	162.325	
2,700.00	2,678.75	2,580.47	2,580.27	10.11	50.14	-91.95	-1,088.10	-9,318.73	9,387.53	9,327.27	60.25	155.806	
2,800.00	2,777.49	2,672.41	2,672.20	10.52	52.13	-92.04	-1,088.69	-9,318.73	9,388.18	9,325.53	62.64	149.865	
2,900.00	2,876.24	2,783.51	2,783.24	10.92	54.49	-92.15	-1,089.56	-9,318.73	9,388.88	9,323.47	65.41	143.536	
3,000.00	2,974.99	2,882.26	2,881.99	11.32	56.51	-92.25	-1,089.56	-9,318.73	9,389.50	9,321.67	67.83	138.432	
3,100.00	3,073.74	2,981.01	2,980.74	11.72	58.52	-92.34	-1,089.56	-9,318.73	9,390.14	9,319.89	70.24	133.678	
3,200.00	3,172.49	3,076.74	3,076.46	12.13	60.47	-92.43	-1,088.83	-9,318.73	9,390.69	9,318.09	72.60	129.349	
3,300.00	3,271.23	3,171.78	3,171.50	12.53	62.41	-92.52	-1,089.15	-9,318.73	9,391.43	9,316.49	74.94	125.317	
3,400.00	3,369.98	3,277.31	3,276.98	12.93	64.54	-92.63	-1,089.56	-9,318.73	9,392.21	9,314.74	77.47	121.230	
3,500.00	3,468.73	3,376.06	3,375.73	13.34	66.49	-92.72	-1,089.56	-9,318.73	9,392.96	9,313.13	79.82	117.672	
3,600.00	3,567.48	3,474.81	3,474.48	13.74	68.43	-92.82	-1,089.56	-9,318.73	9,393.73	9,311.56	82.17	114.317	
3,700.00	3,666.23	3,571.94	3,571.60	14.14	70.35	-92.90	-1,088.30	-9,318.73	9,394.32	9,309.83	84.49	111.189	
3,800.00	3,764.97	3,666.33	3,665.98	14.55	72.21	-92.99	-1,088.54	-9,318.73	9,395.19	9,308.43	86.75	108.298	
3,900.00	3,863.72	3,760.65	3,760.29	14.95	74.06	-93.09	-1,089.04	-9,318.73	9,396.12	9,307.11	89.02	105.556	
4,000.00	3,962.47	3,869.85	3,869.47	15.36	76.22	-93.20	-1,089.56	-9,318.73	9,397.08	9,305.51	91.57	102.621	
4,100.00	4,061.22	3,968.60	3,968.22	15.76	78.16	-93.29	-1,089.56	-9,318.73	9,397.98	9,304.06	93.92	100.063	
4,200.00	4,159.97	4,067.24	4,066.85	16.17	80.10	-93.38	-1,089.04	-9,318.73	9,398.83	9,302.56	96.27	97.632	
4,300.00	4,258.71	4,163.11	4,162.72	16.57	81.99	-93.47	-1,089.14	-9,318.73	9,399.80	9,301.24	98.56	95.370	
4,400.00	4,357.46	4,258.93	4,258.54	16.98	83.88	-93.57	-1,089.40	-9,318.73	9,400.83	9,299.97	100.85	93.213	
4,500.00	4,456.21	4,363.63	4,363.21	17.38	85.99	-93.67	-1,089.56	-9,318.73	9,401.86	9,298.50	103.37	90.956	
4,600.00	4,554.96	4,462.38	4,461.96	17.79	88.00	-93.76	-1,089.56	-9,318.73	9,402.90	9,297.11	105.79	88.885	
4,700.00	4,653.71	4,560.34	4,559.91	18.19	90.00	-93.85	-1,088.48	-9,318.73	9,403.77	9,295.58	108.19	86.918	

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 #692H
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 #692H	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
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
4,800.00	4,752.45	4,653.53	4,653.09	18.60	91.90	-93.94	-1,088.68	-9,318.73	9,404.89	9,294.39	110.50	85.114	
4,900.00	4,851.20	4,746.62	4,746.18	19.00	93.81	-94.03	-1,089.18	-9,318.73	9,406.10	9,293.30	112.80	83.385	
5,000.00	4,949.95	4,857.43	4,856.95	19.41	95.98	-94.14	-1,089.56	-9,318.73	9,407.30	9,291.92	115.38	81.532	
5,100.00	5,048.70	4,956.18	4,955.70	19.81	97.85	-94.24	-1,089.56	-9,318.73	9,408.47	9,290.81	117.66	79.962	
5,200.00	5,147.45	5,054.45	5,053.96	20.22	99.72	-94.33	-1,088.74	-9,318.73	9,409.51	9,289.58	119.93	78.457	
5,300.00	5,246.19	5,148.79	5,148.30	20.62	101.51	-94.42	-1,088.89	-9,318.73	9,410.76	9,288.63	122.13	77.056	
5,400.00	5,344.94	5,243.06	5,242.57	21.03	103.30	-94.51	-1,089.26	-9,318.73	9,412.08	9,287.76	124.32	75.706	
5,455.76	5,400.00	5,307.51	5,307.00	21.25	104.55	-94.57	-1,089.56	-9,318.73	9,412.84	9,287.04	125.79	74.827	
5,500.00	5,443.72	5,351.23	5,350.72	21.43	105.44	-94.62	-1,089.56	-9,318.73	9,413.39	9,286.52	126.87	74.200	
5,600.00	5,542.71	5,450.22	5,449.71	21.83	107.46	-94.72	-1,089.56	-9,318.73	9,414.55	9,285.27	129.28	72.822	
5,700.00	5,641.93	5,549.15	5,548.63	22.22	109.48	-94.80	-1,089.02	-9,318.73	9,415.49	9,283.80	131.69	71.498	
5,800.00	5,741.36	5,645.44	5,644.92	22.60	111.44	-94.87	-1,089.12	-9,318.73	9,416.41	9,282.38	134.03	70.254	
5,900.00	5,840.96	5,741.87	5,741.35	22.97	113.41	-94.93	-1,089.38	-9,318.73	9,417.23	9,280.86	136.37	69.056	
6,000.00	5,940.70	5,848.27	5,847.70	23.33	115.80	-94.99	-1,089.56	-9,318.73	9,417.89	9,278.77	139.12	67.694	
6,100.00	6,040.55	5,948.12	5,947.55	23.68	118.20	-95.02	-1,089.56	-9,318.73	9,418.37	9,276.49	141.88	66.384	
6,200.00	6,140.48	6,000.00	5,999.35	24.02	119.45	-95.04	-1,089.56	-9,318.73	9,418.82	9,275.36	143.46	65.653 ES	
6,300.00	6,240.45	6,000.00	5,999.35	24.35	119.45	-95.05	-1,089.56	-9,318.73	9,420.03	9,276.26	143.78	65.517	
6,408.05	6,348.50	6,000.00	5,999.35	24.69	119.45	84.92	-1,089.56	-9,318.73	9,422.37	9,278.29	144.08	65.397	
6,450.00	6,390.43	6,000.00	5,999.35	24.82	119.45	-167.90	-1,089.56	-9,318.73	9,424.88	9,280.69	144.19	65.364	
6,500.00	6,440.15	6,000.00	5,999.35	24.99	119.45	-164.11	-1,089.56	-9,318.73	9,431.52	9,287.19	144.33	65.346 SF	
6,550.00	6,489.32	6,000.00	5,999.35	25.16	119.45	-162.76	-1,089.56	-9,318.73	9,442.08	9,297.61	144.47	65.355	
6,600.00	6,537.64	6,000.00	5,999.35	25.34	119.45	-161.83	-1,089.56	-9,318.73	9,456.48	9,311.87	144.62	65.390	
6,650.00	6,584.80	6,000.00	5,999.35	25.52	119.45	-160.95	-1,089.56	-9,318.73	9,474.61	9,329.86	144.76	65.452	
6,700.00	6,630.52	6,000.00	5,999.35	25.71	119.45	-160.01	-1,089.56	-9,318.73	9,496.34	9,351.45	144.89	65.540	
6,750.00	6,674.51	6,000.00	5,999.35	25.89	119.45	-158.93	-1,089.56	-9,318.73	9,521.52	9,376.49	145.03	65.654	
6,800.00	6,716.50	6,000.00	5,999.35	26.08	119.45	-157.64	-1,089.56	-9,318.73	9,549.95	9,404.80	145.16	65.791	
6,850.00	6,756.24	6,000.00	5,999.35	26.28	119.45	-156.10	-1,089.56	-9,318.73	9,581.44	9,436.16	145.28	65.951	
6,900.00	6,793.47	6,000.00	5,999.35	26.48	119.45	-154.22	-1,089.56	-9,318.73	9,615.77	9,470.37	145.40	66.133	
6,950.00	6,827.97	6,000.00	5,999.35	26.69	119.45	-151.90	-1,089.56	-9,318.73	9,652.69	9,507.17	145.52	66.334	
7,000.00	6,859.53	6,000.00	5,999.35	26.91	119.45	-149.00	-1,089.56	-9,318.73	9,691.94	9,546.31	145.63	66.553	
7,050.00	6,887.94	6,000.00	5,999.35	27.14	119.45	-145.34	-1,089.56	-9,318.73	9,733.26	9,587.53	145.73	66.788	
7,100.00	6,913.05	6,000.00	5,999.35	27.38	119.45	-140.65	-1,089.56	-9,318.73	9,776.38	9,630.54	145.83	67.038	
7,150.00	6,934.68	6,000.00	5,999.35	27.64	119.45	-134.59	-1,089.56	-9,318.73	9,820.99	9,675.06	145.93	67.298	
7,200.00	6,952.71	6,000.00	5,999.35	27.92	119.45	-126.70	-1,089.56	-9,318.73	9,866.81	9,720.78	146.03	67.568	
7,250.00	6,967.02	6,000.00	5,999.35	28.21	119.45	-116.58	-1,089.56	-9,318.73	9,913.54	9,767.42	146.12	67.845	
7,300.00	6,977.54	6,000.00	5,999.35	28.52	119.45	-104.15	-1,089.56	-9,318.73	9,960.88	9,814.67	146.21	68.127	
7,350.00	6,984.18	6,000.00	5,999.35	28.83	119.45	-90.10	-1,089.56	-9,318.73	10,008.53	9,862.23	146.30	68.410	
7,400.00	6,986.92	6,000.00	5,999.35	29.16	119.45	-76.03	-1,089.56	-9,318.73	10,056.20	9,909.81	146.39	68.693	
7,409.89	6,987.00	6,000.00	5,999.35	29.23	119.45	-73.40	-1,089.56	-9,318.73	10,065.61	9,919.20	146.41	68.749	
7,500.00	6,987.00	6,000.00	5,999.35	29.85	119.45	-73.40	-1,089.56	-9,318.73	10,151.29	10,004.71	146.58	69.254	
7,600.00	6,987.00	6,000.00	5,999.35	30.61	119.45	-73.40	-1,089.56	-9,318.73	10,246.46	10,099.69	146.77	69.813	
7,700.00	6,987.00	6,000.00	5,999.35	31.41	119.45	-73.40	-1,089.56	-9,318.73	10,341.72	10,194.76	146.96	70.370	
7,800.00	6,987.00	6,000.00	5,999.35	32.27	119.45	-73.40	-1,089.56	-9,318.73	10,437.07	10,289.92	147.16	70.925	
7,900.00	6,987.00	6,000.00	5,999.35	33.17	119.45	-73.40	-1,089.56	-9,318.73	10,532.51	10,385.16	147.35	71.479	
8,000.00	6,987.00	6,000.00	5,999.35	34.12	119.45	-73.40	-1,089.56	-9,318.73	10,628.03	10,480.48	147.55	72.031	
8,100.00	6,987.00	6,000.00	5,999.35	35.10	119.45	-73.40	-1,089.56	-9,318.73	10,723.64	10,575.89	147.75	72.581	
8,200.00	6,987.00	6,000.00	5,999.35	36.12	119.45	-73.40	-1,089.56	-9,318.73	10,819.32	10,671.37	147.95	73.130	
8,300.00	6,987.00	6,000.00	5,999.35	37.17	119.45	-73.40	-1,089.56	-9,318.73	10,915.08	10,766.93	148.15	73.677	
8,314.89	6,987.00	6,000.00	5,999.35	37.33	119.45	-73.40	-1,089.56	-9,318.73	10,929.35	10,781.17	148.18	73.759	
8,400.00	6,987.00	6,000.00	5,999.35	38.25	119.45	-69.32	-1,089.56	-9,318.73	11,011.56	10,863.22	148.33	74.235	
8,500.00	6,987.00	6,000.00	5,999.35	39.35	119.45	-61.00	-1,089.56	-9,318.73	11,109.56	10,961.09	148.48	74.823	
8,600.00	6,987.00	6,000.00	5,999.35	40.45	119.45	-43.27	-1,089.56	-9,318.73	11,208.61	11,060.03	148.58	75.440	

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 #692H
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 #692H	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	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		
8,700.00	6,987.00	6,000.00	5,999.35	41.56	119.45	-3.80	-1,089.56	-9,318.73	11,308.19	11,159.56	148.63	76.083		
8,800.00	6,987.00	6,000.00	5,999.35	42.66	119.45	39.24	-1,089.56	-9,318.73	11,407.82	11,259.18	148.64	76.750		
8,900.00	6,987.00	6,000.00	5,999.35	43.75	119.45	59.59	-1,089.56	-9,318.73	11,507.01	11,358.41	148.60	77.437		
9,000.00	6,987.00	6,000.00	5,999.35	44.83	119.45	68.89	-1,089.56	-9,318.73	11,605.29	11,456.77	148.52	78.140		
9,071.74	6,987.00	6,000.00	5,999.35	45.59	119.45	72.76	-1,089.56	-9,318.73	11,675.00	11,526.56	148.44	78.653		
9,100.00	6,987.00	6,000.00	5,999.35	45.89	119.45	72.76	-1,089.56	-9,318.73	11,702.30	11,553.90	148.40	78.856		
9,200.00	6,987.00	6,000.00	5,999.35	46.97	119.45	72.76	-1,089.56	-9,318.73	11,798.94	11,650.66	148.28	79.571		
9,300.00	6,987.00	6,000.00	5,999.35	48.07	119.45	72.76	-1,089.56	-9,318.73	11,895.64	11,747.47	148.17	80.285		
9,400.00	6,987.00	6,000.00	5,999.35	49.20	119.45	72.76	-1,089.56	-9,318.73	11,992.39	11,844.33	148.06	80.996		
9,500.00	6,987.00	6,000.00	5,999.35	50.36	119.45	72.76	-1,089.56	-9,318.73	12,089.20	11,941.24	147.96	81.707		
9,600.00	6,987.00	6,000.00	5,999.35	51.54	119.45	72.76	-1,089.56	-9,318.73	12,186.05	12,038.19	147.86	82.415		
9,700.00	6,987.00	6,000.00	5,999.35	52.74	119.45	72.76	-1,089.56	-9,318.73	12,282.96	12,135.19	147.77	83.122		
9,800.00	6,987.00	6,000.00	5,999.35	53.96	119.45	72.76	-1,089.56	-9,318.73	12,379.92	12,232.23	147.68	83.827		
9,900.00	6,987.00	6,000.00	5,999.35	55.21	119.45	72.76	-1,089.56	-9,318.73	12,476.92	12,329.32	147.60	84.530		
10,000.00	6,987.00	6,000.00	5,999.35	56.47	119.45	72.76	-1,089.56	-9,318.73	12,573.98	12,426.45	147.53	85.231		
10,100.00	6,987.00	6,000.00	5,999.35	57.75	119.45	72.76	-1,089.56	-9,318.73	12,671.07	12,523.62	147.46	85.930		
10,200.00	6,987.00	6,000.00	5,999.35	59.04	119.45	72.76	-1,089.56	-9,318.73	12,768.22	12,620.82	147.39	86.628		
10,300.00	6,987.00	6,000.00	5,999.35	60.35	119.45	72.76	-1,089.56	-9,318.73	12,865.40	12,718.07	147.33	87.324		
10,400.00	6,987.00	6,000.00	5,999.35	61.67	119.45	72.76	-1,089.56	-9,318.73	12,962.63	12,815.36	147.27	88.018		
10,500.00	6,987.00	6,000.00	5,999.35	63.01	119.45	72.76	-1,089.56	-9,318.73	13,059.90	12,912.68	147.22	88.710		
10,600.00	6,987.00	6,000.00	5,999.35	64.36	119.45	72.76	-1,089.56	-9,318.73	13,157.21	13,010.04	147.17	89.400		
10,700.00	6,987.00	6,000.00	5,999.35	65.72	119.45	72.76	-1,089.56	-9,318.73	13,254.57	13,107.44	147.13	90.088		
10,800.00	6,987.00	6,000.00	5,999.35	67.09	119.45	72.76	-1,089.56	-9,318.73	13,351.96	13,204.87	147.09	90.775		
10,900.00	6,987.00	6,000.00	5,999.35	68.47	119.45	72.76	-1,089.56	-9,318.73	13,449.39	13,302.33	147.05	91.459		
11,000.00	6,987.00	6,000.00	5,999.35	69.86	119.45	72.76	-1,089.56	-9,318.73	13,546.85	13,399.83	147.02	92.142		
11,100.00	6,987.00	6,000.00	5,999.35	71.26	119.45	72.76	-1,089.56	-9,318.73	13,644.36	13,497.36	146.99	92.823		
11,200.00	6,987.00	6,000.00	5,999.35	72.67	119.45	72.76	-1,089.56	-9,318.73	13,741.90	13,594.93	146.97	93.502		
11,300.00	6,987.00	6,000.00	5,999.35	74.09	119.45	72.76	-1,089.56	-9,318.73	13,839.47	13,692.52	146.95	94.179		
11,400.00	6,987.00	6,000.00	5,999.35	75.51	119.45	72.76	-1,089.56	-9,318.73	13,937.08	13,790.15	146.93	94.854		
11,500.00	6,987.00	6,000.00	5,999.35	76.94	119.45	72.76	-1,089.56	-9,318.73	14,034.72	13,887.80	146.92	95.527		
11,600.00	6,987.00	6,000.00	5,999.35	78.38	119.45	72.76	-1,089.56	-9,318.73	14,132.40	13,985.49	146.91	96.199		
11,700.00	6,987.00	6,000.00	5,999.35	79.82	119.45	72.76	-1,089.56	-9,318.73	14,230.10	14,083.20	146.90	96.868		
11,800.00	6,987.00	6,000.00	5,999.35	81.27	119.45	72.76	-1,089.56	-9,318.73	14,327.84	14,180.95	146.90	97.536		
11,900.00	6,987.00	6,000.00	5,999.35	82.73	119.45	72.76	-1,089.56	-9,318.73	14,425.61	14,278.72	146.90	98.202		
12,000.00	6,987.00	6,000.00	5,999.35	84.19	119.45	72.76	-1,089.56	-9,318.73	14,523.41	14,376.51	146.90	98.866		
12,100.00	6,987.00	6,000.00	5,999.35	85.66	119.45	72.76	-1,089.56	-9,318.73	14,621.24	14,474.34	146.91	99.528		
12,200.00	6,987.00	6,000.00	5,999.35	87.13	119.45	72.76	-1,089.56	-9,318.73	14,719.10	14,572.19	146.91	100.189		
12,300.00	6,987.00	6,000.00	5,999.35	88.61	119.45	72.76	-1,089.56	-9,318.73	14,816.99	14,670.07	146.93	100.847		
12,400.00	6,987.00	6,000.00	5,999.35	90.09	119.45	72.76	-1,089.56	-9,318.73	14,914.91	14,767.97	146.94	101.504		
12,500.00	6,987.00	6,000.00	5,999.35	91.57	119.45	72.76	-1,089.56	-9,318.73	15,012.85	14,865.90	146.96	102.159		
12,600.00	6,987.00	6,000.00	5,999.35	93.06	119.45	72.76	-1,089.56	-9,318.73	15,110.82	14,963.85	146.98	102.812		
12,700.00	6,987.00	6,000.00	5,999.35	94.55	119.45	72.76	-1,089.56	-9,318.73	15,208.82	15,061.82	147.00	103.463		
12,800.00	6,987.00	6,000.00	5,999.35	96.05	119.45	72.76	-1,089.56	-9,318.73	15,306.84	15,159.82	147.02	104.113		
12,900.00	6,987.00	6,000.00	5,999.35	97.55	119.45	72.76	-1,089.56	-9,318.73	15,404.89	15,257.84	147.05	104.760		
13,000.00	6,987.00	6,000.00	5,999.35	99.05	119.45	72.76	-1,089.56	-9,318.73	15,502.96	15,355.89	147.08	105.406		
13,100.00	6,987.00	6,000.00	5,999.35	100.56	119.45	72.76	-1,089.56	-9,318.73	15,601.06	15,453.95	147.11	106.050		
13,200.00	6,987.00	6,000.00	5,999.35	102.07	119.45	72.76	-1,089.56	-9,318.73	15,699.18	15,552.04	147.14	106.693		
13,300.00	6,987.00	6,000.00	5,999.35	103.58	119.45	72.76	-1,089.56	-9,318.73	15,797.33	15,650.15	147.18	107.333		
13,400.00	6,987.00	6,000.00	5,999.35	105.09	119.45	72.76	-1,089.56	-9,318.73	15,895.50	15,748.28	147.22	107.972		
13,500.00	6,987.00	6,000.00	5,999.35	106.61	119.45	72.76	-1,089.56	-9,318.73	15,993.69	15,846.43	147.26	108.610		
13,600.00	6,987.00	6,000.00	5,999.35	108.13	119.45	72.76	-1,089.56	-9,318.73	16,091.90	15,944.60	147.30	109.245		
13,700.00	6,987.00	6,000.00	5,999.35	109.65	119.45	72.76	-1,089.56	-9,318.73	16,190.14	16,042.79	147.35	109.879		

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 #692H
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 #692H	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)
13,800.00	6,987.00	6,000.00	5,999.35	111.18	119.45	72.76	-1,089.56	-9,318.73	16,288.39	16,141.00	147.39	110.511	
13,900.00	6,987.00	6,000.00	5,999.35	112.71	119.45	72.76	-1,089.56	-9,318.73	16,386.67	16,239.23	147.44	111.141	
14,000.00	6,987.00	6,000.00	5,999.35	114.23	119.45	72.76	-1,089.56	-9,318.73	16,484.97	16,337.48	147.49	111.770	
14,100.00	6,987.00	6,000.00	5,999.35	115.77	119.45	72.76	-1,089.56	-9,318.73	16,583.29	16,435.75	147.54	112.397	
14,200.00	6,987.00	6,000.00	5,999.35	117.30	119.45	72.76	-1,089.56	-9,318.73	16,681.63	16,534.03	147.60	113.023	
14,300.00	6,987.00	6,000.00	5,999.35	118.83	119.45	72.76	-1,089.56	-9,318.73	16,779.99	16,632.34	147.65	113.646	
14,400.00	6,987.00	6,000.00	5,999.35	120.37	119.45	72.76	-1,089.56	-9,318.73	16,878.36	16,730.66	147.71	114.268	
14,500.00	6,987.00	6,000.00	5,999.35	121.91	119.45	72.76	-1,089.56	-9,318.73	16,976.76	16,828.99	147.77	114.889	
14,600.00	6,987.00	6,000.00	5,999.35	123.45	119.45	72.76	-1,089.56	-9,318.73	17,075.18	16,927.35	147.83	115.508	
14,700.00	6,987.00	6,000.00	5,999.35	124.99	119.45	72.76	-1,089.56	-9,318.73	17,173.61	17,025.72	147.89	116.125	
14,800.00	6,987.00	6,000.00	5,999.35	126.53	119.45	72.76	-1,089.56	-9,318.73	17,272.06	17,124.11	147.95	116.741	
14,900.00	6,987.00	6,000.00	5,999.35	128.08	119.45	72.76	-1,089.56	-9,318.73	17,370.53	17,222.51	148.02	117.355	
15,000.00	6,987.00	6,000.00	5,999.35	129.63	119.45	72.76	-1,089.56	-9,318.73	17,469.02	17,320.94	148.08	117.968	
15,100.00	6,987.00	6,000.00	5,999.35	131.17	119.45	72.76	-1,089.56	-9,318.73	17,567.52	17,419.37	148.15	118.579	
15,200.00	6,987.00	6,000.00	5,999.35	132.72	119.45	72.76	-1,089.56	-9,318.73	17,666.04	17,517.82	148.22	119.188	
15,300.00	6,987.00	6,000.00	5,999.35	134.27	119.45	72.76	-1,089.56	-9,318.73	17,764.58	17,616.29	148.29	119.796	
15,400.00	6,987.00	6,000.00	5,999.35	135.83	119.45	72.76	-1,089.56	-9,318.73	17,863.13	17,714.77	148.36	120.402	
15,500.00	6,987.00	6,000.00	5,999.35	137.38	119.45	72.76	-1,089.56	-9,318.73	17,961.70	17,813.27	148.44	121.007	
15,600.00	6,987.00	6,000.00	5,999.35	138.93	119.45	72.76	-1,089.56	-9,318.73	18,060.29	17,911.78	148.51	121.610	
15,700.00	6,987.00	6,000.00	5,999.35	140.49	119.45	72.76	-1,089.56	-9,318.73	18,158.89	18,010.30	148.58	122.212	
15,800.00	6,987.00	6,000.00	5,999.35	142.04	119.45	72.76	-1,089.56	-9,318.73	18,257.50	18,108.84	148.66	122.813	
15,900.00	6,987.00	6,000.00	5,999.35	143.60	119.45	72.76	-1,089.56	-9,318.73	18,356.14	18,207.40	148.74	123.411	
16,000.00	6,987.00	6,000.00	5,999.35	145.16	119.45	72.76	-1,089.56	-9,318.73	18,454.78	18,305.96	148.82	124.009	
16,100.00	6,987.00	6,000.00	5,999.35	146.72	119.45	72.76	-1,089.56	-9,318.73	18,553.44	18,404.54	148.90	124.605	
16,200.00	6,987.00	6,000.00	5,999.35	148.28	119.45	72.76	-1,089.56	-9,318.73	18,652.12	18,503.14	148.98	125.199	
16,300.00	6,987.00	6,000.00	5,999.35	149.84	119.45	72.76	-1,089.56	-9,318.73	18,750.80	18,601.74	149.06	125.792	
16,400.00	6,987.00	6,000.00	5,999.35	151.40	119.45	72.76	-1,089.56	-9,318.73	18,849.51	18,700.36	149.14	126.384	
16,500.00	6,987.00	6,000.00	5,999.35	152.97	119.45	72.76	-1,089.56	-9,318.73	18,948.22	18,798.99	149.23	126.974	
16,600.00	6,987.00	6,000.00	5,999.35	154.53	119.45	72.76	-1,089.56	-9,318.73	19,046.95	18,897.64	149.31	127.563	
16,700.00	6,987.00	6,000.00	5,999.35	156.10	119.45	72.76	-1,089.56	-9,318.73	19,145.69	18,996.29	149.40	128.150	
16,800.00	6,987.00	6,000.00	5,999.35	157.66	119.45	72.76	-1,089.56	-9,318.73	19,244.45	19,094.96	149.49	128.736	
16,900.00	6,987.00	6,000.00	5,999.35	159.23	119.45	72.76	-1,089.56	-9,318.73	19,343.22	19,193.64	149.58	129.321	
17,000.00	6,987.00	6,000.00	5,999.35	160.80	119.45	72.76	-1,089.56	-9,318.73	19,442.00	19,292.33	149.66	129.904	
17,100.00	6,987.00	6,000.00	5,999.35	162.36	119.45	72.76	-1,089.56	-9,318.73	19,540.79	19,391.04	149.75	130.486	
17,200.00	6,987.00	6,000.00	5,999.35	163.93	119.45	72.76	-1,089.56	-9,318.73	19,639.60	19,489.75	149.85	131.066	
17,300.00	6,987.00	6,000.00	5,999.35	165.50	119.45	72.76	-1,089.56	-9,318.73	19,738.41	19,588.48	149.94	131.645	
17,400.00	6,987.00	6,000.00	5,999.35	167.07	119.45	72.76	-1,089.56	-9,318.73	19,837.24	19,687.22	150.03	132.223	
17,500.00	6,987.00	6,000.00	5,999.35	168.64	119.45	72.76	-1,089.56	-9,318.73	19,936.08	19,785.96	150.12	132.799	
17,600.00	6,987.00	6,000.00	5,999.35	170.21	119.45	72.76	-1,089.56	-9,318.73	20,034.94	19,884.72	150.22	133.374	
17,700.00	6,987.00	6,000.00	5,999.35	171.78	119.45	72.76	-1,089.56	-9,318.73	20,133.80	19,983.49	150.31	133.948	
17,800.00	6,987.00	6,000.00	5,999.35	173.36	119.45	72.76	-1,089.56	-9,318.73	20,232.68	20,082.27	150.41	134.520	
17,900.00	6,987.00	6,000.00	5,999.35	174.93	119.45	72.76	-1,089.56	-9,318.73	20,331.56	20,181.06	150.50	135.091	
18,000.00	6,987.00	6,000.00	5,999.35	176.50	119.45	72.76	-1,089.56	-9,318.73	20,430.46	20,279.86	150.60	135.661	
18,100.00	6,987.00	6,000.00	5,999.35	178.08	119.45	72.76	-1,089.56	-9,318.73	20,529.37	20,378.67	150.70	136.230	
18,200.00	6,987.00	6,000.00	5,999.35	179.65	119.45	72.76	-1,089.56	-9,318.73	20,628.28	20,477.49	150.79	136.797	
18,300.00	6,987.00	6,000.00	5,999.35	181.23	119.45	72.76	-1,089.56	-9,318.73	20,727.21	20,576.32	150.89	137.363	
18,400.00	6,987.00	6,000.00	5,999.35	182.80	119.45	72.76	-1,089.56	-9,318.73	20,826.15	20,675.16	150.99	137.928	
18,500.00	6,987.00	6,000.00	5,999.35	184.38	119.45	72.76	-1,089.56	-9,318.73	20,925.10	20,774.01	151.09	138.491	
18,600.00	6,987.00	6,000.00	5,999.35	185.96	119.45	72.76	-1,089.56	-9,318.73	21,024.06	20,872.86	151.19	139.053	
18,700.00	6,987.00	6,000.00	5,999.35	187.53	119.45	72.76	-1,089.56	-9,318.73	21,123.03	20,971.73	151.30	139.614	
18,800.00	6,987.00	6,000.00	5,999.35	189.11	119.45	72.76	-1,089.56	-9,318.73	21,222.01	21,070.61	151.40	140.173	
18,900.00	6,987.00	6,000.00	5,999.35	190.69	119.45	72.76	-1,089.56	-9,318.73	21,320.99	21,169.49	151.50	140.732	

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 #692H
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 #692H	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)				
19,000.00	6,987.00	6,000.00	5,999.35	192.27	119.45	72.76	-1,089.56	-9,318.73	21,419.99	21,268.39	151.60	141.289		
19,100.00	6,987.00	6,000.00	5,999.35	193.85	119.45	72.76	-1,089.56	-9,318.73	21,519.00	21,367.29	151.71	141.845		
19,200.00	6,987.00	6,000.00	5,999.35	195.43	119.45	72.76	-1,089.56	-9,318.73	21,618.01	21,466.20	151.81	142.400		
19,255.69	6,987.00	6,000.00	5,999.35	196.31	119.45	72.76	-1,089.56	-9,318.73	21,673.16	21,521.29	151.87	142.708		
19,300.00	6,987.00	6,000.00	5,999.35	197.01	119.45	72.76	-1,089.56	-9,318.73	21,717.04	21,565.12	151.92	142.953		
19,400.00	6,987.00	6,000.00	5,999.35	198.59	119.45	72.76	-1,089.56	-9,318.73	21,816.07	21,664.05	152.02	143.505		
19,468.80	6,987.00	6,000.00	5,999.35	199.49	119.45	72.76	-1,089.56	-9,318.73	21,884.22	21,727.62	156.59	139.751		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	-93.10	-610.45	-11,255.80	11,272.34				
100.00	100.00	144.00	144.00	0.25	3.06	-93.10	-610.45	-11,255.80	11,272.34	11,269.02	3.32	3,399.519	
200.00	200.00	244.00	244.00	0.61	5.19	-93.10	-610.45	-11,255.80	11,272.34	11,266.54	5.80	1,942.629	
300.00	300.00	344.00	344.00	0.97	7.32	-93.10	-610.45	-11,255.80	11,272.34	11,264.05	8.29	1,359.853	
400.00	400.00	444.00	444.00	1.33	9.45	-93.10	-610.45	-11,255.80	11,272.34	11,261.56	10.78	1,046.047	
500.00	500.00	544.03	544.00	1.68	11.58	-93.10	-610.45	-11,255.80	11,272.34	11,259.07	13.26	849.879	
600.00	600.00	644.03	644.00	2.04	13.71	-93.10	-610.45	-11,255.80	11,272.34	11,256.59	15.75	715.692	
700.00	700.00	744.03	744.00	2.40	15.84	-93.10	-610.45	-11,255.80	11,272.34	11,254.10	18.24	618.101	
800.00	799.98	842.13	842.09	2.76	17.92	-86.72	-609.54	-11,255.80	11,272.19	11,251.51	20.68	545.000	
900.00	899.84	939.78	939.73	3.12	20.00	-86.75	-610.01	-11,255.80	11,271.92	11,248.80	23.12	487.570	
1,000.00	999.45	1,043.55	1,043.45	3.48	22.29	-86.81	-610.45	-11,255.80	11,271.45	11,245.68	25.77	437.393	
1,100.00	1,098.70	1,142.80	1,142.70	3.85	24.58	-86.89	-610.45	-11,255.80	11,270.77	11,242.35	28.42	396.534	
1,153.80	1,151.90	1,196.00	1,195.90	4.04	25.81	-86.94	-610.45	-11,255.80	11,270.34	11,240.49	29.85	377.576	
1,200.00	1,197.53	1,241.63	1,241.53	4.21	26.86	-86.97	-610.45	-11,255.80	11,269.95	11,238.87	31.07	362.682	
1,300.00	1,296.27	1,338.23	1,338.12	4.59	29.09	-87.04	-609.51	-11,255.80	11,269.06	11,235.38	33.68	334.591	
1,400.00	1,395.02	1,434.63	1,434.51	4.97	31.32	-87.12	-609.98	-11,255.80	11,268.28	11,231.99	36.29	310.539	
1,500.00	1,493.77	1,537.99	1,537.77	5.36	33.78	-87.21	-610.45	-11,255.80	11,267.51	11,228.38	39.14	287.886	
1,600.00	1,592.52	1,636.74	1,636.52	5.74	36.26	-87.29	-610.45	-11,255.80	11,266.75	11,224.75	42.00	268.262	
1,700.00	1,691.27	1,735.49	1,735.27	6.14	38.73	-87.37	-610.45	-11,255.80	11,266.00	11,221.14	44.86	251.128	
1,800.00	1,790.01	1,830.92	1,830.67	6.53	41.12	-87.44	-609.01	-11,255.80	11,265.18	11,217.54	47.64	236.449	
1,900.00	1,888.76	1,925.84	1,925.58	6.92	43.49	-87.52	-609.66	-11,255.80	11,264.53	11,214.11	50.41	223.443	
2,000.00	1,987.51	2,031.90	2,031.51	7.32	46.19	-87.60	-610.45	-11,255.80	11,263.90	11,210.40	53.50	210.526	
2,100.00	2,086.26	2,130.65	2,130.26	7.72	48.77	-87.68	-610.45	-11,255.80	11,263.24	11,206.76	56.48	199.414	
2,200.00	2,185.01	2,229.40	2,229.01	8.11	51.35	-87.76	-610.45	-11,255.80	11,262.61	11,203.15	59.46	189.413	
2,300.00	2,283.75	2,324.44	2,324.02	8.51	53.83	-87.83	-609.04	-11,255.80	11,261.89	11,199.55	62.34	180.642	
2,400.00	2,382.50	2,418.90	2,418.47	8.91	56.30	-87.91	-609.71	-11,255.80	11,261.35	11,196.14	65.21	172.688	
2,500.00	2,481.25	2,525.84	2,525.25	9.31	59.02	-88.00	-610.45	-11,255.80	11,260.84	11,192.51	68.33	164.808	
2,600.00	2,580.00	2,624.59	2,624.00	9.71	61.40	-88.08	-610.45	-11,255.80	11,260.29	11,189.18	71.11	158.340	
2,700.00	2,678.75	2,723.33	2,722.75	10.11	63.79	-88.16	-610.45	-11,255.80	11,259.77	11,185.87	73.90	152.359	
2,800.00	2,777.49	2,818.05	2,817.42	10.52	66.08	-88.23	-608.66	-11,255.80	11,259.12	11,182.53	76.59	146.997	
2,900.00	2,876.24	2,911.67	2,911.03	10.92	68.34	-88.30	-609.34	-11,255.80	11,258.70	11,179.44	79.26	142.049	
3,000.00	2,974.99	3,019.73	3,018.99	11.32	70.90	-88.40	-610.45	-11,255.80	11,258.33	11,176.11	82.21	136.939	
3,100.00	3,073.74	3,118.48	3,117.74	11.72	72.98	-88.48	-610.45	-11,255.80	11,257.89	11,173.19	84.71	132.907	
3,200.00	3,172.49	3,217.23	3,216.49	12.13	75.07	-88.56	-610.45	-11,255.80	11,257.48	11,170.28	87.20	129.105	
3,300.00	3,271.23	3,315.97	3,315.23	12.53	77.16	-88.63	-610.45	-11,255.80	11,257.09	11,167.40	89.69	125.514	
3,400.00	3,369.98	3,413.60	3,412.85	12.93	79.23	-88.71	-608.88	-11,255.80	11,256.58	11,164.42	92.16	122.146	
3,500.00	3,468.73	3,510.02	3,509.26	13.34	81.27	-88.78	-609.10	-11,255.80	11,256.25	11,161.65	94.60	118.989	
3,600.00	3,567.48	3,606.36	3,605.60	13.74	83.30	-88.86	-609.54	-11,255.80	11,255.96	11,158.92	97.04	115.992	
3,700.00	3,666.23	3,702.65	3,701.87	14.14	85.34	-88.94	-610.20	-11,255.80	11,255.72	11,156.24	99.48	113.145	
3,800.00	3,764.97	3,809.83	3,808.97	14.55	87.92	-89.03	-610.45	-11,255.80	11,255.46	11,153.00	102.46	109.850	
3,900.00	3,863.72	3,908.57	3,907.72	14.95	90.40	-89.11	-610.45	-11,255.80	11,255.20	11,149.85	105.35	106.832	
4,000.00	3,962.47	4,007.32	4,006.47	15.36	92.89	-89.19	-610.45	-11,255.80	11,254.96	11,146.72	108.25	103.976	
4,100.00	4,061.22	4,106.07	4,105.22	15.76	95.38	-89.27	-610.45	-11,255.80	11,254.75	11,143.61	111.14	101.268	
4,200.00	4,159.97	4,204.82	4,203.97	16.17	97.87	-89.35	-610.45	-11,255.80	11,254.56	11,140.53	114.03	98.698	
4,300.00	4,258.71	4,303.57	4,302.71	16.57	100.35	-89.43	-610.45	-11,255.80	11,254.38	11,137.46	116.92	96.255	
4,400.00	4,357.46	4,402.31	4,401.46	16.98	102.84	-89.51	-610.45	-11,255.80	11,254.24	11,134.42	119.81	93.930	
4,500.00	4,456.21	4,501.06	4,500.21	17.38	105.33	-89.59	-610.45	-11,255.80	11,254.11	11,131.40	122.71	91.715	
4,600.00	4,554.96	4,599.81	4,598.96	17.79	107.82	-89.67	-610.45	-11,255.80	11,254.01	11,128.41	125.60	89.602	
4,700.00	4,653.71	4,698.56	4,697.71	18.19	110.30	-89.74	-610.45	-11,255.80	11,253.92	11,125.43	128.49	87.584	
4,800.00	4,752.45	4,796.76	4,795.87	18.60	112.78	-89.80	-606.05	-11,255.79	11,253.39	11,122.01	131.37	85.661	
4,900.00	4,851.20	4,894.48	4,893.58	19.00	115.24	-89.88	-606.14	-11,255.79	11,253.35	11,119.11	134.24	83.831	
4,959.96	4,910.42	4,953.06	4,952.16	19.24	116.71	-89.93	-606.23	-11,255.79	11,253.35	11,117.39	135.96	82.771 CC	

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 #692H
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 #692H	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		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	4,949.95	4,992.17	4,991.27	19.41	117.70	-89.96	-606.30	-11,255.79	11,253.35	11,116.24	137.10	82.079	
5,100.00	5,048.70	5,089.84	5,088.93	19.81	120.16	-90.04	-606.55	-11,255.79	11,253.38	11,113.41	139.97	80.398	
5,200.00	5,147.45	5,187.48	5,186.57	20.22	122.62	-90.12	-606.88	-11,255.79	11,253.44	11,110.60	142.84	78.786	
5,300.00	5,246.19	5,285.10	5,284.18	20.62	125.08	-90.20	-607.30	-11,255.79	11,253.53	11,107.83	145.70	77.238	
5,400.00	5,344.94	5,382.69	5,381.77	21.03	127.54	-90.28	-607.79	-11,255.80	11,253.66	11,105.09	148.56	75.750	
5,455.76	5,400.00	5,437.10	5,436.17	21.25	128.91	-90.33	-608.11	-11,255.80	11,253.74	11,103.58	150.16	74.945	
5,500.00	5,443.72	5,480.29	5,479.36	21.43	130.00	-90.36	-608.37	-11,255.80	11,253.82	11,102.39	151.43	74.318	
5,600.00	5,542.71	5,578.09	5,577.15	21.83	132.46	-90.44	-609.03	-11,255.80	11,254.00	11,099.71	154.29	72.942	
5,700.00	5,641.93	5,676.11	5,675.16	22.22	134.93	-90.51	-609.78	-11,255.80	11,254.19	11,097.05	157.15	71.617	
5,800.00	5,741.36	5,786.93	5,785.36	22.60	137.85	-90.57	-610.45	-11,255.80	11,254.37	11,093.92	160.45	70.144	
5,900.00	5,840.96	5,886.53	5,884.96	22.97	140.79	-90.62	-610.45	-11,255.80	11,254.46	11,090.71	163.76	68.726	
6,000.00	5,940.70	5,986.27	5,984.70	23.33	143.74	-90.65	-610.45	-11,255.80	11,254.54	11,087.48	167.06	67.366	
6,100.00	6,040.55	6,086.12	6,084.55	23.68	146.69	-90.68	-610.45	-11,255.80	11,254.61	11,084.24	170.37	66.061	
6,200.00	6,140.48	6,186.05	6,184.48	24.02	149.64	-90.70	-610.45	-11,255.80	11,254.65	11,080.99	173.66	64.808	
6,300.00	6,240.45	6,286.03	6,284.45	24.35	152.59	-90.71	-610.45	-11,255.80	11,254.68	11,077.73	176.95	63.605	
6,408.05	6,348.50	6,394.07	6,392.50	24.69	155.79	89.29	-610.45	-11,255.80	11,254.68	11,074.20	180.48	62.361	
6,409.94	6,350.39	6,395.96	6,394.39	24.70	155.84	111.63	-610.45	-11,255.80	11,254.68	11,074.14	180.54	62.340	
6,450.00	6,390.43	6,436.00	6,434.43	24.82	157.02	-163.56	-610.45	-11,255.80	11,255.95	11,074.10	181.85	61.898 ES	
6,500.00	6,440.15	6,485.72	6,484.15	24.99	158.49	-159.80	-610.45	-11,255.80	11,260.78	11,077.30	183.48	61.373	
6,550.00	6,489.32	6,534.89	6,533.32	25.16	159.94	-158.49	-610.45	-11,255.80	11,269.19	11,084.08	185.11	60.879	
6,600.00	6,537.64	6,583.21	6,581.64	25.34	161.37	-157.58	-610.45	-11,255.80	11,281.13	11,094.41	186.71	60.420	
6,650.00	6,584.80	6,630.37	6,628.80	25.52	162.77	-156.74	-610.45	-11,255.80	11,296.52	11,108.24	188.29	59.997	
6,700.00	6,630.52	6,676.09	6,674.52	25.71	164.12	-155.84	-610.45	-11,255.80	11,315.28	11,125.46	189.82	59.611	
6,750.00	6,674.51	6,720.08	6,718.51	25.89	165.42	-154.81	-610.45	-11,255.80	11,337.29	11,145.99	191.30	59.265	
6,800.00	6,716.50	6,762.07	6,760.50	26.08	166.66	-153.60	-610.45	-11,255.80	11,362.42	11,169.70	192.72	58.959	
6,850.00	6,756.24	6,801.81	6,800.24	26.28	167.83	-152.17	-610.45	-11,255.80	11,390.52	11,196.45	194.07	58.693	
6,900.00	6,793.47	6,839.04	6,837.47	26.48	168.93	-150.46	-610.45	-11,255.80	11,421.41	11,226.07	195.34	58.469	
6,950.00	6,827.97	6,873.54	6,871.97	26.69	169.95	-148.41	-610.45	-11,255.80	11,454.92	11,258.39	196.53	58.286	
7,000.00	6,859.53	6,905.10	6,903.53	26.91	170.88	-145.91	-610.45	-11,255.80	11,490.83	11,293.21	197.63	58.144	
7,050.00	6,887.94	6,933.51	6,931.94	27.14	171.72	-142.86	-610.45	-11,255.80	11,528.94	11,330.31	198.62	58.044	
7,100.00	6,913.05	6,958.62	6,957.05	27.38	172.46	-139.12	-610.45	-11,255.80	11,569.00	11,369.48	199.52	57.984	
7,150.00	6,934.68	6,980.25	6,978.68	27.64	173.10	-134.50	-610.45	-11,255.80	11,610.77	11,410.47	200.30	57.965 SF	
7,200.00	6,952.71	6,998.28	6,996.71	27.92	173.63	-128.77	-610.45	-11,255.80	11,654.01	11,453.03	200.98	57.986	
7,250.00	6,967.02	7,012.59	7,011.02	28.21	174.06	-121.73	-610.45	-11,255.80	11,698.44	11,496.90	201.54	58.046	
7,300.00	6,977.54	7,023.11	7,021.54	28.52	174.37	-113.20	-610.45	-11,255.80	11,743.79	11,541.81	201.98	58.145	
7,350.00	6,984.18	7,029.76	7,028.18	28.83	174.56	-103.23	-610.45	-11,255.80	11,789.78	11,587.49	202.30	58.280	
7,400.00	6,986.92	7,032.49	7,030.92	29.16	174.64	-92.23	-610.45	-11,255.80	11,836.14	11,633.64	202.50	58.451	
7,409.89	6,987.00	7,032.57	7,031.00	29.23	174.65	-90.00	-610.45	-11,255.80	11,845.33	11,642.80	202.52	58.489	
7,500.00	6,987.00	7,032.57	7,031.00	29.85	174.65	-90.00	-610.45	-11,255.80	11,929.08	11,726.35	202.73	58.842	
7,600.00	6,987.00	7,032.57	7,031.00	30.61	174.65	-90.00	-610.45	-11,255.80	12,022.14	11,819.17	202.97	59.231	
7,700.00	6,987.00	7,032.57	7,031.00	31.41	174.65	-90.00	-610.45	-11,255.80	12,115.31	11,912.10	203.21	59.619	
7,800.00	6,987.00	7,032.57	7,031.00	32.27	174.65	-90.00	-610.45	-11,255.80	12,208.59	12,005.13	203.46	60.005	
7,900.00	6,987.00	7,032.57	7,031.00	33.17	174.65	-90.00	-610.45	-11,255.80	12,301.98	12,098.27	203.71	60.390	
8,000.00	6,987.00	7,032.57	7,031.00	34.12	174.65	-90.00	-610.45	-11,255.80	12,395.46	12,191.50	203.96	60.773	
8,100.00	6,987.00	7,032.57	7,031.00	35.10	174.65	-90.00	-610.45	-11,255.80	12,489.05	12,284.83	204.22	61.155	
8,200.00	6,987.00	7,032.57	7,031.00	36.12	174.65	-90.00	-610.45	-11,255.80	12,582.74	12,378.26	204.48	61.535	
8,300.00	6,987.00	7,032.57	7,031.00	37.17	174.65	-90.00	-610.45	-11,255.80	12,676.52	12,471.78	204.74	61.915	
8,314.89	6,987.00	7,032.57	7,031.00	37.33	174.65	-90.00	-610.45	-11,255.80	12,690.50	12,485.72	204.78	61.971	
8,400.00	6,987.00	7,032.57	7,031.00	38.25	174.65	-90.00	-610.45	-11,255.80	12,771.22	12,566.23	204.99	62.302	
8,500.00	6,987.00	7,032.57	7,031.00	39.35	174.65	-90.00	-610.45	-11,255.80	12,867.96	12,662.77	205.19	62.712	
8,600.00	6,987.00	7,032.57	7,031.00	40.45	174.65	-90.00	-610.45	-11,255.80	12,966.26	12,760.91	205.34	63.144	
8,700.00	6,987.00	7,032.57	7,031.00	41.56	174.65	-90.00	-610.45	-11,255.80	13,065.60	12,860.16	205.44	63.597	

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 #692H
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 #692H	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		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	
8,800.00	6,987.00	7,032.57	7,031.00	42.66	174.65	-90.00	-610.45	-11,255.80	13,165.49	12,960.00	205.49	64.068		
8,900.00	6,987.00	7,032.57	7,031.00	43.75	174.65	90.00	-610.45	-11,255.80	13,265.43	13,059.94	205.49	64.555		
9,000.00	6,987.00	7,032.57	7,031.00	44.83	174.65	90.00	-610.45	-11,255.80	13,364.94	13,159.51	205.44	65.057		
9,071.74	6,987.00	7,032.57	7,031.00	45.59	174.65	90.00	-610.45	-11,255.80	13,435.81	13,230.44	205.37	65.424		
9,100.00	6,987.00	7,032.57	7,031.00	45.89	174.65	90.00	-610.45	-11,255.80	13,463.61	13,258.27	205.33	65.569		
9,200.00	6,987.00	7,032.57	7,031.00	46.97	174.65	90.00	-610.45	-11,255.80	13,562.00	13,356.77	205.23	66.083		
9,300.00	6,987.00	7,032.57	7,031.00	48.07	174.65	90.00	-610.45	-11,255.80	13,660.41	13,455.29	205.12	66.596		
9,400.00	6,987.00	7,032.57	7,031.00	49.20	174.65	90.00	-610.45	-11,255.80	13,758.85	13,553.83	205.02	67.108		
9,500.00	6,987.00	7,032.57	7,031.00	50.36	174.65	90.00	-610.45	-11,255.80	13,857.31	13,652.38	204.93	67.620		
9,600.00	6,987.00	7,032.57	7,031.00	51.54	174.65	90.00	-610.45	-11,255.80	13,955.80	13,750.96	204.84	68.131		
9,700.00	6,987.00	7,032.57	7,031.00	52.74	174.65	90.00	-610.45	-11,255.80	14,054.30	13,849.55	204.75	68.641		
9,800.00	6,987.00	7,032.57	7,031.00	53.96	174.65	90.00	-610.45	-11,255.80	14,152.82	13,948.16	204.67	69.151		
9,900.00	6,987.00	7,032.57	7,031.00	55.21	174.65	90.00	-610.45	-11,255.80	14,251.37	14,046.78	204.58	69.660		
10,000.00	6,987.00	7,032.57	7,031.00	56.47	174.65	90.00	-610.45	-11,255.80	14,349.94	14,145.43	204.51	70.168		
10,100.00	6,987.00	7,032.57	7,031.00	57.75	174.65	90.00	-610.45	-11,255.80	14,448.52	14,244.09	204.43	70.676		
10,200.00	6,987.00	7,032.57	7,031.00	59.04	174.65	90.00	-610.45	-11,255.80	14,547.12	14,342.76	204.36	71.183		
10,300.00	6,987.00	7,032.57	7,031.00	60.35	174.65	90.00	-610.45	-11,255.80	14,645.75	14,441.45	204.30	71.689		
10,400.00	6,987.00	7,032.57	7,031.00	61.67	174.65	90.00	-610.45	-11,255.80	14,744.39	14,540.16	204.23	72.194		
10,500.00	6,987.00	7,032.57	7,031.00	63.01	174.65	90.00	-610.45	-11,255.80	14,843.05	14,638.88	204.17	72.698		
10,600.00	6,987.00	7,032.57	7,031.00	64.36	174.65	90.00	-610.45	-11,255.80	14,941.73	14,737.61	204.12	73.202		
10,700.00	6,987.00	7,032.57	7,031.00	65.72	174.65	90.00	-610.45	-11,255.80	15,040.42	14,836.36	204.06	73.705		
10,800.00	6,987.00	7,032.57	7,031.00	67.09	174.65	90.00	-610.45	-11,255.80	15,139.14	14,935.13	204.01	74.207		
10,900.00	6,987.00	7,032.57	7,031.00	68.47	174.65	90.00	-610.45	-11,255.80	15,237.87	15,033.90	203.96	74.709		
11,000.00	6,987.00	7,032.57	7,031.00	69.86	174.65	90.00	-610.45	-11,255.80	15,336.61	15,132.69	203.92	75.210		
11,100.00	6,987.00	7,032.57	7,031.00	71.26	174.65	90.00	-610.45	-11,255.80	15,435.37	15,231.50	203.88	75.709		
11,200.00	6,987.00	7,032.57	7,031.00	72.67	174.65	90.00	-610.45	-11,255.80	15,534.15	15,330.31	203.84	76.209		
11,300.00	6,987.00	7,032.57	7,031.00	74.09	174.65	90.00	-610.45	-11,255.80	15,632.95	15,429.14	203.80	76.707		
11,400.00	6,987.00	7,032.57	7,031.00	75.51	174.65	90.00	-610.45	-11,255.80	15,731.75	15,527.99	203.77	77.204		
11,500.00	6,987.00	7,032.57	7,031.00	76.94	174.65	90.00	-610.45	-11,255.80	15,830.58	15,626.84	203.74	77.701		
11,600.00	6,987.00	7,032.57	7,031.00	78.38	174.65	90.00	-610.45	-11,255.80	15,929.42	15,725.71	203.71	78.197		
11,700.00	6,987.00	7,032.57	7,031.00	79.82	174.65	90.00	-610.45	-11,255.80	16,028.27	15,824.59	203.68	78.692		
11,800.00	6,987.00	7,032.57	7,031.00	81.27	174.65	90.00	-610.45	-11,255.80	16,127.14	15,923.47	203.66	79.186		
11,900.00	6,987.00	7,032.57	7,031.00	82.73	174.65	90.00	-610.45	-11,255.80	16,226.02	16,022.38	203.64	79.680		
12,000.00	6,987.00	7,032.57	7,031.00	84.19	174.65	90.00	-610.45	-11,255.80	16,324.91	16,121.29	203.62	80.173		
12,100.00	6,987.00	7,032.57	7,031.00	85.66	174.65	90.00	-610.45	-11,255.80	16,423.82	16,220.21	203.61	80.665		
12,200.00	6,987.00	7,032.57	7,031.00	87.13	174.65	90.00	-610.45	-11,255.80	16,522.74	16,319.15	203.59	81.156		
12,300.00	6,987.00	7,032.57	7,031.00	88.61	174.65	90.00	-610.45	-11,255.80	16,621.67	16,418.09	203.58	81.646		
12,400.00	6,987.00	7,032.57	7,031.00	90.09	174.65	90.00	-610.45	-11,255.80	16,720.62	16,517.04	203.57	82.135		
12,500.00	6,987.00	7,032.57	7,031.00	91.57	174.65	90.00	-610.45	-11,255.80	16,819.58	16,616.01	203.57	82.624		
12,600.00	6,987.00	7,032.57	7,031.00	93.06	174.65	90.00	-610.45	-11,255.80	16,918.55	16,714.98	203.56	83.111		
12,700.00	6,987.00	7,032.57	7,031.00	94.55	174.65	90.00	-610.45	-11,255.80	17,017.53	16,813.97	203.56	83.598		
12,800.00	6,987.00	7,032.57	7,031.00	96.05	174.65	90.00	-610.45	-11,255.80	17,116.53	16,912.96	203.56	84.084		
12,900.00	6,987.00	7,032.57	7,031.00	97.55	174.65	90.00	-610.45	-11,255.80	17,215.53	17,011.97	203.57	84.570		
13,000.00	6,987.00	7,032.57	7,031.00	99.05	174.65	90.00	-610.45	-11,255.80	17,314.55	17,110.98	203.57	85.054		
13,100.00	6,987.00	7,032.57	7,031.00	100.56	174.65	90.00	-610.45	-11,255.80	17,413.58	17,210.00	203.58	85.538		
13,200.00	6,987.00	7,032.57	7,031.00	102.07	174.65	90.00	-610.45	-11,255.80	17,512.62	17,309.03	203.59	86.020		
13,300.00	6,987.00	7,032.57	7,031.00	103.58	174.65	90.00	-610.45	-11,255.80	17,611.67	17,408.08	203.60	86.502		
13,400.00	6,987.00	7,032.57	7,031.00	105.09	174.65	90.00	-610.45	-11,255.80	17,710.73	17,507.12	203.61	86.983		
13,500.00	6,987.00	7,032.57	7,031.00	106.61	174.65	90.00	-610.45	-11,255.80	17,809.81	17,606.18	203.63	87.463		
13,600.00	6,987.00	7,032.57	7,031.00	108.13	174.65	90.00	-610.45	-11,255.80	17,908.89	17,705.25	203.64	87.943		
13,700.00	6,987.00	7,032.57	7,031.00	109.65	174.65	90.00	-610.45	-11,255.80	18,007.98	17,804.32	203.66	88.421		
13,800.00	6,987.00	7,032.57	7,031.00	111.18	174.65	90.00	-610.45	-11,255.80	18,107.09	17,903.40	203.68	88.899		

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 #692H
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 #692H	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				Reference		Offset		Semi Major Axis		Highside		Offset Wellbore Centre		Rule Assigned:		Distance		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									
13,900.00	6,987.00	7,032.57	7,031.00	112.71	174.65	90.00	-610.45	-11,255.80	18,206.20	18,002.49	203.70	89.376									
14,000.00	6,987.00	7,032.57	7,031.00	114.23	174.65	90.00	-610.45	-11,255.80	18,305.32	18,101.59	203.73	89.852									
14,100.00	6,987.00	7,032.57	7,031.00	115.77	174.65	90.00	-610.45	-11,255.80	18,404.45	18,200.70	203.75	90.327									
14,200.00	6,987.00	7,032.57	7,031.00	117.30	174.65	90.00	-610.45	-11,255.80	18,503.59	18,299.81	203.78	90.801									
14,300.00	6,987.00	7,032.57	7,031.00	118.83	174.65	90.00	-610.45	-11,255.80	18,602.74	18,398.93	203.81	91.275									
14,400.00	6,987.00	7,032.57	7,031.00	120.37	174.65	90.00	-610.45	-11,255.80	18,701.90	18,498.06	203.84	91.748									
14,500.00	6,987.00	7,032.57	7,031.00	121.91	174.65	90.00	-610.45	-11,255.80	18,801.07	18,597.20	203.87	92.219									
14,600.00	6,987.00	7,032.57	7,031.00	123.45	174.65	90.00	-610.45	-11,255.80	18,900.25	18,696.34	203.91	92.690									
14,700.00	6,987.00	7,032.57	7,031.00	124.99	174.65	90.00	-610.45	-11,255.80	18,999.43	18,795.49	203.94	93.161									
14,800.00	6,987.00	7,032.57	7,031.00	126.53	174.65	90.00	-610.45	-11,255.80	19,098.63	18,894.65	203.98	93.630									
14,900.00	6,987.00	7,032.57	7,031.00	128.08	174.65	90.00	-610.45	-11,255.80	19,197.83	18,993.81	204.02	94.098									
15,000.00	6,987.00	7,032.57	7,031.00	129.63	174.65	90.00	-610.45	-11,255.80	19,297.04	19,092.98	204.06	94.566									
15,100.00	6,987.00	7,032.57	7,031.00	131.17	174.65	90.00	-610.45	-11,255.80	19,396.26	19,192.16	204.10	95.033									
15,200.00	6,987.00	7,032.57	7,031.00	132.72	174.65	90.00	-610.45	-11,255.80	19,495.49	19,291.34	204.14	95.499									
15,300.00	6,987.00	7,032.57	7,031.00	134.27	174.65	90.00	-610.45	-11,255.80	19,594.72	19,390.53	204.19	95.964									
15,400.00	6,987.00	7,032.57	7,031.00	135.83	174.65	90.00	-610.45	-11,255.80	19,693.96	19,489.73	204.23	96.428									
15,500.00	6,987.00	7,032.57	7,031.00	137.38	174.65	90.00	-610.45	-11,255.80	19,793.21	19,588.93	204.28	96.892									
15,600.00	6,987.00	7,032.57	7,031.00	138.93	174.65	90.00	-610.45	-11,255.80	19,892.47	19,688.14	204.33	97.355									
15,700.00	6,987.00	7,032.57	7,031.00	140.49	174.65	90.00	-610.45	-11,255.80	19,991.74	19,787.36	204.38	97.816									
15,800.00	6,987.00	7,032.57	7,031.00	142.04	174.65	90.00	-610.45	-11,255.80	20,091.01	19,886.58	204.43	98.277									
15,900.00	6,987.00	7,032.57	7,031.00	143.60	174.65	90.00	-610.45	-11,255.80	20,190.29	19,985.80	204.48	98.738									
16,000.00	6,987.00	7,032.57	7,031.00	145.16	174.65	90.00	-610.45	-11,255.80	20,289.57	20,085.04	204.54	99.197									
16,100.00	6,987.00	7,032.57	7,031.00	146.72	174.65	90.00	-610.45	-11,255.80	20,388.87	20,184.27	204.59	99.656									
16,200.00	6,987.00	7,032.57	7,031.00	148.28	174.65	90.00	-610.45	-11,255.80	20,488.17	20,283.52	204.65	100.113									
16,300.00	6,987.00	7,032.57	7,031.00	149.84	174.65	90.00	-610.45	-11,255.80	20,587.47	20,382.77	204.71	100.570									
16,400.00	6,987.00	7,032.57	7,031.00	151.40	174.65	90.00	-610.45	-11,255.80	20,686.79	20,482.02	204.77	101.026									
16,500.00	6,987.00	7,032.57	7,031.00	152.97	174.65	90.00	-610.45	-11,255.80	20,786.11	20,581.28	204.83	101.482									
16,600.00	6,987.00	7,032.57	7,031.00	154.53	174.65	90.00	-610.45	-11,255.80	20,885.44	20,680.55	204.89	101.936									
16,700.00	6,987.00	7,032.57	7,031.00	156.10	174.65	90.00	-610.45	-11,255.80	20,984.77	20,779.82	204.95	102.390									
16,800.00	6,987.00	7,032.57	7,031.00	157.66	174.65	90.00	-610.45	-11,255.80	21,084.11	20,879.10	205.01	102.843									
16,900.00	6,987.00	7,032.57	7,031.00	159.23	174.65	90.00	-610.45	-11,255.80	21,183.45	20,978.38	205.08	103.295									
17,000.00	6,987.00	7,032.57	7,031.00	160.80	174.65	90.00	-610.45	-11,255.80	21,282.81	21,077.66	205.14	103.746									
17,100.00	6,987.00	7,032.57	7,031.00	162.36	174.65	90.00	-610.45	-11,255.80	21,382.16	21,176.95	205.21	104.197									
17,200.00	6,987.00	7,032.57	7,031.00	163.93	174.65	90.00	-610.45	-11,255.80	21,481.53	21,276.25	205.28	104.646									
17,300.00	6,987.00	7,032.57	7,031.00	165.50	174.65	90.00	-610.45	-11,255.80	21,580.90	21,375.55	205.35	105.095									
17,400.00	6,987.00	7,032.57	7,031.00	167.07	174.65	90.00	-610.45	-11,255.80	21,680.27	21,474.86	205.42	105.543									
17,500.00	6,987.00	7,032.57	7,031.00	168.64	174.65	90.00	-610.45	-11,255.80	21,779.65	21,574.17	205.49	105.991									
17,600.00	6,987.00	7,032.57	7,031.00	170.21	174.65	90.00	-610.45	-11,255.80	21,879.04	21,673.48	205.56	106.437									
17,700.00	6,987.00	7,032.57	7,031.00	171.78	174.65	90.00	-610.45	-11,255.80	21,978.43	21,772.80	205.63	106.883									
17,800.00	6,987.00	7,032.57	7,031.00	173.36	174.65	90.00	-610.45	-11,255.80	22,077.83	21,872.13	205.70	107.328									
17,900.00	6,987.00	7,032.57	7,031.00	174.93	174.65	90.00	-610.45	-11,255.80	22,177.24	21,971.46	205.78	107.772									
18,000.00	6,987.00	7,032.57	7,031.00	176.50	174.65	90.00	-610.45	-11,255.80	22,276.64	22,070.79	205.85	108.216									
18,100.00	6,987.00	7,032.57	7,031.00	178.08	174.65	90.00	-610.45	-11,255.80	22,376.06	22,170.13	205.93	108.658									
18,200.00	6,987.00	7,032.57	7,031.00	179.65	174.65	90.00	-610.45	-11,255.80	22,475.48	22,269.47	206.01	109.100									
18,300.00	6,987.00	7,032.57	7,031.00	181.23	174.65	90.00	-610.45	-11,255.80	22,574.90	22,368.82	206.09	109.541									
18,400.00	6,987.00	7,032.57	7,031.00	182.80	174.65	90.00	-610.45	-11,255.80	22,674.33	22,468.17	206.17	109.981									
18,500.00	6,987.00	7,032.57	7,031.00	184.38	174.65	90.00	-610.45	-11,255.80	22,773.76	22,567.52	206.24	110.421									
18,600.00	6,987.00	7,032.57	7,031.00	185.96	174.65	90.00	-610.45	-11,255.80	22,873.20	22,666.88	206.33	110.860									
18,700.00	6,987.00	7,032.57	7,031.00	187.53	174.65	90.00	-610.45	-11,255.80	22,972.65	22,766.24	206.41	111.298									
18,800.00	6,987.00	7,032.57	7,031.00	189.11	174.65	90.00	-610.45	-11,255.80	23,072.10	22,865.61	206.49	111.735									
18,900.00	6,987.00	7,032.57	7,031.00	190.69	174.65	90.00	-610.45	-11,255.80	23,171.55	22,964.98	206.57	112.171									
19,000.00	6,987.00	7,032.57	7,031.00	192.27	174.65	90.00	-610.45	-11,255.80	23,271.01	23,064.35	206.66	112.607									

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 #692H
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 #692H	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)				
19,100.00	6,987.00	7,032.57	7,031.00	193.85	174.65	90.00	-610.45	-11,255.80	23,370.47	23,163.73	206.74	113.042		
19,200.00	6,987.00	7,032.57	7,031.00	195.43	174.65	90.00	-610.45	-11,255.80	23,469.94	23,263.11	206.83	113.476		
19,255.69	6,987.00	7,032.57	7,031.00	196.31	174.65	90.00	-610.45	-11,255.80	23,525.34	23,318.46	206.87	113.718		
19,300.00	6,987.00	7,032.57	7,031.00	197.01	174.65	90.00	-610.45	-11,255.80	23,569.41	23,362.50	206.91	113.910		
19,400.00	6,987.00	7,032.57	7,031.00	198.59	174.65	90.00	-610.45	-11,255.80	23,668.89	23,461.89	207.00	114.342		
19,468.80	6,987.00	7,032.57	7,031.00	199.49	174.65	90.00	-610.45	-11,255.80	23,737.34	23,525.47	211.87	112.039		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		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)	
0.00	0.00	2,707.00	2,536.45	0.00	15.45	-93.54	-541.77	-8,758.81	9,156.15					
100.00	100.00	2,738.00	2,565.17	0.25	15.64	-93.49	-533.30	-8,750.80	9,127.89	9,112.18	15.71	581.158		
200.00	200.00	2,738.00	2,565.17	0.61	15.64	-93.49	-533.30	-8,750.80	9,100.56	9,084.68	15.88	573.178		
300.00	300.00	2,738.00	2,565.17	0.97	15.64	-93.49	-533.30	-8,750.80	9,074.24	9,058.11	16.14	562.393		
400.00	400.00	2,772.93	2,597.80	1.33	15.85	-93.43	-524.03	-8,742.47	9,048.51	9,031.87	16.64	543.685		
500.00	500.00	2,800.00	2,623.28	1.68	16.00	-93.39	-517.12	-8,736.49	9,023.89	9,006.77	17.12	527.028		
600.00	600.00	2,800.00	2,623.28	2.04	16.00	-93.39	-517.12	-8,736.49	9,000.04	8,982.59	17.45	515.760		
700.00	700.00	2,833.22	2,654.75	2.40	16.18	-93.34	-509.09	-8,729.51	8,977.05	8,959.07	17.98	499.245		
800.00	799.98	2,988.00	2,802.59	2.76	16.95	-87.24	-477.42	-8,696.43	8,954.03	8,934.92	19.11	468.455		
900.00	899.84	2,988.00	2,802.59	3.12	16.95	-87.71	-477.42	-8,696.43	8,931.09	8,911.64	19.45	459.090		
1,000.00	999.45	3,019.00	2,832.38	3.48	17.09	-88.15	-471.61	-8,690.11	8,908.93	8,888.98	19.95	446.646		
1,100.00	1,098.70	3,032.60	2,845.49	3.85	17.15	-88.59	-469.21	-8,687.47	8,887.51	8,867.15	20.36	436.571		
1,153.80	1,151.90	3,051.00	2,863.28	4.04	17.23	-88.81	-466.06	-8,683.96	8,876.28	8,855.64	20.63	430.187		
1,200.00	1,197.53	3,082.00	2,893.27	4.21	17.36	-88.82	-460.87	-8,678.04	8,866.67	8,845.73	20.94	423.437		
1,300.00	1,296.27	3,145.00	2,954.24	4.59	17.63	-88.82	-450.28	-8,666.26	8,846.24	8,824.64	21.59	409.667		
1,400.00	1,395.02	3,175.00	2,983.33	4.97	17.75	-88.82	-445.34	-8,660.85	8,826.46	8,804.36	22.09	399.482		
1,500.00	1,493.77	3,206.00	3,013.49	5.36	17.86	-88.82	-440.55	-8,655.49	8,807.44	8,784.84	22.60	389.680		
1,600.00	1,592.52	3,237.00	3,043.73	5.74	17.98	-88.83	-436.11	-8,650.31	8,789.15	8,766.04	23.11	380.343		
1,700.00	1,691.27	3,269.00	3,075.01	6.14	18.09	-88.84	-431.77	-8,645.18	8,771.61	8,747.99	23.62	371.382		
1,800.00	1,790.01	3,301.00	3,106.36	6.53	18.19	-88.84	-427.60	-8,640.28	8,754.83	8,730.70	24.13	362.849		
1,900.00	1,888.76	3,333.00	3,137.76	6.92	18.30	-88.85	-423.50	-8,635.66	8,738.84	8,714.20	24.64	354.722		
2,000.00	1,987.51	3,362.00	3,166.25	7.32	18.38	-88.86	-419.77	-8,631.75	8,723.66	8,698.53	25.13	347.144		
2,100.00	2,086.26	3,394.00	3,197.72	7.72	18.48	-88.87	-415.73	-8,627.54	8,709.14	8,683.50	25.64	339.736		
2,200.00	2,185.01	3,426.00	3,229.25	8.11	18.57	-88.88	-412.00	-8,623.56	8,695.39	8,669.25	26.14	332.672		
2,300.00	2,283.75	3,458.00	3,260.86	8.51	18.65	-88.89	-408.70	-8,619.86	8,682.47	8,655.83	26.64	325.946		
2,400.00	2,382.50	3,470.80	3,273.53	8.91	18.68	-88.90	-407.52	-8,618.48	8,670.39	8,643.33	27.06	320.386		
2,500.00	2,481.25	3,488.00	3,290.58	9.31	18.72	-88.91	-406.04	-8,616.75	8,659.27	8,631.77	27.50	314.860		
2,600.00	2,580.00	3,519.00	3,321.36	9.71	18.78	-88.93	-403.59	-8,613.99	8,649.10	8,621.12	27.99	309.058		
2,700.00	2,678.75	3,519.00	3,321.36	10.11	18.78	-88.93	-403.59	-8,613.99	8,639.81	8,611.45	28.36	304.653		
2,800.00	2,777.49	3,550.00	3,352.18	10.52	18.84	-88.95	-401.25	-8,611.63	8,631.40	8,602.56	28.83	299.348		
2,900.00	2,876.24	3,582.00	3,384.03	10.92	18.90	-88.97	-398.92	-8,609.63	8,623.97	8,594.67	29.30	294.295		
3,000.00	2,974.99	3,582.00	3,384.03	11.32	18.90	-88.97	-398.92	-8,609.63	8,617.40	8,587.73	29.67	290.416		
3,100.00	3,073.74	3,613.00	3,414.93	11.72	18.94	-88.99	-396.90	-8,608.08	8,611.72	8,581.59	30.13	285.824		
3,200.00	3,172.49	3,644.00	3,445.86	12.13	18.98	-89.01	-395.39	-8,606.88	8,606.98	8,576.40	30.58	281.469		
3,300.00	3,271.23	3,644.00	3,445.86	12.53	18.98	-89.01	-395.39	-8,606.88	8,603.18	8,572.24	30.94	278.052		
3,400.00	3,369.98	3,676.00	3,477.84	12.93	19.01	-89.04	-394.67	-8,606.06	8,600.28	8,568.89	31.39	274.006		
3,500.00	3,468.73	3,691.00	3,492.84	13.34	19.01	-89.05	-394.61	-8,605.82	8,598.34	8,566.56	31.78	270.559		
3,600.00	3,567.48	3,738.00	3,539.84	13.74	19.00	-89.11	-394.89	-8,605.39	8,597.22	8,565.00	32.22	266.853		
3,700.00	3,666.23	3,769.00	3,570.84	14.14	18.99	-89.14	-395.13	-8,605.32	8,596.80	8,564.21	32.59	263.796 CC		
3,704.45	3,670.62	3,769.00	3,570.84	14.16	18.99	-89.14	-395.13	-8,605.32	8,596.80	8,564.20	32.60	263.670		
3,800.00	3,764.97	3,840.00	3,641.84	14.55	19.00	-89.22	-395.24	-8,605.64	8,597.02	8,564.12	32.90	261.313		
3,900.00	3,863.72	3,940.10	3,741.93	14.95	31.70	-89.32	-395.34	-8,606.15	8,597.34	8,551.17	46.17	186.213		
4,000.00	3,962.47	4,036.48	3,838.31	15.36	44.00	-89.42	-395.44	-8,606.67	8,597.72	8,538.78	58.94	145.879		
4,100.00	4,061.22	4,132.86	3,934.69	15.76	56.33	-89.52	-395.54	-8,607.21	8,598.15	8,526.45	71.70	119.922		
4,200.00	4,159.97	4,229.24	4,031.07	16.17	68.66	-89.63	-395.65	-8,607.79	8,598.64	8,514.19	84.45	101.814		
4,300.00	4,258.71	4,325.62	4,127.45	16.57	80.99	-89.73	-395.76	-8,608.38	8,599.19	8,501.98	97.21	88.461		
4,400.00	4,357.46	4,422.00	4,223.82	16.98	93.33	-89.83	-395.88	-8,609.01	8,599.79	8,489.83	109.96	78.206		
4,500.00	4,456.21	4,518.37	4,320.20	17.38	105.67	-89.93	-396.01	-8,609.66	8,600.45	8,477.73	122.72	70.083		
4,600.00	4,554.96	4,614.75	4,416.57	17.79	118.02	-90.03	-396.14	-8,610.33	8,601.17	8,465.69	135.47	63.491		
4,700.00	4,653.71	4,711.12	4,512.94	18.19	130.36	-90.13	-396.27	-8,611.03	8,601.94	8,453.71	148.22	58.033		
4,800.00	4,752.45	4,807.50	4,609.31	18.60	142.70	-90.24	-396.41	-8,611.76	8,602.77	8,441.79	160.98	53.441		
4,900.00	4,851.20	4,903.87	4,705.68	19.00	155.04	-90.34	-396.56	-8,612.51	8,603.65	8,429.92	173.73	49.523		

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 #692H
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 #692H	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	
5,000.00	4,949.95	5,000.24	4,802.05	19.41	167.39	-90.44	-396.71	-8,613.29	8,604.59	8,418.10	186.49	46.141		
5,100.00	5,048.70	5,096.61	4,898.42	19.81	179.73	-90.54	-396.86	-8,614.10	8,605.59	8,406.35	199.24	43.192		
5,200.00	5,147.45	5,192.98	4,994.78	20.22	192.08	-90.64	-397.02	-8,614.93	8,606.64	8,394.65	211.99	40.599		
5,300.00	5,246.19	5,289.35	5,091.15	20.62	204.42	-90.74	-397.19	-8,615.79	8,607.75	8,383.00	224.75	38.300		
5,400.00	5,344.94	5,385.72	5,187.51	21.03	216.76	-90.85	-397.36	-8,616.67	8,608.91	8,371.41	237.50	36.248		
5,455.76	5,400.00	5,439.45	5,241.24	21.25	223.64	-90.90	-397.45	-8,617.18	8,609.59	8,364.98	244.61	35.197		
5,500.00	5,443.72	5,482.11	5,283.90	21.43	229.11	-90.95	-397.53	-8,617.58	8,610.13	8,359.88	250.25	34.405		
5,600.00	5,542.71	5,578.71	5,380.50	21.83	241.48	-91.05	-397.71	-8,618.52	8,611.38	8,348.35	263.03	32.739		
5,700.00	5,641.93	5,675.54	5,477.33	22.22	253.89	-91.15	-397.90	-8,619.49	8,612.64	8,336.82	275.83	31.225		
5,800.00	5,741.36	5,772.57	5,574.35	22.60	266.32	-91.23	-398.09	-8,620.48	8,613.91	8,325.28	288.64	29.843		
5,900.00	5,840.96	5,869.77	5,671.54	22.97	278.77	-91.30	-398.28	-8,621.51	8,615.19	8,313.73	301.46	28.578		
6,000.00	5,940.70	5,967.10	5,768.87	23.33	291.23	-91.36	-398.48	-8,622.56	8,616.46	8,302.16	314.29	27.415		
6,100.00	6,040.55	6,064.55	5,866.31	23.68	303.72	-91.41	-398.69	-8,623.64	8,617.72	8,290.58	327.13	26.343		
6,200.00	6,140.48	6,162.07	5,963.82	24.02	316.21	-91.45	-398.90	-8,624.74	8,618.96	8,278.99	339.97	25.352		
6,300.00	6,240.45	6,259.64	6,061.38	24.35	328.71	-91.47	-399.12	-8,625.88	8,620.20	8,267.39	352.81	24.433		
6,408.05	6,348.50	6,365.08	6,166.82	24.69	342.21	88.51	-399.36	-8,627.13	8,621.51	8,254.85	366.66	23.514		
6,450.00	6,390.43	6,405.98	6,207.72	24.82	347.45	-164.32	-399.46	-8,627.63	8,623.30	8,251.27	372.03	23.179		
6,500.00	6,440.15	6,454.45	6,256.18	24.99	353.66	-160.54	-399.57	-8,628.22	8,628.77	8,250.36	378.40	22.803	ES	
6,550.00	6,489.32	6,502.33	6,304.06	25.16	359.80	-159.22	-399.68	-8,628.81	8,637.84	8,253.12	384.71	22.453		
6,600.00	6,537.64	6,549.33	6,351.05	25.34	365.82	-158.31	-399.80	-8,629.40	8,650.45	8,259.54	390.91	22.129		
6,650.00	6,584.80	6,595.16	6,396.87	25.52	371.69	-157.46	-399.91	-8,629.98	8,666.53	8,269.57	396.96	21.832		
6,700.00	6,630.52	6,639.52	6,441.24	25.71	377.37	-156.56	-400.02	-8,630.55	8,685.99	8,283.16	402.83	21.563		
6,750.00	6,674.51	6,682.15	6,483.87	25.89	382.83	-155.53	-400.12	-8,631.10	8,708.70	8,300.23	408.47	21.320		
6,800.00	6,716.50	6,722.79	6,524.50	26.08	388.04	-154.32	-400.22	-8,631.62	8,734.52	8,320.67	413.85	21.105		
6,850.00	6,756.24	6,761.18	6,562.89	26.28	392.95	-152.89	-400.32	-8,632.13	8,763.31	8,344.36	418.95	20.917		
6,900.00	6,793.47	6,797.08	6,598.79	26.48	397.55	-151.18	-400.41	-8,632.60	8,794.88	8,371.17	423.72	20.756		
6,950.00	6,827.97	6,830.28	6,631.98	26.69	401.81	-149.11	-400.50	-8,633.04	8,829.06	8,400.92	428.14	20.622		
7,000.00	6,859.53	6,860.57	6,662.27	26.91	405.69	-146.59	-400.57	-8,633.45	8,865.62	8,433.44	432.18	20.514		
7,050.00	6,887.94	6,887.76	6,689.45	27.14	409.17	-143.49	-400.64	-8,633.82	8,904.34	8,468.53	435.82	20.431		
7,100.00	6,913.05	6,911.69	6,713.38	27.38	412.23	-139.66	-400.71	-8,634.14	8,945.00	8,505.97	439.03	20.374		
7,150.00	6,934.68	6,932.20	6,733.89	27.64	414.86	-134.89	-400.76	-8,634.42	8,987.35	8,545.55	441.80	20.343		
7,200.00	6,952.71	6,949.18	6,750.87	27.92	417.04	-128.92	-400.80	-8,634.65	9,031.11	8,587.00	444.11	20.335	SF	
7,250.00	6,967.02	6,962.52	6,764.20	28.21	418.75	-121.49	-400.84	-8,634.84	9,076.04	8,630.09	445.95	20.352		
7,300.00	6,977.54	6,972.13	6,773.82	28.52	419.98	-112.42	-400.87	-8,634.97	9,121.84	8,674.54	447.30	20.393		
7,350.00	6,984.18	6,977.97	6,779.66	28.83	420.73	-101.78	-400.88	-8,635.05	9,168.25	8,720.08	448.16	20.457		
7,400.00	6,986.92	6,979.99	6,781.68	29.16	420.98	-90.08	-400.89	-8,635.08	9,214.96	8,766.43	448.53	20.545		
7,409.89	6,987.00	6,979.94	6,781.63	29.23	420.98	-87.72	-400.89	-8,635.07	9,224.22	8,775.67	448.55	20.565		
7,500.00	6,987.00	6,978.78	6,780.46	29.85	420.83	-87.70	-400.88	-8,635.06	9,308.58	8,859.98	448.59	20.751		
7,600.00	6,987.00	6,977.49	6,779.17	30.61	420.66	-87.68	-400.88	-8,635.04	9,402.32	8,953.67	448.65	20.957		
7,700.00	6,987.00	6,976.20	6,777.88	31.41	420.50	-87.66	-400.88	-8,635.02	9,496.19	9,047.49	448.70	21.164		
7,800.00	6,987.00	6,974.91	6,776.59	32.27	420.33	-87.64	-400.87	-8,635.01	9,590.18	9,141.42	448.76	21.370		
7,900.00	6,987.00	6,973.62	6,775.30	33.17	420.17	-87.61	-400.87	-8,634.99	9,684.30	9,235.47	448.83	21.577		
8,000.00	6,987.00	6,972.33	6,774.02	34.12	420.00	-87.59	-400.87	-8,634.97	9,778.53	9,329.64	448.89	21.784		
8,100.00	6,987.00	6,971.05	6,772.73	35.10	419.84	-87.57	-400.86	-8,634.95	9,872.87	9,423.92	448.95	21.991		
8,200.00	6,987.00	6,969.76	6,771.44	36.12	419.67	-87.54	-400.86	-8,634.93	9,967.33	9,518.31	449.02	22.198		
8,300.00	6,987.00	6,968.47	6,770.16	37.17	419.51	-87.52	-400.86	-8,634.92	10,061.89	9,612.80	449.09	22.405		
8,314.89	6,987.00	6,968.28	6,769.97	37.33	419.48	-87.52	-400.86	-8,634.91	10,075.98	9,626.88	449.10	22.436		
8,400.00	6,987.00	6,967.18	6,768.86	38.25	419.34	-86.96	-400.85	-8,634.90	10,157.32	9,708.18	449.14	22.615		
8,500.00	6,987.00	6,965.86	6,767.54	39.35	419.17	-85.87	-400.85	-8,634.88	10,254.63	9,805.48	449.15	22.831		
8,600.00	6,987.00	6,964.52	6,766.20	40.45	419.00	-83.53	-400.85	-8,634.86	10,353.33	9,904.23	449.10	23.053		
8,700.00	6,987.00	6,963.17	6,764.85	41.56	418.83	-75.21	-400.84	-8,634.84	10,452.91	10,003.91	449.01	23.280		
8,800.00	6,987.00	6,961.81	6,763.50	42.66	418.66	50.57	-400.84	-8,634.83	10,552.87	10,104.01	448.86	23.510		

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 #692H
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 #692H	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		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)
8,900.00	6,987.00	6,960.45	6,762.14	43.75	418.48	80.79	-400.83	-8,634.81	10,652.70	10,204.04	448.67	23.743	
9,000.00	6,987.00	6,959.11	6,760.79	44.83	418.31	84.83	-400.83	-8,634.79	10,751.95	10,303.52	448.43	23.977	
9,071.74	6,987.00	6,958.15	6,759.84	45.59	418.19	86.05	-400.83	-8,634.78	10,822.52	10,374.29	448.24	24.145	
9,100.00	6,987.00	6,957.77	6,759.46	45.89	418.14	86.04	-400.83	-8,634.77	10,850.19	10,402.04	448.15	24.211	
9,200.00	6,987.00	6,956.44	6,758.13	46.97	417.97	86.01	-400.82	-8,634.75	10,948.14	10,500.27	447.87	24.445	
9,300.00	6,987.00	6,955.12	6,756.80	48.07	417.80	85.97	-400.82	-8,634.73	11,046.13	10,598.53	447.60	24.679	
9,400.00	6,987.00	6,953.79	6,755.48	49.20	417.63	85.94	-400.82	-8,634.72	11,144.15	10,696.82	447.33	24.913	
9,500.00	6,987.00	6,952.46	6,754.15	50.36	417.46	85.91	-400.81	-8,634.70	11,242.20	10,795.14	447.06	25.147	
9,600.00	6,987.00	6,951.14	6,752.82	51.54	417.29	85.87	-400.81	-8,634.68	11,340.29	10,893.49	446.80	25.381	
9,700.00	6,987.00	6,949.81	6,751.50	52.74	417.12	85.84	-400.81	-8,634.66	11,438.41	10,991.87	446.54	25.616	
9,800.00	6,987.00	6,948.49	6,750.17	53.96	416.95	85.80	-400.80	-8,634.64	11,536.57	11,090.28	446.29	25.850	
9,900.00	6,987.00	6,947.16	6,748.85	55.21	416.78	85.77	-400.80	-8,634.62	11,634.75	11,188.72	446.04	26.085	
10,000.00	6,987.00	6,945.84	6,747.53	56.47	416.61	85.73	-400.80	-8,634.61	11,732.97	11,287.18	445.79	26.319	
10,100.00	6,987.00	6,944.52	6,746.20	57.75	416.44	85.70	-400.79	-8,634.59	11,831.21	11,385.66	445.55	26.554	
10,200.00	6,987.00	6,943.20	6,744.88	59.04	416.27	85.66	-400.79	-8,634.57	11,929.49	11,484.17	445.31	26.789	
10,300.00	6,987.00	6,941.87	6,743.56	60.35	416.10	85.63	-400.79	-8,634.55	12,027.79	11,582.71	445.08	27.024	
10,400.00	6,987.00	6,940.55	6,742.24	61.67	415.93	85.60	-400.78	-8,634.53	12,126.12	11,681.27	444.85	27.259	
10,500.00	6,987.00	6,939.23	6,740.92	63.01	415.76	85.56	-400.78	-8,634.52	12,224.48	11,779.85	444.62	27.494	
10,600.00	6,987.00	6,937.92	6,739.60	64.36	415.59	85.53	-400.78	-8,634.50	12,322.86	11,878.46	444.40	27.729	
10,700.00	6,987.00	6,936.60	6,738.29	65.72	415.43	85.49	-400.77	-8,634.48	12,421.27	11,977.09	444.18	27.964	
10,800.00	6,987.00	6,935.28	6,736.97	67.09	415.26	85.46	-400.77	-8,634.46	12,519.70	12,075.74	443.97	28.200	
10,900.00	6,987.00	6,933.96	6,735.65	68.47	415.09	85.42	-400.77	-8,634.44	12,618.16	12,174.41	443.76	28.435	
11,000.00	6,987.00	6,932.65	6,734.34	69.86	414.92	85.39	-400.76	-8,634.43	12,716.64	12,273.10	443.55	28.670	
11,100.00	6,987.00	6,931.33	6,733.02	71.26	414.75	85.36	-400.76	-8,634.41	12,815.15	12,371.81	443.34	28.906	
11,200.00	6,987.00	6,930.02	6,731.71	72.67	414.58	85.32	-400.75	-8,634.39	12,913.68	12,470.54	443.14	29.141	
11,300.00	6,987.00	6,928.70	6,730.39	74.09	414.41	85.29	-400.75	-8,634.37	13,012.23	12,569.29	442.94	29.377	
11,400.00	6,987.00	6,927.39	6,729.08	75.51	414.25	85.25	-400.75	-8,634.35	13,110.80	12,668.06	442.74	29.613	
11,500.00	6,987.00	6,926.08	6,727.77	76.94	414.08	85.22	-400.74	-8,634.34	13,209.40	12,766.85	442.55	29.848	
11,600.00	6,987.00	6,924.77	6,726.46	78.38	413.91	85.19	-400.74	-8,634.32	13,308.01	12,865.65	442.36	30.084	
11,700.00	6,987.00	6,923.46	6,725.15	79.82	413.74	85.15	-400.74	-8,634.30	13,406.65	12,964.47	442.17	30.320	
11,800.00	6,987.00	6,922.15	6,723.84	81.27	413.57	85.12	-400.73	-8,634.28	13,505.30	13,063.31	441.99	30.556	
11,900.00	6,987.00	6,920.84	6,722.53	82.73	413.41	85.08	-400.73	-8,634.27	13,603.98	13,162.17	441.81	30.792	
12,000.00	6,987.00	6,919.53	6,721.22	84.19	413.24	85.05	-400.73	-8,634.25	13,702.67	13,261.04	441.63	31.028	
12,100.00	6,987.00	6,918.22	6,719.91	85.66	413.07	85.02	-400.72	-8,634.23	13,801.38	13,359.93	441.45	31.264	
12,200.00	6,987.00	6,916.91	6,718.60	87.13	412.90	84.98	-400.72	-8,634.21	13,900.12	13,458.84	441.28	31.500	
12,300.00	6,987.00	6,915.61	6,717.30	88.61	412.74	84.95	-400.72	-8,634.19	13,998.86	13,557.76	441.11	31.736	
12,400.00	6,987.00	6,914.30	6,715.99	90.09	412.57	84.91	-400.71	-8,634.18	14,097.63	13,656.69	440.94	31.972	
12,500.00	6,987.00	6,912.99	6,714.68	91.57	412.40	84.88	-400.71	-8,634.16	14,196.41	13,755.64	440.77	32.208	
12,600.00	6,987.00	6,911.69	6,713.38	93.06	412.23	84.85	-400.71	-8,634.14	14,295.21	13,854.61	440.61	32.444	
12,700.00	6,987.00	6,910.39	6,712.08	94.55	412.07	84.81	-400.70	-8,634.12	14,394.03	13,953.59	440.44	32.681	
12,800.00	6,987.00	6,909.08	6,710.77	96.05	411.90	84.78	-400.70	-8,634.11	14,492.86	14,052.58	440.28	32.917	
12,900.00	6,987.00	6,907.78	6,709.47	97.55	411.73	84.75	-400.70	-8,634.09	14,591.71	14,151.59	440.13	33.154	
13,000.00	6,987.00	6,906.48	6,708.17	99.05	411.57	84.71	-400.69	-8,634.07	14,690.58	14,250.61	439.97	33.390	
13,100.00	6,987.00	6,905.18	6,706.87	100.56	411.40	84.68	-400.69	-8,634.05	14,789.46	14,349.64	439.82	33.626	
13,200.00	6,987.00	6,903.88	6,705.57	102.07	411.23	84.64	-400.69	-8,634.03	14,888.35	14,448.68	439.67	33.863	
13,300.00	6,987.00	6,902.58	6,704.27	103.58	411.07	84.61	-400.68	-8,634.02	14,987.26	14,547.74	439.52	34.099	
13,400.00	6,987.00	6,901.28	6,702.97	105.09	410.90	84.58	-400.68	-8,634.00	15,086.18	14,646.81	439.37	34.336	
13,500.00	6,987.00	6,899.98	6,701.67	106.61	410.73	84.54	-400.68	-8,633.98	15,185.12	14,745.89	439.22	34.573	
13,600.00	6,987.00	6,898.68	6,700.37	108.13	410.57	84.51	-400.67	-8,633.96	15,284.07	14,844.99	439.08	34.809	
13,700.00	6,987.00	6,897.38	6,699.08	109.65	410.40	84.48	-400.67	-8,633.95	15,383.03	14,944.09	438.94	35.046	
13,800.00	6,987.00	6,896.09	6,697.78	111.18	410.24	84.44	-400.67	-8,633.93	15,482.01	15,043.21	438.80	35.283	
13,900.00	6,987.00	6,894.79	6,696.48	112.71	410.07	84.41	-400.66	-8,633.91	15,581.00	15,142.34	438.66	35.519	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		
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	
14,000.00	6,987.00	6,893.50	6,695.19	114.23	409.90	84.38	-400.66	-8,633.89	15,680.00	15,241.48	438.53	35.756		
14,100.00	6,987.00	6,892.20	6,693.90	115.77	409.74	84.34	-400.66	-8,633.88	15,779.02	15,340.62	438.39	35.993		
14,200.00	6,987.00	6,890.91	6,692.60	117.30	409.57	84.31	-400.65	-8,633.86	15,878.05	15,439.78	438.26	36.230		
14,300.00	6,987.00	6,889.62	6,691.31	118.83	409.41	84.27	-400.65	-8,633.84	15,977.09	15,538.95	438.13	36.466		
14,400.00	6,987.00	6,888.33	6,690.02	120.37	409.24	84.24	-400.65	-8,633.82	16,076.14	15,638.14	438.00	36.703		
14,500.00	6,987.00	6,887.03	6,688.73	121.91	409.08	84.21	-400.64	-8,633.81	16,175.20	15,737.33	437.87	36.940		
14,600.00	6,987.00	6,885.74	6,687.44	123.45	408.91	84.17	-400.64	-8,633.79	16,274.27	15,836.53	437.75	37.177		
14,700.00	6,987.00	6,884.45	6,686.15	124.99	408.75	84.14	-400.64	-8,633.77	16,373.36	15,935.73	437.63	37.414		
14,800.00	6,987.00	6,883.16	6,684.86	126.53	408.58	84.11	-400.63	-8,633.75	16,472.46	16,034.95	437.50	37.651		
14,900.00	6,987.00	6,881.87	6,683.57	128.08	408.42	84.07	-400.63	-8,633.74	16,571.56	16,134.18	437.38	37.888		
15,000.00	6,987.00	6,880.59	6,682.28	129.63	408.25	84.04	-400.63	-8,633.72	16,670.68	16,233.42	437.26	38.125		
15,100.00	6,987.00	6,879.30	6,680.99	131.17	408.09	84.01	-400.62	-8,633.70	16,769.81	16,332.66	437.14	38.362		
15,200.00	6,987.00	6,878.01	6,679.71	132.72	407.92	83.97	-400.62	-8,633.69	16,868.95	16,431.92	437.03	38.599		
15,300.00	6,987.00	6,876.73	6,678.42	134.27	407.76	83.94	-400.62	-8,633.67	16,968.10	16,531.18	436.91	38.836		
15,400.00	6,987.00	6,875.44	6,677.14	135.83	407.59	83.91	-400.61	-8,633.65	17,067.25	16,630.45	436.80	39.073		
15,500.00	6,987.00	6,874.16	6,675.85	137.38	407.43	83.87	-400.61	-8,633.63	17,166.42	16,729.73	436.69	39.311		
15,600.00	6,987.00	6,872.87	6,674.57	138.93	407.26	83.84	-400.61	-8,633.62	17,265.60	16,829.02	436.58	39.548		
15,700.00	6,987.00	6,871.59	6,673.29	140.49	407.10	83.81	-400.60	-8,633.60	17,364.79	16,928.32	436.47	39.785		
15,800.00	6,987.00	6,870.31	6,672.00	142.04	406.93	83.78	-400.60	-8,633.58	17,463.98	17,027.62	436.36	40.022		
15,900.00	6,987.00	6,869.03	6,670.72	143.60	406.77	83.74	-400.60	-8,633.56	17,563.19	17,126.93	436.25	40.259		
16,000.00	6,987.00	6,867.75	6,669.44	145.16	406.61	83.71	-400.59	-8,633.55	17,662.40	17,226.25	436.15	40.496		
16,100.00	6,987.00	6,866.47	6,668.16	146.72	406.44	83.68	-400.59	-8,633.53	17,761.62	17,325.58	436.04	40.734		
16,200.00	6,987.00	6,865.19	6,666.88	148.28	406.28	83.64	-400.59	-8,633.51	17,860.85	17,424.91	435.94	40.971		
16,300.00	6,987.00	6,863.91	6,665.60	149.84	406.11	83.61	-400.58	-8,633.49	17,960.09	17,524.26	435.84	41.208		
16,400.00	6,987.00	6,862.63	6,664.32	151.40	405.95	83.58	-400.58	-8,633.48	18,059.34	17,623.60	435.74	41.445		
16,500.00	6,987.00	6,861.35	6,663.05	152.97	405.79	83.54	-400.58	-8,633.46	18,158.60	17,722.96	435.64	41.683		
16,600.00	6,987.00	6,860.07	6,661.77	154.53	405.62	83.51	-400.57	-8,633.44	18,257.86	17,822.32	435.54	41.920		
16,700.00	6,987.00	6,858.80	6,660.49	156.10	405.46	83.48	-400.57	-8,633.43	18,357.13	17,921.69	435.44	42.157		
16,800.00	6,987.00	6,857.52	6,659.22	157.66	405.30	83.44	-400.57	-8,633.41	18,456.41	18,021.07	435.35	42.395		
16,900.00	6,987.00	6,856.25	6,657.94	159.23	405.13	83.41	-400.56	-8,633.39	18,555.70	18,120.45	435.25	42.632		
17,000.00	6,987.00	6,854.97	6,656.67	160.80	404.97	83.38	-400.56	-8,633.37	18,654.99	18,219.84	435.16	42.870		
17,100.00	6,987.00	6,853.70	6,655.39	162.36	404.81	83.35	-400.56	-8,633.36	18,754.30	18,319.23	435.06	43.107		
17,200.00	6,987.00	6,852.43	6,654.12	163.93	404.64	83.31	-400.55	-8,633.34	18,853.61	18,418.63	434.97	43.344		
17,300.00	6,987.00	6,851.15	6,652.85	165.50	404.48	83.28	-400.55	-8,633.32	18,952.92	18,518.04	434.88	43.582		
17,400.00	6,987.00	6,849.88	6,651.58	167.07	404.32	83.25	-400.55	-8,633.31	19,052.25	18,617.45	434.79	43.819		
17,500.00	6,987.00	6,848.61	6,650.31	168.64	404.15	83.21	-400.54	-8,633.29	19,151.58	18,716.87	434.70	44.057		
17,600.00	6,987.00	6,847.34	6,649.04	170.21	403.99	83.18	-400.54	-8,633.27	19,250.91	18,816.30	434.62	44.294		
17,700.00	6,987.00	6,846.07	6,647.77	171.78	403.83	83.15	-400.54	-8,633.26	19,350.26	18,915.73	434.53	44.532		
17,800.00	6,987.00	6,844.80	6,646.50	173.36	403.67	83.12	-400.53	-8,633.24	19,449.61	19,015.17	434.44	44.769		
17,900.00	6,987.00	6,843.53	6,645.23	174.93	403.50	83.08	-400.53	-8,633.22	19,548.97	19,114.61	434.36	45.007		
18,000.00	6,987.00	6,842.27	6,643.96	176.50	403.34	83.05	-400.53	-8,633.20	19,648.33	19,214.06	434.27	45.244		
18,100.00	6,987.00	6,841.00	6,642.70	178.08	403.18	83.02	-400.52	-8,633.19	19,747.70	19,313.51	434.19	45.482		
18,200.00	6,987.00	6,839.73	6,641.43	179.65	403.02	82.99	-400.52	-8,633.17	19,847.08	19,412.97	434.11	45.719		
18,300.00	6,987.00	6,838.47	6,640.17	181.23	402.86	82.95	-400.52	-8,633.15	19,946.46	19,512.43	434.03	45.957		
18,400.00	6,987.00	6,837.20	6,638.90	182.80	402.69	82.92	-400.51	-8,633.14	20,045.85	19,611.90	433.95	46.194		
18,500.00	6,987.00	6,835.94	6,637.64	184.38	402.53	82.89	-400.51	-8,633.12	20,145.24	19,711.37	433.87	46.432		
18,600.00	6,987.00	6,834.68	6,636.37	185.96	402.37	82.86	-400.51	-8,633.10	20,244.64	19,810.85	433.79	46.669		
18,700.00	6,987.00	6,833.41	6,635.11	187.53	402.21	82.82	-400.50	-8,633.09	20,344.05	19,910.34	433.71	46.907		
18,800.00	6,987.00	6,832.15	6,633.85	189.11	402.05	82.79	-400.50	-8,633.07	20,443.46	20,009.83	433.64	47.144		
18,900.00	6,987.00	6,830.89	6,632.59	190.69	401.88	82.76	-400.50	-8,633.05	20,542.88	20,109.32	433.56	47.382		
19,000.00	6,987.00	6,829.63	6,631.33	192.27	401.72	82.73	-400.49	-8,633.04	20,642.30	20,208.82	433.48	47.620		
19,100.00	6,987.00	6,828.37	6,630.07	193.85	401.56	82.69	-400.49	-8,633.02	20,741.73	20,308.32	433.41	47.857		

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 #692H
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 #692H	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		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
19,200.00	6,987.00	6,827.11	6,628.81	195.43	401.40	82.66	-400.49	-8,633.00	20,841.16	20,407.83		433.34	48.095
19,255.69	6,987.00	6,826.41	6,628.11	196.31	401.31	82.64	-400.49	-8,632.99	20,896.54	20,463.25		433.30	48.227
19,300.00	6,987.00	6,825.85	6,627.55	197.01	401.24	82.63	-400.49	-8,632.99	20,940.60	20,507.34		433.26	48.332
19,400.00	6,987.00	6,824.59	6,626.29	198.59	401.08	82.60	-400.48	-8,632.97	21,040.05	20,606.86		433.19	48.570
19,468.80	6,987.00	6,823.73	6,625.43	199.49	400.97	82.57	-400.48	-8,632.96	21,108.47	20,670.59		437.88	48.206

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		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	-74.79	2,288.40	-8,415.77	8,721.57				
100.00	100.00	38.00	38.00	0.25	1.20	-74.79	2,288.40	-8,415.77	8,721.35	8,719.90	1.45	5,995.471	
200.00	200.00	138.00	138.00	0.61	4.37	-74.79	2,288.40	-8,415.77	8,721.35	8,716.37	4.98	1,751.169	
300.00	300.00	238.00	238.00	0.97	7.54	-74.79	2,288.40	-8,415.77	8,721.35	8,712.84	8.51	1,025.324	
400.00	400.00	338.00	338.00	1.33	10.71	-74.79	2,288.40	-8,415.77	8,721.35	8,709.32	12.03	724.871	
500.00	500.00	438.00	438.00	1.68	13.87	-74.79	2,288.40	-8,415.77	8,721.35	8,705.79	15.56	560.598	
510.00	510.00	448.00	448.00	1.72	14.19	-74.79	2,288.40	-8,415.77	8,721.35	8,705.44	15.91	548.175	
600.00	600.00	497.00	497.00	2.04	15.74	-74.79	2,288.40	-8,415.77	8,721.45	8,703.66	17.78	490.405	
700.00	700.00	546.42	546.42	2.40	15.79	-74.79	2,288.92	-8,415.97	8,722.16	8,703.99	18.18	479.874	
800.00	799.98	578.38	578.37	2.76	15.80	-68.38	2,289.60	-8,416.31	8,723.01	8,704.47	18.54	470.449	
900.00	899.84	623.06	623.03	3.12	15.82	-68.39	2,290.58	-8,417.05	8,723.23	8,704.32	18.91	461.337	
1,000.00	999.45	639.03	638.99	3.48	15.82	-68.40	2,290.94	-8,417.37	8,722.90	8,703.64	19.26	452.785	
1,100.00	1,098.70	670.04	669.98	3.85	15.83	-68.43	2,291.68	-8,418.42	8,722.25	8,702.62	19.63	444.341	
1,153.80	1,151.90	673.84	673.77	4.04	15.83	-68.44	2,291.77	-8,418.58	8,721.73	8,701.91	19.82	439.967	
1,200.00	1,197.53	700.74	700.64	4.21	15.84	-68.47	2,292.37	-8,419.75	8,721.28	8,701.28	20.00	436.054	
1,285.25	1,281.71	700.74	700.64	4.53	15.84	-68.47	2,292.37	-8,419.75	8,721.00	8,700.69	20.31	429.387	
1,300.00	1,296.27	714.75	714.63	4.59	15.84	-68.48	2,292.70	-8,420.42	8,720.92	8,700.55	20.37	428.106 CC, ES	
1,400.00	1,395.02	733.24	733.08	4.97	15.85	-68.50	2,293.23	-8,421.59	8,721.64	8,700.89	20.75	420.388	
1,500.00	1,493.77	779.54	779.27	5.36	15.87	-68.54	2,293.94	-8,424.67	8,722.90	8,701.76	21.14	412.533	
1,600.00	1,592.52	793.71	793.39	5.74	15.87	-68.56	2,294.10	-8,425.81	8,725.14	8,703.62	21.52	405.402	
1,700.00	1,691.27	809.75	809.36	6.14	15.88	-68.57	2,294.28	-8,427.26	8,728.36	8,706.46	21.90	398.529	
1,800.00	1,790.01	847.61	847.02	6.53	15.89	-68.61	2,294.53	-8,431.09	8,732.48	8,710.18	22.29	391.703	
1,900.00	1,888.76	887.61	886.80	6.92	15.91	-68.66	2,294.85	-8,435.27	8,737.18	8,714.49	22.69	385.141	
2,000.00	1,987.51	901.20	900.31	7.32	15.91	-68.67	2,295.04	-8,436.79	8,742.76	8,719.69	23.06	379.098	
2,100.00	2,086.26	918.16	917.14	7.72	15.92	-68.69	2,295.36	-8,438.87	8,749.34	8,725.90	23.44	373.272	
2,200.00	2,185.01	940.11	938.90	8.11	15.93	-68.71	2,295.71	-8,441.71	8,756.77	8,732.95	23.82	367.626	
2,300.00	2,283.75	1,011.83	1,009.93	8.51	15.97	-68.79	2,296.69	-8,451.57	8,764.85	8,740.60	24.25	361.469	
2,400.00	2,382.50	1,011.83	1,009.93	8.91	15.97	-68.79	2,296.69	-8,451.57	8,773.66	8,749.05	24.61	356.542	
2,500.00	2,481.25	1,043.02	1,040.75	9.31	16.00	-68.83	2,296.99	-8,456.33	8,783.34	8,758.34	25.00	351.291	
2,600.00	2,580.00	1,043.02	1,040.75	9.71	16.00	-68.83	2,296.99	-8,456.33	8,794.06	8,768.70	25.36	346.800	
2,700.00	2,678.75	1,043.02	1,040.75	10.11	16.00	-68.83	2,296.99	-8,456.33	8,805.90	8,780.19	25.71	342.522	
2,800.00	2,777.49	1,074.75	1,071.93	10.52	16.03	-68.87	2,297.39	-8,462.21	8,818.70	8,792.59	26.11	337.770	
2,900.00	2,876.24	1,074.75	1,071.93	10.92	16.03	-68.87	2,297.39	-8,462.21	8,832.42	8,805.96	26.45	333.879	
3,000.00	2,974.99	1,105.75	1,102.26	11.32	16.06	-68.90	2,297.95	-8,468.58	8,847.18	8,820.34	26.84	329.615	
3,100.00	3,073.74	1,105.75	1,102.26	11.72	16.06	-68.90	2,297.95	-8,468.58	8,862.77	8,835.59	27.18	326.078	
3,200.00	3,172.49	1,136.35	1,132.08	12.13	16.09	-68.94	2,298.78	-8,475.38	8,879.41	8,851.85	27.56	322.158	
3,300.00	3,271.23	1,136.35	1,132.08	12.53	16.09	-68.94	2,298.78	-8,475.38	8,896.86	8,868.97	27.89	318.946	
3,400.00	3,369.98	1,168.18	1,163.01	12.93	16.12	-68.97	2,299.73	-8,482.83	8,915.16	8,886.88	28.27	315.316	
3,500.00	3,468.73	1,199.00	1,192.87	13.34	16.15	-69.01	2,300.61	-8,490.42	8,934.34	8,905.69	28.65	311.834	
3,600.00	3,567.48	1,199.00	1,192.87	13.74	16.15	-69.01	2,300.61	-8,490.42	8,954.36	8,925.38	28.97	309.055	
3,700.00	3,666.23	1,248.03	1,240.17	14.14	16.19	-69.07	2,301.59	-8,503.30	8,975.19	8,945.81	29.38	305.478	
3,800.00	3,764.97	1,261.54	1,253.19	14.55	16.21	-69.09	2,301.81	-8,506.90	8,996.69	8,966.97	29.72	302.699	
3,900.00	3,863.72	1,292.54	1,282.93	14.95	16.24	-69.13	2,302.16	-8,515.64	9,019.15	8,989.05	30.10	299.669	
4,000.00	3,962.47	1,292.54	1,282.93	15.36	16.24	-69.13	2,302.16	-8,515.64	9,042.41	9,012.00	30.41	297.387	
4,100.00	4,061.22	1,305.76	1,295.54	15.76	16.26	-69.15	2,302.25	-8,519.61	9,066.67	9,035.93	30.74	294.935	
4,200.00	4,159.97	1,323.84	1,312.75	16.17	16.28	-69.17	2,302.39	-8,525.15	9,091.77	9,060.69	31.08	292.488	
4,300.00	4,258.71	1,354.82	1,342.15	16.57	16.32	-69.21	2,302.52	-8,534.91	9,117.65	9,086.20	31.45	289.897	
4,400.00	4,357.46	1,385.50	1,371.20	16.98	16.36	-69.26	2,302.62	-8,544.77	9,144.22	9,112.40	31.82	287.407	
4,500.00	4,456.21	1,385.50	1,371.20	17.38	16.36	-69.26	2,302.62	-8,544.77	9,171.66	9,139.55	32.11	285.655	
4,600.00	4,554.96	1,414.27	1,398.31	17.79	16.39	-69.30	2,302.89	-8,554.39	9,199.87	9,167.41	32.47	283.370	
4,700.00	4,653.71	1,443.67	1,425.89	18.19	16.43	-69.34	2,303.16	-8,564.58	9,228.96	9,196.13	32.83	281.150	
4,800.00	4,752.45	1,443.67	1,425.89	18.60	16.43	-69.34	2,303.16	-8,564.58	9,258.80	9,225.70	33.11	279.668	

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 #692H
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 #692H	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 (°)	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)					
4,900.00	4,851.20	1,443.67	1,425.89	19.00	16.43	-69.34	2,303.16	-8,564.58	9,289.63	9,256.24	33.38	278.277			
5,000.00	4,949.95	1,475.04	1,455.07	19.41	16.48	-69.38	2,303.53	-8,576.07	9,321.17	9,287.42	33.75	276.216			
5,100.00	5,048.70	1,475.04	1,455.07	19.81	16.48	-69.38	2,303.53	-8,576.07	9,353.61	9,319.60	34.01	274.985			
5,200.00	5,147.45	1,475.04	1,455.07	20.22	16.48	-69.38	2,303.53	-8,576.07	9,387.01	9,352.73	34.28	273.836			
5,300.00	5,246.19	1,505.65	1,483.22	20.62	16.54	-69.42	2,304.28	-8,588.08	9,421.23	9,386.58	34.64	271.967			
5,400.00	5,344.94	1,505.65	1,483.22	21.03	16.54	-69.42	2,304.28	-8,588.08	9,456.20	9,421.31	34.90	270.961			
5,455.76	5,400.00	1,522.72	1,498.82	21.25	16.56	-69.45	2,304.69	-8,594.99	9,476.04	9,440.95	35.09	270.012			
5,500.00	5,443.72	1,537.35	1,512.16	21.43	16.59	-69.63	2,304.85	-8,601.01	9,492.01	9,456.76	35.25	269.253			
5,600.00	5,542.71	1,567.98	1,539.96	21.83	16.64	-70.05	2,304.69	-8,613.85	9,528.98	9,493.38	35.60	267.697			
5,700.00	5,641.93	1,567.98	1,539.96	22.22	16.64	-70.43	2,304.69	-8,613.85	9,567.19	9,531.36	35.83	267.025			
5,800.00	5,741.36	1,598.26	1,567.29	22.60	16.69	-70.88	2,304.35	-8,626.88	9,606.60	9,570.45	36.15	265.729			
5,900.00	5,840.96	1,611.55	1,579.23	22.97	16.71	-71.32	2,304.28	-8,632.72	9,647.30	9,610.89	36.41	264.974			
6,000.00	5,940.70	1,629.61	1,595.41	23.33	16.74	-71.77	2,304.28	-8,640.75	9,689.21	9,652.54	36.67	264.216			
6,100.00	6,040.55	1,660.93	1,623.35	23.68	16.80	-72.25	2,304.23	-8,654.89	9,732.27	9,695.29	36.97	263.225			
6,200.00	6,140.48	1,682.59	1,642.61	24.02	16.84	-72.74	2,304.12	-8,664.81	9,776.37	9,739.14	37.24	262.552			
6,300.00	6,240.45	1,722.18	1,677.68	24.35	16.92	-73.25	2,304.05	-8,683.17	9,821.55	9,783.99	37.56	261.483			
6,408.05	6,348.50	1,735.60	1,689.53	24.69	16.95	106.20	2,304.05	-8,689.48	9,871.46	9,833.68	37.77	261.328			
6,450.00	6,390.43	1,752.80	1,704.68	24.82	16.99	-145.32	2,304.05	-8,697.62	9,892.06	9,854.15	37.91	260.965			
6,500.00	6,440.15	1,752.80	1,704.68	24.99	16.99	-139.79	2,304.05	-8,697.62	9,919.04	9,881.05	37.99	261.065			
6,550.00	6,489.32	1,752.80	1,704.68	25.16	16.99	-136.46	2,304.05	-8,697.62	9,948.56	9,910.47	38.09	261.180			
6,600.00	6,537.64	1,752.80	1,704.68	25.34	16.99	-133.26	2,304.05	-8,697.62	9,980.40	9,942.21	38.19	261.315			
6,650.00	6,584.80	1,752.80	1,704.68	25.52	16.99	-129.81	2,304.05	-8,697.62	10,014.36	9,976.06	38.30	261.466			
6,700.00	6,630.52	1,768.66	1,718.58	25.71	17.03	-125.98	2,304.16	-8,705.25	10,050.08	10,011.60	38.48	261.178			
6,750.00	6,674.51	1,784.13	1,732.06	25.89	17.06	-121.66	2,304.48	-8,712.85	10,087.60	10,048.93	38.66	260.910			
6,800.00	6,716.50	1,784.13	1,732.06	26.08	17.06	-116.70	2,304.48	-8,712.85	10,126.40	10,087.61	38.79	261.075			
6,850.00	6,756.24	1,784.13	1,732.06	26.28	17.06	-111.13	2,304.48	-8,712.85	10,166.36	10,127.44	38.92	261.231			
6,900.00	6,793.47	1,784.13	1,732.06	26.48	17.06	-105.00	2,304.48	-8,712.85	10,207.20	10,168.15	39.05	261.369			
6,950.00	6,827.97	1,784.13	1,732.06	26.69	17.06	-98.40	2,304.48	-8,712.85	10,248.68	10,209.49	39.20	261.479			
7,000.00	6,859.53	1,784.13	1,732.06	26.91	17.06	-91.50	2,304.48	-8,712.85	10,290.53	10,251.19	39.34	261.551			
7,050.00	6,887.94	1,784.13	1,732.06	27.14	17.06	-84.54	2,304.48	-8,712.85	10,332.49	10,292.99	39.50	261.576			
7,100.00	6,913.05	1,784.13	1,732.06	27.38	17.06	-77.75	2,304.48	-8,712.85	10,374.30	10,334.64	39.67	261.543			
7,150.00	6,934.68	1,784.13	1,732.06	27.64	17.06	-71.34	2,304.48	-8,712.85	10,415.71	10,375.87	39.84	261.444			
7,200.00	6,952.71	1,784.13	1,732.06	27.92	17.06	-65.46	2,304.48	-8,712.85	10,456.46	10,416.44	40.02	261.269			
7,250.00	6,967.02	1,784.13	1,732.06	28.21	17.06	-60.19	2,304.48	-8,712.85	10,496.32	10,456.10	40.21	261.011			
7,300.00	6,977.54	1,784.13	1,732.06	28.52	17.06	-55.54	2,304.48	-8,712.85	10,535.05	10,494.63	40.42	260.664			
7,350.00	6,984.18	1,784.13	1,732.06	28.83	17.06	-51.48	2,304.48	-8,712.85	10,572.42	10,531.79	40.63	260.222			
7,400.00	6,986.92	1,784.13	1,732.06	29.16	17.06	-47.98	2,304.48	-8,712.85	10,608.22	10,567.37	40.85	259.683			
7,409.89	6,987.00	1,784.13	1,732.06	29.23	17.06	-47.35	2,304.48	-8,712.85	10,615.10	10,574.21	40.89	259.578			
7,500.00	6,987.00	1,784.13	1,732.06	29.85	17.06	-47.35	2,304.48	-8,712.85	10,677.65	10,636.33	41.32	258.397			
7,600.00	6,987.00	1,768.20	1,718.18	30.61	17.03	-47.25	2,304.15	-8,705.02	10,747.40	10,705.65	41.75	257.446			
7,700.00	6,987.00	1,752.80	1,704.68	31.41	16.99	-47.15	2,304.05	-8,697.62	10,817.73	10,775.55	42.19	256.433			
7,800.00	6,987.00	1,752.80	1,704.68	32.27	16.99	-47.15	2,304.05	-8,697.62	10,888.42	10,845.72	42.70	255.000			
7,900.00	6,987.00	1,752.80	1,704.68	33.17	16.99	-47.15	2,304.05	-8,697.62	10,959.56	10,916.34	43.22	253.558			
8,000.00	6,987.00	1,752.80	1,704.68	34.12	16.99	-47.15	2,304.05	-8,697.62	11,031.15	10,987.40	43.75	252.114			
8,100.00	6,987.00	1,740.57	1,693.92	35.10	16.96	-47.08	2,304.05	-8,691.82	11,103.16	11,058.91	44.24	250.948			
8,200.00	6,987.00	1,722.18	1,677.68	36.12	16.92	-46.97	2,304.05	-8,683.17	11,175.57	11,130.85	44.72	249.917			
8,300.00	6,987.00	1,722.18	1,677.68	37.17	16.92	-46.97	2,304.05	-8,683.17	11,248.34	11,203.08	45.27	248.495			
8,314.89	6,987.00	1,722.18	1,677.68	37.33	16.92	-46.97	2,304.05	-8,683.17	11,259.22	11,213.87	45.35	248.286			
8,400.00	6,987.00	1,722.18	1,677.68	38.25	16.92	-44.30	2,304.05	-8,683.17	11,322.75	11,276.94	45.81	247.187			
8,500.00	6,987.00	1,698.15	1,656.41	39.35	16.87	-40.49	2,304.07	-8,671.99	11,400.55	11,354.33	46.22	246.657			
8,600.00	6,987.00	1,686.37	1,645.97	40.45	16.85	-36.11	2,304.11	-8,666.55	11,481.41	11,434.77	46.64	246.162			
8,700.00	6,987.00	1,660.93	1,623.35	41.56	16.80	-30.93	2,304.23	-8,654.89	11,564.88	11,517.91	46.97	246.235			

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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 (°)	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)
8,800.00	6,987.00	1,660.93	1,623.35	42.66	16.80	-25.10	2,304.23	-8,654.89	11,650.41	11,603.07	47.34	246.100 SF	
8,900.00	6,987.00	1,660.93	1,623.35	43.75	16.80	-18.47	2,304.23	-8,654.89	11,737.64	11,689.98	47.66	246.266	
9,000.00	6,987.00	1,629.61	1,595.41	44.83	16.74	-11.07	2,304.28	-8,640.75	11,826.07	11,778.24	47.82	247.278	
9,071.74	6,987.00	1,629.61	1,595.41	45.59	16.74	-5.51	2,304.28	-8,640.75	11,889.97	11,841.99	47.99	247.775	
9,100.00	6,987.00	1,629.61	1,595.41	45.89	16.74	-5.51	2,304.28	-8,640.75	11,915.21	11,867.17	48.05	247.999	
9,200.00	6,987.00	1,629.61	1,595.41	46.97	16.74	-5.51	2,304.28	-8,640.75	12,004.63	11,956.38	48.25	248.797	
9,300.00	6,987.00	1,614.28	1,581.68	48.07	16.72	-5.49	2,304.27	-8,633.92	12,094.16	12,045.75	48.41	249.850	
9,400.00	6,987.00	1,598.26	1,567.29	49.20	16.69	-5.48	2,304.35	-8,626.88	12,183.85	12,135.29	48.56	250.907	
9,500.00	6,987.00	1,598.26	1,567.29	50.36	16.69	-5.48	2,304.35	-8,626.88	12,273.65	12,224.88	48.76	251.699	
9,600.00	6,987.00	1,598.26	1,567.29	51.54	16.69	-5.48	2,304.35	-8,626.88	12,363.60	12,314.63	48.97	252.494	
9,700.00	6,987.00	1,598.26	1,567.29	52.74	16.69	-5.48	2,304.35	-8,626.88	12,453.70	12,404.53	49.17	253.290	
9,800.00	6,987.00	1,567.98	1,539.96	53.96	16.64	-5.45	2,304.69	-8,613.85	12,543.91	12,494.63	49.28	254.534	
9,900.00	6,987.00	1,567.98	1,539.96	55.21	16.64	-5.45	2,304.69	-8,613.85	12,634.21	12,584.72	49.48	255.324	
10,000.00	6,987.00	1,567.98	1,539.96	56.47	16.64	-5.45	2,304.69	-8,613.85	12,724.65	12,674.97	49.68	256.118	
10,100.00	6,987.00	1,567.98	1,539.96	57.75	16.64	-5.45	2,304.69	-8,613.85	12,815.23	12,765.35	49.88	256.914	
10,200.00	6,987.00	1,551.57	1,525.09	59.04	16.61	-5.44	2,304.85	-8,606.94	12,905.91	12,855.87	50.04	257.931	
10,300.00	6,987.00	1,537.35	1,512.16	60.35	16.59	-5.43	2,304.85	-8,601.01	12,996.70	12,946.51	50.20	258.915	
10,400.00	6,987.00	1,537.35	1,512.16	61.67	16.59	-5.43	2,304.85	-8,601.01	13,087.60	13,037.21	50.39	259.709	
10,500.00	6,987.00	1,537.35	1,512.16	63.01	16.59	-5.43	2,304.85	-8,601.01	13,178.63	13,128.04	50.59	260.506	
10,600.00	6,987.00	1,523.30	1,499.36	64.36	16.57	-5.42	2,304.70	-8,595.23	13,269.73	13,218.98	50.75	261.483	
10,700.00	6,987.00	1,505.65	1,483.22	65.72	16.54	-5.40	2,304.28	-8,588.08	13,361.00	13,310.10	50.90	262.504	
10,800.00	6,987.00	1,505.65	1,483.22	67.09	16.54	-5.40	2,304.28	-8,588.08	13,452.31	13,401.22	51.09	263.299	
10,900.00	6,987.00	1,505.65	1,483.22	68.47	16.54	-5.40	2,304.28	-8,588.08	13,543.74	13,492.46	51.28	264.098	
11,000.00	6,987.00	1,505.65	1,483.22	69.86	16.54	-5.40	2,304.28	-8,588.08	13,635.30	13,583.82	51.47	264.900	
11,100.00	6,987.00	1,505.65	1,483.22	71.26	16.54	-5.40	2,304.28	-8,588.08	13,726.97	13,675.31	51.66	265.704	
11,200.00	6,987.00	1,505.65	1,483.22	72.67	16.54	-5.40	2,304.28	-8,588.08	13,818.76	13,766.91	51.85	266.511	
11,300.00	6,987.00	1,489.02	1,467.96	74.09	16.51	-5.38	2,303.82	-8,581.50	13,910.56	13,858.56	52.00	267.522	
11,400.00	6,987.00	1,475.04	1,455.07	75.51	16.48	-5.36	2,303.53	-8,576.07	14,002.56	13,950.40	52.15	268.495	
11,500.00	6,987.00	1,475.04	1,455.07	76.94	16.48	-5.36	2,303.53	-8,576.07	14,094.59	14,042.25	52.34	269.302	
11,600.00	6,987.00	1,475.04	1,455.07	78.38	16.48	-5.36	2,303.53	-8,576.07	14,186.74	14,134.21	52.52	270.111	
11,700.00	6,987.00	1,475.04	1,455.07	79.82	16.48	-5.36	2,303.53	-8,576.07	14,278.99	14,226.28	52.70	270.923	
11,800.00	6,987.00	1,475.04	1,455.07	81.27	16.48	-5.36	2,303.53	-8,576.07	14,371.34	14,318.45	52.89	271.738	
11,900.00	6,987.00	1,475.04	1,455.07	82.73	16.48	-5.36	2,303.53	-8,576.07	14,463.79	14,410.73	53.07	272.555	
12,000.00	6,987.00	1,475.04	1,455.07	84.19	16.48	-5.36	2,303.53	-8,576.07	14,556.35	14,503.10	53.25	273.375	
12,100.00	6,987.00	1,475.04	1,455.07	85.66	16.48	-5.36	2,303.53	-8,576.07	14,649.00	14,595.58	53.43	274.197	
12,200.00	6,987.00	1,475.04	1,455.07	87.13	16.48	-5.36	2,303.53	-8,576.07	14,741.75	14,688.15	53.60	275.021	
12,300.00	6,987.00	1,475.04	1,455.07	88.61	16.48	-5.36	2,303.53	-8,576.07	14,834.59	14,780.81	53.78	275.847	
12,400.00	6,987.00	1,460.15	1,441.27	90.09	16.46	-5.34	2,303.31	-8,570.48	14,927.38	14,873.46	53.93	276.797	
12,500.00	6,987.00	1,443.67	1,425.89	91.57	16.43	-5.33	2,303.16	-8,564.58	15,020.51	14,966.43	54.08	277.759	
12,600.00	6,987.00	1,443.67	1,425.89	93.06	16.43	-5.33	2,303.16	-8,564.58	15,113.55	15,059.30	54.25	278.584	
12,700.00	6,987.00	1,443.67	1,425.89	94.55	16.43	-5.33	2,303.16	-8,564.58	15,206.68	15,152.25	54.42	279.411	
12,800.00	6,987.00	1,443.67	1,425.89	96.05	16.43	-5.33	2,303.16	-8,564.58	15,299.89	15,245.29	54.60	280.241	
12,900.00	6,987.00	1,443.67	1,425.89	97.55	16.43	-5.33	2,303.16	-8,564.58	15,393.19	15,338.42	54.77	281.072	
13,000.00	6,987.00	1,443.67	1,425.89	99.05	16.43	-5.33	2,303.16	-8,564.58	15,486.57	15,431.64	54.94	281.905	
13,100.00	6,987.00	1,443.67	1,425.89	100.56	16.43	-5.33	2,303.16	-8,564.58	15,580.04	15,524.93	55.10	282.740	
13,200.00	6,987.00	1,443.67	1,425.89	102.07	16.43	-5.33	2,303.16	-8,564.58	15,673.58	15,618.31	55.27	283.577	
13,300.00	6,987.00	1,443.67	1,425.89	103.58	16.43	-5.33	2,303.16	-8,564.58	15,767.21	15,711.77	55.44	284.415	
13,400.00	6,987.00	1,433.01	1,415.89	105.09	16.42	-5.32	2,303.08	-8,560.88	15,860.90	15,805.31	55.59	285.311	
13,500.00	6,987.00	1,414.27	1,398.31	106.61	16.39	-5.30	2,302.89	-8,554.39	15,954.65	15,898.91	55.74	286.247	
13,600.00	6,987.00	1,414.27	1,398.31	108.13	16.39	-5.30	2,302.89	-8,554.39	16,048.44	15,992.54	55.90	287.084	
13,700.00	6,987.00	1,414.27	1,398.31	109.65	16.39	-5.30	2,302.89	-8,554.39	16,142.31	16,086.24	56.06	287.922	
13,800.00	6,987.00	1,414.27	1,398.31	111.18	16.39	-5.30	2,302.89	-8,554.39	16,236.25	16,180.02	56.23	288.761	

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 #692H
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 #692H	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		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		
19,100.00	6,987.00	1,261.54	1,253.19	193.85	16.21	-5.16	2,301.81	-8,506.90	21,286.50	21,222.62	63.88	333.248		
19,200.00	6,987.00	1,242.31	1,234.66	195.43	16.19	-5.14	2,301.50	-8,501.78	21,382.85	21,318.83	64.02	333.993		
19,255.69	6,987.00	1,230.05	1,222.84	196.31	16.18	-5.12	2,301.33	-8,498.52	21,436.52	21,372.42	64.10	334.398		
19,300.00	6,987.00	1,230.05	1,222.84	197.01	16.18	-5.12	2,301.33	-8,498.52	21,479.22	21,415.06	64.16	334.759		
19,400.00	6,987.00	1,230.05	1,222.84	198.59	16.18	-5.12	2,301.33	-8,498.52	21,575.62	21,511.33	64.29	335.576		
19,468.80	6,987.00	1,230.05	1,222.84	199.49	16.18	-5.12	2,301.33	-8,498.52	21,641.97	21,575.24	66.73	324.320		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	-74.65	2,282.84	-8,315.42	8,623.32				
100.00	100.00	36.00	36.00	0.25	0.83	-74.65	2,282.84	-8,315.42	8,623.09	8,622.00	1.08	7,948.278	
200.00	200.00	136.00	136.00	0.61	3.15	-74.65	2,282.84	-8,315.42	8,623.09	8,619.33	3.76	2,293.741	
300.00	300.00	236.00	236.00	0.97	5.47	-74.65	2,282.84	-8,315.42	8,623.09	8,616.65	6.43	1,340.259	
400.00	400.00	336.00	336.00	1.33	7.78	-74.65	2,282.84	-8,315.42	8,623.09	8,613.98	9.11	946.719	
500.00	500.00	436.00	436.00	1.68	10.10	-74.65	2,282.84	-8,315.42	8,623.09	8,611.30	11.78	731.831	
600.00	600.00	536.04	536.00	2.04	12.42	-74.65	2,282.84	-8,315.42	8,623.09	8,608.63	14.46	596.408	
700.00	700.00	636.04	636.00	2.40	14.73	-74.65	2,282.84	-8,315.42	8,623.09	8,605.95	17.13	503.305	
800.00	799.98	736.02	735.98	2.76	17.05	-68.28	2,282.84	-8,315.42	8,622.44	8,602.63	19.81	435.337	
900.00	899.84	835.88	835.84	3.12	19.36	-68.35	2,282.84	-8,315.42	8,620.50	8,598.03	22.48	383.528	
1,000.00	999.45	935.49	935.45	3.48	21.67	-68.46	2,282.84	-8,315.42	8,617.29	8,592.14	25.14	342.729	
1,100.00	1,098.70	1,035.62	1,035.55	3.85	23.99	-68.61	2,285.47	-8,315.42	8,613.49	8,585.66	27.83	309.557	
1,153.80	1,151.90	1,091.68	1,091.60	4.04	25.28	-68.71	2,285.41	-8,315.42	8,610.54	8,581.22	29.32	293.660	
1,200.00	1,197.53	1,139.73	1,139.65	4.21	26.40	-68.76	2,285.31	-8,315.42	8,607.84	8,577.23	30.61	281.252	
1,300.00	1,296.27	1,243.68	1,243.59	4.59	28.80	-68.87	2,284.90	-8,315.42	8,601.97	8,568.59	33.39	257.642	
1,400.00	1,395.02	1,347.57	1,347.47	4.97	31.21	-68.97	2,284.25	-8,315.42	8,596.07	8,559.90	36.17	237.646	
1,500.00	1,493.77	1,451.38	1,451.26	5.36	33.61	-69.08	2,283.36	-8,315.42	8,590.14	8,551.19	38.96	220.497	
1,600.00	1,592.52	1,528.79	1,528.52	5.74	35.46	-69.16	2,282.84	-8,315.42	8,584.30	8,543.11	41.19	208.405	
1,700.00	1,691.27	1,627.54	1,627.27	6.14	37.95	-69.26	2,282.84	-8,315.42	8,578.63	8,534.57	44.07	194.681	
1,800.00	1,790.01	1,726.29	1,726.01	6.53	40.44	-69.35	2,282.84	-8,315.42	8,573.00	8,526.06	46.94	182.632	
1,900.00	1,888.76	1,832.48	1,832.19	6.92	43.11	-69.45	2,284.06	-8,315.42	8,567.70	8,517.69	50.01	171.331	
2,000.00	1,987.51	1,941.22	1,940.91	7.32	45.85	-69.56	2,283.42	-8,315.42	8,561.97	8,508.83	53.14	161.128	
2,100.00	2,086.26	2,022.70	2,022.26	7.72	47.86	-69.65	2,282.84	-8,315.42	8,556.24	8,500.70	55.54	154.046	
2,200.00	2,185.01	2,121.45	2,121.01	8.11	50.15	-69.74	2,282.84	-8,315.42	8,550.71	8,492.48	58.22	146.859	
2,300.00	2,283.75	2,220.20	2,219.75	8.51	52.44	-69.84	2,282.84	-8,315.42	8,545.20	8,484.29	60.91	140.303	
2,400.00	2,382.50	2,328.73	2,328.24	8.91	54.95	-69.94	2,284.55	-8,315.42	8,540.13	8,476.32	63.81	133.830	
2,500.00	2,481.25	2,441.59	2,441.08	9.31	57.56	-70.06	2,283.62	-8,315.42	8,534.48	8,467.65	66.82	127.719	
2,600.00	2,580.00	2,516.57	2,516.00	9.71	59.23	-70.14	2,282.84	-8,315.42	8,528.82	8,459.93	68.89	123.801	
2,700.00	2,678.75	2,615.32	2,614.75	10.11	61.13	-70.24	2,282.84	-8,315.42	8,523.42	8,452.23	71.19	119.731	
2,800.00	2,777.49	2,714.06	2,713.49	10.52	63.03	-70.34	2,282.84	-8,315.42	8,518.04	8,444.55	73.49	115.914	
2,900.00	2,876.24	2,812.81	2,812.24	10.92	64.93	-70.43	2,282.84	-8,315.42	8,512.68	8,436.90	75.78	112.329	
3,000.00	2,974.99	2,911.56	2,910.99	11.32	66.83	-70.53	2,282.84	-8,315.42	8,507.35	8,429.27	78.08	108.955	
3,100.00	3,073.74	3,010.31	3,009.74	11.72	68.73	-70.63	2,282.84	-8,315.42	8,502.05	8,421.67	80.38	105.773	
3,200.00	3,172.49	3,110.37	3,109.79	12.13	70.65	-70.72	2,284.63	-8,315.42	8,497.18	8,414.47	82.70	102.742	
3,300.00	3,271.23	3,211.40	3,210.81	12.53	72.60	-70.82	2,284.50	-8,315.42	8,491.90	8,406.85	85.05	99.850	
3,400.00	3,369.98	3,312.39	3,311.81	12.93	74.54	-70.93	2,284.25	-8,315.42	8,486.61	8,399.22	87.39	97.113	
3,500.00	3,468.73	3,413.35	3,412.76	13.34	76.48	-71.03	2,283.88	-8,315.42	8,481.33	8,391.60	89.73	94.519	
3,600.00	3,567.48	3,514.27	3,513.68	13.74	78.42	-71.14	2,283.39	-8,315.42	8,476.05	8,383.98	92.07	92.058	
3,700.00	3,666.23	3,615.16	3,614.55	14.14	80.36	-71.24	2,282.77	-8,315.42	8,470.77	8,376.36	94.41	89.719	
3,800.00	3,764.97	3,701.64	3,700.97	14.55	82.31	-71.33	2,282.84	-8,315.42	8,465.66	8,368.90	96.76	87.490	
3,900.00	3,863.72	3,800.39	3,799.72	14.95	84.50	-71.43	2,282.84	-8,315.42	8,460.56	8,361.21	99.35	85.155	
4,000.00	3,962.47	3,901.13	3,900.46	15.36	86.74	-71.53	2,283.64	-8,315.42	8,455.67	8,353.68	101.99	82.906	
4,100.00	4,061.22	4,004.66	4,003.98	15.76	89.03	-71.63	2,283.38	-8,315.42	8,450.57	8,345.88	104.69	80.720	
4,200.00	4,159.97	4,108.10	4,107.42	16.17	91.33	-71.74	2,282.85	-8,315.42	8,445.45	8,338.07	107.39	78.645	
4,300.00	4,258.71	4,195.48	4,194.71	16.57	93.84	-71.83	2,282.84	-8,315.42	8,440.45	8,330.15	110.30	76.523	
4,400.00	4,357.46	4,294.23	4,293.46	16.98	96.70	-71.93	2,282.84	-8,315.42	8,435.49	8,321.93	113.56	74.283	
4,500.00	4,456.21	4,397.24	4,396.45	17.38	99.68	-72.03	2,284.36	-8,315.42	8,430.87	8,313.92	116.94	72.094	
4,600.00	4,554.96	4,506.08	4,505.28	17.79	102.83	-72.14	2,283.77	-8,315.42	8,425.85	8,305.35	120.50	69.927	
4,700.00	4,653.71	4,614.75	4,613.92	18.19	105.97	-72.26	2,282.53	-8,315.42	8,420.74	8,296.70	124.04	67.886	
4,800.00	4,752.45	4,689.52	4,688.45	18.60	108.70	-72.34	2,282.84	-8,315.42	8,415.91	8,288.73	127.18	66.174	
4,900.00	4,851.20	4,788.27	4,787.20	19.00	112.14	-72.44	2,282.84	-8,315.42	8,411.08	8,280.06	131.02	64.198	
5,000.00	4,949.95	4,887.02	4,885.95	19.41	115.58	-72.54	2,282.84	-8,315.42	8,406.28	8,271.42	134.86	62.334	

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 #692H
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 #692H	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		Rule Assigned:		Offset Well Error:	0.00 usft
Reference	Offset	Reference	Offset	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Distance		Separation	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)	Ellipses (usft)	Minimum Separation (usft)	Factor		
5,100.00	5,048.70	4,985.76	4,984.70	19.81	119.02	-72.64	2,282.84	-8,315.42	8,401.51	8,262.81	138.70	60.573		
5,200.00	5,147.45	5,084.51	5,083.45	20.22	122.45	-72.74	2,282.84	-8,315.42	8,396.76	8,254.22	142.54	58.908		
5,300.00	5,246.19	5,183.26	5,182.19	20.62	125.89	-72.84	2,282.84	-8,315.42	8,392.04	8,245.66	146.38	57.330		
5,400.00	5,344.94	5,282.01	5,280.94	21.03	129.33	-72.94	2,282.84	-8,315.42	8,387.34	8,237.12	150.22	55.832		
5,455.76	5,400.00	5,337.07	5,336.00	21.25	131.25	-73.00	2,282.84	-8,315.42	8,384.74	8,232.37	152.37	55.031		
5,500.00	5,443.72	5,380.78	5,379.72	21.43	132.77	-73.03	2,282.84	-8,315.42	8,382.73	8,228.66	154.06	54.410		
5,600.00	5,542.71	5,479.78	5,478.71	21.83	136.21	-73.08	2,282.84	-8,315.42	8,378.57	8,220.66	157.91	53.060		
5,700.00	5,641.93	5,579.00	5,577.93	22.22	139.67	-73.12	2,282.84	-8,315.42	8,374.93	8,213.18	161.75	51.778		
5,800.00	5,741.36	5,678.43	5,677.36	22.60	143.13	-73.16	2,282.84	-8,315.42	8,371.81	8,206.23	165.59	50.558		
5,900.00	5,840.96	5,778.02	5,776.96	22.97	146.60	-73.20	2,282.84	-8,315.42	8,369.22	8,199.79	169.42	49.398		
6,000.00	5,940.70	5,877.76	5,876.70	23.33	150.07	-73.22	2,282.84	-8,315.42	8,367.13	8,193.87	173.26	48.293		
6,100.00	6,040.55	5,977.61	5,976.55	23.68	153.55	-73.24	2,282.84	-8,315.42	8,365.55	8,188.46	177.09	47.240		
6,200.00	6,140.48	6,060.00	6,057.39	24.02	156.41	-73.26	2,282.84	-8,315.42	8,364.50	8,184.20	180.30	46.393		
6,234.95	6,175.41	6,060.00	6,057.39	24.14	156.41	-73.25	2,282.84	-8,315.42	8,364.39	8,183.98	180.41	46.362	CC, ES	
6,300.00	6,240.45	6,060.00	6,057.39	24.35	156.41	-73.26	2,282.84	-8,315.42	8,364.75	8,184.13	180.62	46.310		
6,408.05	6,348.50	6,060.00	6,057.39	24.69	156.41	106.72	2,282.84	-8,315.42	8,366.94	8,186.01	180.92	46.245		
6,450.00	6,390.43	6,060.00	6,057.39	24.82	156.41	-146.03	2,282.84	-8,315.42	8,369.33	8,188.29	181.03	46.231		
6,500.00	6,440.15	6,060.00	6,057.39	24.99	156.41	-142.09	2,282.84	-8,315.42	8,375.18	8,194.01	181.17	46.228	SF	
6,550.00	6,489.32	6,060.00	6,057.39	25.16	156.41	-140.51	2,282.84	-8,315.42	8,384.27	8,202.95	181.32	46.241		
6,600.00	6,537.64	6,060.00	6,057.39	25.34	156.41	-139.27	2,282.84	-8,315.42	8,396.52	8,215.05	181.46	46.272		
6,650.00	6,584.80	6,060.00	6,057.39	25.52	156.41	-138.01	2,282.84	-8,315.42	8,411.84	8,230.23	181.61	46.319		
6,700.00	6,630.52	6,060.00	6,057.39	25.71	156.41	-136.61	2,282.84	-8,315.42	8,430.12	8,248.36	181.76	46.381		
6,750.00	6,674.51	6,060.00	6,057.39	25.89	156.41	-135.00	2,282.84	-8,315.42	8,451.23	8,269.32	181.91	46.459		
6,800.00	6,716.50	6,060.00	6,057.39	26.08	156.41	-133.13	2,282.84	-8,315.42	8,475.02	8,292.97	182.06	46.551		
6,850.00	6,756.24	6,060.00	6,057.39	26.28	156.41	-130.97	2,282.84	-8,315.42	8,501.33	8,319.12	182.21	46.656		
6,900.00	6,793.47	6,060.00	6,057.39	26.48	156.41	-128.48	2,282.84	-8,315.42	8,529.96	8,347.59	182.37	46.773		
6,950.00	6,827.97	6,060.00	6,057.39	26.69	156.41	-125.61	2,282.84	-8,315.42	8,560.72	8,378.19	182.53	46.900		
7,000.00	6,859.53	6,060.00	6,057.39	26.91	156.41	-122.33	2,282.84	-8,315.42	8,593.39	8,410.70	182.69	47.037		
7,050.00	6,887.94	6,060.00	6,057.39	27.14	156.41	-118.61	2,282.84	-8,315.42	8,627.76	8,444.90	182.86	47.181		
7,100.00	6,913.05	6,060.00	6,057.39	27.38	156.41	-114.44	2,282.84	-8,315.42	8,663.60	8,480.56	183.04	47.332		
7,150.00	6,934.68	6,060.00	6,057.39	27.64	156.41	-109.80	2,282.84	-8,315.42	8,700.65	8,517.43	183.22	47.487		
7,200.00	6,952.71	6,060.00	6,057.39	27.92	156.41	-104.74	2,282.84	-8,315.42	8,738.70	8,555.29	183.41	47.646		
7,250.00	6,967.02	6,060.00	6,057.39	28.21	156.41	-99.31	2,282.84	-8,315.42	8,777.48	8,593.87	183.60	47.806		
7,300.00	6,977.54	6,060.00	6,057.39	28.52	156.41	-93.63	2,282.84	-8,315.42	8,816.74	8,632.94	183.81	47.968		
7,350.00	6,984.18	6,060.00	6,057.39	28.83	156.41	-87.83	2,282.84	-8,315.42	8,856.25	8,672.24	184.02	48.128		
7,400.00	6,986.92	6,060.00	6,057.39	29.16	156.41	-82.05	2,282.84	-8,315.42	8,895.76	8,711.53	184.23	48.286		
7,409.89	6,987.00	6,060.00	6,057.39	29.23	156.41	-80.92	2,282.84	-8,315.42	8,903.56	8,719.28	184.27	48.317		
7,500.00	6,987.00	6,060.00	6,057.39	29.85	156.41	-80.92	2,282.84	-8,315.42	8,974.69	8,790.01	184.68	48.596		
7,600.00	6,987.00	6,060.00	6,057.39	30.61	156.41	-80.92	2,282.84	-8,315.42	9,054.02	8,868.88	185.14	48.904		
7,700.00	6,987.00	6,060.00	6,057.39	31.41	156.41	-80.92	2,282.84	-8,315.42	9,133.76	8,948.15	185.61	49.209		
7,800.00	6,987.00	6,060.00	6,057.39	32.27	156.41	-80.92	2,282.84	-8,315.42	9,213.90	9,027.81	186.09	49.513		
7,900.00	6,987.00	6,060.00	6,057.39	33.17	156.41	-80.92	2,282.84	-8,315.42	9,294.41	9,107.84	186.58	49.816		
8,000.00	6,987.00	6,060.00	6,057.39	34.12	156.41	-80.92	2,282.84	-8,315.42	9,375.31	9,188.24	187.07	50.117		
8,100.00	6,987.00	6,060.00	6,057.39	35.10	156.41	-80.92	2,282.84	-8,315.42	9,456.57	9,269.00	187.57	50.418		
8,200.00	6,987.00	6,060.00	6,057.39	36.12	156.41	-80.92	2,282.84	-8,315.42	9,538.19	9,350.12	188.07	50.717		
8,300.00	6,987.00	6,060.00	6,057.39	37.17	156.41	-80.92	2,282.84	-8,315.42	9,620.15	9,431.58	188.57	51.017		
8,314.89	6,987.00	6,060.00	6,057.39	37.33	156.41	-80.92	2,282.84	-8,315.42	9,632.38	9,443.74	188.64	51.061		
8,400.00	6,987.00	6,060.00	6,057.39	38.25	156.41	-80.06	2,282.84	-8,315.42	9,703.82	9,514.76	189.06	51.327		
8,500.00	6,987.00	6,060.00	6,057.39	39.35	156.41	-78.72	2,282.84	-8,315.42	9,791.28	9,601.77	189.50	51.668		
8,600.00	6,987.00	6,060.00	6,057.39	40.45	156.41	-76.90	2,282.84	-8,315.42	9,882.03	9,692.14	189.89	52.040		
8,700.00	6,987.00	6,060.00	6,057.39	41.56	156.41	-74.25	2,282.84	-8,315.42	9,975.57	9,785.34	190.23	52.440		
8,800.00	6,987.00	6,060.00	6,057.39	42.66	156.41	-70.17	2,282.84	-8,315.42	10,071.36	9,880.86	190.50	52.868		

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 #692H
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 #692H	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)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
8,900.00	6,987.00	6,060.00	6,057.39	43.75	156.41	-63.16	2,282.84	-8,315.42	10,168.87	9,978.16	190.71	53.320				
9,000.00	6,987.00	6,060.00	6,057.39	44.83	156.41	-49.31	2,282.84	-8,315.42	10,267.60	10,076.74	190.86	53.796				
9,071.74	6,987.00	6,060.00	6,057.39	45.59	156.41	-29.70	2,282.84	-8,315.42	10,338.89	10,147.96	190.93	54.150				
9,100.00	6,987.00	6,060.00	6,057.39	45.89	156.41	-29.70	2,282.84	-8,315.42	10,367.02	10,176.07	190.95	54.292				
9,200.00	6,987.00	6,060.00	6,057.39	46.97	156.41	-29.70	2,282.84	-8,315.42	10,466.56	10,275.54	191.02	54.792				
9,300.00	6,987.00	6,060.00	6,057.39	48.07	156.41	-29.70	2,282.84	-8,315.42	10,566.11	10,375.01	191.09	55.293				
9,400.00	6,987.00	6,060.00	6,057.39	49.20	156.41	-29.70	2,282.84	-8,315.42	10,665.67	10,474.50	191.16	55.793				
9,500.00	6,987.00	6,060.00	6,057.39	50.36	156.41	-29.70	2,282.84	-8,315.42	10,765.23	10,574.00	191.24	56.293				
9,600.00	6,987.00	6,060.00	6,057.39	51.54	156.41	-29.70	2,282.84	-8,315.42	10,864.81	10,673.50	191.31	56.793				
9,700.00	6,987.00	6,060.00	6,057.39	52.74	156.41	-29.70	2,282.84	-8,315.42	10,964.39	10,773.01	191.38	57.293				
9,800.00	6,987.00	6,060.00	6,057.39	53.96	156.41	-29.70	2,282.84	-8,315.42	11,063.98	10,872.53	191.44	57.792				
9,900.00	6,987.00	6,060.00	6,057.39	55.21	156.41	-29.70	2,282.84	-8,315.42	11,163.58	10,972.06	191.51	58.291				
10,000.00	6,987.00	6,060.00	6,057.39	56.47	156.41	-29.70	2,282.84	-8,315.42	11,263.18	11,071.60	191.58	58.790				
10,100.00	6,987.00	6,060.00	6,057.39	57.75	156.41	-29.70	2,282.84	-8,315.42	11,362.79	11,171.14	191.65	59.289				
10,200.00	6,987.00	6,060.00	6,057.39	59.04	156.41	-29.70	2,282.84	-8,315.42	11,462.41	11,270.69	191.72	59.787				
10,300.00	6,987.00	6,060.00	6,057.39	60.35	156.41	-29.70	2,282.84	-8,315.42	11,562.03	11,370.25	191.79	60.286				
10,400.00	6,987.00	6,060.00	6,057.39	61.67	156.41	-29.70	2,282.84	-8,315.42	11,661.67	11,469.81	191.86	60.783				
10,500.00	6,987.00	6,060.00	6,057.39	63.01	156.41	-29.70	2,282.84	-8,315.42	11,761.30	11,569.38	191.92	61.281				
10,600.00	6,987.00	6,060.00	6,057.39	64.36	156.41	-29.70	2,282.84	-8,315.42	11,860.95	11,668.96	191.99	61.779				
10,700.00	6,987.00	6,060.00	6,057.39	65.72	156.41	-29.70	2,282.84	-8,315.42	11,960.60	11,768.54	192.06	62.276				
10,800.00	6,987.00	6,060.00	6,057.39	67.09	156.41	-29.70	2,282.84	-8,315.42	12,060.25	11,868.12	192.13	62.773				
10,900.00	6,987.00	6,060.00	6,057.39	68.47	156.41	-29.70	2,282.84	-8,315.42	12,159.91	11,967.72	192.19	63.269				
11,000.00	6,987.00	6,060.00	6,057.39	69.86	156.41	-29.70	2,282.84	-8,315.42	12,259.58	12,067.32	192.26	63.765				
11,100.00	6,987.00	6,060.00	6,057.39	71.26	156.41	-29.70	2,282.84	-8,315.42	12,359.25	12,166.92	192.33	64.261				
11,200.00	6,987.00	6,060.00	6,057.39	72.67	156.41	-29.70	2,282.84	-8,315.42	12,458.93	12,266.53	192.39	64.757				
11,300.00	6,987.00	6,060.00	6,057.39	74.09	156.41	-29.70	2,282.84	-8,315.42	12,558.61	12,366.15	192.46	65.252				
11,400.00	6,987.00	6,060.00	6,057.39	75.51	156.41	-29.70	2,282.84	-8,315.42	12,658.30	12,465.77	192.53	65.748				
11,500.00	6,987.00	6,060.00	6,057.39	76.94	156.41	-29.70	2,282.84	-8,315.42	12,757.99	12,565.39	192.60	66.242				
11,600.00	6,987.00	6,060.00	6,057.39	78.38	156.41	-29.70	2,282.84	-8,315.42	12,857.69	12,665.02	192.66	66.737				
11,700.00	6,987.00	6,060.00	6,057.39	79.82	156.41	-29.70	2,282.84	-8,315.42	12,957.39	12,764.66	192.73	67.231				
11,800.00	6,987.00	6,060.00	6,057.39	81.27	156.41	-29.70	2,282.84	-8,315.42	13,057.09	12,864.30	192.80	67.725				
11,900.00	6,987.00	6,060.00	6,057.39	82.73	156.41	-29.70	2,282.84	-8,315.42	13,156.80	12,963.94	192.86	68.218				
12,000.00	6,987.00	6,060.00	6,057.39	84.19	156.41	-29.70	2,282.84	-8,315.42	13,256.52	13,063.59	192.93	68.711				
12,100.00	6,987.00	6,060.00	6,057.39	85.66	156.41	-29.70	2,282.84	-8,315.42	13,356.24	13,163.24	193.00	69.204				
12,200.00	6,987.00	6,060.00	6,057.39	87.13	156.41	-29.70	2,282.84	-8,315.42	13,455.96	13,262.90	193.06	69.697				
12,300.00	6,987.00	6,060.00	6,057.39	88.61	156.41	-29.70	2,282.84	-8,315.42	13,555.69	13,362.56	193.13	70.189				
12,400.00	6,987.00	6,060.00	6,057.39	90.09	156.41	-29.70	2,282.84	-8,315.42	13,655.42	13,462.22	193.20	70.681				
12,500.00	6,987.00	6,060.00	6,057.39	91.57	156.41	-29.70	2,282.84	-8,315.42	13,755.15	13,561.89	193.27	71.172				
12,600.00	6,987.00	6,060.00	6,057.39	93.06	156.41	-29.70	2,282.84	-8,315.42	13,854.89	13,661.56	193.33	71.663				
12,700.00	6,987.00	6,060.00	6,057.39	94.55	156.41	-29.70	2,282.84	-8,315.42	13,954.64	13,761.24	193.40	72.154				
12,800.00	6,987.00	6,060.00	6,057.39	96.05	156.41	-29.70	2,282.84	-8,315.42	14,054.38	13,860.91	193.47	72.644				
12,900.00	6,987.00	6,060.00	6,057.39	97.55	156.41	-29.70	2,282.84	-8,315.42	14,154.13	13,960.60	193.54	73.134				
13,000.00	6,987.00	6,060.00	6,057.39	99.05	156.41	-29.70	2,282.84	-8,315.42	14,253.89	14,060.28	193.60	73.624				
13,100.00	6,987.00	6,060.00	6,057.39	100.56	156.41	-29.70	2,282.84	-8,315.42	14,353.64	14,159.97	193.67	74.113				
13,200.00	6,987.00	6,060.00	6,057.39	102.07	156.41	-29.70	2,282.84	-8,315.42	14,453.40	14,259.66	193.74	74.602				
13,300.00	6,987.00	6,060.00	6,057.39	103.58	156.41	-29.70	2,282.84	-8,315.42	14,553.17	14,359.36	193.81	75.090				
13,400.00	6,987.00	6,060.00	6,057.39	105.09	156.41	-29.70	2,282.84	-8,315.42	14,652.93	14,459.06	193.88	75.578				
13,500.00	6,987.00	6,060.00	6,057.39	106.61	156.41	-29.70	2,282.84	-8,315.42	14,752.70	14,558.76	193.95	76.066				
13,600.00	6,987.00	6,060.00	6,057.39	108.13	156.41	-29.70	2,282.84	-8,315.42	14,852.48	14,658.46	194.01	76.553				
13,700.00	6,987.00	6,060.00	6,057.39	109.65	156.41	-29.70	2,282.84	-8,315.42	14,952.25	14,758.17	194.08	77.040				
13,800.00	6,987.00	6,060.00	6,057.39	111.18	156.41	-29.70	2,282.84	-8,315.42	15,052.03	14,857.88	194.15	77.527				
13,900.00	6,987.00	6,060.00	6,057.39	112.71	156.41	-29.70	2,282.84	-8,315.42	15,151.82	14,957.59	194.22	78.013				

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 #692H
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 #692H	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)		
14,000.00	6,987.00	6,060.00	6,057.39	114.23	156.41	-29.70	2,282.84	-8,315.42	15,251.60	15,057.31	194.29	78.499
14,100.00	6,987.00	6,060.00	6,057.39	115.77	156.41	-29.70	2,282.84	-8,315.42	15,351.39	15,157.03	194.36	78.984
14,200.00	6,987.00	6,060.00	6,057.39	117.30	156.41	-29.70	2,282.84	-8,315.42	15,451.18	15,256.75	194.43	79.469
14,300.00	6,987.00	6,060.00	6,057.39	118.83	156.41	-29.70	2,282.84	-8,315.42	15,550.97	15,356.47	194.50	79.953
14,400.00	6,987.00	6,060.00	6,057.39	120.37	156.41	-29.70	2,282.84	-8,315.42	15,650.77	15,456.20	194.57	80.438
14,500.00	6,987.00	6,060.00	6,057.39	121.91	156.41	-29.70	2,282.84	-8,315.42	15,750.57	15,555.92	194.64	80.921
14,600.00	6,987.00	6,060.00	6,057.39	123.45	156.41	-29.70	2,282.84	-8,315.42	15,850.37	15,655.66	194.71	81.404
14,700.00	6,987.00	6,060.00	6,057.39	124.99	156.41	-29.70	2,282.84	-8,315.42	15,950.17	15,755.39	194.78	81.887
14,800.00	6,987.00	6,060.00	6,057.39	126.53	156.41	-29.70	2,282.84	-8,315.42	16,049.98	15,855.12	194.85	82.370
14,900.00	6,987.00	6,060.00	6,057.39	128.08	156.41	-29.70	2,282.84	-8,315.42	16,149.78	15,954.86	194.92	82.852
15,000.00	6,987.00	6,060.00	6,057.39	129.63	156.41	-29.70	2,282.84	-8,315.42	16,249.59	16,054.60	195.00	83.333
15,100.00	6,987.00	6,060.00	6,057.39	131.17	156.41	-29.70	2,282.84	-8,315.42	16,349.41	16,154.34	195.07	83.814
15,200.00	6,987.00	6,060.00	6,057.39	132.72	156.41	-29.70	2,282.84	-8,315.42	16,449.22	16,254.08	195.14	84.295
15,300.00	6,987.00	6,060.00	6,057.39	134.27	156.41	-29.70	2,282.84	-8,315.42	16,549.04	16,353.83	195.21	84.775
15,400.00	6,987.00	6,060.00	6,057.39	135.83	156.41	-29.70	2,282.84	-8,315.42	16,648.86	16,453.58	195.28	85.255
15,500.00	6,987.00	6,060.00	6,057.39	137.38	156.41	-29.70	2,282.84	-8,315.42	16,748.68	16,553.33	195.36	85.734
15,600.00	6,987.00	6,060.00	6,057.39	138.93	156.41	-29.70	2,282.84	-8,315.42	16,848.51	16,653.08	195.43	86.213
15,700.00	6,987.00	6,060.00	6,057.39	140.49	156.41	-29.70	2,282.84	-8,315.42	16,948.33	16,752.83	195.50	86.691
15,800.00	6,987.00	6,060.00	6,057.39	142.04	156.41	-29.70	2,282.84	-8,315.42	17,048.16	16,852.58	195.58	87.169
15,900.00	6,987.00	6,060.00	6,057.39	143.60	156.41	-29.70	2,282.84	-8,315.42	17,147.99	16,952.34	195.65	87.646
16,000.00	6,987.00	6,060.00	6,057.39	145.16	156.41	-29.70	2,282.84	-8,315.42	17,247.82	17,052.10	195.72	88.123
16,100.00	6,987.00	6,060.00	6,057.39	146.72	156.41	-29.70	2,282.84	-8,315.42	17,347.66	17,151.86	195.80	88.600
16,200.00	6,987.00	6,060.00	6,057.39	148.28	156.41	-29.70	2,282.84	-8,315.42	17,447.49	17,251.62	195.87	89.076
16,300.00	6,987.00	6,060.00	6,057.39	149.84	156.41	-29.70	2,282.84	-8,315.42	17,547.33	17,351.38	195.95	89.552
16,400.00	6,987.00	6,060.00	6,057.39	151.40	156.41	-29.70	2,282.84	-8,315.42	17,647.17	17,451.15	196.02	90.027
16,500.00	6,987.00	6,060.00	6,057.39	152.97	156.41	-29.70	2,282.84	-8,315.42	17,747.01	17,550.91	196.10	90.501
16,600.00	6,987.00	6,060.00	6,057.39	154.53	156.41	-29.70	2,282.84	-8,315.42	17,846.85	17,650.68	196.17	90.976
16,700.00	6,987.00	6,060.00	6,057.39	156.10	156.41	-29.70	2,282.84	-8,315.42	17,946.70	17,750.45	196.25	91.449
16,800.00	6,987.00	6,060.00	6,057.39	157.66	156.41	-29.70	2,282.84	-8,315.42	18,046.54	17,850.22	196.32	91.923
16,900.00	6,987.00	6,060.00	6,057.39	159.23	156.41	-29.70	2,282.84	-8,315.42	18,146.39	17,949.99	196.40	92.395
17,000.00	6,987.00	6,060.00	6,057.39	160.80	156.41	-29.70	2,282.84	-8,315.42	18,246.24	18,049.77	196.48	92.867
17,100.00	6,987.00	6,060.00	6,057.39	162.36	156.41	-29.70	2,282.84	-8,315.42	18,346.09	18,149.54	196.55	93.339
17,200.00	6,987.00	6,060.00	6,057.39	163.93	156.41	-29.70	2,282.84	-8,315.42	18,445.95	18,249.32	196.63	93.811
17,300.00	6,987.00	6,060.00	6,057.39	165.50	156.41	-29.70	2,282.84	-8,315.42	18,545.80	18,349.09	196.71	94.281
17,400.00	6,987.00	6,060.00	6,057.39	167.07	156.41	-29.70	2,282.84	-8,315.42	18,645.66	18,448.87	196.78	94.752
17,500.00	6,987.00	6,060.00	6,057.39	168.64	156.41	-29.70	2,282.84	-8,315.42	18,745.52	18,548.65	196.86	95.221
17,600.00	6,987.00	6,060.00	6,057.39	170.21	156.41	-29.70	2,282.84	-8,315.42	18,845.38	18,648.43	196.94	95.691
17,700.00	6,987.00	6,060.00	6,057.39	171.78	156.41	-29.70	2,282.84	-8,315.42	18,945.24	18,748.22	197.02	96.159
17,800.00	6,987.00	6,060.00	6,057.39	173.36	156.41	-29.70	2,282.84	-8,315.42	19,045.10	18,848.00	197.10	96.628
17,900.00	6,987.00	6,060.00	6,057.39	174.93	156.41	-29.70	2,282.84	-8,315.42	19,144.96	18,947.79	197.18	97.096
18,000.00	6,987.00	6,060.00	6,057.39	176.50	156.41	-29.70	2,282.84	-8,315.42	19,244.83	19,047.57	197.26	97.563
18,100.00	6,987.00	6,060.00	6,057.39	178.08	156.41	-29.70	2,282.84	-8,315.42	19,344.69	19,147.36	197.34	98.030
18,200.00	6,987.00	6,060.00	6,057.39	179.65	156.41	-29.70	2,282.84	-8,315.42	19,444.56	19,247.15	197.42	98.496
18,300.00	6,987.00	6,060.00	6,057.39	181.23	156.41	-29.70	2,282.84	-8,315.42	19,544.43	19,346.94	197.50	98.962
18,400.00	6,987.00	6,060.00	6,057.39	182.80	156.41	-29.70	2,282.84	-8,315.42	19,644.30	19,446.73	197.58	99.427
18,500.00	6,987.00	6,060.00	6,057.39	184.38	156.41	-29.70	2,282.84	-8,315.42	19,744.17	19,546.52	197.66	99.892
18,600.00	6,987.00	6,060.00	6,057.39	185.96	156.41	-29.70	2,282.84	-8,315.42	19,844.05	19,646.31	197.74	100.356
18,700.00	6,987.00	6,060.00	6,057.39	187.53	156.41	-29.70	2,282.84	-8,315.42	19,943.92	19,746.10	197.82	100.819
18,800.00	6,987.00	6,060.00	6,057.39	189.11	156.41	-29.70	2,282.84	-8,315.42	20,043.80	19,845.90	197.90	101.283
18,900.00	6,987.00	6,060.00	6,057.39	190.69	156.41	-29.70	2,282.84	-8,315.42	20,143.67	19,945.69	197.98	101.745
19,000.00	6,987.00	6,060.00	6,057.39	192.27	156.41	-29.70	2,282.84	-8,315.42	20,243.55	20,045.49	198.06	102.207
19,100.00	6,987.00	6,060.00	6,057.39	193.85	156.41	-29.70	2,282.84	-8,315.42	20,343.43	20,145.29	198.15	102.669

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 #692H
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 #692H	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		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
19,200.00	6,987.00	6,060.00	6,057.39	195.43	156.41	-29.70	2,282.84	-8,315.42	20,443.31	20,245.08		198.23	103.130
19,255.69	6,987.00	6,060.00	6,057.39	196.31	156.41	-29.70	2,282.84	-8,315.42	20,498.94	20,300.66		198.27	103.387
19,300.00	6,987.00	6,060.00	6,057.39	197.01	156.41	-29.70	2,282.84	-8,315.42	20,543.19	20,344.88		198.31	103.591
19,400.00	6,987.00	6,060.00	6,057.39	198.59	156.41	-29.70	2,282.84	-8,315.42	20,643.08	20,444.68		198.39	104.051
19,468.80	6,987.00	6,060.00	6,057.39	199.49	156.41	-29.70	2,282.84	-8,315.42	20,711.80	20,509.56		202.24	102.412

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 #692H
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 #692H	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		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	-74.70	2,284.70	-8,349.51	8,656.66				
100.00	100.00	38.05	38.05	0.25	0.68	-74.70	2,284.68	-8,349.52	8,656.45	8,655.53	0.93	9,353.905	
200.00	200.00	133.17	133.17	0.61	2.37	-74.70	2,284.46	-8,349.63	8,656.50	8,653.54	2.97	2,914.973	
300.00	300.00	228.29	228.29	0.97	4.06	-74.70	2,283.98	-8,349.86	8,656.61	8,651.60	5.01	1,726.536	
400.00	400.00	323.41	323.40	1.33	5.74	-74.71	2,283.25	-8,350.22	8,656.78	8,649.72	7.06	1,226.522	
500.00	500.00	418.52	418.51	1.68	7.43	-74.71	2,282.27	-8,350.71	8,657.00	8,647.89	9.10	951.108	
600.00	600.00	513.62	513.60	2.04	9.12	-74.72	2,281.04	-8,351.32	8,657.27	8,646.13	11.15	776.722	
700.00	700.00	563.00	562.97	2.40	10.00	-74.73	2,280.30	-8,351.68	8,657.73	8,645.35	12.38	699.371	
800.00	799.98	612.25	612.20	2.76	10.18	-68.34	2,279.33	-8,352.41	8,658.13	8,645.25	12.88	672.111	
900.00	899.84	654.00	653.92	3.12	10.34	-68.37	2,278.20	-8,353.57	8,658.08	8,644.72	13.36	648.182	
1,000.00	999.45	654.00	653.92	3.48	10.34	-68.38	2,278.20	-8,353.57	8,657.59	8,643.87	13.71	631.343	
1,100.00	1,098.70	654.00	653.92	3.85	10.34	-68.39	2,278.20	-8,353.57	8,656.96	8,642.89	14.07	615.246	
1,153.80	1,151.90	698.62	698.46	4.04	10.52	-68.45	2,276.51	-8,355.64	8,655.99	8,641.62	14.37	602.344	
1,200.00	1,197.53	707.57	707.39	4.21	10.56	-68.46	2,276.09	-8,356.19	8,655.51	8,640.95	14.56	594.527	
1,300.00	1,296.27	744.00	743.66	4.59	10.73	-68.52	2,274.10	-8,358.91	8,655.23	8,640.23	15.00	576.921	
1,307.50	1,303.68	744.00	743.66	4.62	10.73	-68.52	2,274.10	-8,358.91	8,655.23	8,640.20	15.03	575.851 CC, ES	
1,400.00	1,395.02	744.00	743.66	4.97	10.73	-68.52	2,274.10	-8,358.91	8,655.72	8,640.35	15.37	563.014	
1,500.00	1,493.77	793.39	792.75	5.36	10.92	-68.59	2,270.96	-8,363.32	8,657.06	8,641.21	15.85	546.087	
1,600.00	1,592.52	835.00	834.06	5.74	11.08	-68.66	2,268.08	-8,367.37	8,659.06	8,642.74	16.31	530.752	
1,700.00	1,691.27	876.17	874.87	6.14	11.19	-68.72	2,264.85	-8,371.74	8,661.75	8,644.99	16.76	516.862	
1,800.00	1,790.01	928.00	926.11	6.53	11.33	-68.82	2,259.98	-8,377.86	8,665.18	8,647.96	17.22	503.201	
1,900.00	1,888.76	928.00	926.11	6.92	11.33	-68.82	2,259.98	-8,377.86	8,669.39	8,651.79	17.60	492.641	
2,000.00	1,987.51	983.65	980.94	7.32	11.53	-68.92	2,253.94	-8,385.23	8,674.23	8,656.14	18.09	479.407	
2,100.00	2,086.26	1,023.00	1,019.59	7.72	11.68	-69.00	2,249.27	-8,390.94	8,679.94	8,661.39	18.55	467.802	
2,200.00	2,185.01	1,023.00	1,019.59	8.11	11.68	-69.00	2,249.27	-8,390.94	8,686.54	8,667.61	18.93	458.848	
2,300.00	2,283.75	1,064.43	1,060.17	8.51	11.82	-69.08	2,244.11	-8,397.50	8,693.88	8,674.47	19.41	447.940	
2,400.00	2,382.50	1,118.00	1,112.44	8.91	12.01	-69.19	2,237.22	-8,406.98	8,702.42	8,682.51	19.92	436.954	
2,500.00	2,481.25	1,118.00	1,112.44	9.31	12.01	-69.19	2,237.22	-8,406.98	8,711.42	8,691.13	20.29	429.358	
2,600.00	2,580.00	1,118.00	1,112.44	9.71	12.01	-69.19	2,237.22	-8,406.98	8,721.55	8,700.89	20.66	422.144	
2,700.00	2,678.75	1,173.57	1,166.43	10.11	12.19	-69.31	2,229.66	-8,417.77	8,732.33	8,711.15	21.18	412.325	
2,800.00	2,777.49	1,210.00	1,201.68	10.52	12.31	-69.39	2,224.37	-8,425.24	8,743.95	8,722.30	21.64	403.973	
2,900.00	2,876.24	1,210.00	1,201.68	10.92	12.31	-69.39	2,224.37	-8,425.24	8,756.48	8,734.47	22.01	397.832	
3,000.00	2,974.99	1,269.21	1,258.69	11.32	12.54	-69.52	2,214.99	-8,438.17	8,769.53	8,746.98	22.56	388.760	
3,100.00	3,073.74	1,305.00	1,292.95	11.72	12.68	-69.61	2,208.78	-8,446.47	8,783.53	8,760.50	23.03	381.355	
3,200.00	3,172.49	1,305.00	1,292.95	12.13	12.68	-69.61	2,208.78	-8,446.47	8,798.42	8,775.02	23.39	376.122	
3,300.00	3,271.23	1,344.10	1,330.18	12.53	12.85	-69.71	2,201.63	-8,456.05	8,814.04	8,790.15	23.89	368.876	
3,400.00	3,369.98	1,395.00	1,378.32	12.93	13.07	-69.84	2,191.92	-8,469.43	8,830.84	8,806.40	24.44	361.317	
3,500.00	3,468.73	1,395.00	1,378.32	13.34	13.07	-69.84	2,191.92	-8,469.43	8,848.11	8,823.32	24.79	356.859	
3,600.00	3,567.48	1,395.00	1,378.32	13.74	13.07	-69.84	2,191.92	-8,469.43	8,866.48	8,841.34	25.14	352.622	
3,700.00	3,666.23	1,434.61	1,415.47	14.14	13.27	-69.94	2,183.82	-8,480.52	8,885.61	8,859.94	25.68	346.066	
3,800.00	3,764.97	1,487.00	1,464.08	14.55	13.55	-70.09	2,171.97	-8,496.03	8,905.79	8,879.52	26.27	339.020	
3,900.00	3,863.72	1,487.00	1,464.08	14.95	13.55	-70.09	2,171.97	-8,496.03	8,926.48	8,899.86	26.61	335.420	
4,000.00	3,962.47	1,487.00	1,464.08	15.36	13.55	-70.09	2,171.97	-8,496.03	8,948.24	8,921.28	26.95	332.001	
4,100.00	4,061.22	1,524.83	1,498.82	15.76	13.75	-70.20	2,162.76	-8,507.86	8,970.72	8,943.23	27.49	326.338	
4,200.00	4,159.97	1,578.00	1,547.14	16.17	14.04	-70.36	2,149.18	-8,525.38	8,994.38	8,966.27	28.11	319.981	
4,300.00	4,258.71	1,578.00	1,547.14	16.57	14.04	-70.36	2,149.18	-8,525.38	9,018.43	8,989.99	28.44	317.083	
4,400.00	4,357.46	1,578.00	1,547.14	16.98	14.04	-70.36	2,149.18	-8,525.38	9,043.52	9,014.75	28.77	314.334	
4,500.00	4,456.21	1,578.00	1,547.14	17.38	14.04	-70.36	2,149.18	-8,525.38	9,069.64	9,040.54	29.09	311.727	
4,600.00	4,554.96	1,578.00	1,547.14	17.79	14.04	-70.36	2,149.18	-8,525.38	9,096.78	9,067.37	29.42	309.256	
4,700.00	4,653.71	1,628.25	1,592.20	18.19	14.31	-70.51	2,135.71	-8,543.08	9,124.15	9,094.11	30.04	303.780	
4,800.00	4,752.45	1,670.00	1,629.11	18.60	14.53	-70.64	2,124.08	-8,558.76	9,153.02	9,122.41	30.61	299.059	
4,900.00	4,851.20	1,670.00	1,629.11	19.00	14.53	-70.64	2,124.08	-8,558.76	9,182.34	9,151.42	30.92	296.981	

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 #692H
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 #692H	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		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	4,949.95	1,670.00	1,629.11	19.41	14.53	-70.64	2,124.08	-8,558.76	9,212.66	9,181.43	31.23	295.016		
5,100.00	5,048.70	1,670.00	1,629.11	19.81	14.53	-70.64	2,124.08	-8,558.76	9,243.95	9,212.42	31.53	293.160		
5,200.00	5,147.45	1,670.00	1,629.11	20.22	14.53	-70.64	2,124.08	-8,558.76	9,276.22	9,244.39	31.83	291.409		
5,300.00	5,246.19	1,718.25	1,671.26	20.62	14.75	-70.80	2,110.46	-8,577.88	9,308.79	9,276.34	32.44	286.926		
5,400.00	5,344.94	1,763.00	1,709.97	21.03	14.96	-70.94	2,097.92	-8,596.49	9,342.73	9,309.69	33.03	282.841		
5,455.76	5,400.00	1,763.00	1,709.97	21.25	14.96	-70.94	2,097.92	-8,596.49	9,361.74	9,328.55	33.20	282.021		
5,500.00	5,443.72	1,763.00	1,709.97	21.43	14.96	-71.10	2,097.92	-8,596.49	9,377.09	9,343.77	33.32	281.398		
5,600.00	5,542.71	1,763.00	1,709.97	21.83	14.96	-71.46	2,097.92	-8,596.49	9,412.84	9,379.24	33.60	280.116		
5,700.00	5,641.93	1,763.00	1,709.97	22.22	14.96	-71.84	2,097.92	-8,596.49	9,450.02	9,416.15	33.87	279.002		
5,800.00	5,741.36	1,808.01	1,748.52	22.60	15.13	-72.37	2,085.15	-8,615.92	9,488.21	9,453.80	34.42	275.699		
5,900.00	5,840.96	1,859.00	1,791.69	22.97	15.32	-72.92	2,070.24	-8,638.58	9,527.88	9,492.89	34.99	272.317		
6,000.00	5,940.70	1,859.00	1,791.69	23.33	15.32	-73.35	2,070.24	-8,638.58	9,568.37	9,533.15	35.22	271.665		
6,100.00	6,040.55	1,859.00	1,791.69	23.68	15.32	-73.79	2,070.24	-8,638.58	9,610.19	9,574.75	35.44	271.152		
6,200.00	6,140.48	1,859.00	1,791.69	24.02	15.32	-74.25	2,070.24	-8,638.58	9,653.30	9,617.65	35.65	270.772		
6,300.00	6,240.45	1,859.00	1,791.69	24.35	15.32	-74.73	2,070.24	-8,638.58	9,697.68	9,661.83	35.85	270.517		
6,408.05	6,348.50	1,909.14	1,833.35	24.69	15.58	104.62	2,054.74	-8,661.77	9,746.22	9,709.76	36.46	267.326		
6,450.00	6,390.43	1,952.00	1,868.09	24.82	15.81	-147.09	2,040.55	-8,682.48	9,766.92	9,730.03	36.89	264.727		
6,500.00	6,440.15	1,952.00	1,868.09	24.99	15.81	-141.67	2,040.55	-8,682.48	9,793.48	9,756.49	37.00	264.703		
6,550.00	6,489.32	1,952.00	1,868.09	25.16	15.81	-138.46	2,040.55	-8,682.48	9,822.67	9,785.56	37.11	264.698		
6,600.00	6,537.64	1,952.00	1,868.09	25.34	15.81	-135.39	2,040.55	-8,682.48	9,854.28	9,817.05	37.23	264.716		
6,650.00	6,584.80	1,952.00	1,868.09	25.52	15.81	-132.06	2,040.55	-8,682.48	9,888.09	9,850.74	37.35	264.756		
6,700.00	6,630.52	1,952.00	1,868.09	25.71	15.81	-128.31	2,040.55	-8,682.48	9,923.88	9,886.41	37.47	264.815		
6,750.00	6,674.51	1,952.00	1,868.09	25.89	15.81	-124.01	2,040.55	-8,682.48	9,961.40	9,923.80	37.61	264.887		
6,800.00	6,716.50	1,952.00	1,868.09	26.08	15.81	-119.09	2,040.55	-8,682.48	10,000.41	9,962.67	37.74	264.966		
6,850.00	6,756.24	1,952.00	1,868.09	26.28	15.81	-113.52	2,040.55	-8,682.48	10,040.65	10,002.77	37.88	265.043		
6,900.00	6,793.47	1,952.00	1,868.09	26.48	15.81	-107.31	2,040.55	-8,682.48	10,081.86	10,043.83	38.03	265.111		
6,950.00	6,827.97	1,952.00	1,868.09	26.69	15.81	-100.54	2,040.55	-8,682.48	10,123.77	10,085.59	38.18	265.161		
7,000.00	6,859.53	1,952.00	1,868.09	26.91	15.81	-93.39	2,040.55	-8,682.48	10,166.11	10,127.77	38.34	265.182		
7,050.00	6,887.94	1,952.00	1,868.09	27.14	15.81	-86.09	2,040.55	-8,682.48	10,208.63	10,170.13	38.50	265.165		
7,100.00	6,913.05	1,952.00	1,868.09	27.38	15.81	-78.93	2,040.55	-8,682.48	10,251.06	10,212.39	38.67	265.100		
7,150.00	6,934.68	1,952.00	1,868.09	27.64	15.81	-72.14	2,040.55	-8,682.48	10,293.14	10,254.29	38.85	264.977		
7,200.00	6,952.71	1,952.00	1,868.09	27.92	15.81	-65.90	2,040.55	-8,682.48	10,334.61	10,295.58	39.03	264.787		
7,250.00	6,967.02	1,952.00	1,868.09	28.21	15.81	-60.32	2,040.55	-8,682.48	10,375.24	10,336.02	39.22	264.523		
7,300.00	6,977.54	1,952.00	1,868.09	28.52	15.81	-55.41	2,040.55	-8,682.48	10,414.78	10,375.35	39.42	264.178		
7,350.00	6,984.18	1,952.00	1,868.09	28.83	15.81	-51.15	2,040.55	-8,682.48	10,452.99	10,413.36	39.63	263.744		
7,400.00	6,986.92	1,952.00	1,868.09	29.16	15.81	-47.49	2,040.55	-8,682.48	10,489.67	10,449.82	39.85	263.219		
7,409.89	6,987.00	1,952.00	1,868.09	29.23	15.81	-46.83	2,040.55	-8,682.48	10,496.73	10,456.83	39.89	263.118		
7,500.00	6,987.00	1,952.00	1,868.09	29.85	15.81	-46.83	2,040.55	-8,682.48	10,560.88	10,520.56	40.31	261.969		
7,600.00	6,987.00	1,952.00	1,868.09	30.61	15.81	-46.83	2,040.55	-8,682.48	10,632.51	10,591.71	40.79	260.650		
7,700.00	6,987.00	1,908.41	1,832.75	31.41	15.58	-46.64	2,054.97	-8,661.42	10,703.97	10,663.05	40.92	261.598		
7,800.00	6,987.00	1,900.37	1,826.14	32.27	15.54	-46.61	2,057.53	-8,657.63	10,776.24	10,734.89	41.35	260.594		
7,900.00	6,987.00	1,859.00	1,791.69	33.17	15.32	-46.42	2,070.24	-8,638.58	10,849.29	10,807.77	41.52	261.296		
8,000.00	6,987.00	1,859.00	1,791.69	34.12	15.32	-46.42	2,070.24	-8,638.58	10,922.21	10,880.17	42.04	259.801		
8,100.00	6,987.00	1,859.00	1,791.69	35.10	15.32	-46.42	2,070.24	-8,638.58	10,995.55	10,952.98	42.57	258.316		
8,200.00	6,987.00	1,859.00	1,791.69	36.12	15.32	-46.42	2,070.24	-8,638.58	11,069.31	11,026.21	43.10	256.848		
8,300.00	6,987.00	1,859.00	1,791.69	37.17	15.32	-46.42	2,070.24	-8,638.58	11,143.48	11,099.85	43.63	255.403		
8,314.89	6,987.00	1,859.00	1,791.69	37.33	15.32	-46.42	2,070.24	-8,638.58	11,154.56	11,110.85	43.71	255.191		
8,400.00	6,987.00	1,859.00	1,791.69	38.25	15.32	-43.61	2,070.24	-8,638.58	11,219.23	11,175.07	44.16	254.084		
8,500.00	6,987.00	1,859.00	1,791.69	39.35	15.32	-39.74	2,070.24	-8,638.58	11,298.34	11,253.70	44.64	253.078		
8,600.00	6,987.00	1,859.00	1,791.69	40.45	15.32	-35.18	2,070.24	-8,638.58	11,380.40	11,335.31	45.09	252.406 SF		
8,700.00	6,987.00	1,818.97	1,757.83	41.56	15.17	-29.74	2,081.99	-8,620.73	11,464.62	11,419.37	45.24	253.403		
8,800.00	6,987.00	1,808.51	1,748.94	42.66	15.13	-23.59	2,085.01	-8,616.14	11,551.00	11,505.47	45.53	253.714		

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 #692H
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 #692H	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		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)					
8,900.00	6,987.00	1,763.00	1,709.97	43.75	14.96	-16.64	2,097.92	-8,596.49	11,639.16	11,593.61	45.55	255.504			
9,000.00	6,987.00	1,763.00	1,709.97	44.83	14.96	-9.09	2,097.92	-8,596.49	11,728.03	11,682.23	45.80	256.083			
9,071.74	6,987.00	1,763.00	1,709.97	45.59	14.96	-3.37	2,097.92	-8,596.49	11,792.22	11,746.28	45.94	256.690			
9,100.00	6,987.00	1,763.00	1,709.97	45.89	14.96	-3.37	2,097.92	-8,596.49	11,817.56	11,771.57	45.99	256.960			
9,200.00	6,987.00	1,763.00	1,709.97	46.97	14.96	-3.37	2,097.92	-8,596.49	11,907.34	11,861.17	46.17	257.918			
9,300.00	6,987.00	1,763.00	1,709.97	48.07	14.96	-3.37	2,097.92	-8,596.49	11,997.27	11,950.93	46.34	258.875			
9,400.00	6,987.00	1,763.00	1,709.97	49.20	14.96	-3.37	2,097.92	-8,596.49	12,087.36	12,040.84	46.52	259.832			
9,500.00	6,987.00	1,763.00	1,709.97	50.36	14.96	-3.37	2,097.92	-8,596.49	12,177.61	12,130.91	46.70	260.787			
9,600.00	6,987.00	1,763.00	1,709.97	51.54	14.96	-3.37	2,097.92	-8,596.49	12,268.01	12,221.14	46.87	261.743			
9,700.00	6,987.00	1,763.00	1,709.97	52.74	14.96	-3.37	2,097.92	-8,596.49	12,358.55	12,311.51	47.04	262.698			
9,800.00	6,987.00	1,763.00	1,709.97	53.96	14.96	-3.37	2,097.92	-8,596.49	12,449.24	12,402.03	47.22	263.654			
9,900.00	6,987.00	1,763.00	1,709.97	55.21	14.96	-3.37	2,097.92	-8,596.49	12,540.08	12,492.68	47.39	264.609			
10,000.00	6,987.00	1,719.30	1,672.17	56.47	14.75	-3.48	2,110.17	-8,578.30	12,630.53	12,583.21	47.32	266.943			
10,100.00	6,987.00	1,713.44	1,667.08	57.75	14.73	-3.50	2,111.81	-8,575.93	12,721.48	12,674.03	47.46	268.064			
10,200.00	6,987.00	1,670.00	1,629.11	59.04	14.53	-3.61	2,124.08	-8,558.76	12,812.94	12,765.55	47.39	270.366			
10,300.00	6,987.00	1,670.00	1,629.11	60.35	14.53	-3.61	2,124.08	-8,558.76	12,904.03	12,856.46	47.57	271.282			
10,400.00	6,987.00	1,670.00	1,629.11	61.67	14.53	-3.61	2,124.08	-8,558.76	12,995.24	12,947.50	47.74	272.200			
10,500.00	6,987.00	1,670.00	1,629.11	63.01	14.53	-3.61	2,124.08	-8,558.76	13,086.58	13,038.66	47.92	273.118			
10,600.00	6,987.00	1,670.00	1,629.11	64.36	14.53	-3.61	2,124.08	-8,558.76	13,178.04	13,129.95	48.09	274.038			
10,700.00	6,987.00	1,670.00	1,629.11	65.72	14.53	-3.61	2,124.08	-8,558.76	13,269.63	13,221.37	48.26	274.959			
10,800.00	6,987.00	1,670.00	1,629.11	67.09	14.53	-3.61	2,124.08	-8,558.76	13,361.34	13,312.91	48.43	275.880			
10,900.00	6,987.00	1,670.00	1,629.11	68.47	14.53	-3.61	2,124.08	-8,558.76	13,453.17	13,404.57	48.60	276.804			
11,000.00	6,987.00	1,670.00	1,629.11	69.86	14.53	-3.61	2,124.08	-8,558.76	13,545.11	13,496.34	48.77	277.728			
11,100.00	6,987.00	1,670.00	1,629.11	71.26	14.53	-3.61	2,124.08	-8,558.76	13,637.17	13,588.23	48.94	278.653			
11,200.00	6,987.00	1,670.00	1,629.11	72.67	14.53	-3.61	2,124.08	-8,558.76	13,729.34	13,680.23	49.11	279.580			
11,300.00	6,987.00	1,670.00	1,629.11	74.09	14.53	-3.61	2,124.08	-8,558.76	13,821.61	13,772.34	49.27	280.508			
11,400.00	6,987.00	1,670.00	1,629.11	75.51	14.53	-3.61	2,124.08	-8,558.76	13,914.00	13,864.56	49.44	281.436			
11,500.00	6,987.00	1,670.00	1,629.11	76.94	14.53	-3.61	2,124.08	-8,558.76	14,006.49	13,956.88	49.60	282.367			
11,600.00	6,987.00	1,670.00	1,629.11	78.38	14.53	-3.61	2,124.08	-8,558.76	14,099.08	14,049.31	49.77	283.298			
11,700.00	6,987.00	1,670.00	1,629.11	79.82	14.53	-3.61	2,124.08	-8,558.76	14,191.77	14,141.84	49.93	284.230			
11,800.00	6,987.00	1,670.00	1,629.11	81.27	14.53	-3.61	2,124.08	-8,558.76	14,284.56	14,234.47	50.09	285.163			
11,900.00	6,987.00	1,627.06	1,591.14	82.73	14.30	-3.71	2,136.04	-8,542.65	14,376.86	14,326.81	50.05	287.226			
12,000.00	6,987.00	1,623.10	1,587.61	84.19	14.28	-3.72	2,137.12	-8,541.21	14,469.73	14,419.53	50.20	288.251			
12,100.00	6,987.00	1,619.18	1,584.12	85.66	14.26	-3.73	2,138.19	-8,539.79	14,562.68	14,512.34	50.34	289.274			
12,200.00	6,987.00	1,578.00	1,547.14	87.13	14.04	-3.82	2,149.18	-8,525.38	14,656.16	14,605.84	50.32	291.269			
12,300.00	6,987.00	1,578.00	1,547.14	88.61	14.04	-3.82	2,149.18	-8,525.38	14,749.19	14,698.71	50.48	292.176			
12,400.00	6,987.00	1,578.00	1,547.14	90.09	14.04	-3.82	2,149.18	-8,525.38	14,842.32	14,791.68	50.64	293.085			
12,500.00	6,987.00	1,578.00	1,547.14	91.57	14.04	-3.82	2,149.18	-8,525.38	14,935.53	14,884.73	50.80	293.995			
12,600.00	6,987.00	1,578.00	1,547.14	93.06	14.04	-3.82	2,149.18	-8,525.38	15,028.83	14,977.87	50.96	294.906			
12,700.00	6,987.00	1,578.00	1,547.14	94.55	14.04	-3.82	2,149.18	-8,525.38	15,122.21	15,071.09	51.12	295.818			
12,800.00	6,987.00	1,578.00	1,547.14	96.05	14.04	-3.82	2,149.18	-8,525.38	15,215.68	15,164.41	51.28	296.731			
12,900.00	6,987.00	1,578.00	1,547.14	97.55	14.04	-3.82	2,149.18	-8,525.38	15,309.24	15,257.80	51.43	297.646			
13,000.00	6,987.00	1,578.00	1,547.14	99.05	14.04	-3.82	2,149.18	-8,525.38	15,402.87	15,351.28	51.59	298.561			
13,100.00	6,987.00	1,578.00	1,547.14	100.56	14.04	-3.82	2,149.18	-8,525.38	15,496.58	15,444.84	51.75	299.478			
13,200.00	6,987.00	1,578.00	1,547.14	102.07	14.04	-3.82	2,149.18	-8,525.38	15,590.37	15,538.47	51.90	300.395			
13,300.00	6,987.00	1,578.00	1,547.14	103.58	14.04	-3.82	2,149.18	-8,525.38	15,684.24	15,632.19	52.05	301.313			
13,400.00	6,987.00	1,578.00	1,547.14	105.09	14.04	-3.82	2,149.18	-8,525.38	15,778.18	15,725.98	52.21	302.232			
13,500.00	6,987.00	1,578.00	1,547.14	106.61	14.04	-3.82	2,149.18	-8,525.38	15,872.20	15,819.84	52.36	303.152			
13,600.00	6,987.00	1,578.00	1,547.14	108.13	14.04	-3.82	2,149.18	-8,525.38	15,966.29	15,913.78	52.51	304.072			
13,700.00	6,987.00	1,578.00	1,547.14	109.65	14.04	-3.82	2,149.18	-8,525.38	16,060.45	16,007.79	52.66	304.993			
13,800.00	6,987.00	1,578.00	1,547.14	111.18	14.04	-3.82	2,149.18	-8,525.38	16,154.68	16,101.87	52.81	305.914			
13,900.00	6,987.00	1,578.00	1,547.14	112.71	14.04	-3.82	2,149.18	-8,525.38	16,248.98	16,196.02	52.96	306.836			

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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: Reference		563-MWD OWSG Rev5				Offset		Semi Major Axis		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)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
14,000.00	6,987.00	1,578.00	1,547.14	114.23	14.04	-3.82	2,149.18	-8,525.38	16,343.35	16,290.24	53.10	307.759			
14,100.00	6,987.00	1,578.00	1,547.14	115.77	14.04	-3.82	2,149.18	-8,525.38	16,437.78	16,384.53	53.25	308.681			
14,200.00	6,987.00	1,535.70	1,508.74	117.30	13.81	-3.91	2,160.04	-8,511.35	16,531.86	16,478.60	53.26	310.428			
14,300.00	6,987.00	1,531.59	1,505.00	118.83	13.79	-3.92	2,161.07	-8,510.03	16,626.34	16,572.95	53.39	311.420			
14,400.00	6,987.00	1,527.53	1,501.29	120.37	13.77	-3.92	2,162.08	-8,508.72	16,720.87	16,667.35	53.52	312.411			
14,500.00	6,987.00	1,487.00	1,464.08	121.91	13.55	-4.00	2,171.97	-8,496.03	16,815.78	16,762.24	53.54	314.105			
14,600.00	6,987.00	1,487.00	1,464.08	123.45	13.55	-4.00	2,171.97	-8,496.03	16,910.36	16,856.67	53.68	315.007			
14,700.00	6,987.00	1,487.00	1,464.08	124.99	13.55	-4.00	2,171.97	-8,496.03	17,005.00	16,951.17	53.83	315.910			
14,800.00	6,987.00	1,487.00	1,464.08	126.53	13.55	-4.00	2,171.97	-8,496.03	17,099.70	17,045.73	53.97	316.813			
14,900.00	6,987.00	1,487.00	1,464.08	128.08	13.55	-4.00	2,171.97	-8,496.03	17,194.46	17,140.35	54.12	317.716			
15,000.00	6,987.00	1,487.00	1,464.08	129.63	13.55	-4.00	2,171.97	-8,496.03	17,289.29	17,235.02	54.26	318.619			
15,100.00	6,987.00	1,487.00	1,464.08	131.17	13.55	-4.00	2,171.97	-8,496.03	17,384.17	17,329.76	54.41	319.523			
15,200.00	6,987.00	1,487.00	1,464.08	132.72	13.55	-4.00	2,171.97	-8,496.03	17,479.10	17,424.55	54.55	320.426			
15,300.00	6,987.00	1,487.00	1,464.08	134.27	13.55	-4.00	2,171.97	-8,496.03	17,574.10	17,519.41	54.69	321.330			
15,400.00	6,987.00	1,487.00	1,464.08	135.83	13.55	-4.00	2,171.97	-8,496.03	17,669.15	17,614.31	54.83	322.234			
15,500.00	6,987.00	1,487.00	1,464.08	137.38	13.55	-4.00	2,171.97	-8,496.03	17,764.25	17,709.27	54.97	323.138			
15,600.00	6,987.00	1,487.00	1,464.08	138.93	13.55	-4.00	2,171.97	-8,496.03	17,859.40	17,804.29	55.11	324.041			
15,700.00	6,987.00	1,487.00	1,464.08	140.49	13.55	-4.00	2,171.97	-8,496.03	17,954.61	17,899.36	55.25	324.945			
15,800.00	6,987.00	1,487.00	1,464.08	142.04	13.55	-4.00	2,171.97	-8,496.03	18,049.87	17,994.48	55.39	325.848			
15,900.00	6,987.00	1,487.00	1,464.08	143.60	13.55	-4.00	2,171.97	-8,496.03	18,145.19	18,089.65	55.53	326.751			
16,000.00	6,987.00	1,487.00	1,464.08	145.16	13.55	-4.00	2,171.97	-8,496.03	18,240.55	18,184.88	55.67	327.654			
16,100.00	6,987.00	1,487.00	1,464.08	146.72	13.55	-4.00	2,171.97	-8,496.03	18,335.96	18,280.15	55.81	328.557			
16,200.00	6,987.00	1,487.00	1,464.08	148.28	13.55	-4.00	2,171.97	-8,496.03	18,431.42	18,375.48	55.94	329.459			
16,300.00	6,987.00	1,487.00	1,464.08	149.84	13.55	-4.00	2,171.97	-8,496.03	18,526.93	18,470.85	56.08	330.361			
16,400.00	6,987.00	1,487.00	1,464.08	151.40	13.55	-4.00	2,171.97	-8,496.03	18,622.48	18,566.27	56.22	331.262			
16,500.00	6,987.00	1,487.00	1,464.08	152.97	13.55	-4.00	2,171.97	-8,496.03	18,718.08	18,661.73	56.35	332.163			
16,600.00	6,987.00	1,445.22	1,425.37	154.53	13.33	-4.07	2,181.52	-8,483.58	18,813.34	18,756.95	56.39	333.629			
16,700.00	6,987.00	1,441.77	1,422.15	156.10	13.31	-4.08	2,182.27	-8,482.58	18,908.97	18,852.45	56.52	334.569			
16,800.00	6,987.00	1,438.35	1,418.96	157.66	13.29	-4.08	2,183.01	-8,481.59	19,004.64	18,947.99	56.64	335.506			
16,900.00	6,987.00	1,395.00	1,378.32	159.23	13.07	-4.15	2,191.92	-8,469.43	19,100.69	19,044.02	56.68	336.994			
17,000.00	6,987.00	1,395.00	1,378.32	160.80	13.07	-4.15	2,191.92	-8,469.43	19,196.38	19,139.57	56.81	337.876			
17,100.00	6,987.00	1,395.00	1,378.32	162.36	13.07	-4.15	2,191.92	-8,469.43	19,292.11	19,235.16	56.95	338.757			
17,200.00	6,987.00	1,395.00	1,378.32	163.93	13.07	-4.15	2,191.92	-8,469.43	19,387.89	19,330.80	57.08	339.638			
17,300.00	6,987.00	1,395.00	1,378.32	165.50	13.07	-4.15	2,191.92	-8,469.43	19,483.70	19,426.48	57.22	340.518			
17,400.00	6,987.00	1,395.00	1,378.32	167.07	13.07	-4.15	2,191.92	-8,469.43	19,579.56	19,522.21	57.35	341.398			
17,500.00	6,987.00	1,395.00	1,378.32	168.64	13.07	-4.15	2,191.92	-8,469.43	19,675.46	19,617.97	57.48	342.277			
17,600.00	6,987.00	1,395.00	1,378.32	170.21	13.07	-4.15	2,191.92	-8,469.43	19,771.40	19,713.78	57.62	343.155			
17,700.00	6,987.00	1,395.00	1,378.32	171.78	13.07	-4.15	2,191.92	-8,469.43	19,867.38	19,809.63	57.75	344.033			
17,800.00	6,987.00	1,395.00	1,378.32	173.36	13.07	-4.15	2,191.92	-8,469.43	19,963.40	19,905.52	57.88	344.909			
17,900.00	6,987.00	1,395.00	1,378.32	174.93	13.07	-4.15	2,191.92	-8,469.43	20,059.45	20,001.44	58.01	345.785			
18,000.00	6,987.00	1,395.00	1,378.32	176.50	13.07	-4.15	2,191.92	-8,469.43	20,155.55	20,097.41	58.14	346.660			
18,100.00	6,987.00	1,395.00	1,378.32	178.08	13.07	-4.15	2,191.92	-8,469.43	20,251.68	20,193.41	58.27	347.534			
18,200.00	6,987.00	1,395.00	1,378.32	179.65	13.07	-4.15	2,191.92	-8,469.43	20,347.86	20,289.45	58.40	348.407			
18,300.00	6,987.00	1,395.00	1,378.32	181.23	13.07	-4.15	2,191.92	-8,469.43	20,444.06	20,385.53	58.53	349.280			
18,400.00	6,987.00	1,395.00	1,378.32	182.80	13.07	-4.15	2,191.92	-8,469.43	20,540.31	20,481.65	58.66	350.151			
18,500.00	6,987.00	1,395.00	1,378.32	184.38	13.07	-4.15	2,191.92	-8,469.43	20,636.59	20,577.80	58.79	351.021			
18,600.00	6,987.00	1,395.00	1,378.32	185.96	13.07	-4.15	2,191.92	-8,469.43	20,732.90	20,673.99	58.92	351.890			
18,700.00	6,987.00	1,395.00	1,378.32	187.53	13.07	-4.15	2,191.92	-8,469.43	20,829.25	20,770.21	59.05	352.758			
18,800.00	6,987.00	1,395.00	1,378.32	189.11	13.07	-4.15	2,191.92	-8,469.43	20,925.64	20,866.46	59.17	353.625			
18,900.00	6,987.00	1,395.00	1,378.32	190.69	13.07	-4.15	2,191.92	-8,469.43	21,022.06	20,962.75	59.30	354.491			
19,000.00	6,987.00	1,395.00	1,378.32	192.27	13.07	-4.15	2,191.92	-8,469.43	21,118.51	21,059.08	59.43	355.356			
19,100.00	6,987.00	1,395.00	1,378.32	193.85	13.07	-4.15	2,191.92	-8,469.43	21,214.99	21,155.44	59.56	356.219			

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 #692H
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 #692H	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		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	
19,200.00	6,987.00	1,395.00	1,378.32	195.43	13.07	-4.15	2,191.92	-8,469.43	21,311.51	21,251.83	59.68	357.081	
19,255.69	6,987.00	1,395.00	1,378.32	196.31	13.07	-4.15	2,191.92	-8,469.43	21,365.27	21,305.52	59.75	357.561	
19,300.00	6,987.00	1,395.00	1,378.32	197.01	13.07	-4.15	2,191.92	-8,469.43	21,408.06	21,348.25	59.81	357.942	
19,400.00	6,987.00	1,395.00	1,378.32	198.59	13.07	-4.15	2,191.92	-8,469.43	21,504.64	21,444.70	59.93	358.802	
19,468.80	6,987.00	1,395.00	1,378.32	199.49	13.07	-4.15	2,191.92	-8,469.43	21,571.11	21,508.67	62.43	345.499	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	-71.66	2,645.39	-7,979.06	8,406.18				
100.00	100.00	1,690.00	1,571.11	0.25	9.49	-74.90	2,153.34	-7,977.95	8,396.72	8,387.11	9.61	873.493	
200.00	200.00	1,722.00	1,597.57	0.61	9.78	-75.02	2,135.34	-7,977.97	8,379.40	8,369.26	10.14	826.198	
300.00	300.00	1,831.55	1,688.68	0.97	10.78	-75.42	2,074.51	-7,977.97	8,362.61	8,351.17	11.44	731.169	
400.00	400.00	1,881.00	1,729.73	1.33	11.27	-75.61	2,046.94	-7,977.99	8,346.09	8,333.84	12.25	681.183	
500.00	500.00	1,901.66	1,747.04	1.68	11.44	-75.69	2,035.67	-7,978.08	8,330.46	8,317.68	12.78	651.956	
600.00	600.00	1,945.00	1,783.49	2.04	11.83	-75.84	2,012.22	-7,978.40	8,315.64	8,302.13	13.52	615.263	
700.00	700.00	2,009.00	1,837.11	2.40	12.46	-76.08	1,977.29	-7,979.13	8,301.37	8,286.88	14.49	572.723	
800.00	799.98	2,166.00	1,968.29	2.76	13.97	-70.58	1,891.06	-7,981.16	8,287.04	8,270.70	16.34	507.236	
900.00	899.84	2,198.00	1,994.84	3.12	14.29	-71.01	1,873.20	-7,981.54	8,271.43	8,254.41	17.03	485.826	
1,000.00	999.45	2,325.00	2,099.84	3.48	15.52	-71.87	1,801.80	-7,983.69	8,255.60	8,237.00	18.60	443.735	
1,100.00	1,098.70	2,435.34	2,192.54	3.85	16.53	-72.69	1,741.96	-7,984.10	8,238.53	8,218.55	19.98	412.426	
1,153.80	1,151.90	2,484.00	2,233.63	4.04	16.99	-73.10	1,715.90	-7,983.89	8,228.83	8,208.20	20.63	398.813	
1,200.00	1,197.53	2,496.87	2,244.48	4.21	17.12	-73.16	1,708.97	-7,983.87	8,220.56	8,199.62	20.94	392.645	
1,300.00	1,296.27	2,626.21	2,353.55	4.59	18.35	-73.76	1,639.48	-7,983.31	8,202.82	8,180.29	22.53	364.154	
1,400.00	1,395.02	2,659.88	2,381.97	4.97	18.67	-73.91	1,621.42	-7,983.15	8,185.58	8,162.33	23.24	352.175	
1,500.00	1,493.77	2,923.98	2,603.26	5.36	21.24	-75.15	1,477.36	-7,979.72	8,167.85	8,141.70	26.15	312.337	
1,600.00	1,592.52	2,946.52	2,621.93	5.74	21.46	-75.26	1,464.74	-7,979.35	8,150.33	8,123.55	26.78	304.375	
1,700.00	1,691.27	3,065.05	2,722.86	6.14	22.50	-75.80	1,402.73	-7,976.24	8,133.26	8,105.05	28.20	288.395	
1,800.00	1,790.01	3,110.96	2,762.87	6.53	22.88	-75.99	1,380.29	-7,974.58	8,116.60	8,087.61	28.99	279.950	
1,900.00	1,888.76	3,134.71	2,783.77	6.92	23.07	-76.10	1,369.04	-7,973.81	8,100.89	8,071.29	29.60	273.645	
2,000.00	1,987.51	3,153.00	2,799.98	7.32	23.21	-76.17	1,360.58	-7,973.29	8,086.17	8,056.00	30.17	268.022	
2,100.00	2,086.26	3,195.43	2,837.81	7.72	23.54	-76.35	1,341.40	-7,972.31	8,072.36	8,041.45	30.91	261.143	
2,200.00	2,185.01	3,229.98	2,868.86	8.11	23.80	-76.49	1,326.25	-7,971.56	8,059.34	8,027.75	31.59	255.127	
2,300.00	2,283.75	3,247.00	2,884.26	8.51	23.92	-76.55	1,319.01	-7,971.27	8,047.31	8,015.18	32.14	250.402	
2,400.00	2,382.50	3,263.48	2,899.25	8.91	24.04	-76.62	1,312.19	-7,971.11	8,036.34	8,003.67	32.68	245.946	
2,500.00	2,481.25	3,279.00	2,913.47	9.31	24.15	-76.68	1,305.97	-7,971.07	8,026.46	7,993.25	33.20	241.726	
2,600.00	2,580.00	3,468.00	3,090.72	9.71	25.30	-77.33	1,240.64	-7,968.89	8,017.07	7,982.32	34.75	230.687	
2,700.00	2,678.75	3,468.00	3,090.72	10.11	25.30	-77.33	1,240.64	-7,968.89	8,007.51	7,972.33	35.18	227.628	
2,800.00	2,777.49	3,500.00	3,121.31	10.52	25.47	-77.43	1,231.28	-7,968.49	7,999.03	7,963.26	35.76	223.661	
2,900.00	2,876.24	3,500.00	3,121.31	10.92	25.47	-77.43	1,231.28	-7,968.49	7,991.59	7,955.41	36.18	220.864	
3,000.00	2,974.99	3,531.00	3,151.15	11.32	25.62	-77.52	1,222.89	-7,968.58	7,985.21	7,948.46	36.75	217.286	
3,100.00	3,073.74	3,657.00	3,273.43	11.72	26.19	-77.87	1,192.49	-7,968.44	7,978.89	7,941.16	37.73	211.496	
3,200.00	3,172.49	3,688.00	3,303.67	12.13	26.31	-77.96	1,185.69	-7,968.34	7,973.09	7,934.83	38.27	208.360	
3,300.00	3,271.23	3,769.06	3,383.29	12.53	26.60	-78.15	1,170.49	-7,968.51	7,968.03	7,929.06	38.97	204.484	
3,400.00	3,369.98	3,887.74	3,500.51	12.93	26.96	-78.41	1,152.01	-7,968.02	7,962.76	7,923.03	39.74	200.376	
3,500.00	3,468.73	3,907.00	3,519.62	13.34	27.02	-78.45	1,149.59	-7,967.96	7,958.14	7,917.94	40.20	197.954	
3,600.00	3,567.48	3,938.00	3,550.44	13.74	27.09	-78.51	1,146.25	-7,968.11	7,954.48	7,913.80	40.68	195.528	
3,700.00	3,666.23	3,956.24	3,568.60	14.14	27.12	-78.54	1,144.61	-7,968.37	7,951.81	7,910.68	41.12	193.365	
3,800.00	3,764.97	3,995.72	3,607.97	14.55	27.19	-78.61	1,141.83	-7,969.22	7,950.09	7,908.49	41.60	191.128	
3,900.00	3,863.72	4,082.11	3,694.26	14.95	27.30	-78.73	1,138.08	-7,971.15	7,948.83	7,906.71	42.12	188.740	
4,000.00	3,962.47	4,181.98	3,794.02	15.36	27.43	-78.87	1,134.12	-7,973.37	7,947.64	7,904.98	42.65	186.326	
4,100.00	4,061.22	4,281.86	3,893.81	15.76	27.56	-79.01	1,130.21	-7,975.57	7,946.47	7,903.28	43.19	183.973	
4,200.00	4,159.97	4,381.77	3,993.61	16.17	27.68	-79.15	1,126.35	-7,977.74	7,945.33	7,901.60	43.73	181.680	
4,300.00	4,258.71	4,481.69	4,093.44	16.57	27.81	-79.29	1,122.53	-7,979.88	7,944.21	7,899.94	44.27	179.443	
4,400.00	4,357.46	4,581.63	4,193.29	16.98	27.94	-79.43	1,118.76	-7,981.99	7,943.12	7,898.31	44.81	177.262	
4,500.00	4,456.21	4,681.59	4,293.16	17.38	28.07	-79.57	1,115.04	-7,984.08	7,942.06	7,896.71	45.35	175.134	
4,600.00	4,554.96	4,781.57	4,393.05	17.79	28.20	-79.71	1,111.37	-7,986.14	7,941.01	7,895.13	45.89	173.057	
4,700.00	4,653.71	4,881.57	4,492.96	18.19	28.33	-79.85	1,107.74	-7,988.18	7,939.99	7,893.57	46.42	171.029	
4,800.00	4,752.45	4,981.59	4,592.89	18.60	28.46	-79.99	1,104.16	-7,990.19	7,939.00	7,892.03	46.96	169.048	
4,900.00	4,851.20	5,081.63	4,692.85	19.00	28.59	-80.12	1,100.62	-7,992.17	7,938.02	7,890.52	47.50	167.113	
5,000.00	4,949.95	5,181.68	4,792.82	19.41	28.72	-80.26	1,097.13	-7,994.13	7,937.07	7,889.03	48.04	165.223	

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 #692H
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 #692H	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			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	5,048.70	5,281.76	4,892.82	19.81	28.85	-80.40	1,093.69	-7,996.06	7,936.14	7,887.57	48.58	163.375		
5,200.00	5,147.45	5,381.85	4,992.84	20.22	28.98	-80.54	1,090.30	-7,997.96	7,935.24	7,886.12	49.11	161.567		
5,300.00	5,246.19	5,481.96	5,092.87	20.62	29.10	-80.67	1,086.95	-7,999.84	7,934.35	7,884.70	49.65	159.799		
5,400.00	5,344.94	5,582.09	5,192.93	21.03	29.23	-80.81	1,083.65	-8,001.69	7,933.49	7,883.30	50.19	158.069		
5,455.76	5,400.00	5,637.92	5,248.73	21.25	29.31	-80.89	1,081.84	-8,002.71	7,933.02	7,882.53	50.49	157.121		
5,500.00	5,443.72	5,682.27	5,293.04	21.43	29.36	-80.94	1,080.40	-8,003.52	7,932.67	7,881.95	50.73	156.380		
5,600.00	5,542.71	5,782.73	5,393.44	21.83	29.49	-81.06	1,077.19	-8,005.32	7,932.10	7,880.85	51.26	154.752		
5,700.00	5,641.93	5,883.50	5,494.14	22.22	29.62	-81.17	1,074.01	-8,007.10	7,931.82	7,880.04	51.78	153.190		
5,756.24	5,697.82	5,940.29	5,550.90	22.43	29.70	-81.23	1,072.24	-8,008.09	7,931.78	7,879.71	52.07	152.342	CC	
5,800.00	5,741.36	5,984.54	5,595.12	22.60	29.75	-81.27	1,070.88	-8,008.86	7,931.80	7,879.51	52.29	151.690		
5,900.00	5,840.96	6,085.82	5,696.34	22.97	29.88	-81.36	1,067.78	-8,010.60	7,932.04	7,879.25	52.79	150.250	ES	
6,000.00	5,940.70	6,187.31	5,797.76	23.33	30.02	-81.44	1,064.73	-8,012.31	7,932.54	7,879.25	53.29	148.867		
6,100.00	6,040.55	6,288.96	5,899.36	23.68	30.15	-81.51	1,061.72	-8,014.00	7,933.28	7,879.51	53.77	147.538		
6,200.00	6,140.48	6,390.76	6,001.10	24.02	30.28	-81.57	1,058.76	-8,015.66	7,934.26	7,880.02	54.25	146.262		
6,300.00	6,240.45	6,492.66	6,102.94	24.35	30.41	-81.62	1,055.84	-8,017.30	7,935.48	7,880.77	54.71	145.035		
6,408.05	6,348.50	6,602.84	6,213.06	24.69	30.55	98.34	1,052.75	-8,019.03	7,937.05	7,881.86	55.20	143.799		
6,450.00	6,390.43	6,645.56	6,255.77	24.82	30.61	-154.47	1,051.56	-8,019.70	7,938.89	7,883.51	55.38	143.346		
6,500.00	6,440.15	6,696.14	6,306.32	24.99	30.67	-150.65	1,050.17	-8,020.48	7,944.12	7,888.50	55.62	142.834		
6,550.00	6,489.32	6,746.05	6,356.21	25.16	30.74	-149.25	1,048.81	-8,021.24	7,952.63	7,896.77	55.86	142.365		
6,600.00	6,537.64	6,794.99	6,405.12	25.34	30.80	-148.23	1,047.48	-8,021.99	7,964.39	7,908.28	56.11	141.946		
6,650.00	6,584.80	6,842.66	6,452.77	25.52	30.86	-147.25	1,046.20	-8,022.71	7,979.31	7,922.95	56.36	141.579		
6,700.00	6,630.52	6,888.76	6,498.85	25.71	30.92	-146.17	1,044.98	-8,023.39	7,997.32	7,940.71	56.61	141.267		
6,750.00	6,674.51	6,933.02	6,543.09	25.89	30.98	-144.94	1,043.81	-8,024.05	8,018.32	7,961.45	56.86	141.011		
6,800.00	6,716.50	6,975.16	6,585.21	26.08	31.04	-143.51	1,042.71	-8,024.67	8,042.17	7,985.06	57.11	140.812		
6,850.00	6,756.24	7,014.92	6,624.95	26.28	31.09	-141.84	1,041.67	-8,025.25	8,068.76	8,011.40	57.36	140.669		
6,900.00	6,793.47	7,052.07	6,662.08	26.48	31.13	-139.86	1,040.72	-8,025.78	8,097.91	8,040.31	57.60	140.583		
6,950.00	6,827.97	7,086.36	6,696.36	26.69	31.18	-137.53	1,039.84	-8,026.28	8,129.47	8,071.63	57.84	140.551	SF	
7,000.00	6,859.53	7,117.59	6,727.58	26.91	31.22	-134.77	1,039.04	-8,026.72	8,163.25	8,105.17	58.07	140.572		
7,050.00	6,887.94	7,145.57	6,755.54	27.14	31.26	-131.52	1,038.33	-8,027.12	8,199.04	8,140.74	58.30	140.644		
7,100.00	6,913.05	7,170.12	6,780.08	27.38	31.29	-127.70	1,037.71	-8,027.47	8,236.64	8,178.13	58.51	140.764		
7,150.00	6,934.68	7,191.08	6,801.04	27.64	31.31	-123.20	1,037.19	-8,027.76	8,275.82	8,217.10	58.72	140.929		
7,200.00	6,952.71	7,208.33	6,818.28	27.92	31.34	-117.97	1,036.76	-8,028.01	8,316.35	8,257.43	58.92	141.136		
7,250.00	6,967.02	7,221.77	6,831.71	28.21	31.35	-111.95	1,036.42	-8,028.19	8,357.98	8,298.87	59.12	141.381		
7,300.00	6,977.54	7,231.29	6,841.23	28.52	31.37	-105.17	1,036.18	-8,028.33	8,400.46	8,341.16	59.30	141.660		
7,350.00	6,984.18	7,236.85	6,846.79	28.83	31.37	-97.75	1,036.05	-8,028.40	8,443.53	8,384.06	59.47	141.968		
7,400.00	6,986.92	7,238.40	6,848.34	29.16	31.38	-89.93	1,036.01	-8,028.43	8,486.92	8,427.28	59.64	142.301		
7,409.89	6,987.00	7,238.23	6,848.17	29.23	31.38	-88.36	1,036.01	-8,028.42	8,495.52	8,435.85	59.67	142.369		
7,500.00	6,987.00	7,235.97	6,845.91	29.85	31.37	-88.33	1,036.07	-8,028.39	8,573.98	8,514.02	59.96	142.987		
7,600.00	6,987.00	7,233.46	6,843.40	30.61	31.37	-88.30	1,036.13	-8,028.36	8,661.31	8,601.02	60.29	143.656		
7,700.00	6,987.00	7,230.95	6,840.89	31.41	31.37	-88.26	1,036.19	-8,028.32	8,748.92	8,688.29	60.63	144.310		
7,800.00	6,987.00	7,228.44	6,838.38	32.27	31.36	-88.23	1,036.25	-8,028.29	8,836.79	8,775.82	60.96	144.951		
7,900.00	6,987.00	7,225.93	6,835.87	33.17	31.36	-88.20	1,036.32	-8,028.25	8,924.91	8,863.60	61.31	145.580		
8,000.00	6,987.00	7,223.41	6,833.35	34.12	31.36	-88.16	1,036.38	-8,028.22	9,013.28	8,951.63	61.65	146.200		
8,100.00	6,987.00	7,220.89	6,830.83	35.10	31.35	-88.13	1,036.44	-8,028.18	9,101.89	9,039.89	62.00	146.812		
8,200.00	6,987.00	7,218.36	6,828.31	36.12	31.35	-88.09	1,036.51	-8,028.15	9,190.73	9,128.39	62.34	147.418		
8,300.00	6,987.00	7,215.84	6,825.78	37.17	31.35	-88.06	1,036.57	-8,028.11	9,279.80	9,217.11	62.69	148.019		
8,314.89	6,987.00	7,215.46	6,825.41	37.33	31.35	-88.05	1,036.58	-8,028.11	9,293.08	9,230.34	62.75	148.109		
8,400.00	6,987.00	7,213.35	6,823.30	38.25	31.34	-87.76	1,036.63	-8,028.08	9,370.18	9,307.15	63.03	148.669		
8,500.00	6,987.00	7,210.97	6,820.92	39.35	31.34	-87.27	1,036.69	-8,028.04	9,463.43	9,400.12	63.32	149.463		
8,600.00	6,987.00	7,208.72	6,818.67	40.45	31.34	-86.51	1,036.75	-8,028.01	9,559.08	9,495.52	63.55	150.409		
8,700.00	6,987.00	7,206.61	6,816.55	41.56	31.33	-85.17	1,036.80	-8,027.98	9,656.58	9,592.84	63.74	151.503		
8,800.00	6,987.00	7,204.64	6,814.59	42.66	31.33	-82.22	1,036.85	-8,027.95	9,755.41	9,691.54	63.87	152.741		

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 #692H
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 #692H	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)			
8,900.00	6,987.00	7,202.82	6,812.77	43.75	31.33	-70.57	1,036.89	-8,027.93	9,855.05	9,791.11	63.94	154.119		
9,000.00	6,987.00	7,201.18	6,811.13	44.83	31.33	58.00	1,036.93	-8,027.91	9,955.02	9,891.05	63.97	155.631		
9,071.74	6,987.00	7,200.10	6,810.05	45.59	31.33	78.12	1,036.96	-8,027.89	10,026.65	9,962.70	63.95	156.793		
9,100.00	6,987.00	7,199.70	6,809.65	45.89	31.33	78.09	1,036.97	-8,027.88	10,054.83	9,990.89	63.94	157.263		
9,200.00	6,987.00	7,198.26	6,808.21	46.97	31.32	77.98	1,037.01	-8,027.86	10,154.54	10,090.64	63.90	158.923		
9,300.00	6,987.00	7,196.83	6,806.78	48.07	31.32	77.88	1,037.04	-8,027.84	10,254.26	10,190.40	63.86	160.580		
9,400.00	6,987.00	7,195.39	6,805.34	49.20	31.32	77.77	1,037.08	-8,027.82	10,353.98	10,290.16	63.82	162.234		
9,500.00	6,987.00	7,193.95	6,803.91	50.36	31.32	77.67	1,037.12	-8,027.80	10,453.70	10,389.92	63.79	163.885		
9,600.00	6,987.00	7,192.51	6,802.47	51.54	31.32	77.56	1,037.15	-8,027.78	10,553.44	10,489.68	63.75	165.533		
9,700.00	6,987.00	7,191.08	6,801.03	52.74	31.31	77.46	1,037.19	-8,027.76	10,653.17	10,589.45	63.72	167.178		
9,800.00	6,987.00	7,189.64	6,799.59	53.96	31.31	77.35	1,037.22	-8,027.74	10,752.91	10,689.22	63.69	168.820		
9,900.00	6,987.00	7,188.20	6,798.15	55.21	31.31	77.25	1,037.26	-8,027.72	10,852.66	10,788.99	63.67	170.458		
10,000.00	6,987.00	7,186.75	6,796.71	56.47	31.31	77.14	1,037.30	-8,027.70	10,952.41	10,888.77	63.64	172.093		
10,100.00	6,987.00	7,185.31	6,795.27	57.75	31.31	77.04	1,037.33	-8,027.68	11,052.17	10,988.55	63.62	173.725		
10,200.00	6,987.00	7,183.87	6,793.83	59.04	31.31	76.93	1,037.37	-8,027.66	11,151.93	11,088.33	63.60	175.353		
10,300.00	6,987.00	7,182.43	6,792.39	60.35	31.30	76.83	1,037.40	-8,027.64	11,251.69	11,188.11	63.58	176.978		
10,400.00	6,987.00	7,180.98	6,790.94	61.67	31.30	76.72	1,037.44	-8,027.62	11,351.46	11,287.90	63.56	178.599		
10,500.00	6,987.00	7,179.54	6,789.50	63.01	31.30	76.62	1,037.48	-8,027.60	11,451.23	11,387.69	63.54	180.217		
10,600.00	6,987.00	7,178.09	6,788.05	64.36	31.30	76.51	1,037.51	-8,027.58	11,551.00	11,487.48	63.53	181.831		
10,700.00	6,987.00	7,176.65	6,786.61	65.72	31.30	76.41	1,037.55	-8,027.56	11,650.78	11,587.27	63.51	183.441		
10,800.00	6,987.00	7,175.20	6,785.16	67.09	31.29	76.30	1,037.59	-8,027.54	11,750.56	11,687.06	63.50	185.048		
10,900.00	6,987.00	7,173.75	6,783.71	68.47	31.29	76.20	1,037.62	-8,027.52	11,850.35	11,786.86	63.49	186.650		
11,000.00	6,987.00	7,172.30	6,782.26	69.86	31.29	76.09	1,037.66	-8,027.50	11,950.14	11,886.66	63.48	188.249		
11,100.00	6,987.00	7,170.85	6,780.82	71.26	31.29	75.99	1,037.69	-8,027.48	12,049.93	11,986.46	63.47	189.844		
11,200.00	6,987.00	7,169.40	6,779.37	72.67	31.29	75.88	1,037.73	-8,027.46	12,149.73	12,086.26	63.47	191.434		
11,300.00	6,987.00	7,167.95	6,777.91	74.09	31.28	75.78	1,037.77	-8,027.44	12,249.52	12,186.06	63.46	193.021		
11,400.00	6,987.00	7,166.50	6,776.46	75.51	31.28	75.67	1,037.80	-8,027.42	12,349.33	12,285.87	63.46	194.604		
11,500.00	6,987.00	7,165.04	6,775.01	76.94	31.28	75.57	1,037.84	-8,027.40	12,449.13	12,385.67	63.46	196.182		
11,600.00	6,987.00	7,163.59	6,773.56	78.38	31.28	75.46	1,037.88	-8,027.38	12,548.94	12,485.48	63.46	197.756		
11,700.00	6,987.00	7,162.14	6,772.10	79.82	31.28	75.36	1,037.91	-8,027.36	12,648.75	12,585.29	63.46	199.326		
11,800.00	6,987.00	7,160.68	6,770.65	81.27	31.28	75.25	1,037.95	-8,027.34	12,748.56	12,685.10	63.46	200.892		
11,900.00	6,987.00	7,159.22	6,769.19	82.73	31.27	75.15	1,037.99	-8,027.31	12,848.38	12,784.92	63.46	202.453		
12,000.00	6,987.00	7,157.77	6,767.74	84.19	31.27	75.04	1,038.02	-8,027.29	12,948.20	12,884.73	63.47	204.010		
12,100.00	6,987.00	7,156.31	6,766.28	85.66	31.27	74.94	1,038.06	-8,027.27	13,048.02	12,984.55	63.47	205.563		
12,200.00	6,987.00	7,154.85	6,764.82	87.13	31.27	74.83	1,038.10	-8,027.25	13,147.84	13,084.36	63.48	207.111		
12,300.00	6,987.00	7,153.39	6,763.36	88.61	31.27	74.73	1,038.13	-8,027.23	13,247.67	13,184.18	63.49	208.654		
12,400.00	6,987.00	7,151.93	6,761.90	90.09	31.26	74.62	1,038.17	-8,027.21	13,347.50	13,284.00	63.50	210.193		
12,500.00	6,987.00	7,150.47	6,760.44	91.57	31.26	74.52	1,038.21	-8,027.19	13,447.33	13,383.82	63.51	211.727		
12,600.00	6,987.00	7,149.01	6,758.98	93.06	31.26	74.42	1,038.25	-8,027.17	13,547.17	13,483.64	63.53	213.257		
12,700.00	6,987.00	7,147.54	6,757.52	94.55	31.26	74.31	1,038.28	-8,027.15	13,647.00	13,583.46	63.54	214.782		
12,800.00	6,987.00	7,146.08	6,756.06	96.05	31.26	74.21	1,038.32	-8,027.13	13,746.84	13,683.29	63.55	216.302		
12,900.00	6,987.00	7,144.62	6,754.59	97.55	31.25	74.10	1,038.36	-8,027.11	13,846.68	13,783.11	63.57	217.818		
13,000.00	6,987.00	7,143.15	6,753.13	99.05	31.25	74.00	1,038.39	-8,027.09	13,946.52	13,882.94	63.59	219.328		
13,100.00	6,987.00	7,141.69	6,751.66	100.56	31.25	73.89	1,038.43	-8,027.07	14,046.37	13,982.76	63.61	220.834		
13,200.00	6,987.00	7,140.22	6,750.20	102.07	31.25	73.79	1,038.47	-8,027.05	14,146.21	14,082.59	63.63	222.335		
13,300.00	6,987.00	7,138.75	6,748.73	103.58	31.25	73.69	1,038.50	-8,027.02	14,246.06	14,182.42	63.65	223.831		
13,400.00	6,987.00	7,137.28	6,747.26	105.09	31.25	73.58	1,038.54	-8,027.00	14,345.91	14,282.25	63.67	225.322		
13,500.00	6,987.00	7,135.81	6,745.79	106.61	31.24	73.48	1,038.58	-8,026.98	14,445.77	14,382.08	63.69	226.808		
13,600.00	6,987.00	7,134.34	6,744.32	108.13	31.24	73.37	1,038.62	-8,026.96	14,545.62	14,481.91	63.72	228.290		
13,700.00	6,987.00	7,132.87	6,742.85	109.65	31.24	73.27	1,038.65	-8,026.94	14,645.48	14,581.74	63.74	229.766		
13,800.00	6,987.00	7,131.40	6,741.38	111.18	31.24	73.17	1,038.69	-8,026.92	14,745.34	14,681.57	63.77	231.237		
13,900.00	6,987.00	7,129.93	6,739.91	112.71	31.24	73.06	1,038.73	-8,026.90	14,845.20	14,781.40	63.79	232.703		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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)	
14,000.00	6,987.00	7,128.46	6,738.44	114.23	31.23	72.96	1,038.77	-8,026.88	14,945.06	14,881.23	63.82 234.164
14,100.00	6,987.00	7,126.98	6,736.97	115.77	31.23	72.85	1,038.80	-8,026.86	15,044.92	14,981.07	63.85 235.620
14,200.00	6,987.00	7,125.51	6,735.49	117.30	31.23	72.75	1,038.84	-8,026.84	15,144.79	15,080.90	63.88 237.070
14,300.00	6,987.00	7,124.03	6,734.02	118.83	31.23	72.65	1,038.88	-8,026.82	15,244.65	15,180.74	63.91 238.516
14,400.00	6,987.00	7,122.56	6,732.54	120.37	31.23	72.54	1,038.91	-8,026.79	15,344.52	15,280.57	63.95 239.956
14,500.00	6,987.00	7,121.08	6,731.06	121.91	31.22	72.44	1,038.95	-8,026.77	15,444.39	15,380.41	63.98 241.391
14,600.00	6,987.00	7,119.60	6,729.59	123.45	31.22	72.34	1,038.99	-8,026.75	15,544.26	15,480.25	64.02 242.821
14,700.00	6,987.00	7,118.12	6,728.11	124.99	31.22	72.23	1,039.03	-8,026.73	15,644.14	15,580.08	64.05 244.245
14,800.00	6,987.00	7,116.64	6,726.63	126.53	31.22	72.13	1,039.06	-8,026.71	15,744.01	15,679.92	64.09 245.665
14,900.00	6,987.00	7,115.16	6,725.15	128.08	31.22	72.03	1,039.10	-8,026.69	15,843.89	15,779.76	64.12 247.079
15,000.00	6,987.00	7,113.68	6,723.67	129.63	31.21	71.92	1,039.14	-8,026.67	15,943.76	15,879.60	64.16 248.487
15,100.00	6,987.00	7,112.20	6,722.19	131.17	31.21	71.82	1,039.18	-8,026.65	16,043.64	15,979.44	64.20 249.890
15,200.00	6,987.00	7,110.71	6,720.70	132.72	31.21	71.72	1,039.22	-8,026.63	16,143.52	16,079.28	64.24 251.288
15,300.00	6,987.00	7,109.23	6,719.22	134.27	31.21	71.61	1,039.25	-8,026.60	16,243.40	16,179.12	64.28 252.681
15,400.00	6,987.00	7,107.75	6,717.74	135.83	31.21	71.51	1,039.29	-8,026.58	16,343.29	16,278.96	64.33 254.068
15,500.00	6,987.00	7,106.26	6,716.25	137.38	31.20	71.41	1,039.33	-8,026.56	16,443.17	16,378.80	64.37 255.450
15,600.00	6,987.00	7,104.77	6,714.77	138.93	31.20	71.30	1,039.37	-8,026.54	16,543.06	16,478.64	64.41 256.826
15,700.00	6,987.00	7,103.29	6,713.28	140.49	31.20	71.20	1,039.40	-8,026.52	16,642.94	16,578.48	64.46 258.197
15,800.00	6,987.00	7,101.80	6,711.79	142.04	31.20	71.10	1,039.44	-8,026.50	16,742.83	16,678.33	64.50 259.562
15,900.00	6,987.00	7,100.31	6,710.30	143.60	31.20	70.99	1,039.48	-8,026.48	16,842.72	16,778.17	64.55 260.922
16,000.00	6,987.00	7,098.82	6,708.82	145.16	31.20	70.89	1,039.52	-8,026.46	16,942.61	16,878.01	64.60 262.277
16,100.00	6,987.00	7,097.33	6,707.33	146.72	31.19	70.79	1,039.56	-8,026.43	17,042.50	16,977.85	64.65 263.626
16,200.00	6,987.00	7,095.84	6,705.84	148.28	31.19	70.69	1,039.59	-8,026.41	17,142.39	17,077.70	64.70 264.970
16,300.00	6,987.00	7,094.35	6,704.34	149.84	31.19	70.58	1,039.63	-8,026.39	17,242.29	17,177.54	64.75 266.308
16,400.00	6,987.00	7,092.85	6,702.85	151.40	31.19	70.48	1,039.67	-8,026.37	17,342.18	17,277.38	64.80 267.640
16,500.00	6,987.00	7,091.36	6,701.36	152.97	31.19	70.38	1,039.71	-8,026.35	17,442.08	17,377.23	64.85 268.967
16,600.00	6,987.00	7,089.87	6,699.86	154.53	31.18	70.28	1,039.75	-8,026.33	17,541.97	17,477.07	64.90 270.289
16,700.00	6,987.00	7,088.37	6,698.37	156.10	31.18	70.17	1,039.78	-8,026.31	17,641.87	17,576.92	64.95 271.605
16,800.00	6,987.00	7,086.87	6,696.87	157.66	31.18	70.07	1,039.82	-8,026.28	17,741.77	17,676.76	65.01 272.916
16,900.00	6,987.00	7,085.38	6,695.38	159.23	31.18	69.97	1,039.86	-8,026.26	17,841.67	17,776.61	65.06 274.221
17,000.00	6,987.00	7,083.88	6,693.88	160.80	31.18	69.87	1,039.90	-8,026.24	17,941.57	17,876.45	65.12 275.520
17,100.00	6,987.00	7,082.38	6,692.38	162.36	31.17	69.77	1,039.94	-8,026.22	18,041.47	17,976.30	65.18 276.814
17,200.00	6,987.00	7,080.88	6,690.88	163.93	31.17	69.66	1,039.98	-8,026.20	18,141.38	18,076.14	65.23 278.103
17,300.00	6,987.00	7,079.38	6,689.38	165.50	31.17	69.56	1,040.01	-8,026.18	18,241.28	18,175.99	65.29 279.386
17,400.00	6,987.00	7,077.88	6,687.88	167.07	31.17	69.46	1,040.05	-8,026.16	18,341.18	18,275.83	65.35 280.663
17,500.00	6,987.00	7,076.38	6,686.38	168.64	31.17	69.36	1,040.09	-8,026.13	18,441.09	18,375.68	65.41 281.935
17,600.00	6,987.00	7,074.87	6,684.88	170.21	31.16	69.26	1,040.13	-8,026.11	18,541.00	18,475.53	65.47 283.201
17,700.00	6,987.00	7,073.37	6,683.38	171.78	31.16	69.15	1,040.17	-8,026.09	18,640.90	18,575.37	65.53 284.462
17,800.00	6,987.00	7,071.86	6,681.87	173.36	31.16	69.05	1,040.21	-8,026.07	18,740.81	18,675.22	65.59 285.718
17,900.00	6,987.00	7,070.36	6,680.37	174.93	31.16	68.95	1,040.25	-8,026.05	18,840.72	18,775.07	65.65 286.968
18,000.00	6,987.00	7,068.85	6,678.86	176.50	31.16	68.85	1,040.28	-8,026.03	18,940.63	18,874.91	65.72 288.212
18,100.00	6,987.00	7,067.35	6,677.35	178.08	31.15	68.75	1,040.32	-8,026.00	19,040.54	18,974.76	65.78 289.451
18,200.00	6,987.00	7,065.84	6,675.85	179.65	31.15	68.65	1,040.36	-8,025.98	19,140.45	19,074.61	65.85 290.684
18,300.00	6,987.00	7,064.33	6,674.34	181.23	31.15	68.55	1,040.40	-8,025.96	19,240.37	19,174.46	65.91 291.912
18,400.00	6,987.00	7,062.82	6,672.83	182.80	31.15	68.44	1,040.44	-8,025.94	19,340.28	19,274.30	65.98 293.134
18,500.00	6,987.00	7,061.31	6,671.32	184.38	31.15	68.34	1,040.48	-8,025.92	19,440.19	19,374.15	66.04 294.351
18,600.00	6,987.00	7,059.80	6,669.81	185.96	31.14	68.24	1,040.52	-8,025.90	19,540.11	19,474.00	66.11 295.562
18,700.00	6,987.00	7,058.28	6,668.30	187.53	31.14	68.14	1,040.56	-8,025.87	19,640.02	19,573.84	66.18 296.768
18,800.00	6,987.00	7,056.77	6,666.78	189.11	31.14	68.04	1,040.59	-8,025.85	19,739.94	19,673.69	66.25 297.969
18,900.00	6,987.00	7,055.26	6,665.27	190.69	31.14	67.94	1,040.63	-8,025.83	19,839.86	19,773.54	66.32 299.164
19,000.00	6,987.00	7,053.74	6,663.76	192.27	31.14	67.84	1,040.67	-8,025.81	19,939.78	19,873.39	66.39 300.353
19,100.00	6,987.00	7,052.23	6,662.24	193.85	31.13	67.74	1,040.71	-8,025.79	20,039.69	19,973.24	66.46 301.537

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 #692H
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 #692H	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		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	Warning	
19,200.00	6,987.00	7,050.71	6,660.73	195.43	31.13	67.64	1,040.75	-8,025.76	20,139.61	20,073.08	66.53	302.716		
19,255.69	6,987.00	7,049.87	6,659.88	196.31	31.13	67.58	1,040.77	-8,025.75	20,195.26	20,128.69	66.57	303.370		
19,300.00	6,987.00	7,049.19	6,659.21	197.01	31.13	67.54	1,040.79	-8,025.74	20,239.53	20,172.93	66.60	303.889		
19,400.00	6,987.00	7,047.67	6,657.69	198.59	31.13	67.44	1,040.83	-8,025.72	20,339.45	20,272.78	66.67	305.057		
19,468.80	6,987.00	7,046.63	6,656.65	199.49	31.13	67.37	1,040.85	-8,025.71	20,408.20	20,337.01	71.19	286.655		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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												Rule Assigned:	
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	-102.84	-1,091.43	-4,788.05	4,912.15				
100.00	100.00	0.00	0.00	0.25	0.00	-102.84	-1,091.43	-4,788.05	4,910.89	4,910.64	0.25	N/A	
137.88	137.88	25.88	25.88	0.39	0.48	-102.84	-1,091.43	-4,788.05	4,910.87	4,910.01	0.87	5,675.732	
200.00	200.00	88.00	88.00	0.61	1.63	-102.84	-1,091.43	-4,788.05	4,910.87	4,908.64	2.24	2,196.146	
286.67	286.67	174.43	174.42	0.92	3.22	-102.84	-1,091.27	-4,788.05	4,910.84	4,906.69	4.14	1,184.923	
300.00	300.00	186.96	186.96	0.97	3.46	-102.84	-1,091.28	-4,788.05	4,910.84	4,906.41	4.42	1,110.057	
400.00	400.00	288.01	288.00	1.33	5.32	-102.84	-1,091.43	-4,788.05	4,910.87	4,904.22	6.65	738.447	
480.54	480.54	368.52	368.52	1.62	6.81	-102.84	-1,091.17	-4,788.05	4,910.81	4,902.39	8.43	582.722 CC	
500.00	500.00	387.26	387.25	1.68	7.16	-102.84	-1,091.18	-4,788.05	4,910.81	4,901.97	8.84	555.309	
600.00	600.00	483.50	483.49	2.04	8.94	-102.84	-1,091.41	-4,788.05	4,910.87	4,899.89	10.98	447.215	
700.00	700.00	588.02	588.00	2.40	10.87	-102.84	-1,091.43	-4,788.05	4,910.87	4,897.60	13.27	370.032	
800.00	799.98	688.00	687.98	2.76	12.72	-96.47	-1,091.43	-4,788.05	4,911.07	4,895.59	15.48	317.304	
900.00	899.84	786.43	786.41	3.12	14.54	-96.51	-1,090.98	-4,788.05	4,911.56	4,893.91	17.65	278.202	
1,000.00	999.45	883.98	883.96	3.48	16.34	-96.59	-1,091.20	-4,788.05	4,912.61	4,892.79	19.82	247.896	
1,100.00	1,098.70	986.74	986.70	3.85	18.28	-96.71	-1,091.43	-4,788.05	4,914.08	4,891.96	22.12	222.121	
1,153.80	1,151.90	1,039.94	1,039.90	4.04	19.32	-96.78	-1,091.43	-4,788.05	4,915.03	4,891.67	23.36	210.379	
1,200.00	1,197.53	1,085.56	1,085.53	4.21	20.22	-96.86	-1,091.43	-4,788.05	4,915.91	4,891.48	24.43	201.245	
1,300.00	1,296.27	1,184.31	1,184.27	4.59	22.15	-97.04	-1,091.43	-4,788.05	4,917.84	4,891.11	26.74	183.937	
1,400.00	1,395.02	1,281.14	1,281.10	4.97	24.04	-97.22	-1,090.98	-4,788.05	4,919.72	4,890.71	29.01	169.571	
1,500.00	1,493.77	1,377.81	1,377.77	5.36	25.93	-97.40	-1,091.22	-4,788.05	4,921.81	4,890.52	31.29	157.300	
1,600.00	1,592.52	1,480.59	1,480.52	5.74	27.95	-97.58	-1,091.43	-4,788.05	4,923.94	4,890.25	33.69	146.146	
1,700.00	1,691.27	1,579.34	1,579.27	6.14	29.89	-97.76	-1,091.43	-4,788.05	4,926.08	4,890.05	36.02	136.753	
1,800.00	1,790.01	1,678.09	1,678.01	6.53	31.83	-97.94	-1,091.43	-4,788.05	4,928.26	4,889.91	38.35	128.497	
1,900.00	1,888.76	1,773.73	1,773.64	6.92	33.70	-98.11	-1,090.37	-4,788.05	4,930.22	4,889.60	40.63	121.359 ES	
2,000.00	1,987.51	1,868.54	1,868.44	7.32	35.57	-98.28	-1,090.76	-4,788.05	4,932.60	4,889.72	42.88	115.028	
2,100.00	2,086.26	1,974.38	1,974.26	7.72	37.64	-98.48	-1,091.43	-4,788.05	4,935.10	4,889.75	45.36	108.806	
2,200.00	2,185.01	2,073.13	2,073.01	8.11	39.59	-98.66	-1,091.43	-4,788.05	4,937.48	4,889.79	47.70	103.520	
2,300.00	2,283.75	2,171.88	2,171.75	8.51	41.53	-98.84	-1,091.43	-4,788.05	4,939.91	4,889.88	50.04	98.728	
2,400.00	2,382.50	2,268.39	2,268.26	8.91	43.42	-99.01	-1,091.03	-4,788.05	4,942.28	4,889.95	52.33	94.441	
2,500.00	2,481.25	2,364.56	2,364.43	9.31	45.32	-99.19	-1,091.28	-4,788.05	4,944.88	4,890.26	54.62	90.529	
2,600.00	2,580.00	2,468.16	2,468.00	9.71	47.31	-99.37	-1,091.43	-4,788.05	4,947.49	4,890.48	57.02	86.770	
2,700.00	2,678.75	2,566.91	2,566.75	10.11	49.19	-99.55	-1,091.43	-4,788.05	4,950.12	4,890.82	59.30	83.478	
2,800.00	2,777.49	2,662.28	2,662.10	10.52	51.01	-99.71	-1,090.62	-4,788.05	4,952.57	4,891.05	61.51	80.510	
2,900.00	2,876.24	2,755.39	2,755.21	10.92	52.78	-99.89	-1,091.04	-4,788.05	4,955.41	4,891.72	63.69	77.808	
3,000.00	2,974.99	2,863.18	2,862.99	11.32	54.77	-100.08	-1,091.43	-4,788.05	4,958.29	4,892.21	66.07	75.041	
3,100.00	3,073.74	2,961.93	2,961.74	11.72	56.53	-100.26	-1,091.43	-4,788.05	4,961.11	4,892.87	68.24	72.705	
3,200.00	3,172.49	3,060.60	3,060.41	12.13	58.28	-100.44	-1,091.17	-4,788.05	4,963.90	4,893.50	70.40	70.514	
3,300.00	3,271.23	3,158.08	3,157.89	12.53	60.02	-100.61	-1,091.21	-4,788.05	4,966.83	4,894.29	72.53	68.475	
3,400.00	3,369.98	3,255.54	3,255.35	12.93	61.76	-100.79	-1,091.34	-4,788.05	4,969.83	4,895.16	74.67	66.554	
3,500.00	3,468.73	3,356.93	3,356.73	13.34	63.70	-100.97	-1,091.43	-4,788.05	4,972.87	4,895.85	77.02	64.565	
3,600.00	3,567.48	3,455.68	3,455.48	13.74	65.71	-101.14	-1,091.43	-4,788.05	4,975.94	4,896.51	79.43	62.648	
3,700.00	3,666.23	3,554.43	3,554.23	14.14	67.71	-101.32	-1,091.43	-4,788.05	4,979.05	4,897.21	81.83	60.843	
3,800.00	3,764.97	3,653.18	3,652.97	14.55	69.72	-101.50	-1,091.43	-4,788.05	4,982.20	4,897.96	84.24	59.143	
3,900.00	3,863.72	3,751.92	3,751.72	14.95	71.72	-101.67	-1,091.43	-4,788.05	4,985.41	4,898.76	86.65	57.537	
4,000.00	3,962.47	3,850.67	3,850.47	15.36	73.72	-101.85	-1,091.43	-4,788.05	4,988.66	4,899.61	89.05	56.019	
4,100.00	4,061.22	3,949.42	3,949.22	15.76	75.73	-102.02	-1,091.43	-4,788.05	4,991.97	4,900.51	91.46	54.581	
4,200.00	4,159.97	4,047.71	4,047.50	16.17	77.72	-102.18	-1,089.91	-4,788.05	4,994.83	4,900.97	93.86	53.217	
4,300.00	4,258.71	4,145.47	4,145.26	16.57	79.71	-102.35	-1,089.97	-4,788.05	4,998.24	4,901.99	96.24	51.933	
4,400.00	4,357.46	4,243.21	4,243.00	16.98	81.69	-102.53	-1,090.09	-4,788.05	5,001.72	4,903.09	98.63	50.711	
4,500.00	4,456.21	4,340.93	4,340.72	17.38	83.68	-102.70	-1,090.27	-4,788.05	5,005.26	4,904.25	101.02	49.549	
4,600.00	4,554.96	4,438.64	4,438.43	17.79	85.66	-102.88	-1,090.50	-4,788.05	5,008.88	4,905.48	103.40	48.441	
4,700.00	4,653.71	4,536.33	4,536.11	18.19	87.64	-103.05	-1,090.80	-4,788.05	5,012.56	4,906.78	105.79	47.383	

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 #692H
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 #692H	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		
4,800.00	4,752.45	4,634.00	4,633.78	18.60	89.62	-103.23	-1,091.15	-4,788.05	5,016.32	4,908.14	108.17	46.374		
4,900.00	4,851.20	4,739.58	4,739.20	19.00	91.82	-103.41	-1,091.43	-4,788.05	5,020.09	4,909.31	110.77	45.318		
5,000.00	4,949.95	4,838.32	4,837.95	19.41	93.97	-103.59	-1,091.43	-4,788.05	5,023.81	4,910.49	113.33	44.330		
5,100.00	5,048.70	4,937.07	4,936.70	19.81	96.13	-103.76	-1,091.43	-4,788.05	5,027.59	4,911.70	115.88	43.386		
5,200.00	5,147.45	5,035.82	5,035.45	20.22	98.28	-103.93	-1,091.43	-4,788.05	5,031.41	4,912.97	118.44	42.482		
5,300.00	5,246.19	5,134.57	5,134.19	20.62	100.43	-104.10	-1,091.43	-4,788.05	5,035.27	4,914.28	120.99	41.617		
5,400.00	5,344.94	5,233.32	5,232.94	21.03	102.58	-104.28	-1,091.43	-4,788.05	5,039.19	4,915.64	123.54	40.789		
5,455.76	5,400.00	5,288.37	5,288.00	21.25	103.78	-104.37	-1,091.43	-4,788.05	5,041.39	4,916.42	124.97	40.342		
5,500.00	5,443.72	5,332.09	5,331.72	21.43	104.73	-104.46	-1,091.43	-4,788.05	5,043.10	4,917.01	126.10	39.994		
5,600.00	5,542.71	5,431.08	5,430.71	21.83	106.89	-104.65	-1,091.43	-4,788.05	5,046.69	4,918.05	128.65	39.229		
5,700.00	5,641.93	5,530.31	5,529.93	22.22	109.05	-104.82	-1,091.43	-4,788.05	5,049.87	4,918.68	131.20	38.491		
5,800.00	5,741.36	5,629.73	5,629.36	22.60	111.22	-104.96	-1,091.43	-4,788.05	5,052.63	4,918.90	133.74	37.780		
5,900.00	5,840.96	5,729.33	5,728.96	22.97	113.39	-105.08	-1,091.43	-4,788.05	5,054.96	4,918.69	136.28	37.093		
6,000.00	5,940.70	5,829.07	5,828.70	23.33	115.56	-105.18	-1,091.43	-4,788.05	5,056.85	4,918.04	138.81	36.430		
6,100.00	6,040.55	5,928.92	5,928.55	23.68	117.74	-105.25	-1,091.43	-4,788.05	5,058.29	4,916.95	141.34	35.789		
6,200.00	6,140.48	6,028.00	6,027.37	24.02	119.90	-105.30	-1,091.43	-4,788.05	5,059.27	4,915.43	143.84	35.173		
6,300.00	6,240.45	6,028.00	6,027.37	24.35	119.90	-105.32	-1,091.43	-4,788.05	5,060.80	4,916.67	144.13	35.112		
6,408.05	6,348.50	6,028.00	6,027.37	24.69	119.90	74.65	-1,091.43	-4,788.05	5,064.16	4,919.79	144.37	35.078 SF		
6,450.00	6,390.43	6,028.00	6,027.37	24.82	119.90	-178.20	-1,091.43	-4,788.05	5,067.34	4,922.90	144.44	35.082		
6,500.00	6,440.15	6,028.00	6,027.37	24.99	119.90	-174.50	-1,091.43	-4,788.05	5,075.13	4,930.60	144.53	35.116		
6,550.00	6,489.32	6,028.00	6,027.37	25.16	119.90	-173.31	-1,091.43	-4,788.05	5,087.20	4,942.59	144.60	35.181		
6,600.00	6,537.64	6,028.00	6,027.37	25.34	119.90	-172.59	-1,091.43	-4,788.05	5,103.44	4,958.77	144.67	35.277		
6,650.00	6,584.80	6,028.00	6,027.37	25.52	119.90	-172.00	-1,091.43	-4,788.05	5,123.71	4,978.98	144.73	35.403		
6,700.00	6,630.52	6,028.00	6,027.37	25.71	119.90	-171.41	-1,091.43	-4,788.05	5,147.85	5,003.07	144.77	35.558		
6,750.00	6,674.51	6,028.00	6,027.37	25.89	119.90	-170.77	-1,091.43	-4,788.05	5,175.64	5,030.83	144.81	35.740		
6,800.00	6,716.50	6,028.00	6,027.37	26.08	119.90	-170.04	-1,091.43	-4,788.05	5,206.87	5,062.03	144.84	35.948		
6,850.00	6,756.24	6,028.00	6,027.37	26.28	119.90	-169.14	-1,091.43	-4,788.05	5,241.28	5,096.41	144.87	36.180		
6,900.00	6,793.47	6,028.00	6,027.37	26.48	119.90	-168.04	-1,091.43	-4,788.05	5,278.60	5,133.71	144.89	36.433		
6,950.00	6,827.97	6,028.00	6,027.37	26.69	119.90	-166.62	-1,091.43	-4,788.05	5,318.53	5,173.63	144.90	36.704		
7,000.00	6,859.53	6,028.00	6,027.37	26.91	119.90	-164.77	-1,091.43	-4,788.05	5,360.79	5,215.87	144.92	36.993		
7,050.00	6,887.94	6,028.00	6,027.37	27.14	119.90	-162.23	-1,091.43	-4,788.05	5,405.04	5,260.12	144.93	37.295		
7,100.00	6,913.05	6,028.00	6,027.37	27.38	119.90	-158.61	-1,091.43	-4,788.05	5,450.99	5,306.05	144.94	37.608		
7,150.00	6,934.68	6,028.00	6,027.37	27.64	119.90	-153.10	-1,091.43	-4,788.05	5,498.30	5,353.34	144.96	37.930		
7,200.00	6,952.71	6,028.00	6,027.37	27.92	119.90	-144.03	-1,091.43	-4,788.05	5,546.65	5,401.67	144.98	38.258		
7,250.00	6,967.02	6,028.00	6,027.37	28.21	119.90	-127.86	-1,091.43	-4,788.05	5,595.72	5,450.72	145.00	38.590		
7,300.00	6,977.54	6,028.00	6,027.37	28.52	119.90	-99.78	-1,091.43	-4,788.05	5,645.20	5,500.16	145.04	38.923		
7,350.00	6,984.18	6,028.00	6,027.37	28.83	119.90	-66.55	-1,091.43	-4,788.05	5,694.76	5,549.69	145.08	39.254		
7,400.00	6,986.92	6,028.00	6,027.37	29.16	119.90	-43.95	-1,091.43	-4,788.05	5,744.12	5,598.99	145.13	39.580		
7,409.89	6,987.00	6,028.00	6,027.37	29.23	119.90	-40.86	-1,091.43	-4,788.05	5,753.83	5,608.69	145.14	39.644		
7,500.00	6,987.00	6,028.00	6,027.37	29.85	119.90	-40.86	-1,091.43	-4,788.05	5,842.24	5,697.00	145.24	40.225		
7,600.00	6,987.00	6,028.00	6,027.37	30.61	119.90	-40.86	-1,091.43	-4,788.05	5,940.41	5,795.06	145.35	40.869		
7,700.00	6,987.00	6,028.00	6,027.37	31.41	119.90	-40.86	-1,091.43	-4,788.05	6,038.65	5,893.18	145.46	41.513		
7,800.00	6,987.00	6,028.00	6,027.37	32.27	119.90	-40.86	-1,091.43	-4,788.05	6,136.94	5,991.36	145.57	42.157		
7,900.00	6,987.00	6,028.00	6,027.37	33.17	119.90	-40.86	-1,091.43	-4,788.05	6,235.28	6,089.60	145.68	42.801		
8,000.00	6,987.00	6,028.00	6,027.37	34.12	119.90	-40.86	-1,091.43	-4,788.05	6,333.68	6,187.89	145.79	43.445		
8,100.00	6,987.00	6,028.00	6,027.37	35.10	119.90	-40.86	-1,091.43	-4,788.05	6,432.13	6,286.24	145.89	44.089		
8,200.00	6,987.00	6,028.00	6,027.37	36.12	119.90	-40.86	-1,091.43	-4,788.05	6,530.62	6,384.63	145.99	44.733		
8,300.00	6,987.00	6,028.00	6,027.37	37.17	119.90	-40.86	-1,091.43	-4,788.05	6,629.16	6,483.07	146.09	45.377		
8,314.89	6,987.00	6,028.00	6,027.37	37.33	119.90	-40.86	-1,091.43	-4,788.05	6,643.84	6,497.73	146.11	45.473		
8,400.00	6,987.00	6,028.00	6,027.37	38.25	119.90	-21.88	-1,091.43	-4,788.05	6,727.97	6,581.79	146.18	46.025		
8,500.00	6,987.00	6,028.00	6,027.37	39.35	119.90	8.64	-1,091.43	-4,788.05	6,827.15	6,680.91	146.24	46.685		
8,600.00	6,987.00	6,028.00	6,027.37	40.45	119.90	35.49	-1,091.43	-4,788.05	6,926.22	6,779.96	146.27	47.354		

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 #692H
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 #692H	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)				
8,700.00	6,987.00	6,028.00	6,027.37	41.56	119.90	51.98	-1,091.43	-4,788.05	7,024.72	6,878.46	146.27	48.027			
8,800.00	6,987.00	6,028.00	6,027.37	42.66	119.90	61.57	-1,091.43	-4,788.05	7,122.20	6,975.96	146.24	48.703			
8,900.00	6,987.00	6,028.00	6,027.37	43.75	119.90	67.50	-1,091.43	-4,788.05	7,218.24	7,072.05	146.19	49.377			
9,000.00	6,987.00	6,028.00	6,027.37	44.83	119.90	71.44	-1,091.43	-4,788.05	7,312.42	7,166.31	146.12	50.045			
9,071.74	6,987.00	6,028.00	6,027.37	45.59	119.90	73.51	-1,091.43	-4,788.05	7,378.64	7,232.59	146.05	50.520			
9,100.00	6,987.00	6,028.00	6,027.37	45.89	119.90	73.51	-1,091.43	-4,788.05	7,404.49	7,258.47	146.03	50.706			
9,200.00	6,987.00	6,028.00	6,027.37	46.97	119.90	73.51	-1,091.43	-4,788.05	7,496.11	7,350.16	145.95	51.361			
9,300.00	6,987.00	6,028.00	6,027.37	48.07	119.90	73.51	-1,091.43	-4,788.05	7,587.94	7,442.05	145.88	52.015			
9,400.00	6,987.00	6,028.00	6,027.37	49.20	119.90	73.51	-1,091.43	-4,788.05	7,679.97	7,534.14	145.82	52.667			
9,500.00	6,987.00	6,028.00	6,027.37	50.36	119.90	73.51	-1,091.43	-4,788.05	7,772.19	7,626.42	145.77	53.319			
9,600.00	6,987.00	6,028.00	6,027.37	51.54	119.90	73.51	-1,091.43	-4,788.05	7,864.61	7,718.88	145.72	53.969			
9,700.00	6,987.00	6,028.00	6,027.37	52.74	119.90	73.51	-1,091.43	-4,788.05	7,957.21	7,811.52	145.69	54.618			
9,800.00	6,987.00	6,028.00	6,027.37	53.96	119.90	73.51	-1,091.43	-4,788.05	8,049.99	7,904.33	145.66	55.266			
9,900.00	6,987.00	6,028.00	6,027.37	55.21	119.90	73.51	-1,091.43	-4,788.05	8,142.94	7,997.30	145.64	55.912			
10,000.00	6,987.00	6,028.00	6,027.37	56.47	119.90	73.51	-1,091.43	-4,788.05	8,236.05	8,090.43	145.62	56.557			
10,100.00	6,987.00	6,028.00	6,027.37	57.75	119.90	73.51	-1,091.43	-4,788.05	8,329.32	8,183.71	145.61	57.201			
10,200.00	6,987.00	6,028.00	6,027.37	59.04	119.90	73.51	-1,091.43	-4,788.05	8,422.75	8,277.14	145.61	57.844			
10,300.00	6,987.00	6,028.00	6,027.37	60.35	119.90	73.51	-1,091.43	-4,788.05	8,516.33	8,370.71	145.61	58.486			
10,400.00	6,987.00	6,028.00	6,027.37	61.67	119.90	73.51	-1,091.43	-4,788.05	8,610.05	8,464.43	145.62	59.126			
10,500.00	6,987.00	6,028.00	6,027.37	63.01	119.90	73.51	-1,091.43	-4,788.05	8,703.91	8,558.28	145.64	59.765			
10,600.00	6,987.00	6,028.00	6,027.37	64.36	119.90	73.51	-1,091.43	-4,788.05	8,797.91	8,652.25	145.65	60.403			
10,700.00	6,987.00	6,028.00	6,027.37	65.72	119.90	73.51	-1,091.43	-4,788.05	8,892.03	8,746.36	145.68	61.039			
10,800.00	6,987.00	6,028.00	6,027.37	67.09	119.90	73.51	-1,091.43	-4,788.05	8,986.29	8,840.58	145.70	61.675			
10,900.00	6,987.00	6,028.00	6,027.37	68.47	119.90	73.51	-1,091.43	-4,788.05	9,080.67	8,934.93	145.74	62.309			
11,000.00	6,987.00	6,028.00	6,027.37	69.86	119.90	73.51	-1,091.43	-4,788.05	9,175.16	9,029.39	145.77	62.942			
11,100.00	6,987.00	6,028.00	6,027.37	71.26	119.90	73.51	-1,091.43	-4,788.05	9,269.77	9,123.96	145.81	63.573			
11,200.00	6,987.00	6,028.00	6,027.37	72.67	119.90	73.51	-1,091.43	-4,788.05	9,364.50	9,218.64	145.86	64.204			
11,300.00	6,987.00	6,028.00	6,027.37	74.09	119.90	73.51	-1,091.43	-4,788.05	9,459.33	9,313.43	145.90	64.834			
11,400.00	6,987.00	6,028.00	6,027.37	75.51	119.90	73.51	-1,091.43	-4,788.05	9,554.27	9,408.32	145.95	65.462			
11,500.00	6,987.00	6,028.00	6,027.37	76.94	119.90	73.51	-1,091.43	-4,788.05	9,649.31	9,503.30	146.00	66.089			
11,600.00	6,987.00	6,028.00	6,027.37	78.38	119.90	73.51	-1,091.43	-4,788.05	9,744.45	9,598.39	146.06	66.715			
11,700.00	6,987.00	6,028.00	6,027.37	79.82	119.90	73.51	-1,091.43	-4,788.05	9,839.68	9,693.56	146.12	67.340			
11,800.00	6,987.00	6,028.00	6,027.37	81.27	119.90	73.51	-1,091.43	-4,788.05	9,935.01	9,788.83	146.18	67.964			
11,900.00	6,987.00	6,028.00	6,027.37	82.73	119.90	73.51	-1,091.43	-4,788.05	10,030.43	9,884.19	146.25	68.586			
12,000.00	6,987.00	6,028.00	6,027.37	84.19	119.90	73.51	-1,091.43	-4,788.05	10,125.94	9,979.63	146.31	69.208			
12,100.00	6,987.00	6,028.00	6,027.37	85.66	119.90	73.51	-1,091.43	-4,788.05	10,221.54	10,075.16	146.38	69.829			
12,200.00	6,987.00	6,028.00	6,027.37	87.13	119.90	73.51	-1,091.43	-4,788.05	10,317.21	10,170.76	146.45	70.448			
12,300.00	6,987.00	6,028.00	6,027.37	88.61	119.90	73.51	-1,091.43	-4,788.05	10,412.97	10,266.45	146.52	71.067			
12,400.00	6,987.00	6,028.00	6,027.37	90.09	119.90	73.51	-1,091.43	-4,788.05	10,508.81	10,362.21	146.60	71.684			
12,500.00	6,987.00	6,028.00	6,027.37	91.57	119.90	73.51	-1,091.43	-4,788.05	10,604.73	10,458.05	146.68	72.301			
12,600.00	6,987.00	6,028.00	6,027.37	93.06	119.90	73.51	-1,091.43	-4,788.05	10,700.72	10,553.96	146.75	72.916			
12,700.00	6,987.00	6,028.00	6,027.37	94.55	119.90	73.51	-1,091.43	-4,788.05	10,796.78	10,649.95	146.83	73.530			
12,800.00	6,987.00	6,028.00	6,027.37	96.05	119.90	73.51	-1,091.43	-4,788.05	10,892.91	10,746.00	146.92	74.144			
12,900.00	6,987.00	6,028.00	6,027.37	97.55	119.90	73.51	-1,091.43	-4,788.05	10,989.12	10,842.12	147.00	74.756			
13,000.00	6,987.00	6,028.00	6,027.37	99.05	119.90	73.51	-1,091.43	-4,788.05	11,085.39	10,938.30	147.08	75.368			
13,100.00	6,987.00	6,028.00	6,027.37	100.56	119.90	73.51	-1,091.43	-4,788.05	11,181.72	11,034.55	147.17	75.978			
13,200.00	6,987.00	6,028.00	6,027.37	102.07	119.90	73.51	-1,091.43	-4,788.05	11,278.12	11,130.86	147.26	76.588			
13,300.00	6,987.00	6,028.00	6,027.37	103.58	119.90	73.51	-1,091.43	-4,788.05	11,374.58	11,227.24	147.35	77.196			
13,400.00	6,987.00	6,028.00	6,027.37	105.09	119.90	73.51	-1,091.43	-4,788.05	11,471.10	11,323.67	147.44	77.804			
13,500.00	6,987.00	6,028.00	6,027.37	106.61	119.90	73.51	-1,091.43	-4,788.05	11,567.68	11,420.16	147.53	78.410			
13,600.00	6,987.00	6,028.00	6,027.37	108.13	119.90	73.51	-1,091.43	-4,788.05	11,664.32	11,516.70	147.62	79.016			
13,700.00	6,987.00	6,028.00	6,027.37	109.65	119.90	73.51	-1,091.43	-4,788.05	11,761.02	11,613.31	147.71	79.621			

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 #692H
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 #692H	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		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)					
13,800.00	6,987.00	6,028.00	6,027.37	111.18	119.90	73.51	-1,091.43	-4,788.05	11,857.77	11,709.96	147.81	80.225			
13,900.00	6,987.00	6,028.00	6,027.37	112.71	119.90	73.51	-1,091.43	-4,788.05	11,954.57	11,806.67	147.90	80.828			
14,000.00	6,987.00	6,028.00	6,027.37	114.23	119.90	73.51	-1,091.43	-4,788.05	12,051.43	11,903.43	148.00	81.430			
14,100.00	6,987.00	6,028.00	6,027.37	115.77	119.90	73.51	-1,091.43	-4,788.05	12,148.33	12,000.24	148.09	82.031			
14,200.00	6,987.00	6,028.00	6,027.37	117.30	119.90	73.51	-1,091.43	-4,788.05	12,245.29	12,097.10	148.19	82.631			
14,300.00	6,987.00	6,028.00	6,027.37	118.83	119.90	73.51	-1,091.43	-4,788.05	12,342.29	12,194.00	148.29	83.230			
14,400.00	6,987.00	6,028.00	6,027.37	120.37	119.90	73.51	-1,091.43	-4,788.05	12,439.34	12,290.96	148.39	83.829			
14,500.00	6,987.00	6,028.00	6,027.37	121.91	119.90	73.51	-1,091.43	-4,788.05	12,536.44	12,387.95	148.49	84.426			
14,600.00	6,987.00	6,028.00	6,027.37	123.45	119.90	73.51	-1,091.43	-4,788.05	12,633.59	12,485.00	148.59	85.023			
14,700.00	6,987.00	6,028.00	6,027.37	124.99	119.90	73.51	-1,091.43	-4,788.05	12,730.77	12,582.08	148.69	85.619			
14,800.00	6,987.00	6,028.00	6,027.37	126.53	119.90	73.51	-1,091.43	-4,788.05	12,828.01	12,679.21	148.79	86.214			
14,900.00	6,987.00	6,028.00	6,027.37	128.08	119.90	73.51	-1,091.43	-4,788.05	12,925.28	12,776.38	148.90	86.808			
15,000.00	6,987.00	6,028.00	6,027.37	129.63	119.90	73.51	-1,091.43	-4,788.05	13,022.59	12,873.60	149.00	87.401			
15,100.00	6,987.00	6,028.00	6,027.37	131.17	119.90	73.51	-1,091.43	-4,788.05	13,119.95	12,970.85	149.10	87.993			
15,200.00	6,987.00	6,028.00	6,027.37	132.72	119.90	73.51	-1,091.43	-4,788.05	13,217.34	13,068.14	149.21	88.584			
15,300.00	6,987.00	6,028.00	6,027.37	134.27	119.90	73.51	-1,091.43	-4,788.05	13,314.78	13,165.47	149.31	89.175			
15,400.00	6,987.00	6,028.00	6,027.37	135.83	119.90	73.51	-1,091.43	-4,788.05	13,412.25	13,262.83	149.42	89.764			
15,500.00	6,987.00	6,028.00	6,027.37	137.38	119.90	73.51	-1,091.43	-4,788.05	13,509.76	13,360.23	149.52	90.353			
15,600.00	6,987.00	6,028.00	6,027.37	138.93	119.90	73.51	-1,091.43	-4,788.05	13,607.30	13,457.67	149.63	90.941			
15,700.00	6,987.00	6,028.00	6,027.37	140.49	119.90	73.51	-1,091.43	-4,788.05	13,704.88	13,555.15	149.73	91.528			
15,800.00	6,987.00	6,028.00	6,027.37	142.04	119.90	73.51	-1,091.43	-4,788.05	13,802.49	13,652.65	149.84	92.114			
15,900.00	6,987.00	6,028.00	6,027.37	143.60	119.90	73.51	-1,091.43	-4,788.05	13,900.14	13,750.19	149.95	92.700			
16,000.00	6,987.00	6,028.00	6,027.37	145.16	119.90	73.51	-1,091.43	-4,788.05	13,997.82	13,847.77	150.06	93.284			
16,100.00	6,987.00	6,028.00	6,027.37	146.72	119.90	73.51	-1,091.43	-4,788.05	14,095.54	13,945.37	150.16	93.868			
16,200.00	6,987.00	6,028.00	6,027.37	148.28	119.90	73.51	-1,091.43	-4,788.05	14,193.28	14,043.01	150.27	94.451			
16,300.00	6,987.00	6,028.00	6,027.37	149.84	119.90	73.51	-1,091.43	-4,788.05	14,291.06	14,140.68	150.38	95.033			
16,400.00	6,987.00	6,028.00	6,027.37	151.40	119.90	73.51	-1,091.43	-4,788.05	14,388.87	14,238.38	150.49	95.614			
16,500.00	6,987.00	6,028.00	6,027.37	152.97	119.90	73.51	-1,091.43	-4,788.05	14,486.70	14,336.10	150.60	96.194			
16,600.00	6,987.00	6,028.00	6,027.37	154.53	119.90	73.51	-1,091.43	-4,788.05	14,584.57	14,433.86	150.71	96.773			
16,700.00	6,987.00	6,028.00	6,027.37	156.10	119.90	73.51	-1,091.43	-4,788.05	14,682.47	14,531.65	150.82	97.352			
16,800.00	6,987.00	6,028.00	6,027.37	157.66	119.90	73.51	-1,091.43	-4,788.05	14,780.39	14,629.46	150.93	97.930			
16,900.00	6,987.00	6,028.00	6,027.37	159.23	119.90	73.51	-1,091.43	-4,788.05	14,878.34	14,727.30	151.04	98.507			
17,000.00	6,987.00	6,028.00	6,027.37	160.80	119.90	73.51	-1,091.43	-4,788.05	14,976.32	14,825.17	151.15	99.083			
17,100.00	6,987.00	6,028.00	6,027.37	162.36	119.90	73.51	-1,091.43	-4,788.05	15,074.32	14,923.06	151.26	99.658			
17,200.00	6,987.00	6,028.00	6,027.37	163.93	119.90	73.51	-1,091.43	-4,788.05	15,172.35	15,020.98	151.37	100.232			
17,300.00	6,987.00	6,028.00	6,027.37	165.50	119.90	73.51	-1,091.43	-4,788.05	15,270.41	15,118.93	151.48	100.806			
17,400.00	6,987.00	6,028.00	6,027.37	167.07	119.90	73.51	-1,091.43	-4,788.05	15,368.49	15,216.90	151.60	101.378			
17,500.00	6,987.00	6,028.00	6,027.37	168.64	119.90	73.51	-1,091.43	-4,788.05	15,466.60	15,314.89	151.71	101.950			
17,600.00	6,987.00	6,028.00	6,027.37	170.21	119.90	73.51	-1,091.43	-4,788.05	15,564.73	15,412.91	151.82	102.521			
17,700.00	6,987.00	6,028.00	6,027.37	171.78	119.90	73.51	-1,091.43	-4,788.05	15,662.88	15,510.95	151.93	103.091			
17,800.00	6,987.00	6,028.00	6,027.37	173.36	119.90	73.51	-1,091.43	-4,788.05	15,761.06	15,609.01	152.04	103.661			
17,900.00	6,987.00	6,028.00	6,027.37	174.93	119.90	73.51	-1,091.43	-4,788.05	15,859.26	15,707.10	152.16	104.229			
18,000.00	6,987.00	6,028.00	6,027.37	176.50	119.90	73.51	-1,091.43	-4,788.05	15,957.48	15,805.21	152.27	104.797			
18,100.00	6,987.00	6,028.00	6,027.37	178.08	119.90	73.51	-1,091.43	-4,788.05	16,055.73	15,903.34	152.38	105.363			
18,200.00	6,987.00	6,028.00	6,027.37	179.65	119.90	73.51	-1,091.43	-4,788.05	16,153.99	16,001.49	152.50	105.929			
18,300.00	6,987.00	6,028.00	6,027.37	181.23	119.90	73.51	-1,091.43	-4,788.05	16,252.28	16,099.67	152.61	106.494			
18,400.00	6,987.00	6,028.00	6,027.37	182.80	119.90	73.51	-1,091.43	-4,788.05	16,350.59	16,197.86	152.73	107.059			
18,500.00	6,987.00	6,028.00	6,027.37	184.38	119.90	73.51	-1,091.43	-4,788.05	16,448.91	16,296.07	152.84	107.622			
18,600.00	6,987.00	6,028.00	6,027.37	185.96	119.90	73.51	-1,091.43	-4,788.05	16,547.26	16,394.31	152.95	108.185			
18,700.00	6,987.00	6,028.00	6,027.37	187.53	119.90	73.51	-1,091.43	-4,788.05	16,645.63	16,492.56	153.07	108.746			
18,800.00	6,987.00	6,028.00	6,027.37	189.11	119.90	73.51	-1,091.43	-4,788.05	16,744.02	16,590.83	153.18	109.307			
18,900.00	6,987.00	6,028.00	6,027.37	190.69	119.90	73.51	-1,091.43	-4,788.05	16,842.42	16,689.12	153.30	109.867			

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 #692H
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 #692H	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)				
19,000.00	6,987.00	6,028.00	6,027.37	192.27	119.90	73.51	-1,091.43	-4,788.05	16,940.85	16,787.43	153.41	110.426		
19,100.00	6,987.00	6,028.00	6,027.37	193.85	119.90	73.51	-1,091.43	-4,788.05	17,039.29	16,885.76	153.53	110.985		
19,200.00	6,987.00	6,028.00	6,027.37	195.43	119.90	73.51	-1,091.43	-4,788.05	17,137.75	16,984.11	153.64	111.542		
19,255.69	6,987.00	6,028.00	6,027.37	196.31	119.90	73.51	-1,091.43	-4,788.05	17,192.59	17,038.89	153.71	111.853		
19,300.00	6,987.00	6,028.00	6,027.37	197.01	119.90	73.51	-1,091.43	-4,788.05	17,236.23	17,082.47	153.76	112.099		
19,400.00	6,987.00	6,028.00	6,027.37	198.59	119.90	73.51	-1,091.43	-4,788.05	17,334.73	17,180.85	153.87	112.655		
19,468.80	6,987.00	6,028.00	6,027.37	199.49	119.90	73.51	-1,091.43	-4,788.05	17,402.51	17,244.35	158.16	110.031		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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
Rule Assigned:														
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	-102.69	-1,095.61	-4,863.88	4,986.99					
100.00	100.00	0.00	0.00	0.25	0.00	-102.69	-1,095.61	-4,863.88	4,985.76	4,985.51	0.25	N/A		
111.00	111.00	0.00	0.00	0.29	0.00	-102.69	-1,095.61	-4,863.88	4,985.75	4,985.46	0.29	N/A CC, ES		
200.00	200.00	0.00	0.00	0.61	0.00	-102.69	-1,095.61	-4,863.88	4,986.55	4,985.94	0.61	8,162.688		
300.00	300.00	0.00	0.00	0.97	0.00	-102.69	-1,095.61	-4,863.88	4,989.33	4,988.36	0.97	5,136.404		
400.00	400.00	0.00	0.00	1.33	0.00	-102.69	-1,095.61	-4,863.88	4,994.12	4,992.79	1.33	3,751.515		
500.00	500.00	0.00	0.00	1.68	0.00	-102.69	-1,095.61	-4,863.88	5,000.90	4,999.21	1.69	2,959.206		
576.28	576.28	175.43	175.32	1.96	10.89	-102.68	-1,095.84	-4,869.05	4,999.26	4,986.46	12.80	390.560		
600.00	600.00	184.35	184.23	2.04	11.45	-102.68	-1,095.87	-4,869.59	5,000.67	4,987.23	13.44	372.051		
700.00	700.00	221.92	221.71	2.40	13.78	-102.68	-1,095.98	-4,872.15	5,007.38	4,991.24	16.14	310.209		
800.00	799.98	259.41	259.08	2.76	16.11	-96.13	-1,096.12	-4,875.17	5,015.52	4,996.68	18.84	266.201		
900.00	899.84	296.79	296.30	3.12	18.43	-95.95	-1,096.28	-4,878.65	5,025.27	5,003.74	21.53	233.375		
1,000.00	999.45	334.00	333.30	3.48	20.74	-95.75	-1,096.45	-4,882.59	5,036.61	5,012.40	24.21	208.002		
1,100.00	1,098.70	370.98	370.02	3.85	23.04	-95.53	-1,096.65	-4,886.95	5,049.52	5,022.64	26.88	187.841		
1,153.80	1,151.90	561.00	557.68	4.04	34.83	-95.66	-1,097.99	-4,916.55	5,064.76	5,025.95	38.81	130.487		
1,200.00	1,197.53	561.00	557.68	4.21	34.83	-95.66	-1,097.99	-4,916.55	5,070.16	5,031.15	39.00	129.994		
1,300.00	1,296.27	561.00	557.68	4.59	34.83	-95.66	-1,097.99	-4,916.55	5,083.25	5,043.85	39.40	129.002		
1,400.00	1,395.02	561.00	557.68	4.97	34.83	-95.66	-1,097.99	-4,916.55	5,098.28	5,058.48	39.79	128.118		
1,500.00	1,493.77	561.00	557.68	5.36	34.83	-95.66	-1,097.99	-4,916.55	5,115.21	5,075.04	40.17	127.340		
1,600.00	1,592.52	561.00	557.68	5.74	34.83	-95.66	-1,097.99	-4,916.55	5,134.04	5,093.51	40.53	126.667		
1,700.00	1,691.27	652.00	647.06	6.14	34.92	-95.79	-1,098.91	-4,933.62	5,154.27	5,113.29	40.98	125.781		
1,800.00	1,790.01	682.00	676.53	6.53	34.92	-95.83	-1,099.00	-4,939.24	5,174.68	5,133.34	41.34	125.167		
1,900.00	1,888.76	712.00	705.89	6.92	34.94	-95.86	-1,098.61	-4,945.38	5,196.39	5,154.69	41.70	124.607		
2,000.00	1,987.51	712.00	705.89	7.32	34.94	-95.86	-1,098.61	-4,945.38	5,219.78	5,177.75	42.03	124.199		
2,100.00	2,086.26	773.00	765.06	7.72	34.99	-95.91	-1,096.60	-4,960.04	5,244.28	5,201.85	42.44	123.581		
2,200.00	2,185.01	790.87	782.30	8.11	35.00	-95.92	-1,095.91	-4,964.72	5,270.10	5,227.33	42.76	123.240		
2,300.00	2,283.75	834.00	823.86	8.51	35.02	-95.95	-1,094.58	-4,976.14	5,296.97	5,253.86	43.11	122.862		
2,400.00	2,382.50	864.00	852.63	8.91	35.03	-95.97	-1,093.38	-4,984.57	5,325.03	5,281.59	43.44	122.581		
2,500.00	2,481.25	894.00	881.22	9.31	35.05	-95.98	-1,091.77	-4,993.50	5,354.30	5,310.54	43.76	122.347		
2,600.00	2,580.00	923.00	908.77	9.71	35.07	-95.99	-1,089.98	-5,002.40	5,384.61	5,340.54	44.08	122.166		
2,700.00	2,678.75	955.00	939.07	10.11	35.08	-96.00	-1,088.02	-5,012.50	5,415.97	5,371.58	44.39	122.013		
2,800.00	2,777.49	986.60	968.84	10.52	35.11	-96.01	-1,086.16	-5,022.90	5,448.50	5,403.80	44.70	121.890		
2,900.00	2,876.24	1,017.00	997.34	10.92	35.13	-96.01	-1,084.33	-5,033.33	5,482.22	5,437.22	45.00	121.821		
3,000.00	2,974.99	1,017.00	997.34	11.32	35.13	-96.01	-1,084.33	-5,033.33	5,517.25	5,472.03	45.22	122.006		
3,100.00	3,073.74	1,073.88	1,050.30	11.72	35.20	-96.02	-1,080.91	-5,053.82	5,552.96	5,507.35	45.60	121.762		
3,200.00	3,172.49	1,109.00	1,082.76	12.13	35.24	-96.02	-1,078.82	-5,067.04	5,589.93	5,544.01	45.92	121.739		
3,300.00	3,271.23	1,177.14	1,145.49	12.53	35.30	-96.02	-1,074.39	-5,093.27	5,627.63	5,581.30	46.32	121.491		
3,400.00	3,369.98	1,203.00	1,169.26	12.93	35.33	-96.02	-1,072.51	-5,103.30	5,665.83	5,619.24	46.59	121.608		
3,500.00	3,468.73	1,245.86	1,208.42	13.34	35.38	-96.01	-1,069.12	-5,120.39	5,704.88	5,657.96	46.92	121.577		
3,600.00	3,567.48	1,297.00	1,254.58	13.74	35.45	-95.99	-1,064.62	-5,141.92	5,745.32	5,698.04	47.28	121.504		
3,700.00	3,666.23	1,297.00	1,254.58	14.14	35.45	-95.99	-1,064.62	-5,141.92	5,786.38	5,738.93	47.45	121.950		
3,800.00	3,764.97	1,398.92	1,346.79	14.55	35.62	-96.00	-1,059.65	-5,184.96	5,828.10	5,780.05	48.05	121.283		
3,900.00	3,863.72	1,481.00	1,421.57	14.95	35.72	-96.04	-1,058.81	-5,218.79	5,869.70	5,821.17	48.52	120.970		
4,000.00	3,962.47	1,551.51	1,485.74	15.36	35.79	-96.07	-1,058.09	-5,248.00	5,911.52	5,862.59	48.93	120.807		
4,100.00	4,061.22	1,605.42	1,534.65	15.76	35.85	-96.09	-1,057.35	-5,270.67	5,953.84	5,904.55	49.29	120.793		
4,200.00	4,159.97	1,670.00	1,592.93	16.17	35.93	-96.11	-1,055.84	-5,298.45	5,996.81	5,947.12	49.69	120.682		
4,300.00	4,258.71	1,712.99	1,631.55	16.57	35.99	-96.12	-1,054.43	-5,317.28	6,040.28	5,990.27	50.01	120.779		
4,400.00	4,357.46	1,776.73	1,688.61	16.98	36.07	-96.12	-1,051.74	-5,345.56	6,084.19	6,033.78	50.42	120.679		
4,500.00	4,456.21	1,840.97	1,745.85	17.38	36.15	-96.11	-1,048.18	-5,374.49	6,128.48	6,077.66	50.83	120.574		
4,600.00	4,554.96	1,885.36	1,785.19	17.79	36.22	-96.10	-1,045.11	-5,394.82	6,173.25	6,122.09	51.16	120.655		
4,700.00	4,653.71	1,949.00	1,840.98	18.19	36.32	-96.07	-1,039.35	-5,424.90	6,218.87	6,167.27	51.60	120.521		
4,800.00	4,752.45	1,975.99	1,864.47	18.60	36.36	-96.05	-1,036.57	-5,437.90	6,264.95	6,213.09	51.86	120.809		

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 #692H
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 #692H	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			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	4,851.20	2,063.26	1,940.42	19.00	36.51	-95.99	-1,027.66	-5,479.94	6,311.35	6,258.94	52.42	120.409		
5,000.00	4,949.95	2,391.82	2,229.52	19.41	37.08	-95.78	-992.06	-5,631.84	6,354.94	6,300.75	54.19	117.267		
5,100.00	5,048.70	2,506.00	2,331.56	19.81	37.30	-95.73	-981.82	-5,682.01	6,397.40	6,342.48	54.92	116.496		
5,200.00	5,147.45	2,552.54	2,373.30	20.22	37.41	-95.73	-978.42	-5,702.32	6,440.17	6,384.84	55.33	116.399		
5,300.00	5,246.19	3,337.00	3,088.56	20.62	39.41	-95.59	-914.58	-6,013.06	6,479.88	6,420.35	59.52	108.867 SF		
5,400.00	5,344.94	3,337.00	3,088.56	21.03	39.41	-95.59	-914.58	-6,013.06	6,514.01	6,454.26	59.75	109.014		
5,455.76	5,400.00	3,337.00	3,088.56	21.25	39.41	-95.59	-914.58	-6,013.06	6,533.63	6,473.75	59.88	109.116		
5,500.00	5,443.72	3,337.00	3,088.56	21.43	39.41	-95.76	-914.58	-6,013.06	6,549.48	6,489.50	59.97	109.208		
5,600.00	5,542.71	3,337.00	3,088.56	21.83	39.41	-96.15	-914.58	-6,013.06	6,586.13	6,525.96	60.17	109.453		
5,700.00	5,641.93	3,337.00	3,088.56	22.22	39.41	-96.56	-914.58	-6,013.06	6,623.92	6,563.57	60.35	109.750		
5,800.00	5,741.36	3,337.00	3,088.56	22.60	39.41	-96.98	-914.58	-6,013.06	6,662.82	6,602.30	60.52	110.097		
5,900.00	5,840.96	3,337.00	3,088.56	22.97	39.41	-97.41	-914.58	-6,013.06	6,702.78	6,642.12	60.66	110.494		
6,000.00	5,940.70	3,337.00	3,088.56	23.33	39.41	-97.86	-914.58	-6,013.06	6,743.79	6,683.00	60.79	110.937		
6,100.00	6,040.55	3,337.00	3,088.56	23.68	39.41	-98.31	-914.58	-6,013.06	6,785.81	6,724.91	60.90	111.426		
6,200.00	6,140.48	3,337.00	3,088.56	24.02	39.41	-98.79	-914.58	-6,013.06	6,828.81	6,767.81	60.99	111.958		
6,300.00	6,240.45	3,337.00	3,088.56	24.35	39.41	-99.27	-914.58	-6,013.06	6,872.75	6,811.68	61.07	112.532		
6,408.05	6,348.50	3,337.00	3,088.56	24.69	39.41	80.20	-914.58	-6,013.06	6,921.26	6,860.13	61.13	113.220		
6,450.00	6,390.43	3,337.00	3,088.56	24.82	39.41	-172.19	-914.58	-6,013.06	6,941.58	6,880.43	61.15	113.512		
6,500.00	6,440.15	3,337.00	3,088.56	24.99	39.41	-167.84	-914.58	-6,013.06	6,969.03	6,907.84	61.19	113.893		
6,550.00	6,489.32	3,337.00	3,088.56	25.16	39.41	-165.87	-914.58	-6,013.06	6,999.79	6,938.56	61.23	114.322		
6,600.00	6,537.64	3,337.00	3,088.56	25.34	39.41	-164.20	-914.58	-6,013.06	7,033.64	6,972.37	61.27	114.797		
6,650.00	6,584.80	3,337.00	3,088.56	25.52	39.41	-162.43	-914.58	-6,013.06	7,070.32	7,009.01	61.31	115.315		
6,700.00	6,630.52	3,337.00	3,088.56	25.71	39.41	-160.32	-914.58	-6,013.06	7,109.57	7,048.22	61.36	115.873		
6,750.00	6,674.51	3,337.00	3,088.56	25.89	39.41	-157.69	-914.58	-6,013.06	7,151.10	7,089.70	61.40	116.465		
6,800.00	6,716.50	3,337.00	3,088.56	26.08	39.41	-154.26	-914.58	-6,013.06	7,194.62	7,133.18	61.45	117.086		
6,850.00	6,756.24	3,337.00	3,088.56	26.28	39.41	-149.61	-914.58	-6,013.06	7,239.83	7,178.34	61.49	117.732		
6,900.00	6,793.47	3,337.00	3,088.56	26.48	39.41	-143.03	-914.58	-6,013.06	7,286.42	7,224.88	61.54	118.397		
6,950.00	6,827.97	3,337.00	3,088.56	26.69	39.41	-133.43	-914.58	-6,013.06	7,334.08	7,272.49	61.59	119.075		
7,000.00	6,859.53	3,337.00	3,088.56	26.91	39.41	-119.25	-914.58	-6,013.06	7,382.49	7,320.85	61.64	119.760		
7,050.00	6,887.94	3,337.00	3,088.56	27.14	39.41	-99.69	-914.58	-6,013.06	7,431.36	7,369.66	61.70	120.446		
7,100.00	6,913.05	3,337.00	3,088.56	27.38	39.41	-77.62	-914.58	-6,013.06	7,480.36	7,418.60	61.76	121.125		
7,150.00	6,934.68	3,337.00	3,088.56	27.64	39.41	-58.68	-914.58	-6,013.06	7,529.20	7,467.38	61.82	121.791		
7,200.00	6,952.71	3,337.00	3,088.56	27.92	39.41	-45.17	-914.58	-6,013.06	7,577.58	7,515.69	61.89	122.438		
7,250.00	6,967.02	3,337.00	3,088.56	28.21	39.41	-36.04	-914.58	-6,013.06	7,625.22	7,563.26	61.97	123.057		
7,300.00	6,977.54	3,337.00	3,088.56	28.52	39.41	-29.79	-914.58	-6,013.06	7,671.84	7,609.79	62.05	123.642		
7,350.00	6,984.18	3,337.00	3,088.56	28.83	39.41	-25.37	-914.58	-6,013.06	7,717.17	7,655.03	62.14	124.186		
7,400.00	6,986.92	3,337.00	3,088.56	29.16	39.41	-22.13	-914.58	-6,013.06	7,760.96	7,698.71	62.25	124.683		
7,409.89	6,987.00	3,337.00	3,088.56	29.23	39.41	-21.59	-914.58	-6,013.06	7,769.42	7,707.15	62.26	124.780		
7,500.00	6,987.00	3,337.00	3,088.56	29.85	39.41	-21.59	-914.58	-6,013.06	7,846.29	7,783.82	62.48	125.586		
7,600.00	6,987.00	3,337.00	3,088.56	30.61	39.41	-21.59	-914.58	-6,013.06	7,931.93	7,869.22	62.72	126.475		
7,700.00	6,987.00	3,337.00	3,088.56	31.41	39.41	-21.59	-914.58	-6,013.06	8,017.91	7,954.95	62.95	127.364		
7,800.00	6,987.00	3,337.00	3,088.56	32.27	39.41	-21.59	-914.58	-6,013.06	8,104.20	8,041.01	63.19	128.250		
7,900.00	6,987.00	3,337.00	3,088.56	33.17	39.41	-21.59	-914.58	-6,013.06	8,190.80	8,127.38	63.43	129.136		
8,000.00	6,987.00	3,337.00	3,088.56	34.12	39.41	-21.59	-914.58	-6,013.06	8,277.71	8,214.05	63.66	130.021		
8,100.00	6,987.00	3,337.00	3,088.56	35.10	39.41	-21.59	-914.58	-6,013.06	8,364.91	8,301.01	63.90	130.906		
8,200.00	6,987.00	3,337.00	3,088.56	36.12	39.41	-21.59	-914.58	-6,013.06	8,452.40	8,388.26	64.13	131.791		
8,300.00	6,987.00	3,337.00	3,088.56	37.17	39.41	-21.59	-914.58	-6,013.06	8,540.16	8,475.79	64.37	132.677		
8,314.89	6,987.00	3,337.00	3,088.56	37.33	39.41	-21.59	-914.58	-6,013.06	8,553.25	8,488.84	64.40	132.809		
8,400.00	6,987.00	3,337.00	3,088.56	38.25	39.41	-15.45	-914.58	-6,013.06	8,628.58	8,563.98	64.59	133.586		
8,500.00	6,987.00	3,337.00	3,088.56	39.35	39.41	-7.60	-914.58	-6,013.06	8,718.07	8,653.28	64.79	134.558		
8,600.00	6,987.00	3,337.00	3,088.56	40.45	39.41	0.70	-914.58	-6,013.06	8,808.19	8,743.23	64.96	135.592		
8,700.00	6,987.00	3,337.00	3,088.56	41.56	39.41	9.07	-914.58	-6,013.06	8,898.49	8,833.38	65.10	136.682		

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 #692H
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 #692H	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)				
8,800.00	6,987.00	3,337.00	3,088.56	42.66	39.41	17.12	-914.58	-6,013.06	8,988.52	8,923.30	65.22	137.821		
8,900.00	6,987.00	3,337.00	3,088.56	43.75	39.41	24.55	-914.58	-6,013.06	9,077.86	9,012.55	65.31	139.000		
9,000.00	6,987.00	3,337.00	3,088.56	44.83	39.41	31.18	-914.58	-6,013.06	9,166.10	9,100.73	65.37	140.209		
9,071.74	6,987.00	3,337.00	3,088.56	45.59	39.41	35.41	-914.58	-6,013.06	9,228.51	9,163.11	65.41	141.090		
9,100.00	6,987.00	3,337.00	3,088.56	45.89	39.41	35.41	-914.58	-6,013.06	9,252.94	9,187.52	65.42	141.439		
9,200.00	6,987.00	3,337.00	3,088.56	46.97	39.41	35.41	-914.58	-6,013.06	9,339.55	9,274.08	65.47	142.657		
9,300.00	6,987.00	3,337.00	3,088.56	48.07	39.41	35.41	-914.58	-6,013.06	9,426.42	9,360.90	65.52	143.865		
9,400.00	6,987.00	3,337.00	3,088.56	49.20	39.41	35.41	-914.58	-6,013.06	9,513.56	9,447.97	65.58	145.064		
9,500.00	6,987.00	3,337.00	3,088.56	50.36	39.41	35.41	-914.58	-6,013.06	9,600.94	9,535.29	65.65	146.253		
9,600.00	6,987.00	3,337.00	3,088.56	51.54	39.41	35.41	-914.58	-6,013.06	9,688.57	9,622.85	65.71	147.434		
9,700.00	6,987.00	3,337.00	3,088.56	52.74	39.41	35.41	-914.58	-6,013.06	9,776.43	9,710.64	65.79	148.605		
9,800.00	6,987.00	3,337.00	3,088.56	53.96	39.41	35.41	-914.58	-6,013.06	9,864.52	9,798.66	65.87	149.768		
9,900.00	6,987.00	3,337.00	3,088.56	55.21	39.41	35.41	-914.58	-6,013.06	9,952.85	9,886.90	65.95	150.923		
10,000.00	6,987.00	3,337.00	3,088.56	56.47	39.41	35.41	-914.58	-6,013.06	10,041.38	9,975.35	66.03	152.069		
10,100.00	6,987.00	3,337.00	3,088.56	57.75	39.41	35.41	-914.58	-6,013.06	10,130.14	10,064.02	66.12	153.208		
10,200.00	6,987.00	3,337.00	3,088.56	59.04	39.41	35.41	-914.58	-6,013.06	10,219.10	10,152.89	66.21	154.339		
10,300.00	6,987.00	3,337.00	3,088.56	60.35	39.41	35.41	-914.58	-6,013.06	10,308.26	10,241.95	66.31	155.462		
10,400.00	6,987.00	3,337.00	3,088.56	61.67	39.41	35.41	-914.58	-6,013.06	10,397.62	10,331.22	66.41	156.579		
10,500.00	6,987.00	3,337.00	3,088.56	63.01	39.41	35.41	-914.58	-6,013.06	10,487.17	10,420.67	66.51	157.688		
10,600.00	6,987.00	3,337.00	3,088.56	64.36	39.41	35.41	-914.58	-6,013.06	10,576.91	10,510.30	66.61	158.791		
10,700.00	6,987.00	3,337.00	3,088.56	65.72	39.41	35.41	-914.58	-6,013.06	10,666.83	10,600.12	66.71	159.887		
10,800.00	6,987.00	3,337.00	3,088.56	67.09	39.41	35.41	-914.58	-6,013.06	10,756.93	10,690.11	66.82	160.976		
10,900.00	6,987.00	3,337.00	3,088.56	68.47	39.41	35.41	-914.58	-6,013.06	10,847.21	10,780.27	66.93	162.060		
11,000.00	6,987.00	3,337.00	3,088.56	69.86	39.41	35.41	-914.58	-6,013.06	10,937.65	10,870.60	67.05	163.138		
11,100.00	6,987.00	3,337.00	3,088.56	71.26	39.41	35.41	-914.58	-6,013.06	11,028.26	10,961.10	67.16	164.210		
11,200.00	6,987.00	3,337.00	3,088.56	72.67	39.41	35.41	-914.58	-6,013.06	11,119.03	11,051.75	67.28	165.276		
11,300.00	6,987.00	3,337.00	3,088.56	74.09	39.41	35.41	-914.58	-6,013.06	11,209.95	11,142.56	67.39	166.337		
11,400.00	6,987.00	1,949.00	1,840.98	75.51	36.32	29.20	-1,039.35	-5,424.90	11,296.39	11,233.11	63.28	178.511		
11,500.00	6,987.00	1,949.00	1,840.98	76.94	36.32	29.20	-1,039.35	-5,424.90	11,382.48	11,318.97	63.51	179.224		
11,600.00	6,987.00	1,949.00	1,840.98	78.38	36.32	29.20	-1,039.35	-5,424.90	11,468.80	11,405.07	63.74	179.937		
11,700.00	6,987.00	1,905.15	1,802.62	79.82	36.25	29.05	-1,043.50	-5,404.05	11,555.04	11,491.18	63.87	180.924		
11,800.00	6,987.00	1,892.30	1,791.31	81.27	36.23	29.01	-1,044.56	-5,398.05	11,641.60	11,577.53	64.07	181.703		
11,900.00	6,987.00	1,856.00	1,759.21	82.73	36.17	28.88	-1,047.22	-5,381.33	11,728.40	11,664.18	64.22	182.614		
12,000.00	6,987.00	1,856.00	1,759.21	84.19	36.17	28.88	-1,047.22	-5,381.33	11,815.21	11,750.75	64.46	183.303		
12,100.00	6,987.00	1,856.00	1,759.21	85.66	36.17	28.88	-1,047.22	-5,381.33	11,902.23	11,837.54	64.69	183.993		
12,200.00	6,987.00	1,829.48	1,735.64	87.13	36.14	28.78	-1,048.88	-5,369.29	11,989.39	11,924.51	64.88	184.790		
12,300.00	6,987.00	1,805.41	1,714.20	88.61	36.11	28.69	-1,050.26	-5,358.42	12,076.66	12,011.58	65.08	185.567		
12,400.00	6,987.00	1,763.00	1,676.34	90.09	36.05	28.53	-1,052.38	-5,339.43	12,164.07	12,098.81	65.26	186.402		
12,500.00	6,987.00	1,763.00	1,676.34	91.57	36.05	28.53	-1,052.38	-5,339.43	12,251.53	12,186.04	65.49	187.074		
12,600.00	6,987.00	1,735.18	1,651.44	93.06	36.01	28.43	-1,053.57	-5,327.08	12,339.12	12,273.43	65.69	187.832		
12,700.00	6,987.00	1,712.44	1,631.06	94.55	35.99	28.34	-1,054.45	-5,317.04	12,426.82	12,360.92	65.90	188.566		
12,800.00	6,987.00	1,670.00	1,592.93	96.05	35.93	28.18	-1,055.84	-5,298.45	12,514.66	12,448.56	66.09	189.345		
12,900.00	6,987.00	1,670.00	1,592.93	97.55	35.93	28.18	-1,055.84	-5,298.45	12,602.53	12,536.21	66.33	190.004		
13,000.00	6,987.00	1,670.00	1,592.93	99.05	35.93	28.18	-1,055.84	-5,298.45	12,690.59	12,624.03	66.56	190.665		
13,100.00	6,987.00	1,670.00	1,592.93	100.56	35.93	28.18	-1,055.84	-5,298.45	12,778.82	12,712.03	66.79	191.329		
13,200.00	6,987.00	1,624.33	1,551.76	102.07	35.88	28.00	-1,056.98	-5,278.73	12,866.99	12,799.99	66.99	192.068		
13,300.00	6,987.00	1,609.97	1,538.77	103.58	35.86	27.95	-1,057.27	-5,272.60	12,955.38	12,888.17	67.21	192.748		
13,400.00	6,987.00	1,575.00	1,507.08	105.09	35.82	27.81	-1,057.81	-5,257.83	13,043.95	12,976.53	67.43	193.453		
13,500.00	6,987.00	1,575.00	1,507.08	106.61	35.82	27.81	-1,057.81	-5,257.83	13,132.55	13,064.89	67.66	194.108		
13,600.00	6,987.00	1,575.00	1,507.08	108.13	35.82	27.81	-1,057.81	-5,257.83	13,221.31	13,153.42	67.88	194.765		
13,700.00	6,987.00	1,544.53	1,479.40	109.65	35.78	27.69	-1,058.17	-5,245.09	13,310.15	13,242.04	68.11	195.435		
13,800.00	6,987.00	1,524.60	1,461.28	111.18	35.76	27.62	-1,058.39	-5,236.81	13,399.10	13,330.77	68.33	196.095		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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)				
13,900.00	6,987.00	1,481.00	1,421.57	112.71	35.72	27.45	-1,058.81	-5,218.79	13,488.18	13,419.63	68.55	196.754		
14,000.00	6,987.00	1,481.00	1,421.57	114.23	35.72	27.45	-1,058.81	-5,218.79	13,577.27	13,508.49	68.78	197.404		
14,100.00	6,987.00	1,443.88	1,387.75	115.77	35.67	27.30	-1,059.16	-5,203.50	13,666.47	13,597.47	69.00	198.066		
14,200.00	6,987.00	1,343.24	1,296.39	117.30	35.53	26.94	-1,062.18	-5,161.50	13,755.60	13,686.41	69.19	198.810		
14,300.00	6,987.00	1,297.00	1,254.58	118.83	35.45	26.79	-1,064.62	-5,141.92	13,844.66	13,775.28	69.39	199.529		
14,400.00	6,987.00	1,297.00	1,254.58	120.37	35.45	26.79	-1,064.62	-5,141.92	13,933.79	13,864.18	69.61	200.158		
14,500.00	6,987.00	1,297.00	1,254.58	121.91	35.45	26.79	-1,064.62	-5,141.92	14,023.07	13,953.23	69.84	200.790		
14,600.00	6,987.00	1,297.00	1,254.58	123.45	35.45	26.79	-1,064.62	-5,141.92	14,112.49	14,042.43	70.06	201.426		
14,700.00	6,987.00	1,297.00	1,254.58	124.99	35.45	26.79	-1,064.62	-5,141.92	14,202.05	14,131.77	70.28	202.065		
14,800.00	6,987.00	1,297.00	1,254.58	126.53	35.45	26.79	-1,064.62	-5,141.92	14,291.75	14,221.25	70.50	202.706		
14,900.00	6,987.00	1,297.00	1,254.58	128.08	35.45	26.79	-1,064.62	-5,141.92	14,381.59	14,310.87	70.72	203.351		
15,000.00	6,987.00	1,252.89	1,214.79	129.63	35.39	26.66	-1,068.53	-5,123.27	14,471.02	14,400.07	70.95	203.953		
15,100.00	6,987.00	1,247.76	1,210.14	131.17	35.39	26.64	-1,068.96	-5,121.16	14,560.99	14,489.82	71.17	204.592		
15,200.00	6,987.00	1,203.00	1,169.26	132.72	35.33	26.51	-1,072.51	-5,103.30	14,651.51	14,580.11	71.40	205.193		
15,300.00	6,987.00	1,203.00	1,169.26	134.27	35.33	26.51	-1,072.51	-5,103.30	14,741.61	14,669.99	71.62	205.834		
15,400.00	6,987.00	1,203.00	1,169.26	135.83	35.33	26.51	-1,072.51	-5,103.30	14,831.83	14,759.99	71.83	206.478		
15,500.00	6,987.00	1,203.00	1,169.26	137.38	35.33	26.51	-1,072.51	-5,103.30	14,922.17	14,850.13	72.04	207.125		
15,600.00	6,987.00	1,203.00	1,169.26	138.93	35.33	26.51	-1,072.51	-5,103.30	15,012.64	14,940.39	72.25	207.774		
15,700.00	6,987.00	1,203.00	1,169.26	140.49	35.33	26.51	-1,072.51	-5,103.30	15,103.23	15,030.77	72.46	208.426		
15,800.00	6,987.00	1,203.00	1,169.26	142.04	35.33	26.51	-1,072.51	-5,103.30	15,193.94	15,121.27	72.67	209.081		
15,900.00	6,987.00	1,203.00	1,169.26	143.60	35.33	26.51	-1,072.51	-5,103.30	15,284.76	15,211.89	72.88	209.738		
16,000.00	6,987.00	1,203.00	1,169.26	145.16	35.33	26.51	-1,072.51	-5,103.30	15,375.70	15,302.62	73.08	210.397		
16,100.00	6,987.00	1,184.68	1,152.43	146.72	35.31	26.45	-1,073.85	-5,096.19	15,466.73	15,393.43	73.30	211.002		
16,200.00	6,987.00	1,160.04	1,129.76	148.28	35.29	26.37	-1,075.57	-5,086.66	15,557.81	15,484.28	73.53	211.585		
16,300.00	6,987.00	1,135.57	1,107.24	149.84	35.26	26.30	-1,077.18	-5,077.24	15,648.95	15,575.19	73.76	212.165		
16,400.00	6,987.00	1,109.00	1,082.76	151.40	35.24	26.21	-1,078.82	-5,067.04	15,740.12	15,666.14	73.99	212.734		
16,500.00	6,987.00	1,109.00	1,082.76	152.97	35.24	26.21	-1,078.82	-5,067.04	15,831.38	15,757.19	74.19	213.392		
16,600.00	6,987.00	1,109.00	1,082.76	154.53	35.24	26.21	-1,078.82	-5,067.04	15,922.73	15,848.34	74.39	214.052		
16,700.00	6,987.00	1,109.00	1,082.76	156.10	35.24	26.21	-1,078.82	-5,067.04	16,014.19	15,939.61	74.58	214.715		
16,800.00	6,987.00	1,109.00	1,082.76	157.66	35.24	26.21	-1,078.82	-5,067.04	16,105.75	16,030.97	74.78	215.379		
16,900.00	6,987.00	1,109.00	1,082.76	159.23	35.24	26.21	-1,078.82	-5,067.04	16,197.41	16,122.44	74.97	216.045		
17,000.00	6,987.00	1,109.00	1,082.76	160.80	35.24	26.21	-1,078.82	-5,067.04	16,289.17	16,214.00	75.16	216.713		
17,100.00	6,987.00	1,109.00	1,082.76	162.36	35.24	26.21	-1,078.82	-5,067.04	16,381.02	16,305.67	75.36	217.383		
17,200.00	6,987.00	1,067.48	1,044.36	163.93	35.19	26.08	-1,081.29	-5,051.45	16,472.59	16,397.00	75.60	217.903		
17,300.00	6,987.00	1,062.46	1,039.70	165.50	35.18	26.07	-1,081.59	-5,049.61	16,564.54	16,488.75	75.79	218.553		
17,400.00	6,987.00	1,057.48	1,035.08	167.07	35.18	26.05	-1,081.89	-5,047.79	16,656.57	16,580.58	75.99	219.205		
17,500.00	6,987.00	1,017.00	997.34	168.64	35.13	25.92	-1,084.33	-5,033.33	16,748.95	16,672.73	76.23	219.727		
17,600.00	6,987.00	1,017.00	997.34	170.21	35.13	25.92	-1,084.33	-5,033.33	16,841.07	16,764.65	76.41	220.394		
17,700.00	6,987.00	1,017.00	997.34	171.78	35.13	25.92	-1,084.33	-5,033.33	16,933.27	16,856.67	76.60	221.064		
17,800.00	6,987.00	1,017.00	997.34	173.36	35.13	25.92	-1,084.33	-5,033.33	17,025.57	16,948.78	76.78	221.735		
17,900.00	6,987.00	1,017.00	997.34	174.93	35.13	25.92	-1,084.33	-5,033.33	17,117.95	17,040.98	76.97	222.407		
18,000.00	6,987.00	1,017.00	997.34	176.50	35.13	25.92	-1,084.33	-5,033.33	17,210.41	17,133.26	77.15	223.081		
18,100.00	6,987.00	1,017.00	997.34	178.08	35.13	25.92	-1,084.33	-5,033.33	17,302.96	17,225.63	77.33	223.756		
18,200.00	6,987.00	1,017.00	997.34	179.65	35.13	25.92	-1,084.33	-5,033.33	17,395.59	17,318.08	77.51	224.432		
18,300.00	6,987.00	1,017.00	997.34	181.23	35.13	25.92	-1,084.33	-5,033.33	17,488.30	17,410.62	77.69	225.110		
18,400.00	6,987.00	1,017.00	997.34	182.80	35.13	25.92	-1,084.33	-5,033.33	17,581.10	17,503.23	77.87	225.789		
18,500.00	6,987.00	1,017.00	997.34	184.38	35.13	25.92	-1,084.33	-5,033.33	17,673.97	17,595.93	78.04	226.469		
18,600.00	6,987.00	1,017.00	997.34	185.96	35.13	25.92	-1,084.33	-5,033.33	17,766.92	17,688.70	78.22	227.149		
18,700.00	6,987.00	1,017.00	997.34	187.53	35.13	25.92	-1,084.33	-5,033.33	17,859.94	17,781.55	78.39	227.831		
18,800.00	6,987.00	1,017.00	997.34	189.11	35.13	25.92	-1,084.33	-5,033.33	17,953.04	17,874.48	78.56	228.514		
18,900.00	6,987.00	1,017.00	997.34	190.69	35.13	25.92	-1,084.33	-5,033.33	18,046.21	17,967.48	78.74	229.198		
19,000.00	6,987.00	1,017.00	997.34	192.27	35.13	25.92	-1,084.33	-5,033.33	18,139.46	18,060.55	78.91	229.882		

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 #692H
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 #692H	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		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		
19,100.00	6,987.00	985.93	968.22	193.85	35.10	25.83	-1,086.20	-5,022.67	18,232.52	18,153.38	79.15	230.365		
19,200.00	6,987.00	955.00	939.07	195.43	35.08	25.73	-1,088.02	-5,012.50	18,326.05	18,246.66	79.38	230.851		
19,255.69	6,987.00	955.00	939.07	196.31	35.08	25.73	-1,088.02	-5,012.50	18,378.03	18,298.55	79.48	231.230		
19,300.00	6,987.00	955.00	939.07	197.01	35.08	25.73	-1,088.02	-5,012.50	18,419.39	18,339.84	79.55	231.532		
19,400.00	6,987.00	955.00	939.07	198.59	35.08	25.73	-1,088.02	-5,012.50	18,512.81	18,433.08	79.72	232.215		
19,468.80	6,987.00	955.00	939.07	199.49	35.08	25.73	-1,088.02	-5,012.50	18,577.12	18,495.28	81.84	226.985		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		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	37.10	37.10	0.00	0.41	-72.17	1,456.98	-4,531.15	4,759.63				
100.00	100.00	132.22	132.22	0.25	1.47	-72.17	1,457.01	-4,531.23	4,759.73	4,758.01	1.72	2,769.830	
200.00	200.00	227.34	227.34	0.61	2.52	-72.17	1,457.06	-4,531.41	4,759.92	4,756.79	3.13	1,519.536	
300.00	300.00	324.00	324.00	0.97	3.60	-72.18	1,457.14	-4,531.69	4,760.22	4,755.65	4.56	1,043.097	
400.00	400.00	413.23	413.22	1.33	3.76	-72.17	1,457.42	-4,531.97	4,760.62	4,755.54	5.08	936.701 ES	
500.00	500.00	497.44	497.44	1.68	3.86	-72.17	1,457.44	-4,532.61	4,761.34	4,755.80	5.55	858.321	
600.00	600.00	565.00	564.97	2.04	3.98	-72.19	1,456.25	-4,534.00	4,762.70	4,756.68	6.01	792.124	
700.00	700.00	603.06	602.96	2.40	4.42	-72.22	1,454.55	-4,535.53	4,765.00	4,758.42	6.58	724.071	
800.00	799.98	655.00	654.64	2.76	5.23	-65.85	1,450.47	-4,538.68	4,767.67	4,760.57	7.09	672.059	
900.00	899.84	722.01	720.98	3.12	6.25	-65.96	1,442.77	-4,544.09	4,769.78	4,762.04	7.73	616.738	
1,000.00	999.45	789.10	787.03	3.48	6.89	-66.13	1,433.00	-4,550.56	4,771.16	4,762.86	8.29	575.317	
1,100.00	1,098.70	856.98	853.58	3.85	7.25	-66.36	1,421.83	-4,557.94	4,771.88	4,763.05	8.83	540.544	
1,153.80	1,151.90	897.08	892.85	4.04	7.36	-66.51	1,415.09	-4,562.50	4,771.97	4,762.85	9.12	523.167	
1,160.27	1,158.29	901.89	897.56	4.07	7.37	-66.53	1,414.29	-4,563.05	4,771.97	4,762.81	9.16	521.138	
1,200.00	1,197.53	926.00	921.17	4.21	7.44	-66.63	1,410.27	-4,565.84	4,772.02	4,762.66	9.36	509.710	
1,300.00	1,296.27	986.02	979.80	4.59	7.63	-66.88	1,399.81	-4,573.20	4,772.79	4,762.89	9.90	481.965	
1,400.00	1,395.02	1,041.93	1,034.18	4.97	7.82	-67.12	1,389.24	-4,580.77	4,774.56	4,764.12	10.45	457.009	
1,500.00	1,493.77	1,113.00	1,103.02	5.36	8.12	-67.44	1,374.99	-4,591.24	4,777.37	4,766.31	11.06	431.908	
1,600.00	1,592.52	1,158.07	1,146.49	5.74	8.30	-67.64	1,365.45	-4,598.35	4,781.07	4,769.46	11.61	411.880	
1,700.00	1,691.27	1,223.70	1,209.48	6.14	8.56	-67.96	1,350.65	-4,609.30	4,785.73	4,773.50	12.23	391.154	
1,800.00	1,790.01	1,300.00	1,282.37	6.53	8.85	-68.34	1,332.34	-4,622.47	4,790.97	4,778.06	12.92	370.910	
1,900.00	1,888.76	1,367.24	1,346.26	6.92	9.11	-68.68	1,315.20	-4,634.56	4,796.95	4,783.37	13.59	353.058	
2,000.00	1,987.51	1,434.06	1,409.33	7.32	9.37	-69.04	1,297.17	-4,647.24	4,803.88	4,789.61	14.27	336.582	
2,100.00	2,086.26	1,502.63	1,473.73	7.72	9.65	-69.41	1,277.82	-4,660.67	4,811.57	4,796.58	14.98	321.159	
2,200.00	2,185.01	1,559.41	1,526.78	8.11	9.87	-69.73	1,261.20	-4,672.22	4,820.19	4,804.54	15.65	308.038	
2,300.00	2,283.75	1,629.61	1,592.04	8.51	10.13	-70.13	1,239.99	-4,687.02	4,829.76	4,813.37	16.39	294.616	
2,400.00	2,382.50	1,670.00	1,629.48	8.91	10.27	-70.37	1,227.53	-4,695.65	4,840.17	4,823.18	16.99	284.947	
2,500.00	2,481.25	1,734.03	1,688.46	9.31	10.55	-70.74	1,207.06	-4,709.89	4,851.58	4,833.84	17.74	273.527	
2,600.00	2,580.00	1,764.00	1,715.84	9.71	10.67	-70.92	1,197.11	-4,716.89	4,864.38	4,846.09	18.29	266.002	
2,700.00	2,678.75	1,831.59	1,777.30	10.11	10.97	-71.34	1,174.22	-4,733.24	4,878.25	4,859.17	19.08	255.627	
2,800.00	2,777.49	1,858.00	1,801.24	10.52	11.09	-71.50	1,165.20	-4,739.79	4,893.38	4,873.76	19.62	249.453	
2,900.00	2,876.24	1,921.76	1,858.87	10.92	11.34	-71.89	1,143.35	-4,756.13	4,909.56	4,889.15	20.41	240.555	
3,000.00	2,974.99	1,983.00	1,914.02	11.32	11.58	-72.27	1,122.39	-4,772.55	4,927.15	4,905.97	21.18	232.645	
3,100.00	3,073.74	2,263.00	2,168.39	11.72	12.77	-73.94	1,029.39	-4,843.38	4,945.32	4,921.91	23.41	211.221	
3,200.00	3,172.49	2,333.69	2,233.14	12.13	13.07	-74.35	1,006.02	-4,859.45	4,960.55	4,936.31	24.24	204.615	
3,300.00	3,271.23	2,417.13	2,309.55	12.53	13.43	-74.83	978.64	-4,878.76	4,976.61	4,951.46	25.15	197.888	
3,400.00	3,369.98	2,661.11	2,535.27	12.93	14.54	-76.19	902.48	-4,931.39	4,992.04	4,964.95	27.09	184.276	
3,500.00	3,468.73	2,729.00	2,598.03	13.34	14.85	-76.57	880.46	-4,945.01	5,006.34	4,978.44	27.90	179.430	
3,600.00	3,567.48	2,771.31	2,637.04	13.74	15.06	-76.81	866.61	-4,953.76	5,021.65	4,993.11	28.54	175.942	
3,700.00	3,666.23	2,857.40	2,716.32	14.14	15.49	-77.29	838.64	-4,972.28	5,038.13	5,008.66	29.47	170.964	
3,800.00	3,764.97	2,981.82	2,831.54	14.55	16.15	-77.97	799.35	-4,998.00	5,054.27	5,023.63	30.64	164.970	
3,900.00	3,863.72	3,090.14	2,932.37	14.95	16.73	-78.54	766.35	-5,019.83	5,070.41	5,038.73	31.68	160.061	
4,000.00	3,962.47	3,173.81	3,010.48	15.36	17.19	-78.98	741.35	-5,036.42	5,086.68	5,054.12	32.56	156.244	
4,100.00	4,061.22	3,276.92	3,106.30	15.76	17.80	-79.53	709.33	-5,056.91	5,103.40	5,069.82	33.58	151.970	
4,200.00	4,159.97	3,353.72	3,177.57	16.17	18.29	-79.94	685.00	-5,072.01	5,120.38	5,085.92	34.46	148.568	
4,300.00	4,258.71	3,432.62	3,251.18	16.57	18.79	-80.34	661.50	-5,087.98	5,138.21	5,102.87	35.34	145.386	
4,400.00	4,357.46	3,737.64	3,538.66	16.98	20.49	-81.83	575.44	-5,142.13	5,153.14	5,115.60	37.54	137.256	
4,500.00	4,456.21	3,793.97	3,592.29	17.38	20.79	-82.09	560.92	-5,151.43	5,168.17	5,129.95	38.22	135.205	
4,600.00	4,554.96	4,249.89	4,035.60	17.79	23.06	-83.78	478.67	-5,213.61	5,180.22	5,139.15	41.07	126.130	
4,700.00	4,653.71	4,317.31	4,102.25	18.19	23.57	-83.98	471.67	-5,220.90	5,189.74	5,147.86	41.88	123.930	
4,800.00	4,752.45	4,359.00	4,143.48	18.60	24.00	-84.09	467.66	-5,225.60	5,200.01	5,157.48	42.54	122.251	
4,900.00	4,851.20	4,359.00	4,143.48	19.00	24.00	-84.09	467.66	-5,225.60	5,211.94	5,169.01	42.93	121.398	

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 #692H
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 #692H	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)	
5,000.00	4,949.95	4,412.48	4,196.33	19.41	24.22	-84.23	463.58	-5,232.66	5,224.59	5,181.05	43.53	120.014		
5,100.00	5,048.70	4,451.00	4,234.30	19.81	24.38	-84.31	461.77	-5,238.91	5,239.19	5,195.12	44.07	118.887		
5,200.00	5,147.45	4,451.00	4,234.30	20.22	24.38	-84.31	461.77	-5,238.91	5,255.05	5,210.62	44.44	118.261		
5,300.00	5,246.19	4,451.00	4,234.30	20.62	24.38	-84.31	461.77	-5,238.91	5,272.76	5,227.97	44.79	117.724		
5,400.00	5,344.94	4,577.04	4,358.12	21.03	25.52	-84.57	457.49	-5,262.04	5,289.65	5,243.54	46.11	114.720		
5,455.76	5,400.00	4,607.59	4,388.06	21.25	25.89	-84.63	456.48	-5,267.99	5,299.90	5,253.36	46.54	113.881		
5,500.00	5,443.72	4,631.80	4,411.79	21.43	26.20	-84.76	455.68	-5,272.80	5,308.23	5,261.36	46.88	113.234		
5,600.00	5,542.71	4,686.54	4,465.34	21.83	26.93	-85.06	453.90	-5,283.97	5,327.76	5,280.13	47.64	111.840		
5,700.00	5,641.93	4,821.00	4,596.51	22.22	28.78	-85.48	449.63	-5,313.23	5,349.30	5,300.29	49.02	109.134		
5,800.00	5,741.36	4,821.00	4,596.51	22.60	28.78	-85.69	449.63	-5,313.23	5,369.77	5,320.45	49.32	108.873		
5,900.00	5,840.96	4,982.01	4,753.94	22.97	29.39	-86.05	448.26	-5,346.84	5,389.75	5,339.21	50.53	106.657		
6,000.00	5,940.70	5,486.48	5,250.59	23.33	30.90	-86.45	459.34	-5,433.35	5,405.54	5,352.28	53.26	101.498		
6,100.00	6,040.55	5,604.98	5,368.18	23.68	31.25	-86.60	462.58	-5,447.75	5,416.95	5,362.81	54.14	100.056		
6,200.00	6,140.48	5,780.42	5,542.20	24.02	31.76	-86.73	467.23	-5,469.40	5,428.71	5,373.48	55.24	98.283		
6,300.00	6,240.45	5,862.36	5,623.53	24.35	32.00	-86.85	468.88	-5,479.26	5,440.50	5,384.58	55.92	97.291		
6,408.05	6,348.50	5,954.00	5,714.45	24.69	32.28	-93.04	470.47	-5,490.58	5,453.71	5,397.06	56.65	96.273		
6,450.00	6,390.43	6,053.09	5,812.81	24.82	32.66	-159.57	472.46	-5,502.45	5,459.94	5,402.67	57.27	95.330		
6,500.00	6,440.15	6,182.55	5,941.46	24.99	33.17	-155.57	476.30	-5,516.35	5,469.88	5,411.80	58.08	94.181		
6,550.00	6,489.32	6,310.77	6,069.01	25.16	33.70	-154.04	481.50	-5,528.33	5,482.49	5,423.62	58.87	93.126		
6,600.00	6,537.64	6,258.19	6,016.80	25.34	33.48	-152.78	480.35	-5,522.15	5,497.29	5,438.47	58.82	93.457		
6,650.00	6,584.80	6,388.00	6,145.89	25.52	33.90	-151.75	485.18	-5,534.69	5,516.64	5,457.13	59.50	92.709 SF		
6,700.00	6,630.52	6,388.00	6,145.89	25.71	33.90	-150.45	485.18	-5,534.69	5,538.91	5,479.21	59.71	92.770		
6,750.00	6,674.51	6,388.00	6,145.89	25.89	33.90	-148.94	485.18	-5,534.69	5,564.51	5,504.61	59.90	92.892		
6,800.00	6,716.50	6,388.00	6,145.89	26.08	33.90	-147.14	485.18	-5,534.69	5,593.22	5,533.12	60.09	93.074		
6,850.00	6,756.24	6,388.00	6,145.89	26.28	33.90	-144.98	485.18	-5,534.69	5,624.82	5,564.54	60.28	93.312		
6,900.00	6,793.47	6,388.00	6,145.89	26.48	33.90	-142.38	485.18	-5,534.69	5,659.07	5,598.61	60.46	93.601		
6,950.00	6,827.97	6,388.00	6,145.89	26.69	33.90	-139.24	485.18	-5,534.69	5,695.71	5,635.07	60.63	93.938		
7,000.00	6,859.53	6,388.00	6,145.89	26.91	33.90	-135.42	485.18	-5,534.69	5,734.47	5,673.67	60.80	94.318		
7,050.00	6,887.94	6,388.00	6,145.89	27.14	33.90	-130.78	485.18	-5,534.69	5,775.08	5,714.12	60.96	94.736		
7,100.00	6,913.05	6,388.00	6,145.89	27.38	33.90	-125.15	485.18	-5,534.69	5,817.24	5,756.13	61.11	95.186		
7,150.00	6,934.68	6,388.00	6,145.89	27.64	33.90	-118.40	485.18	-5,534.69	5,860.67	5,799.41	61.26	95.663		
7,200.00	6,952.71	6,388.00	6,145.89	27.92	33.90	-110.44	485.18	-5,534.69	5,905.07	5,843.67	61.41	96.162		
7,250.00	6,967.02	6,388.00	6,145.89	28.21	33.90	-101.39	485.18	-5,534.69	5,950.16	5,888.61	61.55	96.677		
7,300.00	6,977.54	6,388.00	6,145.89	28.52	33.90	-91.61	485.18	-5,534.69	5,995.63	5,933.95	61.68	97.202		
7,350.00	6,984.18	6,388.00	6,145.89	28.83	33.90	-81.66	485.18	-5,534.69	6,041.21	5,979.40	61.81	97.732		
7,400.00	6,986.92	6,388.00	6,145.89	29.16	33.90	-72.18	485.18	-5,534.69	6,086.62	6,024.68	61.94	98.261		
7,409.89	6,987.00	6,388.00	6,145.89	29.23	33.90	-70.40	485.18	-5,534.69	6,095.56	6,033.59	61.97	98.366		
7,500.00	6,987.00	6,388.00	6,145.89	29.85	33.90	-70.40	485.18	-5,534.69	6,177.01	6,114.81	62.20	99.305		
7,600.00	6,987.00	6,388.00	6,145.89	30.61	33.90	-70.40	485.18	-5,534.69	6,267.69	6,205.22	62.46	100.341		
7,700.00	6,987.00	6,388.00	6,145.89	31.41	33.90	-70.40	485.18	-5,534.69	6,358.64	6,295.91	62.73	101.372		
7,800.00	6,987.00	6,388.00	6,145.89	32.27	33.90	-70.40	485.18	-5,534.69	6,449.86	6,386.87	62.99	102.399		
7,900.00	6,987.00	6,388.00	6,145.89	33.17	33.90	-70.40	485.18	-5,534.69	6,541.34	6,478.09	63.25	103.421		
8,000.00	6,987.00	6,388.00	6,145.89	34.12	33.90	-70.40	485.18	-5,534.69	6,633.06	6,569.55	63.51	104.441		
8,100.00	6,987.00	6,388.00	6,145.89	35.10	33.90	-70.40	485.18	-5,534.69	6,725.02	6,661.25	63.77	105.457		
8,200.00	6,987.00	6,388.00	6,145.89	36.12	33.90	-70.40	485.18	-5,534.69	6,817.21	6,753.18	64.03	106.472		
8,300.00	6,987.00	6,388.00	6,145.89	37.17	33.90	-70.40	485.18	-5,534.69	6,909.61	6,845.33	64.28	107.484		
8,314.89	6,987.00	6,388.00	6,145.89	37.33	33.90	-70.40	485.18	-5,534.69	6,923.39	6,859.07	64.32	107.635		
8,400.00	6,987.00	6,388.00	6,145.89	38.25	33.90	-67.11	485.18	-5,534.69	7,003.07	6,938.54	64.53	108.532		
8,500.00	6,987.00	6,388.00	6,145.89	39.35	33.90	-61.39	485.18	-5,534.69	7,098.73	7,034.01	64.72	109.679		
8,600.00	6,987.00	6,388.00	6,145.89	40.45	33.90	-52.04	485.18	-5,534.69	7,196.07	7,131.20	64.87	110.926		
8,700.00	6,987.00	6,388.00	6,145.89	41.56	33.90	-35.58	485.18	-5,534.69	7,294.56	7,229.59	64.98	112.267		
8,800.00	6,987.00	6,388.00	6,145.89	42.66	33.90	-7.86	485.18	-5,534.69	7,393.69	7,328.66	65.03	113.697		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	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	
8,900.00	6,987.00	6,388.00	6,145.89	43.75	33.90	24.13	485.18	-5,534.69	7,492.95	7,427.91	65.04	115.208		
9,000.00	6,987.00	6,388.00	6,145.89	44.83	33.90	46.12	485.18	-5,534.69	7,591.87	7,526.86	65.00	116.793		
9,071.74	6,987.00	6,388.00	6,145.89	45.59	33.90	55.71	485.18	-5,534.69	7,662.36	7,597.41	64.95	117.971		
9,100.00	6,987.00	6,388.00	6,145.89	45.89	33.90	55.71	485.18	-5,534.69	7,690.03	7,625.10	64.93	118.442		
9,200.00	6,987.00	6,388.00	6,145.89	46.97	33.90	55.71	485.18	-5,534.69	7,787.97	7,723.13	64.85	120.101		
9,300.00	6,987.00	6,388.00	6,145.89	48.07	33.90	55.71	485.18	-5,534.69	7,885.97	7,821.20	64.77	121.757		
9,400.00	6,987.00	6,388.00	6,145.89	49.20	33.90	55.71	485.18	-5,534.69	7,984.01	7,919.31	64.70	123.409		
9,500.00	6,987.00	6,388.00	6,145.89	50.36	33.90	55.71	485.18	-5,534.69	8,082.10	8,017.47	64.63	125.059		
9,600.00	6,987.00	6,388.00	6,145.89	51.54	33.90	55.71	485.18	-5,534.69	8,180.24	8,115.68	64.56	126.706		
9,700.00	6,987.00	6,388.00	6,145.89	52.74	33.90	55.71	485.18	-5,534.69	8,278.42	8,213.92	64.50	128.349		
9,800.00	6,987.00	6,388.00	6,145.89	53.96	33.90	55.71	485.18	-5,534.69	8,376.64	8,312.20	64.44	129.989		
9,900.00	6,987.00	6,388.00	6,145.89	55.21	33.90	55.71	485.18	-5,534.69	8,474.91	8,410.52	64.39	131.626		
10,000.00	6,987.00	6,388.00	6,145.89	56.47	33.90	55.71	485.18	-5,534.69	8,573.22	8,508.88	64.34	133.259		
10,100.00	6,987.00	6,388.00	6,145.89	57.75	33.90	55.71	485.18	-5,534.69	8,671.56	8,607.27	64.29	134.888		
10,200.00	6,987.00	6,388.00	6,145.89	59.04	33.90	55.71	485.18	-5,534.69	8,769.94	8,705.70	64.24	136.514		
10,300.00	6,987.00	6,388.00	6,145.89	60.35	33.90	55.71	485.18	-5,534.69	8,868.36	8,804.16	64.20	138.136		
10,400.00	6,987.00	6,388.00	6,145.89	61.67	33.90	55.71	485.18	-5,534.69	8,966.82	8,902.66	64.16	139.754		
10,500.00	6,987.00	6,388.00	6,145.89	63.01	33.90	55.71	485.18	-5,534.69	9,065.30	9,001.18	64.13	141.368		
10,600.00	6,987.00	6,388.00	6,145.89	64.36	33.90	55.71	485.18	-5,534.69	9,163.82	9,099.73	64.09	142.979		
10,700.00	6,987.00	6,388.00	6,145.89	65.72	33.90	55.71	485.18	-5,534.69	9,262.38	9,198.32	64.06	144.585		
10,800.00	6,987.00	6,388.00	6,145.89	67.09	33.90	55.71	485.18	-5,534.69	9,360.96	9,296.93	64.03	146.188		
10,900.00	6,987.00	6,388.00	6,145.89	68.47	33.90	55.71	485.18	-5,534.69	9,459.57	9,395.56	64.01	147.786		
11,000.00	6,987.00	6,388.00	6,145.89	69.86	33.90	55.71	485.18	-5,534.69	9,558.21	9,494.23	63.99	149.380		
11,100.00	6,987.00	6,388.00	6,145.89	71.26	33.90	55.71	485.18	-5,534.69	9,656.88	9,592.92	63.97	150.970		
11,200.00	6,987.00	6,388.00	6,145.89	72.67	33.90	55.71	485.18	-5,534.69	9,755.58	9,691.63	63.95	152.556		
11,300.00	6,987.00	6,388.00	6,145.89	74.09	33.90	55.71	485.18	-5,534.69	9,854.30	9,790.37	63.93	154.137		
11,400.00	6,987.00	6,388.00	6,145.89	75.51	33.90	55.71	485.18	-5,534.69	9,953.05	9,889.13	63.92	155.714		
11,500.00	6,987.00	6,388.00	6,145.89	76.94	33.90	55.71	485.18	-5,534.69	10,051.82	9,987.92	63.91	157.287		
11,600.00	6,987.00	6,388.00	6,145.89	78.38	33.90	55.71	485.18	-5,534.69	10,150.62	10,086.72	63.90	158.855		
11,700.00	6,987.00	6,388.00	6,145.89	79.82	33.90	55.71	485.18	-5,534.69	10,249.44	10,185.55	63.89	160.419		
11,800.00	6,987.00	6,240.72	5,999.44	81.27	33.41	51.61	479.78	-5,520.33	10,348.24	10,284.92	63.32	163.420		
11,900.00	6,987.00	6,230.33	5,989.10	82.73	33.36	51.34	479.44	-5,519.25	10,446.96	10,383.69	63.27	165.108		
12,000.00	6,987.00	6,219.93	5,978.77	84.19	33.32	51.07	479.11	-5,518.18	10,545.70	10,482.47	63.23	166.793		
12,100.00	6,987.00	6,209.53	5,968.44	85.66	33.28	50.80	478.77	-5,517.10	10,644.45	10,581.27	63.18	168.475		
12,200.00	6,987.00	6,199.14	5,958.10	87.13	33.24	50.54	478.43	-5,516.02	10,743.21	10,680.07	63.14	170.154		
12,300.00	6,987.00	6,188.74	5,947.77	88.61	33.19	50.27	478.09	-5,514.94	10,841.99	10,778.89	63.10	171.829		
12,400.00	6,987.00	6,178.34	5,937.44	90.09	33.15	50.01	477.76	-5,513.86	10,940.78	10,877.72	63.06	173.501		
12,500.00	6,987.00	6,167.95	5,927.10	91.57	33.11	49.75	477.42	-5,512.78	11,039.58	10,976.55	63.02	175.170		
12,600.00	6,987.00	6,157.55	5,916.77	93.06	33.07	49.50	477.08	-5,511.70	11,138.39	11,075.40	62.99	176.835		
12,700.00	6,987.00	6,147.15	5,906.44	94.55	33.03	49.24	476.74	-5,510.62	11,237.21	11,174.26	62.95	178.497		
12,800.00	6,987.00	6,136.76	5,896.10	96.05	32.98	48.99	476.41	-5,509.54	11,336.04	11,273.12	62.92	180.155		
12,900.00	6,987.00	6,126.36	5,885.77	97.55	32.94	48.74	476.07	-5,508.46	11,434.89	11,371.99	62.90	181.809		
13,000.00	6,987.00	6,115.96	5,875.43	99.05	32.90	48.49	475.73	-5,507.38	11,533.75	11,470.88	62.87	183.460		
13,100.00	6,987.00	6,105.57	5,865.10	100.56	32.86	48.24	475.39	-5,506.31	11,632.61	11,569.77	62.84	185.106		
13,200.00	6,987.00	6,095.17	5,854.77	102.07	32.82	47.99	475.06	-5,505.23	11,731.49	11,668.67	62.82	186.749		
13,300.00	6,987.00	6,084.77	5,844.43	103.58	32.78	47.75	474.72	-5,504.15	11,830.37	11,767.58	62.80	188.389		
13,400.00	6,987.00	5,849.05	5,610.32	105.09	31.96	42.71	468.63	-5,477.64	11,929.19	11,867.32	61.87	192.811		
13,500.00	6,987.00	5,840.88	5,602.21	106.61	31.94	42.55	468.47	-5,476.65	12,027.89	11,966.01	61.87	194.399		
13,600.00	6,987.00	5,832.75	5,594.14	108.13	31.92	42.39	468.31	-5,475.67	12,126.59	12,064.72	61.88	195.981		
13,700.00	6,987.00	4,682.73	4,461.61	109.65	26.87	27.25	454.02	-5,283.18	12,223.26	12,165.85	57.41	212.917		
13,800.00	6,987.00	4,675.23	4,454.28	111.18	26.77	27.17	454.26	-5,281.63	12,320.45	12,263.02	57.43	214.544		
13,900.00	6,987.00	4,667.80	4,447.01	112.71	26.67	27.10	454.50	-5,280.10	12,417.67	12,360.23	57.45	216.164		

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 #692H
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 #692H	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
14,000.00	6,987.00	4,660.45	4,439.82	114.23	26.57	27.04	454.74	-5,278.59	12,514.93	12,457.46	57.47	217.778
14,100.00	6,987.00	4,653.17	4,432.70	115.77	26.48	26.97	454.98	-5,277.11	12,612.22	12,554.73	57.49	219.385
14,200.00	6,987.00	4,645.97	4,425.65	117.30	26.38	26.90	455.22	-5,275.65	12,709.53	12,652.02	57.51	220.985
14,300.00	6,987.00	4,638.83	4,418.67	118.83	26.29	26.83	455.45	-5,274.21	12,806.88	12,749.34	57.54	222.580
14,400.00	6,987.00	4,631.77	4,411.76	120.37	26.20	26.77	455.68	-5,272.79	12,904.26	12,846.69	57.57	224.167
14,500.00	6,987.00	4,624.78	4,404.91	121.91	26.11	26.71	455.91	-5,271.39	13,001.67	12,944.07	57.59	225.748
14,600.00	6,987.00	4,617.86	4,398.13	123.45	26.02	26.64	456.14	-5,270.02	13,099.10	13,041.48	57.62	227.323
14,700.00	6,987.00	4,611.01	4,391.42	124.99	25.93	26.58	456.37	-5,268.66	13,196.56	13,138.91	57.65	228.891
14,800.00	6,987.00	4,604.22	4,384.77	126.53	25.85	26.52	456.59	-5,267.33	13,294.05	13,236.37	57.69	230.452
14,900.00	6,987.00	4,597.50	4,378.18	128.08	25.76	26.46	456.81	-5,266.01	13,391.57	13,333.85	57.72	232.007
15,000.00	6,987.00	4,590.85	4,371.66	129.63	25.68	26.40	457.03	-5,264.71	13,489.11	13,431.36	57.76	233.556
15,100.00	6,987.00	4,584.25	4,365.19	131.17	25.61	26.34	457.25	-5,263.43	13,586.68	13,528.89	57.79	235.098
15,200.00	6,987.00	4,577.73	4,358.79	132.72	25.53	26.28	457.47	-5,262.17	13,684.28	13,626.45	57.83	236.633
15,300.00	6,987.00	4,451.00	4,234.30	134.27	24.38	25.18	461.77	-5,238.91	13,783.46	13,726.24	57.22	240.890
15,400.00	6,987.00	4,451.00	4,234.30	135.83	24.38	25.18	461.77	-5,238.91	13,880.94	13,823.65	57.30	242.267
15,500.00	6,987.00	4,451.00	4,234.30	137.38	24.38	25.18	461.77	-5,238.91	13,978.46	13,921.09	57.37	243.640
15,600.00	6,987.00	4,451.00	4,234.30	138.93	24.38	25.18	461.77	-5,238.91	14,076.01	14,018.56	57.45	245.007
15,700.00	6,987.00	4,451.00	4,234.30	140.49	24.38	25.18	461.77	-5,238.91	14,173.60	14,116.07	57.53	246.370
15,800.00	6,987.00	4,451.00	4,234.30	142.04	24.38	25.18	461.77	-5,238.91	14,271.22	14,213.61	57.61	247.727
15,900.00	6,987.00	4,451.00	4,234.30	143.60	24.38	25.18	461.77	-5,238.91	14,368.87	14,311.18	57.69	249.079
16,000.00	6,987.00	4,451.00	4,234.30	145.16	24.38	25.18	461.77	-5,238.91	14,466.55	14,408.79	57.77	250.427
16,100.00	6,987.00	4,451.00	4,234.30	146.72	24.38	25.18	461.77	-5,238.91	14,564.27	14,506.42	57.85	251.769
16,200.00	6,987.00	4,451.00	4,234.30	148.28	24.38	25.18	461.77	-5,238.91	14,662.02	14,604.09	57.93	253.106
16,300.00	6,987.00	4,451.00	4,234.30	149.84	24.38	25.18	461.77	-5,238.91	14,759.79	14,701.78	58.01	254.438
16,400.00	6,987.00	4,451.00	4,234.30	151.40	24.38	25.18	461.77	-5,238.91	14,857.60	14,799.51	58.09	255.765
16,500.00	6,987.00	4,451.00	4,234.30	152.97	24.38	25.18	461.77	-5,238.91	14,955.43	14,897.26	58.17	257.088
16,600.00	6,987.00	4,451.00	4,234.30	154.53	24.38	25.18	461.77	-5,238.91	15,053.30	14,995.04	58.25	258.405
16,700.00	6,987.00	4,451.00	4,234.30	156.10	24.38	25.18	461.77	-5,238.91	15,151.19	15,092.85	58.34	259.717
16,800.00	6,987.00	4,451.00	4,234.30	157.66	24.38	25.18	461.77	-5,238.91	15,249.11	15,190.69	58.42	261.024
16,900.00	6,987.00	4,451.00	4,234.30	159.23	24.38	25.18	461.77	-5,238.91	15,347.05	15,288.55	58.50	262.325
17,000.00	6,987.00	4,451.00	4,234.30	160.80	24.38	25.18	461.77	-5,238.91	15,445.03	15,386.44	58.59	263.622
17,100.00	6,987.00	4,451.00	4,234.30	162.36	24.38	25.18	461.77	-5,238.91	15,543.02	15,484.35	58.67	264.914
17,200.00	6,987.00	4,451.00	4,234.30	163.93	24.38	25.18	461.77	-5,238.91	15,641.05	15,582.29	58.76	266.201
17,300.00	6,987.00	4,451.00	4,234.30	165.50	24.38	25.18	461.77	-5,238.91	15,739.10	15,680.25	58.84	267.483
17,400.00	6,987.00	4,451.00	4,234.30	167.07	24.38	25.18	461.77	-5,238.91	15,837.17	15,778.24	58.93	268.759
17,500.00	6,987.00	4,451.00	4,234.30	168.64	24.38	25.18	461.77	-5,238.91	15,935.26	15,876.25	59.01	270.031
17,600.00	6,987.00	4,451.00	4,234.30	170.21	24.38	25.18	461.77	-5,238.91	16,033.38	15,974.29	59.10	271.297
17,700.00	6,987.00	4,451.00	4,234.30	171.78	24.38	25.18	461.77	-5,238.91	16,131.53	16,072.34	59.19	272.559
17,800.00	6,987.00	4,451.00	4,234.30	173.36	24.38	25.18	461.77	-5,238.91	16,229.69	16,170.42	59.27	273.815
17,900.00	6,987.00	4,451.00	4,234.30	174.93	24.38	25.18	461.77	-5,238.91	16,327.88	16,268.52	59.36	275.067
18,000.00	6,987.00	4,451.00	4,234.30	176.50	24.38	25.18	461.77	-5,238.91	16,426.09	16,366.64	59.45	276.313
18,100.00	6,987.00	4,451.00	4,234.30	178.08	24.38	25.18	461.77	-5,238.91	16,524.32	16,464.79	59.54	277.555
18,200.00	6,987.00	4,451.00	4,234.30	179.65	24.38	25.18	461.77	-5,238.91	16,622.58	16,562.95	59.62	278.791
18,300.00	6,987.00	4,451.00	4,234.30	181.23	24.38	25.18	461.77	-5,238.91	16,720.85	16,661.14	59.71	280.023
18,400.00	6,987.00	4,451.00	4,234.30	182.80	24.38	25.18	461.77	-5,238.91	16,819.14	16,759.34	59.80	281.249
18,500.00	6,987.00	4,451.00	4,234.30	184.38	24.38	25.18	461.77	-5,238.91	16,917.46	16,857.56	59.89	282.470
18,600.00	6,987.00	4,451.00	4,234.30	185.96	24.38	25.18	461.77	-5,238.91	17,015.79	16,955.81	59.98	283.687
18,700.00	6,987.00	4,451.00	4,234.30	187.53	24.38	25.18	461.77	-5,238.91	17,114.14	17,054.07	60.07	284.898
18,800.00	6,987.00	4,451.00	4,234.30	189.11	24.38	25.18	461.77	-5,238.91	17,212.51	17,152.35	60.16	286.104
18,900.00	6,987.00	4,451.00	4,234.30	190.69	24.38	25.18	461.77	-5,238.91	17,310.90	17,250.65	60.25	287.306
19,000.00	6,987.00	4,451.00	4,234.30	192.27	24.38	25.18	461.77	-5,238.91	17,409.31	17,348.97	60.34	288.502
19,100.00	6,987.00	4,451.00	4,234.30	193.85	24.38	25.18	461.77	-5,238.91	17,507.74	17,447.30	60.44	289.694

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 #692H
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 #692H	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		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	Warning	
19,200.00	6,987.00	4,451.00	4,234.30	195.43	24.38	25.18	461.77	-5,238.91	17,606.18	17,545.66	60.53	290.880		
19,255.69	6,987.00	4,451.00	4,234.30	196.31	24.38	25.18	461.77	-5,238.91	17,661.02	17,600.44	60.58	291.539		
19,300.00	6,987.00	4,451.00	4,234.30	197.01	24.38	25.18	461.77	-5,238.91	17,704.64	17,644.02	60.62	292.062		
19,400.00	6,987.00	4,451.00	4,234.30	198.59	24.38	25.18	461.77	-5,238.91	17,803.12	17,742.41	60.71	293.238		
19,468.80	6,987.00	4,451.00	4,234.30	199.49	24.38	25.18	461.77	-5,238.91	17,870.89	17,806.48	64.41	277.440		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		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	39.00	39.00	0.00	0.79	-72.33	1,452.83	-4,560.14	4,785.98				
100.00	100.00	139.00	139.00	0.25	2.82	-72.33	1,452.83	-4,560.14	4,785.98	4,782.91	3.07	1,560.990	
200.00	200.00	239.00	239.00	0.61	4.84	-72.33	1,452.83	-4,560.14	4,785.98	4,780.53	5.45	878.235	
210.00	210.00	249.00	249.00	0.65	5.04	-72.33	1,452.83	-4,560.14	4,785.98	4,780.29	5.69	841.432 CC	
300.00	300.00	311.39	311.39	0.97	5.85	-72.33	1,452.88	-4,560.20	4,786.13	4,779.31	6.81	702.308 ES	
400.00	400.00	386.39	386.38	1.33	5.97	-72.33	1,453.03	-4,560.88	4,787.03	4,779.74	7.29	656.793	
500.00	500.00	460.32	460.31	1.68	6.10	-72.34	1,452.53	-4,562.03	4,788.34	4,780.58	7.76	616.880	
600.00	600.00	516.98	516.94	2.04	6.15	-72.35	1,451.83	-4,563.51	4,790.44	4,782.27	8.18	585.919	
700.00	700.00	562.00	561.92	2.40	6.18	-72.37	1,450.83	-4,565.19	4,793.45	4,784.88	8.58	558.902	
800.00	799.98	622.00	621.80	2.76	6.28	-65.96	1,448.83	-4,568.44	4,796.89	4,787.88	9.01	532.532	
900.00	899.84	646.01	645.72	3.12	6.35	-65.94	1,447.83	-4,570.16	4,800.15	4,790.75	9.40	510.553	
1,000.00	999.45	682.00	681.54	3.48	6.45	-65.94	1,446.13	-4,573.28	4,803.40	4,793.59	9.81	489.467	
1,100.00	1,098.70	717.62	716.91	3.85	6.57	-65.97	1,444.12	-4,576.94	4,806.58	4,796.34	10.24	469.358	
1,153.80	1,151.90	742.00	741.07	4.04	6.65	-66.00	1,442.52	-4,579.76	4,808.25	4,797.77	10.48	458.733	
1,200.00	1,197.53	742.00	741.07	4.21	6.65	-66.00	1,442.52	-4,579.76	4,809.85	4,799.20	10.65	451.834	
1,300.00	1,296.27	780.05	778.69	4.59	6.79	-66.12	1,439.76	-4,584.77	4,814.31	4,803.20	11.10	433.691	
1,400.00	1,395.02	803.00	801.31	4.97	6.87	-66.19	1,437.98	-4,588.20	4,820.32	4,808.80	11.52	418.472	
1,500.00	1,493.77	838.42	836.12	5.36	7.01	-66.30	1,435.03	-4,594.06	4,827.79	4,815.81	11.98	402.921	
1,600.00	1,592.52	863.00	860.20	5.74	7.11	-66.38	1,432.86	-4,598.50	4,836.75	4,824.34	12.41	389.649	
1,700.00	1,691.27	893.81	890.27	6.14	7.23	-66.49	1,429.98	-4,604.55	4,847.19	4,834.32	12.87	376.516	
1,800.00	1,790.01	924.00	919.61	6.53	7.36	-66.60	1,427.01	-4,611.02	4,859.18	4,845.85	13.33	364.472	
1,900.00	1,888.76	954.44	949.06	6.92	7.48	-66.71	1,423.80	-4,618.02	4,872.60	4,858.81	13.80	353.213	
2,000.00	1,987.51	986.00	979.46	7.32	7.61	-66.83	1,420.18	-4,625.66	4,887.35	4,873.09	14.26	342.696	
2,100.00	2,086.26	1,018.10	1,010.23	7.72	7.75	-66.95	1,416.18	-4,633.91	4,903.49	4,888.75	14.74	332.737	
2,200.00	2,185.01	1,049.00	1,039.66	8.11	7.88	-67.08	1,412.05	-4,642.36	4,921.07	4,905.87	15.21	323.622	
2,300.00	2,283.75	1,072.33	1,061.75	8.51	7.99	-67.18	1,408.77	-4,649.08	4,940.11	4,924.46	15.65	315.655	
2,400.00	2,382.50	1,110.00	1,097.21	8.91	8.16	-67.34	1,403.26	-4,660.56	4,960.67	4,944.51	16.16	306.976	
2,500.00	2,481.25	1,110.00	1,097.21	9.31	8.16	-67.34	1,403.26	-4,660.56	4,982.65	4,966.16	16.49	302.221	
2,600.00	2,580.00	1,141.88	1,126.95	9.71	8.32	-67.48	1,398.40	-4,670.94	5,006.09	4,989.10	16.98	294.750	
2,700.00	2,678.75	1,173.00	1,155.72	10.11	8.48	-67.62	1,393.47	-4,681.75	5,031.13	5,013.66	17.48	287.887	
2,800.00	2,777.49	1,173.00	1,155.72	10.52	8.48	-67.62	1,393.47	-4,681.75	5,057.62	5,039.83	17.79	284.356	
2,900.00	2,876.24	1,201.21	1,181.55	10.92	8.64	-67.75	1,388.86	-4,692.12	5,085.56	5,067.29	18.28	278.266	
3,000.00	2,974.99	1,235.00	1,212.15	11.32	8.82	-67.91	1,383.21	-4,705.27	5,115.13	5,096.33	18.80	272.057	
3,100.00	3,073.74	1,235.00	1,212.15	11.72	8.82	-67.91	1,383.21	-4,705.27	5,145.96	5,126.86	19.09	269.506	
3,200.00	3,172.49	1,259.64	1,234.24	12.13	8.96	-68.02	1,378.93	-4,715.33	5,178.28	5,158.72	19.56	264.781	
3,300.00	3,271.23	1,297.00	1,267.29	12.53	9.17	-68.21	1,372.02	-4,731.30	5,212.11	5,192.00	20.11	259.173	
3,400.00	3,369.98	1,297.00	1,267.29	12.93	9.17	-68.21	1,372.02	-4,731.30	5,247.07	5,226.69	20.38	257.402	
3,500.00	3,468.73	1,297.00	1,267.29	13.34	9.17	-68.21	1,372.02	-4,731.30	5,283.69	5,263.04	20.65	255.860	
3,600.00	3,567.48	1,333.73	1,299.29	13.74	9.37	-68.39	1,364.92	-4,747.87	5,321.32	5,300.12	21.20	251.050	
3,700.00	3,666.23	1,359.00	1,321.01	14.14	9.50	-68.52	1,359.95	-4,759.80	5,360.49	5,338.84	21.65	247.594	
3,800.00	3,764.97	1,359.00	1,321.01	14.55	9.50	-68.52	1,359.95	-4,759.80	5,400.95	5,379.05	21.90	246.637	
3,900.00	3,863.72	1,389.84	1,347.18	14.95	9.65	-68.68	1,353.67	-4,774.84	5,442.59	5,420.21	22.39	243.133	
4,000.00	3,962.47	1,421.00	1,373.27	15.36	9.81	-68.85	1,346.96	-4,790.52	5,485.52	5,462.65	22.87	239.832	
4,100.00	4,061.22	1,421.00	1,373.27	15.76	9.81	-68.85	1,346.96	-4,790.52	5,529.58	5,506.47	23.10	239.348	
4,200.00	4,159.97	1,421.00	1,373.27	16.17	9.81	-68.85	1,346.96	-4,790.52	5,575.08	5,551.76	23.33	239.009	
4,300.00	4,258.71	1,482.00	1,423.04	16.57	10.11	-69.18	1,333.03	-4,822.89	5,621.65	5,597.57	24.07	233.506	
4,400.00	4,357.46	1,482.00	1,423.04	16.98	10.11	-69.18	1,333.03	-4,822.89	5,669.10	5,644.82	24.29	233.404	
4,500.00	4,456.21	1,482.00	1,423.04	17.38	10.11	-69.18	1,333.03	-4,822.89	5,717.91	5,693.42	24.50	233.423	
4,600.00	4,554.96	1,482.00	1,423.04	17.79	10.11	-69.18	1,333.03	-4,822.89	5,768.04	5,743.35	24.70	233.556	
4,700.00	4,653.71	1,513.70	1,448.16	18.19	10.28	-69.36	1,325.42	-4,840.66	5,818.99	5,793.79	25.20	230.922	
4,800.00	4,752.45	1,543.00	1,470.91	18.60	10.43	-69.52	1,318.14	-4,857.64	5,871.29	5,845.61	25.68	228.666	
4,900.00	4,851.20	1,543.00	1,470.91	19.00	10.43	-69.52	1,318.14	-4,857.64	5,924.42	5,898.55	25.86	229.067	

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 #692H
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 #692H	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:	
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	4,949.95	1,543.00	1,470.91	19.41	10.43	-69.52	1,318.14	-4,857.64	5,978.75	5,952.70	26.04	229.558	
5,100.00	5,048.70	1,571.80	1,492.83	19.81	10.57	-69.69	1,310.71	-4,874.77	6,033.93	6,007.43	26.50	227.691	
5,200.00	5,147.45	1,604.00	1,516.87	20.22	10.72	-69.88	1,301.99	-4,894.34	6,090.24	6,063.25	26.99	225.674	
5,300.00	5,246.19	1,604.00	1,516.87	20.62	10.72	-69.88	1,301.99	-4,894.34	6,147.28	6,120.12	27.16	226.365	
5,400.00	5,344.94	1,633.84	1,538.81	21.03	10.82	-70.06	1,293.55	-4,912.72	6,205.25	6,177.67	27.58	224.987	
5,455.76	5,400.00	1,667.00	1,562.95	21.25	10.95	-70.26	1,283.77	-4,933.25	6,237.92	6,209.96	27.96	223.127	
5,500.00	5,443.72	1,667.00	1,562.95	21.43	10.95	-70.56	1,283.77	-4,933.25	6,263.97	6,235.94	28.03	223.492	
5,600.00	5,542.71	1,695.97	1,583.84	21.83	11.03	-71.44	1,274.94	-4,951.27	6,323.78	6,295.36	28.42	222.530	
5,700.00	5,641.93	1,729.00	1,607.44	22.22	11.15	-72.37	1,264.61	-4,971.94	6,384.73	6,355.90	28.82	221.501	
5,800.00	5,741.36	1,764.53	1,632.63	22.60	11.35	-73.32	1,253.28	-4,994.29	6,446.70	6,417.46	29.24	220.492	
5,900.00	5,840.96	1,791.00	1,651.31	22.97	11.70	-74.25	1,244.76	-5,010.99	6,509.61	6,480.03	29.58	220.059	
6,000.00	5,940.70	1,833.62	1,681.22	23.33	12.21	-75.28	1,230.93	-5,038.03	6,573.42	6,543.37	30.05	218.777	
6,100.00	6,040.55	2,236.22	1,970.24	23.68	17.31	-78.02	1,099.77	-5,285.57	6,634.65	6,600.93	33.72	196.738	
6,200.00	6,140.48	2,281.23	2,003.17	24.02	17.89	-78.98	1,085.26	-5,312.61	6,696.26	6,662.02	34.24	195.578	
6,300.00	6,240.45	2,324.03	2,034.38	24.35	18.45	-79.94	1,071.52	-5,338.49	6,758.57	6,723.85	34.72	194.636	
6,408.05	6,348.50	2,372.27	2,069.44	24.69	19.08	-99.01	1,056.16	-5,367.83	6,826.66	6,791.41	35.25	193.658	
6,450.00	6,390.43	2,391.76	2,083.59	24.82	19.34	-152.15	1,050.00	-5,379.74	6,854.15	6,818.69	35.47	193.255	
6,500.00	6,440.15	2,413.20	2,099.14	24.99	19.62	-146.08	1,043.26	-5,392.87	6,889.18	6,853.46	35.72	192.872	
6,550.00	6,489.32	2,446.00	2,122.91	25.16	20.05	-142.13	1,033.02	-5,413.02	6,926.47	6,890.39	36.08	191.969	
6,600.00	6,537.64	2,446.00	2,122.91	25.34	20.05	-137.85	1,033.02	-5,413.02	6,965.74	6,929.60	36.15	192.708	
6,650.00	6,584.80	2,446.00	2,122.91	25.52	20.05	-132.91	1,033.02	-5,413.02	7,006.83	6,970.61	36.22	193.472	
6,700.00	6,630.52	2,473.27	2,142.63	25.71	20.42	-127.34	1,024.52	-5,429.84	7,049.36	7,012.81	36.54	192.902	
6,750.00	6,674.51	2,482.01	2,148.93	25.89	20.54	-120.48	1,021.78	-5,435.24	7,093.15	7,056.45	36.70	193.260	
6,800.00	6,716.50	2,488.55	2,153.64	26.08	20.63	-112.34	1,019.73	-5,439.27	7,137.91	7,101.07	36.85	193.726	
6,850.00	6,756.24	2,492.85	2,156.74	26.28	20.69	-102.98	1,018.38	-5,441.94	7,183.35	7,146.38	36.97	194.292	
6,900.00	6,793.47	6,912.39	6,030.33	26.48	72.18	-141.24	528.53	-7,100.83	7,223.05	7,136.52	86.53	83.470	
6,950.00	6,827.97	6,944.15	6,061.82	26.69	72.87	-138.31	530.56	-7,104.45	7,258.96	7,171.50	87.45	83.004	
7,000.00	6,859.53	6,972.82	6,090.24	26.91	73.49	-134.80	532.38	-7,107.71	7,296.85	7,208.56	88.29	82.650	
7,050.00	6,887.94	6,990.00	6,107.28	27.14	73.87	-130.55	533.48	-7,109.67	7,336.51	7,247.68	88.83	82.589 SF	
7,100.00	6,913.05	6,990.00	6,107.28	27.38	73.87	-125.31	533.48	-7,109.67	7,377.76	7,288.81	88.95	82.943	
7,150.00	6,934.68	6,990.00	6,107.28	27.64	73.87	-119.09	533.48	-7,109.67	7,420.32	7,331.26	89.06	83.321	
7,200.00	6,952.71	6,990.00	6,107.28	27.92	73.87	-111.81	533.48	-7,109.67	7,463.92	7,374.76	89.16	83.718	
7,250.00	6,967.02	6,990.00	6,107.28	28.21	73.87	-103.54	533.48	-7,109.67	7,508.28	7,419.03	89.25	84.131	
7,300.00	6,977.54	6,990.00	6,107.28	28.52	73.87	-94.54	533.48	-7,109.67	7,553.10	7,463.77	89.33	84.555	
7,350.00	6,984.18	6,990.00	6,107.28	28.83	73.87	-85.24	533.48	-7,109.67	7,598.11	7,508.71	89.40	84.986	
7,400.00	6,986.92	6,990.00	6,107.28	29.16	73.87	-76.17	533.48	-7,109.67	7,643.03	7,553.56	89.47	85.421	
7,409.89	6,987.00	6,990.00	6,107.28	29.23	73.87	-74.45	533.48	-7,109.67	7,651.89	7,562.40	89.49	85.507	
7,500.00	6,987.00	2,354.00	2,056.17	29.85	18.84	-30.11	1,061.96	-5,356.69	7,715.21	7,677.61	37.60	205.165	
7,600.00	6,987.00	2,311.16	2,025.00	30.61	18.28	-29.95	1,075.64	-5,330.69	7,782.11	7,744.44	37.66	206.623	
7,700.00	6,987.00	2,259.00	1,986.92	31.41	17.60	-29.75	1,092.43	-5,299.24	7,849.39	7,811.73	37.66	208.444	
7,800.00	6,987.00	2,232.93	1,967.83	32.27	17.27	-29.65	1,100.82	-5,283.60	7,916.98	7,879.10	37.88	208.989	
7,900.00	6,987.00	1,791.00	1,651.31	33.17	11.70	-28.08	1,244.76	-5,010.99	7,982.73	7,947.92	34.81	229.344	
8,000.00	6,987.00	1,768.74	1,635.60	34.12	11.40	-28.01	1,251.93	-4,996.94	8,047.65	8,012.51	35.15	228.974	
8,100.00	6,987.00	1,729.00	1,607.44	35.10	11.15	-27.87	1,264.61	-4,971.94	8,113.00	8,077.63	35.36	229.408	
8,200.00	6,987.00	1,707.35	1,592.00	36.12	11.07	-27.80	1,271.41	-4,958.38	8,178.78	8,143.06	35.72	228.979	
8,300.00	6,987.00	1,667.00	1,562.95	37.17	10.95	-27.66	1,283.77	-4,933.25	8,245.09	8,209.15	35.95	229.381	
8,314.89	6,987.00	1,667.00	1,562.95	37.33	10.95	-27.66	1,283.77	-4,933.25	8,254.98	8,218.96	36.02	229.167	
8,400.00	6,987.00	1,667.00	1,562.95	38.25	10.95	-24.84	1,283.77	-4,933.25	8,312.63	8,276.18	36.45	228.038	
8,500.00	6,987.00	1,637.57	1,541.54	39.35	10.84	-21.14	1,292.47	-4,915.03	8,382.75	8,346.03	36.71	228.336	
8,600.00	6,987.00	1,604.00	1,516.87	40.45	10.72	-17.13	1,301.99	-4,894.34	8,455.05	8,418.14	36.92	229.030	
8,700.00	6,987.00	1,604.00	1,516.87	41.56	10.72	-12.87	1,301.99	-4,894.34	8,529.11	8,491.77	37.35	228.385	
8,800.00	6,987.00	1,604.00	1,516.87	42.66	10.72	-8.33	1,301.99	-4,894.34	8,604.72	8,566.98	37.74	228.002	

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 #692H
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 #692H	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)	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)			
8,900.00	6,987.00	1,604.00	1,516.87	43.75	10.72	-3.57	1,301.99	-4,894.34	8,681.47	8,643.37	38.10	227.870	
9,000.00	6,987.00	1,570.25	1,491.67	44.83	10.56	1.24	1,311.12	-4,873.84	8,758.51	8,720.38	38.13	229.694	
9,071.74	6,987.00	1,543.00	1,470.91	45.59	10.43	4.68	1,318.14	-4,857.64	8,814.33	8,776.22	38.11	231.275	
9,100.00	6,987.00	1,543.00	1,470.91	45.89	10.43	4.68	1,318.14	-4,857.64	8,836.24	8,798.05	38.19	231.359	
9,200.00	6,987.00	1,543.00	1,470.91	46.97	10.43	4.68	1,318.14	-4,857.64	8,914.06	8,875.58	38.48	231.664	
9,300.00	6,987.00	1,543.00	1,470.91	48.07	10.43	4.68	1,318.14	-4,857.64	8,992.32	8,953.56	38.76	231.989	
9,400.00	6,987.00	1,543.00	1,470.91	49.20	10.43	4.68	1,318.14	-4,857.64	9,071.01	9,031.96	39.04	232.334	
9,500.00	6,987.00	1,543.00	1,470.91	50.36	10.43	4.68	1,318.14	-4,857.64	9,150.11	9,110.79	39.32	232.699	
9,600.00	6,987.00	1,543.00	1,470.91	51.54	10.43	4.68	1,318.14	-4,857.64	9,229.62	9,190.02	39.60	233.083	
9,700.00	6,987.00	1,543.00	1,470.91	52.74	10.43	4.68	1,318.14	-4,857.64	9,309.52	9,269.65	39.87	233.487	
9,800.00	6,987.00	1,510.41	1,445.58	53.96	10.26	4.57	1,326.22	-4,838.79	9,389.31	9,349.44	39.88	235.461	
9,900.00	6,987.00	1,482.00	1,423.04	55.21	10.11	4.48	1,333.03	-4,822.89	9,469.99	9,430.07	39.92	237.227	
10,000.00	6,987.00	1,482.00	1,423.04	56.47	10.11	4.48	1,333.03	-4,822.89	9,550.66	9,510.46	40.19	237.629	
10,100.00	6,987.00	1,482.00	1,423.04	57.75	10.11	4.48	1,333.03	-4,822.89	9,631.69	9,591.23	40.46	238.051	
10,200.00	6,987.00	1,482.00	1,423.04	59.04	10.11	4.48	1,333.03	-4,822.89	9,713.07	9,672.35	40.73	238.492	
10,300.00	6,987.00	1,482.00	1,423.04	60.35	10.11	4.48	1,333.03	-4,822.89	9,794.81	9,753.81	40.99	238.953	
10,400.00	6,987.00	1,482.00	1,423.04	61.67	10.11	4.48	1,333.03	-4,822.89	9,876.87	9,835.62	41.25	239.433	
10,500.00	6,987.00	1,482.00	1,423.04	63.01	10.11	4.48	1,333.03	-4,822.89	9,959.27	9,917.76	41.51	239.932	
10,600.00	6,987.00	1,482.00	1,423.04	64.36	10.11	4.48	1,333.03	-4,822.89	10,041.98	10,000.22	41.76	240.448	
10,700.00	6,987.00	1,482.00	1,423.04	65.72	10.11	4.48	1,333.03	-4,822.89	10,125.01	10,082.99	42.02	240.982	
10,800.00	6,987.00	1,450.22	1,397.34	67.09	9.96	4.39	1,340.41	-4,805.72	10,207.87	10,165.82	42.05	242.728	
10,900.00	6,987.00	1,421.00	1,373.27	68.47	9.81	4.30	1,346.96	-4,790.52	10,291.58	10,249.47	42.11	244.376	
11,000.00	6,987.00	1,421.00	1,373.27	69.86	9.81	4.30	1,346.96	-4,790.52	10,375.19	10,332.83	42.36	244.915	
11,100.00	6,987.00	1,421.00	1,373.27	71.26	9.81	4.30	1,346.96	-4,790.52	10,459.09	10,416.48	42.61	245.472	
11,200.00	6,987.00	1,421.00	1,373.27	72.67	9.81	4.30	1,346.96	-4,790.52	10,543.27	10,500.41	42.85	246.045	
11,300.00	6,987.00	1,421.00	1,373.27	74.09	9.81	4.30	1,346.96	-4,790.52	10,627.72	10,584.63	43.09	246.634	
11,400.00	6,987.00	1,421.00	1,373.27	75.51	9.81	4.30	1,346.96	-4,790.52	10,712.44	10,669.11	43.33	247.238	
11,500.00	6,987.00	1,421.00	1,373.27	76.94	9.81	4.30	1,346.96	-4,790.52	10,797.42	10,753.86	43.56	247.858	
11,600.00	6,987.00	1,421.00	1,373.27	78.38	9.81	4.30	1,346.96	-4,790.52	10,882.65	10,838.86	43.79	248.492	
11,700.00	6,987.00	1,421.00	1,373.27	79.82	9.81	4.30	1,346.96	-4,790.52	10,968.14	10,924.12	44.02	249.140	
11,800.00	6,987.00	1,391.57	1,348.64	81.27	9.66	4.22	1,353.31	-4,775.70	11,053.56	11,009.47	44.09	250.710	
11,900.00	6,987.00	1,359.00	1,321.01	82.73	9.50	4.13	1,359.95	-4,759.80	11,139.63	11,095.49	44.14	252.379	
12,000.00	6,987.00	1,359.00	1,321.01	84.19	9.50	4.13	1,359.95	-4,759.80	11,225.56	11,181.20	44.36	253.032	
12,100.00	6,987.00	1,359.00	1,321.01	85.66	9.50	4.13	1,359.95	-4,759.80	11,311.72	11,267.13	44.59	253.698	
12,200.00	6,987.00	1,359.00	1,321.01	87.13	9.50	4.13	1,359.95	-4,759.80	11,398.10	11,353.30	44.81	254.377	
12,300.00	6,987.00	1,359.00	1,321.01	88.61	9.50	4.13	1,359.95	-4,759.80	11,484.71	11,439.69	45.03	255.069	
12,400.00	6,987.00	1,359.00	1,321.01	90.09	9.50	4.13	1,359.95	-4,759.80	11,571.53	11,526.29	45.24	255.773	
12,500.00	6,987.00	1,359.00	1,321.01	91.57	9.50	4.13	1,359.95	-4,759.80	11,658.57	11,613.11	45.45	256.488	
12,600.00	6,987.00	1,359.00	1,321.01	93.06	9.50	4.13	1,359.95	-4,759.80	11,745.81	11,700.14	45.67	257.215	
12,700.00	6,987.00	1,359.00	1,321.01	94.55	9.50	4.13	1,359.95	-4,759.80	11,833.25	11,787.38	45.87	257.952	
12,800.00	6,987.00	1,359.00	1,321.01	96.05	9.50	4.13	1,359.95	-4,759.80	11,920.89	11,874.81	46.08	258.700	
12,900.00	6,987.00	1,359.00	1,321.01	97.55	9.50	4.13	1,359.95	-4,759.80	12,008.72	11,962.44	46.28	259.458	
13,000.00	6,987.00	1,328.35	1,294.63	99.05	9.34	4.05	1,365.97	-4,745.38	12,096.34	12,050.01	46.33	261.082	
13,100.00	6,987.00	1,297.00	1,267.29	100.56	9.17	3.97	1,372.02	-4,731.30	12,184.73	12,138.36	46.38	262.723	
13,200.00	6,987.00	1,297.00	1,267.29	102.07	9.17	3.97	1,372.02	-4,731.30	12,272.89	12,226.31	46.58	263.483	
13,300.00	6,987.00	1,297.00	1,267.29	103.58	9.17	3.97	1,372.02	-4,731.30	12,361.23	12,314.45	46.78	264.251	
13,400.00	6,987.00	1,297.00	1,267.29	105.09	9.17	3.97	1,372.02	-4,731.30	12,449.74	12,402.77	46.98	265.029	
13,500.00	6,987.00	1,297.00	1,267.29	106.61	9.17	3.97	1,372.02	-4,731.30	12,538.43	12,491.26	47.17	265.816	
13,600.00	6,987.00	1,297.00	1,267.29	108.13	9.17	3.97	1,372.02	-4,731.30	12,627.29	12,579.92	47.36	266.611	
13,700.00	6,987.00	1,297.00	1,267.29	109.65	9.17	3.97	1,372.02	-4,731.30	12,716.31	12,668.75	47.55	267.414	
13,800.00	6,987.00	1,297.00	1,267.29	111.18	9.17	3.97	1,372.02	-4,731.30	12,805.49	12,757.75	47.74	268.224	
13,900.00	6,987.00	1,297.00	1,267.29	112.71	9.17	3.97	1,372.02	-4,731.30	12,894.83	12,846.90	47.93	269.043	

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 #692H
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 #692H	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)			
14,000.00	6,987.00	1,297.00	1,267.29	114.23	9.17	3.97	1,372.02	-4,731.30	12,984.33	12,936.21	48.11	269.868	
14,100.00	6,987.00	1,297.00	1,267.29	115.77	9.17	3.97	1,372.02	-4,731.30	13,073.98	13,025.68	48.30	270.701	
14,200.00	6,987.00	1,297.00	1,267.29	117.30	9.17	3.97	1,372.02	-4,731.30	13,163.78	13,115.30	48.48	271.540	
14,300.00	6,987.00	1,297.00	1,267.29	118.83	9.17	3.97	1,372.02	-4,731.30	13,253.72	13,205.06	48.66	272.386	
14,400.00	6,987.00	1,297.00	1,267.29	120.37	9.17	3.97	1,372.02	-4,731.30	13,343.81	13,294.97	48.84	273.238	
14,500.00	6,987.00	1,265.65	1,239.58	121.91	8.99	3.90	1,377.86	-4,717.84	13,433.65	13,384.77	48.88	274.825	
14,600.00	6,987.00	1,235.00	1,212.15	123.45	8.82	3.82	1,383.21	-4,705.27	13,524.19	13,475.26	48.93	276.399	
14,700.00	6,987.00	1,235.00	1,212.15	124.99	8.82	3.82	1,383.21	-4,705.27	13,614.50	13,565.40	49.11	277.248	
14,800.00	6,987.00	1,235.00	1,212.15	126.53	8.82	3.82	1,383.21	-4,705.27	13,704.95	13,655.67	49.28	278.103	
14,900.00	6,987.00	1,235.00	1,212.15	128.08	8.82	3.82	1,383.21	-4,705.27	13,795.53	13,746.07	49.45	278.964	
15,000.00	6,987.00	1,235.00	1,212.15	129.63	8.82	3.82	1,383.21	-4,705.27	13,886.23	13,836.61	49.62	279.829	
15,100.00	6,987.00	1,235.00	1,212.15	131.17	8.82	3.82	1,383.21	-4,705.27	13,977.07	13,927.27	49.79	280.700	
15,200.00	6,987.00	1,235.00	1,212.15	132.72	8.82	3.82	1,383.21	-4,705.27	14,068.02	14,018.06	49.96	281.576	
15,300.00	6,987.00	1,235.00	1,212.15	134.27	8.82	3.82	1,383.21	-4,705.27	14,159.10	14,108.98	50.13	282.456	
15,400.00	6,987.00	1,235.00	1,212.15	135.83	8.82	3.82	1,383.21	-4,705.27	14,250.30	14,200.01	50.29	283.341	
15,500.00	6,987.00	1,235.00	1,212.15	137.38	8.82	3.82	1,383.21	-4,705.27	14,341.62	14,291.16	50.46	284.230	
15,600.00	6,987.00	1,235.00	1,212.15	138.93	8.82	3.82	1,383.21	-4,705.27	14,433.05	14,382.43	50.62	285.122	
15,700.00	6,987.00	1,235.00	1,212.15	140.49	8.82	3.82	1,383.21	-4,705.27	14,524.60	14,473.81	50.78	286.019	
15,800.00	6,987.00	1,235.00	1,212.15	142.04	8.82	3.82	1,383.21	-4,705.27	14,616.25	14,565.31	50.94	286.920	
15,900.00	6,987.00	1,235.00	1,212.15	143.60	8.82	3.82	1,383.21	-4,705.27	14,708.02	14,656.92	51.10	287.823	
16,000.00	6,987.00	1,235.00	1,212.15	145.16	8.82	3.82	1,383.21	-4,705.27	14,799.89	14,748.63	51.26	288.731	
16,100.00	6,987.00	1,235.00	1,212.15	146.72	8.82	3.82	1,383.21	-4,705.27	14,891.86	14,840.45	51.41	289.641	
16,200.00	6,987.00	1,235.00	1,212.15	148.28	8.82	3.82	1,383.21	-4,705.27	14,983.94	14,932.37	51.57	290.555	
16,300.00	6,987.00	1,203.55	1,183.68	149.84	8.65	3.75	1,388.47	-4,693.00	15,075.71	15,024.09	51.62	292.058	
16,400.00	6,987.00	1,173.00	1,155.72	151.40	8.48	3.69	1,393.47	-4,681.75	15,168.22	15,116.55	51.67	293.542	
16,500.00	6,987.00	1,173.00	1,155.72	152.97	8.48	3.69	1,393.47	-4,681.75	15,260.44	15,208.62	51.83	294.450	
16,600.00	6,987.00	1,173.00	1,155.72	154.53	8.48	3.69	1,393.47	-4,681.75	15,352.76	15,300.79	51.98	295.361	
16,700.00	6,987.00	1,173.00	1,155.72	156.10	8.48	3.69	1,393.47	-4,681.75	15,445.18	15,393.05	52.13	296.274	
16,800.00	6,987.00	1,173.00	1,155.72	157.66	8.48	3.69	1,393.47	-4,681.75	15,537.69	15,485.41	52.28	297.190	
16,900.00	6,987.00	1,173.00	1,155.72	159.23	8.48	3.69	1,393.47	-4,681.75	15,630.29	15,577.86	52.43	298.107	
17,000.00	6,987.00	1,173.00	1,155.72	160.80	8.48	3.69	1,393.47	-4,681.75	15,722.99	15,670.41	52.58	299.027	
17,100.00	6,987.00	1,173.00	1,155.72	162.36	8.48	3.69	1,393.47	-4,681.75	15,815.77	15,763.04	52.73	299.950	
17,200.00	6,987.00	1,173.00	1,155.72	163.93	8.48	3.69	1,393.47	-4,681.75	15,908.64	15,855.76	52.87	300.874	
17,300.00	6,987.00	1,173.00	1,155.72	165.50	8.48	3.69	1,393.47	-4,681.75	16,001.59	15,948.57	53.02	301.799	
17,400.00	6,987.00	1,173.00	1,155.72	167.07	8.48	3.69	1,393.47	-4,681.75	16,094.63	16,041.47	53.17	302.727	
17,500.00	6,987.00	1,173.00	1,155.72	168.64	8.48	3.69	1,393.47	-4,681.75	16,187.75	16,134.45	53.31	303.656	
17,600.00	6,987.00	1,173.00	1,155.72	170.21	8.48	3.69	1,393.47	-4,681.75	16,280.96	16,227.51	53.45	304.586	
17,700.00	6,987.00	1,173.00	1,155.72	171.78	8.48	3.69	1,393.47	-4,681.75	16,374.24	16,320.65	53.59	305.518	
17,800.00	6,987.00	1,173.00	1,155.72	173.36	8.48	3.69	1,393.47	-4,681.75	16,467.61	16,413.87	53.74	306.451	
17,900.00	6,987.00	1,173.00	1,155.72	174.93	8.48	3.69	1,393.47	-4,681.75	16,561.05	16,507.17	53.88	307.386	
18,000.00	6,987.00	1,173.00	1,155.72	176.50	8.48	3.69	1,393.47	-4,681.75	16,654.56	16,600.55	54.02	308.321	
18,100.00	6,987.00	1,173.00	1,155.72	178.08	8.48	3.69	1,393.47	-4,681.75	16,748.16	16,694.00	54.16	309.257	
18,200.00	6,987.00	1,173.00	1,155.72	179.65	8.48	3.69	1,393.47	-4,681.75	16,841.82	16,787.53	54.29	310.194	
18,300.00	6,987.00	1,173.00	1,155.72	181.23	8.48	3.69	1,393.47	-4,681.75	16,935.56	16,881.13	54.43	311.132	
18,400.00	6,987.00	1,173.00	1,155.72	182.80	8.48	3.69	1,393.47	-4,681.75	17,029.37	16,974.80	54.57	312.071	
18,500.00	6,987.00	1,143.54	1,128.49	184.38	8.33	3.62	1,398.14	-4,671.50	17,122.90	17,068.26	54.65	313.335	
18,600.00	6,987.00	1,141.07	1,126.20	185.96	8.32	3.62	1,398.52	-4,670.67	17,216.79	17,162.01	54.78	314.298	
18,700.00	6,987.00	1,110.00	1,097.21	187.53	8.16	3.55	1,403.26	-4,660.56	17,311.07	17,256.21	54.86	315.577	
18,800.00	6,987.00	1,110.00	1,097.21	189.11	8.16	3.55	1,403.26	-4,660.56	17,405.03	17,350.04	54.99	316.508	
18,900.00	6,987.00	1,110.00	1,097.21	190.69	8.16	3.55	1,403.26	-4,660.56	17,499.06	17,443.93	55.13	317.439	
19,000.00	6,987.00	1,110.00	1,097.21	192.27	8.16	3.55	1,403.26	-4,660.56	17,593.16	17,537.90	55.26	318.371	
19,100.00	6,987.00	1,110.00	1,097.21	193.85	8.16	3.55	1,403.26	-4,660.56	17,687.31	17,631.92	55.39	319.303	

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 #692H
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 #692H	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		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		
19,200.00	6,987.00	1,110.00	1,097.21	195.43	8.16	3.55	1,403.26	-4,660.56	17,781.54	17,726.01	55.53	320.235		
19,255.69	6,987.00	1,110.00	1,097.21	196.31	8.16	3.55	1,403.26	-4,660.56	17,834.04	17,778.44	55.60	320.754		
19,300.00	6,987.00	1,110.00	1,097.21	197.01	8.16	3.55	1,403.26	-4,660.56	17,875.82	17,820.17	55.66	321.167		
19,400.00	6,987.00	1,110.00	1,097.21	198.59	8.16	3.55	1,403.26	-4,660.56	17,970.17	17,914.38	55.79	322.100		
19,468.80	6,987.00	1,110.00	1,097.21	199.49	8.16	3.55	1,403.26	-4,660.56	18,035.12	17,977.24	57.88	311.600		

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 #692H
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 #692H	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													
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	-96.83	-1,054.37	-8,809.32	8,873.11				
100.00	100.00	0.00	0.00	0.25	0.00	-96.83	-1,054.37	-8,809.32	8,872.24	8,871.99	0.25	N/A	
145.66	145.66	18.66	18.66	0.41	0.33	-96.83	-1,054.37	-8,809.32	8,872.20	8,871.45	0.75	N/A	
200.00	200.00	73.00	73.00	0.61	1.29	-96.83	-1,054.37	-8,809.32	8,872.20	8,870.29	1.90	4,662.451	
300.00	300.00	173.00	173.00	0.97	3.07	-96.83	-1,054.37	-8,809.32	8,872.20	8,868.16	4.03	2,199.888	
400.00	400.00	273.00	273.00	1.33	4.84	-96.83	-1,054.37	-8,809.32	8,872.20	8,866.03	6.16	1,439.558	
500.00	500.00	373.00	373.00	1.68	6.61	-96.83	-1,054.37	-8,809.32	8,872.20	8,863.90	8.29	1,069.808	
600.00	600.00	473.00	473.00	2.04	8.40	-96.83	-1,054.37	-8,809.32	8,872.20	8,861.75	10.44	849.548	
700.00	700.00	573.00	573.00	2.40	10.20	-96.83	-1,054.37	-8,809.32	8,872.20	8,859.59	12.60	703.950	
800.00	799.98	672.98	672.98	2.76	12.00	-90.45	-1,054.37	-8,809.32	8,872.21	8,857.45	14.76	600.998	
820.10	820.07	693.07	693.06	2.83	12.36	-90.45	-1,054.06	-8,809.32	8,872.18	8,856.98	15.20	583.843 CC	
900.00	899.84	772.20	772.20	3.12	13.79	-90.48	-1,054.08	-8,809.32	8,872.22	8,855.31	16.91	524.755	
1,000.00	999.45	871.00	871.00	3.48	15.57	-90.53	-1,054.18	-8,809.32	8,872.31	8,853.26	19.05	465.821	
1,100.00	1,098.70	969.43	969.42	3.85	17.34	-90.61	-1,054.35	-8,809.32	8,872.45	8,851.27	21.18	418.838	
1,153.80	1,151.90	1,024.92	1,024.90	4.04	18.40	-90.66	-1,054.37	-8,809.32	8,872.54	8,850.10	22.44	395.425	
1,200.00	1,197.53	1,070.54	1,070.53	4.21	19.28	-90.70	-1,054.37	-8,809.32	8,872.63	8,849.14	23.49	377.730	
1,300.00	1,296.27	1,169.29	1,169.27	4.59	21.18	-90.81	-1,054.37	-8,809.32	8,872.84	8,847.07	25.77	344.314	
1,400.00	1,395.02	1,267.22	1,267.21	4.97	23.07	-90.90	-1,053.85	-8,809.32	8,873.01	8,844.97	28.04	316.453	
1,500.00	1,493.77	1,364.00	1,363.98	5.36	24.93	-91.00	-1,054.00	-8,809.32	8,873.30	8,843.01	30.29	292.949	
1,600.00	1,592.52	1,460.73	1,460.71	5.74	26.80	-91.10	-1,054.32	-8,809.32	8,873.63	8,841.09	32.54	272.681	
1,700.00	1,691.27	1,564.32	1,564.27	6.14	28.92	-91.21	-1,054.37	-8,809.32	8,873.96	8,838.91	35.05	253.146	
1,800.00	1,790.01	1,663.07	1,663.01	6.53	30.96	-91.31	-1,054.37	-8,809.32	8,874.31	8,836.83	37.49	236.737	
1,900.00	1,888.76	1,761.46	1,761.39	6.92	32.99	-91.40	-1,053.16	-8,809.32	8,874.53	8,834.62	39.91	222.355	
2,000.00	1,987.51	1,856.58	1,856.51	7.32	34.95	-91.50	-1,053.33	-8,809.32	8,874.96	8,832.69	42.27	209.955	
2,100.00	2,086.26	1,951.61	1,951.53	7.72	36.91	-91.60	-1,053.78	-8,809.32	8,875.45	8,830.82	44.63	198.870	
2,200.00	2,185.01	2,058.15	2,058.01	8.11	39.14	-91.71	-1,054.37	-8,809.32	8,876.00	8,828.74	47.25	187.841	
2,300.00	2,283.75	2,156.90	2,156.75	8.51	41.27	-91.81	-1,054.37	-8,809.32	8,876.49	8,826.70	49.79	178.296	
2,400.00	2,382.50	2,255.64	2,255.50	8.91	43.41	-91.91	-1,054.37	-8,809.32	8,877.01	8,824.69	52.32	169.673	
2,500.00	2,481.25	2,354.38	2,354.23	9.31	45.49	-92.00	-1,053.29	-8,809.32	8,877.39	8,822.60	54.80	162.004	
2,600.00	2,580.00	2,446.43	2,446.27	9.71	47.53	-92.10	-1,053.62	-8,809.32	8,878.02	8,820.78	57.24	155.097	
2,700.00	2,678.75	2,540.92	2,540.75	10.11	49.57	-92.20	-1,054.25	-8,809.32	8,878.72	8,819.04	59.68	148.761	
2,800.00	2,777.49	2,650.74	2,650.49	10.52	51.96	-92.31	-1,054.37	-8,809.32	8,879.36	8,816.88	62.48	142.114	
2,900.00	2,876.24	2,749.49	2,749.24	10.92	54.12	-92.41	-1,054.37	-8,809.32	8,880.02	8,814.98	65.04	136.535	
3,000.00	2,974.99	2,848.23	2,847.99	11.32	56.28	-92.51	-1,054.37	-8,809.32	8,880.71	8,813.11	67.60	131.377	
3,100.00	3,073.74	2,946.98	2,946.74	11.72	58.43	-92.61	-1,054.37	-8,809.32	8,881.42	8,811.27	70.16	126.596	
3,200.00	3,172.49	3,045.73	3,045.49	12.13	60.59	-92.71	-1,054.37	-8,809.32	8,882.16	8,809.45	72.71	122.152	
3,300.00	3,271.23	3,135.00	3,134.64	12.53	62.54	-92.81	-1,054.37	-8,809.32	8,882.94	8,807.87	75.07	118.335 ES	
3,400.00	3,369.98	3,135.00	3,134.64	12.93	62.54	-92.81	-1,054.37	-8,809.32	8,884.39	8,808.93	75.46	117.731	
3,500.00	3,468.73	3,135.00	3,134.64	13.34	62.54	-92.81	-1,054.37	-8,809.32	8,886.97	8,811.12	75.85	117.162	
3,600.00	3,567.48	3,135.00	3,134.64	13.74	62.54	-92.81	-1,054.37	-8,809.32	8,890.68	8,814.44	76.23	116.628	
3,700.00	3,666.23	3,135.00	3,134.64	14.14	62.54	-92.81	-1,054.37	-8,809.32	8,895.50	8,818.90	76.60	116.127	
3,800.00	3,764.97	3,135.00	3,134.64	14.55	62.54	-92.81	-1,054.37	-8,809.32	8,901.45	8,824.49	76.96	115.660	
3,900.00	3,863.72	3,135.00	3,134.64	14.95	62.54	-92.81	-1,054.37	-8,809.32	8,908.51	8,831.20	77.31	115.225	
4,000.00	3,962.47	3,135.00	3,134.64	15.36	62.54	-92.81	-1,054.37	-8,809.32	8,916.70	8,839.04	77.66	114.823	
4,100.00	4,061.22	3,135.00	3,134.64	15.76	62.54	-92.81	-1,054.37	-8,809.32	8,925.99	8,848.00	77.99	114.452	
4,200.00	4,159.97	3,135.00	3,134.64	16.17	62.54	-92.81	-1,054.37	-8,809.32	8,936.39	8,858.08	78.31	114.113	
4,300.00	4,258.71	3,135.00	3,134.64	16.57	62.54	-92.81	-1,054.37	-8,809.32	8,947.90	8,869.28	78.63	113.804	
4,400.00	4,357.46	3,135.00	3,134.64	16.98	62.54	-92.81	-1,054.37	-8,809.32	8,960.51	8,881.58	78.93	113.525	
4,500.00	4,456.21	3,135.00	3,134.64	17.38	62.54	-92.81	-1,054.37	-8,809.32	8,974.22	8,895.00	79.22	113.277	
4,600.00	4,554.96	3,135.00	3,134.64	17.79	62.54	-92.81	-1,054.37	-8,809.32	8,989.02	8,909.51	79.51	113.057	
4,700.00	4,653.71	3,135.00	3,134.64	18.19	62.54	-92.81	-1,054.37	-8,809.32	9,004.90	8,925.12	79.78	112.866	
4,800.00	4,752.45	3,135.00	3,134.64	18.60	62.54	-92.81	-1,054.37	-8,809.32	9,021.87	8,941.82	80.05	112.703	

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 #692H
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 #692H	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)				
4,900.00	4,851.20	3,135.00	3,134.64	19.00	62.54	-92.81	-1,054.37	-8,809.32	9,039.91	8,959.60	80.31	112.569			
5,000.00	4,949.95	3,135.00	3,134.64	19.41	62.54	-92.81	-1,054.37	-8,809.32	9,059.02	8,978.46	80.55	112.461			
5,100.00	5,048.70	3,135.00	3,134.64	19.81	62.54	-92.81	-1,054.37	-8,809.32	9,079.19	8,998.40	80.79	112.380			
5,200.00	5,147.45	3,135.00	3,134.64	20.22	62.54	-92.81	-1,054.37	-8,809.32	9,100.41	9,019.39	81.02	112.326			
5,300.00	5,246.19	3,135.00	3,134.64	20.62	62.54	-92.81	-1,054.37	-8,809.32	9,122.68	9,041.44	81.24	112.298			
5,400.00	5,344.94	3,135.00	3,134.64	21.03	62.54	-92.81	-1,054.37	-8,809.32	9,145.99	9,064.54	81.45	112.295 SF			
5,455.76	5,400.00	3,135.00	3,134.64	21.25	62.54	-92.81	-1,054.37	-8,809.32	9,159.43	9,077.87	81.56	112.304			
5,500.00	5,443.72	3,135.00	3,134.64	21.43	62.54	-92.92	-1,054.37	-8,809.32	9,170.32	9,088.68	81.65	112.318			
5,600.00	5,542.71	3,135.00	3,134.64	21.83	62.54	-93.18	-1,054.37	-8,809.32	9,195.60	9,113.77	81.83	112.376			
5,700.00	5,641.93	3,135.00	3,134.64	22.22	62.54	-93.45	-1,054.37	-8,809.32	9,221.81	9,139.81	81.99	112.469			
5,800.00	5,741.36	3,135.00	3,134.64	22.60	62.54	-93.73	-1,054.37	-8,809.32	9,248.92	9,166.78	82.14	112.597			
5,900.00	5,840.96	3,135.00	3,134.64	22.97	62.54	-94.02	-1,054.37	-8,809.32	9,276.92	9,194.65	82.27	112.759			
6,000.00	5,940.70	3,135.00	3,134.64	23.33	62.54	-94.32	-1,054.37	-8,809.32	9,305.79	9,223.41	82.39	112.955			
6,100.00	6,040.55	3,135.00	3,134.64	23.68	62.54	-94.63	-1,054.37	-8,809.32	9,335.52	9,253.04	82.48	113.183			
6,200.00	6,140.48	3,135.00	3,134.64	24.02	62.54	-94.95	-1,054.37	-8,809.32	9,366.09	9,283.53	82.56	113.444			
6,300.00	6,240.45	3,135.00	3,134.64	24.35	62.54	-95.28	-1,054.37	-8,809.32	9,397.48	9,314.86	82.63	113.736			
6,408.05	6,348.50	3,135.00	3,134.64	24.69	62.54	84.35	-1,054.37	-8,809.32	9,432.30	9,349.64	82.67	114.103			
6,450.00	6,390.43	3,135.00	3,134.64	24.82	62.54	-168.09	-1,054.37	-8,809.32	9,447.32	9,364.64	82.68	114.264			
6,500.00	6,440.15	3,135.00	3,134.64	24.99	62.54	-163.81	-1,054.37	-8,809.32	9,468.57	9,385.86	82.71	114.481			
6,550.00	6,489.32	3,135.00	3,134.64	25.16	62.54	-161.93	-1,054.37	-8,809.32	9,493.31	9,410.57	82.74	114.733			
6,600.00	6,537.64	3,135.00	3,134.64	25.34	62.54	-160.37	-1,054.37	-8,809.32	9,521.38	9,438.60	82.78	115.019			
6,650.00	6,584.80	3,135.00	3,134.64	25.52	62.54	-158.76	-1,054.37	-8,809.32	9,552.57	9,469.75	82.82	115.337			
6,700.00	6,630.52	3,135.00	3,134.64	25.71	62.54	-156.93	-1,054.37	-8,809.32	9,586.66	9,503.79	82.87	115.685			
6,750.00	6,674.51	3,135.00	3,134.64	25.89	62.54	-154.74	-1,054.37	-8,809.32	9,623.41	9,540.49	82.92	116.061			
6,800.00	6,716.50	3,135.00	3,134.64	26.08	62.54	-152.04	-1,054.37	-8,809.32	9,662.55	9,579.59	82.97	116.461			
6,850.00	6,756.24	3,135.00	3,134.64	26.28	62.54	-148.64	-1,054.37	-8,809.32	9,703.84	9,620.81	83.02	116.883			
6,900.00	6,793.47	3,135.00	3,134.64	26.48	62.54	-144.27	-1,054.37	-8,809.32	9,746.97	9,663.89	83.08	117.321			
6,950.00	6,827.97	3,135.00	3,134.64	26.69	62.54	-138.55	-1,054.37	-8,809.32	9,791.67	9,708.53	83.14	117.773			
7,000.00	6,859.53	3,135.00	3,134.64	26.91	62.54	-130.98	-1,054.37	-8,809.32	9,837.64	9,754.44	83.20	118.235			
7,050.00	6,887.94	3,135.00	3,134.64	27.14	62.54	-120.96	-1,054.37	-8,809.32	9,884.58	9,801.31	83.27	118.700			
7,100.00	6,913.05	3,135.00	3,134.64	27.38	62.54	-108.16	-1,054.37	-8,809.32	9,932.19	9,848.84	83.35	119.166			
7,150.00	6,934.68	3,135.00	3,134.64	27.64	62.54	-93.08	-1,054.37	-8,809.32	9,980.17	9,896.74	83.43	119.627			
7,200.00	6,952.71	3,135.00	3,134.64	27.92	62.54	-77.55	-1,054.37	-8,809.32	10,028.21	9,944.70	83.51	120.079			
7,250.00	6,967.02	3,135.00	3,134.64	28.21	62.54	-63.71	-1,054.37	-8,809.32	10,076.03	9,992.42	83.61	120.516			
7,300.00	6,977.54	3,135.00	3,134.64	28.52	62.54	-52.59	-1,054.37	-8,809.32	10,123.34	10,039.63	83.71	120.933			
7,350.00	6,984.18	3,135.00	3,134.64	28.83	62.54	-44.12	-1,054.37	-8,809.32	10,169.84	10,086.02	83.82	121.326			
7,400.00	6,986.92	3,135.00	3,134.64	29.16	62.54	-37.75	-1,054.37	-8,809.32	10,215.28	10,131.33	83.95	121.689			
7,409.89	6,987.00	3,135.00	3,134.64	29.23	62.54	-36.69	-1,054.37	-8,809.32	10,224.12	10,140.15	83.97	121.760			
7,500.00	6,987.00	3,135.00	3,134.64	29.85	62.54	-36.69	-1,054.37	-8,809.32	10,304.47	10,220.25	84.21	122.359			
7,600.00	6,987.00	3,135.00	3,134.64	30.61	62.54	-36.69	-1,054.37	-8,809.32	10,393.82	10,309.33	84.49	123.019			
7,700.00	6,987.00	3,135.00	3,134.64	31.41	62.54	-36.69	-1,054.37	-8,809.32	10,483.37	10,398.61	84.77	123.673			
7,800.00	6,987.00	3,135.00	3,134.64	32.27	62.54	-36.69	-1,054.37	-8,809.32	10,573.11	10,488.07	85.05	124.323			
7,900.00	6,987.00	3,135.00	3,134.64	33.17	62.54	-36.69	-1,054.37	-8,809.32	10,663.03	10,577.71	85.32	124.970			
8,000.00	6,987.00	3,135.00	3,134.64	34.12	62.54	-36.69	-1,054.37	-8,809.32	10,753.13	10,667.52	85.61	125.612			
8,100.00	6,987.00	3,135.00	3,134.64	35.10	62.54	-36.69	-1,054.37	-8,809.32	10,843.40	10,757.51	85.89	126.252			
8,200.00	6,987.00	3,135.00	3,134.64	36.12	62.54	-36.69	-1,054.37	-8,809.32	10,933.84	10,847.67	86.17	126.889			
8,300.00	6,987.00	3,135.00	3,134.64	37.17	62.54	-36.69	-1,054.37	-8,809.32	11,024.45	10,937.99	86.45	127.523			
8,314.89	6,987.00	3,135.00	3,134.64	37.33	62.54	-36.69	-1,054.37	-8,809.32	11,037.95	10,951.46	86.49	127.617			
8,400.00	6,987.00	3,135.00	3,134.64	38.25	62.54	-30.27	-1,054.37	-8,809.32	11,115.80	11,029.08	86.72	128.180			
8,500.00	6,987.00	3,135.00	3,134.64	39.35	62.54	-21.27	-1,054.37	-8,809.32	11,208.63	11,121.68	86.95	128.906			
8,600.00	6,987.00	3,135.00	3,134.64	40.45	62.54	-10.83	-1,054.37	-8,809.32	11,302.48	11,215.34	87.14	129.702			
8,700.00	6,987.00	3,135.00	3,134.64	41.56	62.54	0.54	-1,054.37	-8,809.32	11,396.88	11,309.59	87.29	130.563			

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 #692H
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 #692H	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)
8,800.00	6,987.00	3,135.00	3,134.64	42.66	62.54	11.97	-1,054.37	-8,809.32	11,491.34	11,403.95	87.40	131.485	
8,900.00	6,987.00	3,135.00	3,134.64	43.75	62.54	22.56	-1,054.37	-8,809.32	11,585.43	11,497.96	87.46	132.463	
9,000.00	6,987.00	3,135.00	3,134.64	44.83	62.54	31.74	-1,054.37	-8,809.32	11,678.68	11,591.19	87.49	133.490	
9,071.74	6,987.00	3,135.00	3,134.64	45.59	62.54	37.38	-1,054.37	-8,809.32	11,744.83	11,657.35	87.48	134.253	
9,100.00	6,987.00	3,135.00	3,134.64	45.89	62.54	37.38	-1,054.37	-8,809.32	11,770.75	11,683.27	87.48	134.557	
9,200.00	6,987.00	3,135.00	3,134.64	46.97	62.54	37.38	-1,054.37	-8,809.32	11,862.54	11,775.08	87.47	135.624	
9,300.00	6,987.00	3,135.00	3,134.64	48.07	62.54	37.38	-1,054.37	-8,809.32	11,954.47	11,867.01	87.46	136.685	
9,400.00	6,987.00	3,135.00	3,134.64	49.20	62.54	37.38	-1,054.37	-8,809.32	12,046.52	11,959.06	87.46	137.739	
9,500.00	6,987.00	3,135.00	3,134.64	50.36	62.54	37.38	-1,054.37	-8,809.32	12,138.70	12,051.24	87.46	138.787	
9,600.00	6,987.00	3,135.00	3,134.64	51.54	62.54	37.38	-1,054.37	-8,809.32	12,231.01	12,143.53	87.47	139.828	
9,700.00	6,987.00	3,135.00	3,134.64	52.74	62.54	37.38	-1,054.37	-8,809.32	12,323.43	12,235.94	87.49	140.863	
9,800.00	6,987.00	3,135.00	3,134.64	53.96	62.54	37.38	-1,054.37	-8,809.32	12,415.97	12,328.47	87.50	141.891	
9,900.00	6,987.00	3,135.00	3,134.64	55.21	62.54	37.38	-1,054.37	-8,809.32	12,508.62	12,421.10	87.53	142.913	
10,000.00	6,987.00	3,135.00	3,134.64	56.47	62.54	37.38	-1,054.37	-8,809.32	12,601.39	12,513.84	87.55	143.929	
10,100.00	6,987.00	3,135.00	3,134.64	57.75	62.54	37.38	-1,054.37	-8,809.32	12,694.27	12,606.69	87.58	144.939	
10,200.00	6,987.00	3,135.00	3,134.64	59.04	62.54	37.38	-1,054.37	-8,809.32	12,787.25	12,699.64	87.62	145.943	
10,300.00	6,987.00	3,135.00	3,134.64	60.35	62.54	37.38	-1,054.37	-8,809.32	12,880.34	12,792.69	87.66	146.941	
10,400.00	6,987.00	3,135.00	3,134.64	61.67	62.54	37.38	-1,054.37	-8,809.32	12,973.54	12,885.84	87.70	147.932	
10,500.00	6,987.00	3,135.00	3,134.64	63.01	62.54	37.38	-1,054.37	-8,809.32	13,066.83	12,979.08	87.74	148.918	
10,600.00	6,987.00	3,135.00	3,134.64	64.36	62.54	37.38	-1,054.37	-8,809.32	13,160.22	13,072.43	87.79	149.898	
10,700.00	6,987.00	3,135.00	3,134.64	65.72	62.54	37.38	-1,054.37	-8,809.32	13,253.71	13,165.86	87.85	150.873	
10,800.00	6,987.00	3,135.00	3,134.64	67.09	62.54	37.38	-1,054.37	-8,809.32	13,347.29	13,259.39	87.90	151.841	
10,900.00	6,987.00	3,135.00	3,134.64	68.47	62.54	37.38	-1,054.37	-8,809.32	13,440.97	13,353.00	87.96	152.804	
11,000.00	6,987.00	3,135.00	3,134.64	69.86	62.54	37.38	-1,054.37	-8,809.32	13,534.73	13,446.71	88.02	153.762	
11,100.00	6,987.00	3,135.00	3,134.64	71.26	62.54	37.38	-1,054.37	-8,809.32	13,628.59	13,540.50	88.09	154.714	
11,200.00	6,987.00	3,135.00	3,134.64	72.67	62.54	37.38	-1,054.37	-8,809.32	13,722.53	13,634.37	88.16	155.661	
11,300.00	6,987.00	3,135.00	3,134.64	74.09	62.54	37.38	-1,054.37	-8,809.32	13,816.55	13,728.33	88.23	156.603	
11,400.00	6,987.00	3,135.00	3,134.64	75.51	62.54	37.38	-1,054.37	-8,809.32	13,910.66	13,822.36	88.30	157.539	
11,500.00	6,987.00	3,135.00	3,134.64	76.94	62.54	37.38	-1,054.37	-8,809.32	14,004.85	13,916.48	88.38	158.470	
11,600.00	6,987.00	3,135.00	3,134.64	78.38	62.54	37.38	-1,054.37	-8,809.32	14,099.12	14,010.67	88.45	159.397	
11,700.00	6,987.00	3,135.00	3,134.64	79.82	62.54	37.38	-1,054.37	-8,809.32	14,193.47	14,104.94	88.53	160.318	
11,800.00	6,987.00	3,135.00	3,134.64	81.27	62.54	37.38	-1,054.37	-8,809.32	14,287.90	14,199.28	88.62	161.235	
11,900.00	6,987.00	3,135.00	3,134.64	82.73	62.54	37.38	-1,054.37	-8,809.32	14,382.40	14,293.70	88.70	162.147	
12,000.00	6,987.00	3,135.00	3,134.64	84.19	62.54	37.38	-1,054.37	-8,809.32	14,476.98	14,388.19	88.79	163.054	
12,100.00	6,987.00	3,135.00	3,134.64	85.66	62.54	37.38	-1,054.37	-8,809.32	14,571.62	14,482.75	88.87	163.957	
12,200.00	6,987.00	3,135.00	3,134.64	87.13	62.54	37.38	-1,054.37	-8,809.32	14,666.34	14,577.38	88.97	164.855	
12,300.00	6,987.00	3,135.00	3,134.64	88.61	62.54	37.38	-1,054.37	-8,809.32	14,761.13	14,672.07	89.06	165.748	
12,400.00	6,987.00	3,135.00	3,134.64	90.09	62.54	37.38	-1,054.37	-8,809.32	14,855.99	14,766.84	89.15	166.638	
12,500.00	6,987.00	3,135.00	3,134.64	91.57	62.54	37.38	-1,054.37	-8,809.32	14,950.91	14,861.67	89.25	167.523	
12,600.00	6,987.00	3,135.00	3,134.64	93.06	62.54	37.38	-1,054.37	-8,809.32	15,045.90	14,956.56	89.34	168.404	
12,700.00	6,987.00	3,135.00	3,134.64	94.55	62.54	37.38	-1,054.37	-8,809.32	15,140.96	15,051.51	89.44	169.281	
12,800.00	6,987.00	3,135.00	3,134.64	96.05	62.54	37.38	-1,054.37	-8,809.32	15,236.07	15,146.53	89.54	170.153	
12,900.00	6,987.00	3,135.00	3,134.64	97.55	62.54	37.38	-1,054.37	-8,809.32	15,331.25	15,241.61	89.64	171.022	
13,000.00	6,987.00	3,135.00	3,134.64	99.05	62.54	37.38	-1,054.37	-8,809.32	15,426.50	15,336.75	89.75	171.887	
13,100.00	6,987.00	3,135.00	3,134.64	100.56	62.54	37.38	-1,054.37	-8,809.32	15,521.80	15,431.94	89.85	172.748	
13,200.00	6,987.00	3,135.00	3,134.64	102.07	62.54	37.38	-1,054.37	-8,809.32	15,617.16	15,527.20	89.96	173.605	
13,300.00	6,987.00	3,135.00	3,134.64	103.58	62.54	37.38	-1,054.37	-8,809.32	15,712.57	15,622.51	90.06	174.459	
13,400.00	6,987.00	3,135.00	3,134.64	105.09	62.54	37.38	-1,054.37	-8,809.32	15,808.05	15,717.87	90.17	175.308	
13,500.00	6,987.00	3,135.00	3,134.64	106.61	62.54	37.38	-1,054.37	-8,809.32	15,903.58	15,813.29	90.28	176.155	
13,600.00	6,987.00	3,135.00	3,134.64	108.13	62.54	37.38	-1,054.37	-8,809.32	15,999.16	15,908.77	90.39	176.997	
13,700.00	6,987.00	3,135.00	3,134.64	109.65	62.54	37.38	-1,054.37	-8,809.32	16,094.80	16,004.29	90.50	177.837	
13,800.00	6,987.00	3,135.00	3,134.64	111.18	62.54	37.38	-1,054.37	-8,809.32	16,190.49	16,099.87	90.62	178.673	

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 #692H
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 #692H	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		Distance		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		
13,900.00	6,987.00	3,135.00	3,134.64	112.71	62.54	37.38	-1,054.37	-8,809.32	16,286.23	16,195.50	90.73	179.505			
14,000.00	6,987.00	3,135.00	3,134.64	114.23	62.54	37.38	-1,054.37	-8,809.32	16,382.02	16,291.18	90.84	180.334			
14,100.00	6,987.00	3,135.00	3,134.64	115.77	62.54	37.38	-1,054.37	-8,809.32	16,477.87	16,386.91	90.96	181.160			
14,200.00	6,987.00	3,135.00	3,134.64	117.30	62.54	37.38	-1,054.37	-8,809.32	16,573.76	16,482.68	91.07	181.983			
14,300.00	6,987.00	3,135.00	3,134.64	118.83	62.54	37.38	-1,054.37	-8,809.32	16,669.70	16,578.51	91.19	182.803			
14,400.00	6,987.00	3,135.00	3,134.64	120.37	62.54	37.38	-1,054.37	-8,809.32	16,765.69	16,674.38	91.31	183.619			
14,500.00	6,987.00	3,135.00	3,134.64	121.91	62.54	37.38	-1,054.37	-8,809.32	16,861.72	16,770.30	91.42	184.433			
14,600.00	6,987.00	3,135.00	3,134.64	123.45	62.54	37.38	-1,054.37	-8,809.32	16,957.80	16,866.26	91.54	185.244			
14,700.00	6,987.00	3,135.00	3,134.64	124.99	62.54	37.38	-1,054.37	-8,809.32	17,053.93	16,962.26	91.66	186.051			
14,800.00	6,987.00	3,135.00	3,134.64	126.53	62.54	37.38	-1,054.37	-8,809.32	17,150.10	17,058.31	91.78	186.856			
14,900.00	6,987.00	3,135.00	3,134.64	128.08	62.54	37.38	-1,054.37	-8,809.32	17,246.31	17,154.41	91.90	187.658			
15,000.00	6,987.00	3,135.00	3,134.64	129.63	62.54	37.38	-1,054.37	-8,809.32	17,342.56	17,250.54	92.02	188.457			
15,100.00	6,987.00	3,135.00	3,134.64	131.17	62.54	37.38	-1,054.37	-8,809.32	17,438.86	17,346.72	92.15	189.253			
15,200.00	6,987.00	3,135.00	3,134.64	132.72	62.54	37.38	-1,054.37	-8,809.32	17,535.20	17,442.93	92.27	190.047			
15,300.00	6,987.00	3,135.00	3,134.64	134.27	62.54	37.38	-1,054.37	-8,809.32	17,631.58	17,539.19	92.39	190.837			
15,400.00	6,987.00	3,135.00	3,134.64	135.83	62.54	37.38	-1,054.37	-8,809.32	17,728.00	17,635.49	92.51	191.626			
15,500.00	6,987.00	3,135.00	3,134.64	137.38	62.54	37.38	-1,054.37	-8,809.32	17,824.46	17,731.83	92.64	192.411			
15,600.00	6,987.00	3,135.00	3,134.64	138.93	62.54	37.38	-1,054.37	-8,809.32	17,920.96	17,828.20	92.76	193.194			
15,700.00	6,987.00	3,135.00	3,134.64	140.49	62.54	37.38	-1,054.37	-8,809.32	18,017.50	17,924.61	92.89	193.974			
15,800.00	6,987.00	3,135.00	3,134.64	142.04	62.54	37.38	-1,054.37	-8,809.32	18,114.07	18,021.06	93.01	194.752			
15,900.00	6,987.00	3,135.00	3,134.64	143.60	62.54	37.38	-1,054.37	-8,809.32	18,210.68	18,117.55	93.14	195.527			
16,000.00	6,987.00	3,135.00	3,134.64	145.16	62.54	37.38	-1,054.37	-8,809.32	18,307.33	18,214.07	93.26	196.300			
16,100.00	6,987.00	3,135.00	3,134.64	146.72	62.54	37.38	-1,054.37	-8,809.32	18,404.02	18,310.63	93.39	197.071			
16,200.00	6,987.00	3,135.00	3,134.64	148.28	62.54	37.38	-1,054.37	-8,809.32	18,500.74	18,407.22	93.51	197.839			
16,300.00	6,987.00	3,135.00	3,134.64	149.84	62.54	37.38	-1,054.37	-8,809.32	18,597.49	18,503.85	93.64	198.604			
16,400.00	6,987.00	3,135.00	3,134.64	151.40	62.54	37.38	-1,054.37	-8,809.32	18,694.28	18,600.51	93.77	199.368			
16,500.00	6,987.00	3,135.00	3,134.64	152.97	62.54	37.38	-1,054.37	-8,809.32	18,791.10	18,697.20	93.90	200.129			
16,600.00	6,987.00	3,135.00	3,134.64	154.53	62.54	37.38	-1,054.37	-8,809.32	18,887.95	18,793.93	94.02	200.887			
16,700.00	6,987.00	3,135.00	3,134.64	156.10	62.54	37.38	-1,054.37	-8,809.32	18,984.84	18,890.69	94.15	201.644			
16,800.00	6,987.00	3,135.00	3,134.64	157.66	62.54	37.38	-1,054.37	-8,809.32	19,081.76	18,987.48	94.28	202.398			
16,900.00	6,987.00	3,135.00	3,134.64	159.23	62.54	37.38	-1,054.37	-8,809.32	19,178.71	19,084.30	94.41	203.150			
17,000.00	6,987.00	3,135.00	3,134.64	160.80	62.54	37.38	-1,054.37	-8,809.32	19,275.69	19,181.16	94.54	203.900			
17,100.00	6,987.00	3,135.00	3,134.64	162.36	62.54	37.38	-1,054.37	-8,809.32	19,372.71	19,278.04	94.66	204.647			
17,200.00	6,987.00	3,135.00	3,134.64	163.93	62.54	37.38	-1,054.37	-8,809.32	19,469.75	19,374.96	94.79	205.392			
17,300.00	6,987.00	3,135.00	3,134.64	165.50	62.54	37.38	-1,054.37	-8,809.32	19,566.82	19,471.90	94.92	206.136			
17,400.00	6,987.00	3,135.00	3,134.64	167.07	62.54	37.38	-1,054.37	-8,809.32	19,663.92	19,568.87	95.05	206.877			
17,500.00	6,987.00	3,135.00	3,134.64	168.64	62.54	37.38	-1,054.37	-8,809.32	19,761.05	19,665.87	95.18	207.616			
17,600.00	6,987.00	3,135.00	3,134.64	170.21	62.54	37.38	-1,054.37	-8,809.32	19,858.21	19,762.90	95.31	208.353			
17,700.00	6,987.00	3,135.00	3,134.64	171.78	62.54	37.38	-1,054.37	-8,809.32	19,955.40	19,859.96	95.44	209.088			
17,800.00	6,987.00	3,135.00	3,134.64	173.36	62.54	37.38	-1,054.37	-8,809.32	20,052.62	19,957.05	95.57	209.820			
17,900.00	6,987.00	3,135.00	3,134.64	174.93	62.54	37.38	-1,054.37	-8,809.32	20,149.86	20,054.16	95.70	210.551			
18,000.00	6,987.00	3,135.00	3,134.64	176.50	62.54	37.38	-1,054.37	-8,809.32	20,247.13	20,151.30	95.83	211.280			
18,100.00	6,987.00	3,135.00	3,134.64	178.08	62.54	37.38	-1,054.37	-8,809.32	20,344.42	20,248.46	95.96	212.007			
18,200.00	6,987.00	3,135.00	3,134.64	179.65	62.54	37.38	-1,054.37	-8,809.32	20,441.75	20,345.65	96.09	212.732			
18,300.00	6,987.00	3,135.00	3,134.64	181.23	62.54	37.38	-1,054.37	-8,809.32	20,539.09	20,442.87	96.22	213.454			
18,400.00	6,987.00	3,135.00	3,134.64	182.80	62.54	37.38	-1,054.37	-8,809.32	20,636.47	20,540.11	96.35	214.175			
18,500.00	6,987.00	3,135.00	3,134.64	184.38	62.54	37.38	-1,054.37	-8,809.32	20,733.87	20,637.38	96.48	214.894			
18,600.00	6,987.00	3,135.00	3,134.64	185.96	62.54	37.38	-1,054.37	-8,809.32	20,831.29	20,734.67	96.62	215.611			
18,700.00	6,987.00	3,135.00	3,134.64	187.53	62.54	37.38	-1,054.37	-8,809.32	20,928.73	20,831.99	96.75	216.326			
18,800.00	6,987.00	3,135.00	3,134.64	189.11	62.54	37.38	-1,054.37	-8,809.32	21,026.21	20,929.33	96.88	217.039			
18,900.00	6,987.00	3,135.00	3,134.64	190.69	62.54	37.38	-1,054.37	-8,809.32	21,123.70	21,026.69	97.01	217.751			
19,000.00	6,987.00	3,135.00	3,134.64	192.27	62.54	37.38	-1,054.37	-8,809.32	21,221.22	21,124.08	97.14	218.460			

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 #692H
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 #692H	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		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		
19,100.00	6,987.00	3,135.00	3,134.64	193.85	62.54	37.38	-1,054.37	-8,809.32	21,318.76	21,221.49	97.27	219.168		
19,200.00	6,987.00	3,135.00	3,134.64	195.43	62.54	37.38	-1,054.37	-8,809.32	21,416.32	21,318.92	97.40	219.874		
19,255.69	6,987.00	3,135.00	3,134.64	196.31	62.54	37.38	-1,054.37	-8,809.32	21,470.67	21,373.19	97.48	220.266		
19,300.00	6,987.00	3,135.00	3,134.64	197.01	62.54	37.38	-1,054.37	-8,809.32	21,513.91	21,416.37	97.53	220.578		
19,400.00	6,987.00	3,135.00	3,134.64	198.59	62.54	37.38	-1,054.37	-8,809.32	21,611.52	21,513.85	97.67	221.280		
19,468.80	6,987.00	3,135.00	3,134.64	199.49	62.54	37.38	-1,054.37	-8,809.32	21,678.69	21,577.49	101.20	214.215		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	-86.34	534.04	-8,357.39	8,935.13		
100.00	100.00	5,392.00	3,078.35	0.25	62.35	-86.34	534.04	-8,357.39	8,900.76	8,869.21	282.124
200.00	200.00	5,392.00	3,078.35	0.61	62.35	-86.34	534.04	-8,357.39	8,867.38	8,835.64	279.353
300.00	300.00	5,392.00	3,078.35	0.97	62.35	-86.34	534.04	-8,357.39	8,835.01	8,802.99	275.898
400.00	400.00	5,392.00	3,078.35	1.33	62.35	-86.34	534.04	-8,357.39	8,803.65	8,771.30	272.134
500.00	500.00	5,392.00	3,078.35	1.68	62.35	-86.34	534.04	-8,357.39	8,773.33	8,740.62	268.264
600.00	600.00	5,392.00	3,078.35	2.04	62.35	-86.34	534.04	-8,357.39	8,744.04	8,710.96	264.390
700.00	700.00	5,392.00	3,078.35	2.40	62.35	-86.34	534.04	-8,357.39	8,715.80	8,682.35	260.562
800.00	799.98	5,392.00	3,078.35	2.76	62.35	-80.52	534.04	-8,357.39	8,688.33	8,654.50	256.863
900.00	899.84	5,392.00	3,078.35	3.12	62.35	-81.07	534.04	-8,357.39	8,661.37	8,627.19	253.372
1,000.00	999.45	5,392.00	3,078.35	3.48	62.35	-81.61	534.04	-8,357.39	8,634.97	8,600.44	250.085
1,100.00	1,098.70	5,392.00	3,078.35	3.85	62.35	-82.14	534.04	-8,357.39	8,609.15	8,574.29	246.981
1,153.80	1,151.90	5,392.00	3,078.35	4.04	62.35	-82.42	534.04	-8,357.39	8,595.51	8,560.48	245.377
1,200.00	1,197.53	5,392.00	3,078.35	4.21	62.35	-82.42	534.04	-8,357.39	8,584.00	8,548.82	244.026
1,300.00	1,296.27	5,392.00	3,078.35	4.59	62.35	-82.42	534.04	-8,357.39	8,559.88	8,524.38	241.138
1,400.00	1,395.02	5,392.00	3,078.35	4.97	62.35	-82.42	534.04	-8,357.39	8,536.86	8,501.04	238.302
1,500.00	1,493.77	5,392.00	3,078.35	5.36	62.35	-82.42	534.04	-8,357.39	8,514.96	8,478.81	235.527
1,600.00	1,592.52	5,392.00	3,078.35	5.74	62.35	-82.42	534.04	-8,357.39	8,494.18	8,457.69	232.818
1,700.00	1,691.27	5,392.00	3,078.35	6.14	62.35	-82.42	534.04	-8,357.39	8,474.53	8,437.71	230.180
1,800.00	1,790.01	5,392.00	3,078.35	6.53	62.35	-82.42	534.04	-8,357.39	8,456.01	8,418.86	227.615
1,900.00	1,888.76	5,392.00	3,078.35	6.92	62.35	-82.42	534.04	-8,357.39	8,438.64	8,401.15	225.124
2,000.00	1,987.51	5,392.00	3,078.35	7.32	62.35	-82.42	534.04	-8,357.39	8,422.42	8,384.60	222.708
2,100.00	2,086.26	5,392.00	3,078.35	7.72	62.35	-82.42	534.04	-8,357.39	8,407.36	8,369.20	220.368
2,200.00	2,185.01	5,392.00	3,078.35	8.11	62.35	-82.42	534.04	-8,357.39	8,393.46	8,354.97	218.103
2,300.00	2,283.75	5,392.00	3,078.35	8.51	62.35	-82.42	534.04	-8,357.39	8,380.73	8,341.92	215.914
2,400.00	2,382.50	5,392.00	3,078.35	8.91	62.35	-82.42	534.04	-8,357.39	8,369.18	8,330.03	213.800
2,500.00	2,481.25	5,392.00	3,078.35	9.31	62.35	-82.42	534.04	-8,357.39	8,358.81	8,319.33	211.761
2,600.00	2,580.00	5,392.00	3,078.35	9.71	62.35	-82.42	534.04	-8,357.39	8,349.62	8,309.82	209.794
2,700.00	2,678.75	5,392.00	3,078.35	10.11	62.35	-82.42	534.04	-8,357.39	8,341.62	8,301.50	207.901
2,800.00	2,777.49	5,392.00	3,078.35	10.52	62.35	-82.42	534.04	-8,357.39	8,334.82	8,294.37	206.079
2,900.00	2,876.24	5,392.00	3,078.35	10.92	62.35	-82.42	534.04	-8,357.39	8,329.21	8,288.44	204.327
3,000.00	2,974.99	5,392.00	3,078.35	11.32	62.35	-82.42	534.04	-8,357.39	8,324.80	8,283.71	202.646
3,100.00	3,073.74	5,392.00	3,078.35	11.72	62.35	-82.42	534.04	-8,357.39	8,321.58	8,280.19	201.032
3,200.00	3,172.49	5,392.00	3,078.35	12.13	62.35	-82.42	534.04	-8,357.39	8,319.57	8,277.86	199.486
3,300.00	3,271.23	5,392.00	3,078.35	12.53	62.35	-82.42	534.04	-8,357.39	8,318.76	8,276.75	198.005
3,317.40	3,288.42	5,392.00	3,078.35	12.60	62.35	-82.42	534.04	-8,357.39	8,318.74	8,276.67	197.754 CC, ES
3,400.00	3,369.98	5,392.00	3,078.35	12.93	62.35	-82.42	534.04	-8,357.39	8,319.15	8,276.83	196.590
3,500.00	3,468.73	5,392.00	3,078.35	13.34	62.35	-82.42	534.04	-8,357.39	8,320.74	8,278.12	195.238
3,600.00	3,567.48	5,392.00	3,078.35	13.74	62.35	-82.42	534.04	-8,357.39	8,323.54	8,280.62	193.948
3,700.00	3,666.23	5,392.00	3,078.35	14.14	62.35	-82.42	534.04	-8,357.39	8,327.53	8,284.32	192.720
3,800.00	3,764.97	5,392.00	3,078.35	14.55	62.35	-82.42	534.04	-8,357.39	8,332.72	8,289.22	191.551
3,900.00	3,863.72	5,392.00	3,078.35	14.95	62.35	-82.42	534.04	-8,357.39	8,339.11	8,295.33	190.442
4,000.00	3,962.47	5,392.00	3,078.35	15.36	62.35	-82.42	534.04	-8,357.39	8,346.70	8,302.62	189.390
4,100.00	4,061.22	5,392.00	3,078.35	15.76	62.35	-82.42	534.04	-8,357.39	8,355.47	8,311.12	188.394
4,200.00	4,159.97	5,392.00	3,078.35	16.17	62.35	-82.42	534.04	-8,357.39	8,365.43	8,320.80	187.454
4,300.00	4,258.71	5,392.00	3,078.35	16.57	62.35	-82.42	534.04	-8,357.39	8,376.57	8,331.67	186.567
4,400.00	4,357.46	5,392.00	3,078.35	16.98	62.35	-82.42	534.04	-8,357.39	8,388.88	8,343.72	185.734
4,500.00	4,456.21	5,392.00	3,078.35	17.38	62.35	-82.42	534.04	-8,357.39	8,402.37	8,356.94	184.952
4,600.00	4,554.96	5,392.00	3,078.35	17.79	62.35	-82.42	534.04	-8,357.39	8,417.03	8,371.34	184.220
4,700.00	4,653.71	5,392.00	3,078.35	18.19	62.35	-82.42	534.04	-8,357.39	8,432.85	8,386.90	183.538
4,800.00	4,752.45	5,392.00	3,078.35	18.60	62.35	-82.42	534.04	-8,357.39	8,449.82	8,403.62	182.904
4,900.00	4,851.20	5,392.00	3,078.35	19.00	62.35	-82.42	534.04	-8,357.39	8,467.93	8,421.49	182.317

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 #692H
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 #692H	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	4,949.95	5,392.00	3,078.35	19.41	62.35	-82.42	534.04	-8,357.39	8,487.19	8,440.50	46.69	181.776	
5,100.00	5,048.70	5,392.00	3,078.35	19.81	62.35	-82.42	534.04	-8,357.39	8,507.58	8,460.65	46.93	181.280	
5,200.00	5,147.45	5,392.00	3,078.35	20.22	62.35	-82.42	534.04	-8,357.39	8,529.09	8,481.93	47.17	180.827	
5,300.00	5,246.19	5,392.00	3,078.35	20.62	62.35	-82.42	534.04	-8,357.39	8,551.72	8,504.32	47.40	180.418	
5,400.00	5,344.94	5,392.00	3,078.35	21.03	62.35	-82.42	534.04	-8,357.39	8,575.46	8,527.83	47.63	180.049	
5,455.76	5,400.00	5,392.00	3,078.35	21.25	62.35	-82.42	534.04	-8,357.39	8,589.17	8,541.41	47.75	179.862	
5,500.00	5,443.72	5,392.00	3,078.35	21.43	62.35	-82.53	534.04	-8,357.39	8,600.31	8,552.46	47.85	179.722	
5,600.00	5,542.71	5,392.00	3,078.35	21.83	62.35	-82.80	534.04	-8,357.39	8,626.44	8,578.36	48.08	179.436	
5,700.00	5,641.93	5,392.00	3,078.35	22.22	62.35	-83.08	534.04	-8,357.39	8,653.85	8,605.56	48.29	179.192	
5,800.00	5,741.36	5,392.00	3,078.35	22.60	62.35	-83.38	534.04	-8,357.39	8,682.53	8,634.02	48.51	178.988	
5,900.00	5,840.96	5,392.00	3,078.35	22.97	62.35	-83.69	534.04	-8,357.39	8,712.45	8,663.73	48.72	178.825	
6,000.00	5,940.70	5,392.00	3,078.35	23.33	62.35	-84.02	534.04	-8,357.39	8,743.60	8,694.67	48.93	178.699	
6,100.00	6,040.55	5,392.00	3,078.35	23.68	62.35	-84.36	534.04	-8,357.39	8,775.95	8,726.81	49.13	178.610	
6,200.00	6,140.48	5,392.00	3,078.35	24.02	62.35	-84.71	534.04	-8,357.39	8,809.47	8,760.13	49.34	178.557	
6,300.00	6,240.45	5,392.00	3,078.35	24.35	62.35	-85.08	534.04	-8,357.39	8,844.15	8,794.61	49.54	178.537 SF	
6,408.05	6,348.50	5,392.00	3,078.35	24.69	62.35	94.50	534.04	-8,357.39	8,882.89	8,833.15	49.74	178.596	
6,450.00	6,390.43	5,392.00	3,078.35	24.82	62.35	-157.61	534.04	-8,357.39	8,899.39	8,849.58	49.81	178.653	
6,500.00	6,440.15	5,392.00	3,078.35	24.99	62.35	-152.89	534.04	-8,357.39	8,922.13	8,872.22	49.91	178.771	
6,550.00	6,489.32	5,392.00	3,078.35	25.16	62.35	-150.47	534.04	-8,357.39	8,948.05	8,898.05	50.00	178.967	
6,600.00	6,537.64	5,392.00	3,078.35	25.34	62.35	-148.28	534.04	-8,357.39	8,976.96	8,926.88	50.08	179.243	
6,650.00	6,584.80	5,392.00	3,078.35	25.52	62.35	-145.92	534.04	-8,357.39	9,008.67	8,958.51	50.16	179.595	
6,700.00	6,630.52	5,392.00	3,078.35	25.71	62.35	-143.23	534.04	-8,357.39	9,042.94	8,992.70	50.23	180.021	
6,750.00	6,674.51	5,392.00	3,078.35	25.89	62.35	-140.04	534.04	-8,357.39	9,079.53	9,029.23	50.30	180.516	
6,800.00	6,716.50	5,392.00	3,078.35	26.08	62.35	-136.23	534.04	-8,357.39	9,118.20	9,067.84	50.36	181.074	
6,850.00	6,756.24	5,392.00	3,078.35	26.28	62.35	-131.63	534.04	-8,357.39	9,158.68	9,108.27	50.41	181.688	
6,900.00	6,793.47	5,392.00	3,078.35	26.48	62.35	-126.10	534.04	-8,357.39	9,200.70	9,150.24	50.46	182.352	
6,950.00	6,827.97	5,392.00	3,078.35	26.69	62.35	-119.47	534.04	-8,357.39	9,243.98	9,193.48	50.50	183.057	
7,000.00	6,859.53	5,392.00	3,078.35	26.91	62.35	-111.69	534.04	-8,357.39	9,288.23	9,237.70	50.54	183.794	
7,050.00	6,887.94	5,392.00	3,078.35	27.14	62.35	-102.82	534.04	-8,357.39	9,333.18	9,282.61	50.57	184.555	
7,100.00	6,913.05	5,392.00	3,078.35	27.38	62.35	-93.19	534.04	-8,357.39	9,378.54	9,327.94	50.60	185.329	
7,150.00	6,934.68	5,392.00	3,078.35	27.64	62.35	-83.34	534.04	-8,357.39	9,424.02	9,373.38	50.64	186.106	
7,200.00	6,952.71	5,392.00	3,078.35	27.92	62.35	-73.88	534.04	-8,357.39	9,469.35	9,418.68	50.67	186.877	
7,250.00	6,967.02	5,392.00	3,078.35	28.21	62.35	-65.30	534.04	-8,357.39	9,514.24	9,463.53	50.71	187.630	
7,300.00	6,977.54	5,392.00	3,078.35	28.52	62.35	-57.84	534.04	-8,357.39	9,558.44	9,507.69	50.75	188.355	
7,350.00	6,984.18	5,392.00	3,078.35	28.83	62.35	-51.55	534.04	-8,357.39	9,601.67	9,550.88	50.79	189.042	
7,400.00	6,986.92	5,392.00	3,078.35	29.16	62.35	-46.32	534.04	-8,357.39	9,643.69	9,592.85	50.84	189.681	
7,409.89	6,987.00	5,392.00	3,078.35	29.23	62.35	-45.40	534.04	-8,357.39	9,651.84	9,600.99	50.85	189.808	
7,500.00	6,987.00	5,392.00	3,078.35	29.85	62.35	-45.40	534.04	-8,357.39	9,725.93	9,674.97	50.96	190.840	
7,600.00	6,987.00	5,392.00	3,078.35	30.61	62.35	-45.40	534.04	-8,357.39	9,808.47	9,757.37	51.10	191.946	
7,700.00	6,987.00	5,392.00	3,078.35	31.41	62.35	-45.40	534.04	-8,357.39	9,891.34	9,840.09	51.25	193.015	
7,800.00	6,987.00	5,392.00	3,078.35	32.27	62.35	-45.40	534.04	-8,357.39	9,974.52	9,923.12	51.40	194.051	
7,900.00	6,987.00	5,392.00	3,078.35	33.17	62.35	-45.40	534.04	-8,357.39	10,058.01	10,006.44	51.56	195.056	
8,000.00	6,987.00	5,392.00	3,078.35	34.12	62.35	-45.40	534.04	-8,357.39	10,141.79	10,090.05	51.73	196.034	
8,100.00	6,987.00	5,392.00	3,078.35	35.10	62.35	-45.40	534.04	-8,357.39	10,225.87	10,173.95	51.91	196.985	
8,200.00	6,987.00	5,392.00	3,078.35	36.12	62.35	-45.40	534.04	-8,357.39	10,310.23	10,258.13	52.09	197.914	
8,300.00	6,987.00	5,392.00	3,078.35	37.17	62.35	-45.40	534.04	-8,357.39	10,394.86	10,342.58	52.28	198.822	
8,314.89	6,987.00	5,392.00	3,078.35	37.33	62.35	-45.40	534.04	-8,357.39	10,407.49	10,355.18	52.31	198.956	
8,400.00	6,987.00	5,392.00	3,078.35	38.25	62.35	-41.22	534.04	-8,357.39	10,480.68	10,428.21	52.47	199.743	
8,500.00	6,987.00	5,392.00	3,078.35	39.35	62.35	-35.32	534.04	-8,357.39	10,568.95	10,516.30	52.65	200.741	
8,600.00	6,987.00	5,392.00	3,078.35	40.45	62.35	-28.18	534.04	-8,357.39	10,659.22	10,606.41	52.81	201.830	
8,700.00	6,987.00	5,392.00	3,078.35	41.56	62.35	-19.73	534.04	-8,357.39	10,751.02	10,698.06	52.96	203.011	
8,800.00	6,987.00	5,392.00	3,078.35	42.66	62.35	-10.08	534.04	-8,357.39	10,843.85	10,790.77	53.08	204.281	

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 #692H
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 #692H	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: Reference		200-MWD OWSG Rev5 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 (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	6,987.00	5,392.00	3,078.35	43.75	62.35	0.32	534.04	-8,357.39	10,937.25	10,884.06	53.19	205.635	
9,000.00	6,987.00	5,392.00	3,078.35	44.83	62.35	10.80	534.04	-8,357.39	11,030.75	10,977.48	53.27	207.064	
9,071.74	6,987.00	5,392.00	3,078.35	45.59	62.35	17.96	534.04	-8,357.39	11,097.63	11,044.31	53.32	208.131	
9,100.00	6,987.00	5,392.00	3,078.35	45.89	62.35	17.96	534.04	-8,357.39	11,123.93	11,070.59	53.34	208.558	
9,200.00	6,987.00	5,392.00	3,078.35	46.97	62.35	17.96	534.04	-8,357.39	11,217.05	11,163.65	53.40	210.055	
9,300.00	6,987.00	5,392.00	3,078.35	48.07	62.35	17.96	534.04	-8,357.39	11,310.30	11,256.83	53.47	211.543	
9,400.00	6,987.00	5,392.00	3,078.35	49.20	62.35	17.96	534.04	-8,357.39	11,403.66	11,350.12	53.53	213.022	
9,500.00	6,987.00	5,392.00	3,078.35	50.36	62.35	17.96	534.04	-8,357.39	11,497.13	11,443.52	53.60	214.492	
9,600.00	6,987.00	5,392.00	3,078.35	51.54	62.35	17.96	534.04	-8,357.39	11,590.70	11,537.03	53.67	215.953	
9,700.00	6,987.00	5,392.00	3,078.35	52.74	62.35	17.96	534.04	-8,357.39	11,684.39	11,630.64	53.74	217.406	
9,800.00	6,987.00	5,392.00	3,078.35	53.96	62.35	17.96	534.04	-8,357.39	11,778.18	11,724.36	53.82	218.851	
9,900.00	6,987.00	5,392.00	3,078.35	55.21	62.35	17.96	534.04	-8,357.39	11,872.07	11,818.17	53.89	220.288	
10,000.00	6,987.00	5,392.00	3,078.35	56.47	62.35	17.96	534.04	-8,357.39	11,966.06	11,912.09	53.97	221.716	
10,100.00	6,987.00	5,392.00	3,078.35	57.75	62.35	17.96	534.04	-8,357.39	12,060.14	12,006.09	54.05	223.136	
10,200.00	6,987.00	5,392.00	3,078.35	59.04	62.35	17.96	534.04	-8,357.39	12,154.32	12,100.19	54.13	224.549	
10,300.00	6,987.00	5,392.00	3,078.35	60.35	62.35	17.96	534.04	-8,357.39	12,248.59	12,194.39	54.21	225.953	
10,400.00	6,987.00	5,392.00	3,078.35	61.67	62.35	17.96	534.04	-8,357.39	12,342.96	12,288.67	54.29	227.350	
10,500.00	6,987.00	5,392.00	3,078.35	63.01	62.35	17.96	534.04	-8,357.39	12,437.41	12,383.03	54.37	228.740	
10,600.00	6,987.00	5,392.00	3,078.35	64.36	62.35	17.96	534.04	-8,357.39	12,531.94	12,477.49	54.46	230.122	
10,700.00	6,987.00	5,392.00	3,078.35	65.72	62.35	17.96	534.04	-8,357.39	12,626.57	12,572.02	54.54	231.497	
10,800.00	6,987.00	5,392.00	3,078.35	67.09	62.35	17.96	534.04	-8,357.39	12,721.27	12,666.64	54.63	232.865	
10,900.00	6,987.00	5,392.00	3,078.35	68.47	62.35	17.96	534.04	-8,357.39	12,816.05	12,761.34	54.72	234.225	
11,000.00	6,987.00	5,392.00	3,078.35	69.86	62.35	17.96	534.04	-8,357.39	12,910.92	12,856.11	54.80	235.579	
11,100.00	6,987.00	5,392.00	3,078.35	71.26	62.35	17.96	534.04	-8,357.39	13,005.85	12,950.96	54.89	236.926	
11,200.00	6,987.00	5,392.00	3,078.35	72.67	62.35	17.96	534.04	-8,357.39	13,100.87	13,045.89	54.98	238.266	
11,300.00	6,987.00	5,392.00	3,078.35	74.09	62.35	17.96	534.04	-8,357.39	13,195.96	13,140.88	55.08	239.600	
11,400.00	6,987.00	5,392.00	3,078.35	75.51	62.35	17.96	534.04	-8,357.39	13,291.12	13,235.95	55.17	240.927	
11,500.00	6,987.00	5,392.00	3,078.35	76.94	62.35	17.96	534.04	-8,357.39	13,386.35	13,331.09	55.26	242.247	
11,600.00	6,987.00	5,392.00	3,078.35	78.38	62.35	17.96	534.04	-8,357.39	13,481.65	13,426.30	55.35	243.561	
11,700.00	6,987.00	5,392.00	3,078.35	79.82	62.35	17.96	534.04	-8,357.39	13,577.02	13,521.57	55.45	244.869	
11,800.00	6,987.00	5,392.00	3,078.35	81.27	62.35	17.96	534.04	-8,357.39	13,672.45	13,616.91	55.54	246.170	
11,900.00	6,987.00	5,392.00	3,078.35	82.73	62.35	17.96	534.04	-8,357.39	13,767.95	13,712.31	55.64	247.465	
12,000.00	6,987.00	5,392.00	3,078.35	84.19	62.35	17.96	534.04	-8,357.39	13,863.51	13,807.78	55.73	248.754	
12,100.00	6,987.00	5,392.00	3,078.35	85.66	62.35	17.96	534.04	-8,357.39	13,959.14	13,903.31	55.83	250.037	
12,200.00	6,987.00	5,392.00	3,078.35	87.13	62.35	17.96	534.04	-8,357.39	14,054.82	13,998.90	55.93	251.315	
12,300.00	6,987.00	5,392.00	3,078.35	88.61	62.35	17.96	534.04	-8,357.39	14,150.57	14,094.54	56.02	252.586	
12,400.00	6,987.00	5,392.00	3,078.35	90.09	62.35	17.96	534.04	-8,357.39	14,246.37	14,190.25	56.12	253.851	
12,500.00	6,987.00	5,392.00	3,078.35	91.57	62.35	17.96	534.04	-8,357.39	14,342.23	14,286.01	56.22	255.111	
12,600.00	6,987.00	5,392.00	3,078.35	93.06	62.35	17.96	534.04	-8,357.39	14,438.15	14,381.83	56.32	256.365	
12,700.00	6,987.00	5,392.00	3,078.35	94.55	62.35	17.96	534.04	-8,357.39	14,534.12	14,477.70	56.42	257.613	
12,800.00	6,987.00	5,392.00	3,078.35	96.05	62.35	17.96	534.04	-8,357.39	14,630.15	14,573.63	56.52	258.856	
12,900.00	6,987.00	5,392.00	3,078.35	97.55	62.35	17.96	534.04	-8,357.39	14,726.22	14,669.60	56.62	260.093	
13,000.00	6,987.00	5,392.00	3,078.35	99.05	62.35	17.96	534.04	-8,357.39	14,822.35	14,765.63	56.72	261.325	
13,100.00	6,987.00	5,392.00	3,078.35	100.56	62.35	17.96	534.04	-8,357.39	14,918.54	14,861.71	56.82	262.551	
13,200.00	6,987.00	5,392.00	3,078.35	102.07	62.35	17.96	534.04	-8,357.39	15,014.77	14,957.84	56.92	263.772	
13,300.00	6,987.00	5,392.00	3,078.35	103.58	62.35	17.96	534.04	-8,357.39	15,111.05	15,054.02	57.03	264.988	
13,400.00	6,987.00	5,392.00	3,078.35	105.09	62.35	17.96	534.04	-8,357.39	15,207.38	15,150.25	57.13	266.198	
13,500.00	6,987.00	5,392.00	3,078.35	106.61	62.35	17.96	534.04	-8,357.39	15,303.75	15,246.52	57.23	267.404	
13,600.00	6,987.00	5,392.00	3,078.35	108.13	62.35	17.96	534.04	-8,357.39	15,400.17	15,342.84	57.33	268.603	
13,700.00	6,987.00	5,392.00	3,078.35	109.65	62.35	17.96	534.04	-8,357.39	15,496.64	15,439.20	57.44	269.798	
13,800.00	6,987.00	5,392.00	3,078.35	111.18	62.35	17.96	534.04	-8,357.39	15,593.15	15,535.61	57.54	270.988	
13,900.00	6,987.00	5,392.00	3,078.35	112.71	62.35	17.96	534.04	-8,357.39	15,689.71	15,632.06	57.65	272.173	

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 #692H
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 #692H	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)
14,000.00	6,987.00	5,392.00	3,078.35	114.23	62.35	17.96	534.04	-8,357.39	15,786.30	15,728.55	57.75	273.352	
14,100.00	6,987.00	5,392.00	3,078.35	115.77	62.35	17.96	534.04	-8,357.39	15,882.95	15,825.09	57.86	274.527	
14,200.00	6,987.00	5,392.00	3,078.35	117.30	62.35	17.96	534.04	-8,357.39	15,979.63	15,921.67	57.96	275.697	
14,300.00	6,987.00	5,392.00	3,078.35	118.83	62.35	17.96	534.04	-8,357.39	16,076.35	16,018.28	58.07	276.861	
14,400.00	6,987.00	5,392.00	3,078.35	120.37	62.35	17.96	534.04	-8,357.39	16,173.11	16,114.94	58.17	278.021	
14,500.00	6,987.00	5,392.00	3,078.35	121.91	62.35	17.96	534.04	-8,357.39	16,269.91	16,211.63	58.28	279.176	
14,600.00	6,987.00	5,392.00	3,078.35	123.45	62.35	17.96	534.04	-8,357.39	16,366.75	16,308.37	58.38	280.327	
14,700.00	6,987.00	5,392.00	3,078.35	124.99	62.35	17.96	534.04	-8,357.39	16,463.63	16,405.14	58.49	281.472	
14,800.00	6,987.00	5,392.00	3,078.35	126.53	62.35	17.96	534.04	-8,357.39	16,560.54	16,501.95	58.60	282.613	
14,900.00	6,987.00	5,392.00	3,078.35	128.08	62.35	17.96	534.04	-8,357.39	16,657.49	16,598.79	58.71	283.749	
15,000.00	6,987.00	5,392.00	3,078.35	129.63	62.35	17.96	534.04	-8,357.39	16,754.48	16,695.67	58.81	284.880	
15,100.00	6,987.00	5,392.00	3,078.35	131.17	62.35	17.96	534.04	-8,357.39	16,851.50	16,792.58	58.92	286.007	
15,200.00	6,987.00	5,392.00	3,078.35	132.72	62.35	17.96	534.04	-8,357.39	16,948.56	16,889.53	59.03	287.129	
15,300.00	6,987.00	5,392.00	3,078.35	134.27	62.35	17.96	534.04	-8,357.39	17,045.65	16,986.52	59.14	288.247	
15,400.00	6,987.00	5,392.00	3,078.35	135.83	62.35	17.96	534.04	-8,357.39	17,142.78	17,083.53	59.24	289.360	
15,500.00	6,987.00	5,392.00	3,078.35	137.38	62.35	17.96	534.04	-8,357.39	17,239.93	17,180.58	59.35	290.468	
15,600.00	6,987.00	5,392.00	3,078.35	138.93	62.35	17.96	534.04	-8,357.39	17,337.12	17,277.66	59.46	291.572	
15,700.00	6,987.00	5,392.00	3,078.35	140.49	62.35	17.96	534.04	-8,357.39	17,434.34	17,374.77	59.57	292.671	
15,800.00	6,987.00	5,392.00	3,078.35	142.04	62.35	17.96	534.04	-8,357.39	17,531.60	17,471.92	59.68	293.766	
15,900.00	6,987.00	5,392.00	3,078.35	143.60	62.35	17.96	534.04	-8,357.39	17,628.88	17,569.09	59.79	294.856	
16,000.00	6,987.00	5,392.00	3,078.35	145.16	62.35	17.96	534.04	-8,357.39	17,726.19	17,666.29	59.90	295.942	
16,100.00	6,987.00	5,392.00	3,078.35	146.72	62.35	17.96	534.04	-8,357.39	17,823.54	17,763.53	60.01	297.024	
16,200.00	6,987.00	5,392.00	3,078.35	148.28	62.35	17.96	534.04	-8,357.39	17,920.91	17,860.79	60.12	298.101	
16,300.00	6,987.00	5,392.00	3,078.35	149.84	62.35	17.96	534.04	-8,357.39	18,018.31	17,958.08	60.23	299.174	
16,400.00	6,987.00	5,392.00	3,078.35	151.40	62.35	17.96	534.04	-8,357.39	18,115.74	18,055.40	60.34	300.242	
16,500.00	6,987.00	5,392.00	3,078.35	152.97	62.35	17.96	534.04	-8,357.39	18,213.20	18,152.75	60.45	301.306	
16,600.00	6,987.00	5,392.00	3,078.35	154.53	62.35	17.96	534.04	-8,357.39	18,310.68	18,250.12	60.56	302.366	
16,700.00	6,987.00	5,392.00	3,078.35	156.10	62.35	17.96	534.04	-8,357.39	18,408.19	18,347.52	60.67	303.422	
16,800.00	6,987.00	5,392.00	3,078.35	157.66	62.35	17.96	534.04	-8,357.39	18,505.73	18,444.95	60.78	304.473	
16,900.00	6,987.00	5,392.00	3,078.35	159.23	62.35	17.96	534.04	-8,357.39	18,603.30	18,542.40	60.89	305.520	
17,000.00	6,987.00	5,392.00	3,078.35	160.80	62.35	17.96	534.04	-8,357.39	18,700.89	18,639.88	61.00	306.563	
17,100.00	6,987.00	5,392.00	3,078.35	162.36	62.35	17.96	534.04	-8,357.39	18,798.50	18,737.39	61.11	307.602	
17,200.00	6,987.00	5,392.00	3,078.35	163.93	62.35	17.96	534.04	-8,357.39	18,896.14	18,834.92	61.22	308.636	
17,300.00	6,987.00	5,392.00	3,078.35	165.50	62.35	17.96	534.04	-8,357.39	18,993.81	18,932.47	61.34	309.666	
17,400.00	6,987.00	5,392.00	3,078.35	167.07	62.35	17.96	534.04	-8,357.39	19,091.50	19,030.05	61.45	310.692	
17,500.00	6,987.00	5,392.00	3,078.35	168.64	62.35	17.96	534.04	-8,357.39	19,189.21	19,127.65	61.56	311.714	
17,600.00	6,987.00	5,392.00	3,078.35	170.21	62.35	17.96	534.04	-8,357.39	19,286.95	19,225.27	61.67	312.732	
17,700.00	6,987.00	5,392.00	3,078.35	171.78	62.35	17.96	534.04	-8,357.39	19,384.70	19,322.92	61.78	313.746	
17,800.00	6,987.00	5,392.00	3,078.35	173.36	62.35	17.96	534.04	-8,357.39	19,482.49	19,420.59	61.90	314.756	
17,900.00	6,987.00	5,392.00	3,078.35	174.93	62.35	17.96	534.04	-8,357.39	19,580.29	19,518.28	62.01	315.761	
18,000.00	6,987.00	5,392.00	3,078.35	176.50	62.35	17.96	534.04	-8,357.39	19,678.12	19,616.00	62.12	316.763	
18,100.00	6,987.00	5,392.00	3,078.35	178.08	62.35	17.96	534.04	-8,357.39	19,775.97	19,713.73	62.24	317.760	
18,200.00	6,987.00	5,392.00	3,078.35	179.65	62.35	17.96	534.04	-8,357.39	19,873.84	19,811.49	62.35	318.754	
18,300.00	6,987.00	5,392.00	3,078.35	181.23	62.35	17.96	534.04	-8,357.39	19,971.73	19,909.27	62.46	319.743	
18,400.00	6,987.00	5,392.00	3,078.35	182.80	62.35	17.96	534.04	-8,357.39	20,069.64	20,007.06	62.58	320.729	
18,500.00	6,987.00	5,392.00	3,078.35	184.38	62.35	17.96	534.04	-8,357.39	20,167.57	20,104.88	62.69	321.711	
18,600.00	6,987.00	5,392.00	3,078.35	185.96	62.35	17.96	534.04	-8,357.39	20,265.52	20,202.72	62.80	322.688	
18,700.00	6,987.00	5,392.00	3,078.35	187.53	62.35	17.96	534.04	-8,357.39	20,363.50	20,300.58	62.92	323.662	
18,800.00	6,987.00	5,392.00	3,078.35	189.11	62.35	17.96	534.04	-8,357.39	20,461.49	20,398.46	63.03	324.632	
18,900.00	6,987.00	5,392.00	3,078.35	190.69	62.35	17.96	534.04	-8,357.39	20,559.50	20,496.36	63.14	325.597	
19,000.00	6,987.00	5,392.00	3,078.35	192.27	62.35	17.96	534.04	-8,357.39	20,657.53	20,594.27	63.26	326.559	
19,100.00	6,987.00	5,392.00	3,078.35	193.85	62.35	17.96	534.04	-8,357.39	20,755.58	20,692.21	63.37	327.517	

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 #692H
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 #692H	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		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	
19,200.00	6,987.00	5,392.00	3,078.35	195.43	62.35	17.96	534.04	-8,357.39	20,853.65	20,790.16	63.49	328.472	
19,255.69	6,987.00	5,392.00	3,078.35	196.31	62.35	17.96	534.04	-8,357.39	20,908.27	20,844.72	63.55	329.001	
19,300.00	6,987.00	5,392.00	3,078.35	197.01	62.35	17.96	534.04	-8,357.39	20,951.73	20,888.13	63.60	329.422	
19,400.00	6,987.00	5,392.00	3,078.35	198.59	62.35	17.96	534.04	-8,357.39	21,049.84	20,986.12	63.72	330.368	
19,468.80	6,987.00	5,392.00	3,078.35	199.49	62.35	17.96	534.04	-8,357.39	21,117.35	21,050.20	67.15	314.487	

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	
Measured Depth (usft)	Reference Depth (usft)	Measured Depth (usft)	Offset Vertical Depth (usft)	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	-105.64	-1,430.25	-5,109.27	5,306.91					
100.00	100.00	0.00	0.00	0.25	0.00	-105.64	-1,430.25	-5,109.27	5,305.70	5,305.45	0.25	N/A		
200.00	200.00	92.39	92.39	0.61	1.10	-105.64	-1,430.35	-5,109.19	5,305.63	5,303.93	1.70	3,117.428		
300.00	300.00	199.82	199.82	0.97	2.37	-105.64	-1,430.69	-5,108.88	5,305.44	5,302.11	3.33	1,592.972		
400.00	400.00	307.24	307.24	1.33	3.65	-105.65	-1,431.28	-5,108.35	5,305.11	5,300.15	4.96	1,069.775		
496.99	496.99	383.00	382.99	1.67	4.21	-105.66	-1,431.79	-5,107.93	5,304.80	5,298.94	5.87	904.453 CC		
500.00	500.00	383.00	382.99	1.68	4.21	-105.66	-1,431.79	-5,107.93	5,304.80	5,298.93	5.88	902.795 ES		
600.00	600.00	434.99	434.98	2.04	4.23	-105.66	-1,431.68	-5,108.20	5,305.29	5,299.03	6.26	848.140		
700.00	700.00	474.00	473.98	2.40	4.25	-105.65	-1,430.96	-5,108.96	5,306.76	5,300.13	6.63	800.440		
800.00	799.98	505.00	504.94	2.76	4.28	-99.19	-1,429.90	-5,110.09	5,309.75	5,302.75	7.00	758.138		
900.00	899.84	549.83	549.65	3.12	4.32	-99.09	-1,427.69	-5,112.45	5,314.43	5,307.04	7.39	719.568		
1,000.00	999.45	580.18	579.84	3.48	4.36	-98.96	-1,425.59	-5,114.66	5,320.93	5,313.17	7.76	685.591		
1,100.00	1,098.70	616.80	616.18	3.85	4.40	-98.80	-1,422.50	-5,117.93	5,329.20	5,321.06	8.15	654.257		
1,153.80	1,151.90	638.51	637.68	4.04	4.43	-98.71	-1,420.36	-5,120.16	5,334.35	5,326.00	8.36	638.329		
1,200.00	1,197.53	657.00	655.94	4.21	4.46	-98.71	-1,418.35	-5,122.20	5,339.09	5,330.55	8.54	625.208		
1,300.00	1,296.27	688.00	686.49	4.59	4.50	-98.71	-1,414.64	-5,125.92	5,350.14	5,341.21	8.93	598.909		
1,400.00	1,395.02	732.68	730.31	4.97	4.59	-98.71	-1,408.48	-5,132.07	5,362.33	5,352.98	9.35	573.448		
1,500.00	1,493.77	780.00	776.43	5.36	4.68	-98.69	-1,400.97	-5,139.54	5,375.71	5,365.93	9.78	549.613		
1,600.00	1,592.52	811.00	806.44	5.74	4.75	-98.66	-1,395.42	-5,144.98	5,390.18	5,379.98	10.20	528.579		
1,700.00	1,691.27	842.00	836.27	6.14	4.83	-98.64	-1,389.37	-5,150.87	5,405.81	5,395.19	10.62	509.029		
1,800.00	1,790.01	874.00	866.86	6.53	4.91	-98.60	-1,382.62	-5,157.40	5,422.60	5,411.55	11.05	490.705		
1,900.00	1,888.76	905.00	896.29	6.92	4.99	-98.56	-1,375.65	-5,164.19	5,440.58	5,429.10	11.49	473.711		
2,000.00	1,987.51	950.62	939.25	7.32	5.11	-98.49	-1,364.70	-5,174.92	5,459.67	5,447.71	11.97	456.230		
2,100.00	2,086.26	999.00	984.45	7.72	5.25	-98.41	-1,352.42	-5,187.06	5,479.83	5,467.36	12.47	439.384		
2,200.00	2,185.01	1,031.00	1,014.04	8.11	5.35	-98.34	-1,343.63	-5,195.49	5,500.92	5,487.99	12.94	425.118		
2,300.00	2,283.75	1,073.04	1,052.61	8.51	5.48	-98.25	-1,331.59	-5,207.10	5,523.07	5,509.62	13.46	410.454		
2,400.00	2,382.50	1,105.95	1,082.39	8.91	5.59	-98.17	-1,321.43	-5,216.73	5,546.34	5,532.39	13.95	397.568		
2,500.00	2,481.25	1,139.11	1,112.16	9.31	5.71	-98.09	-1,310.93	-5,226.89	5,570.80	5,556.34	14.46	385.361		
2,600.00	2,580.00	1,185.66	1,153.35	9.71	5.92	-97.96	-1,295.19	-5,241.78	5,596.26	5,581.18	15.07	371.312		
2,700.00	2,678.75	1,244.47	1,204.56	10.11	6.18	-97.78	-1,273.83	-5,261.30	5,622.55	5,606.77	15.78	356.301		
2,800.00	2,777.49	1,279.00	1,234.28	10.52	6.30	-97.66	-1,260.76	-5,273.03	5,649.61	5,633.27	16.33	345.862		
2,900.00	2,876.24	1,311.00	1,261.52	10.92	6.43	-97.55	-1,248.23	-5,284.21	5,677.70	5,660.81	16.88	336.271		
3,000.00	2,974.99	1,348.79	1,293.33	11.32	6.69	-97.42	-1,233.10	-5,297.88	5,706.88	5,689.39	17.49	326.262		
3,100.00	3,073.74	1,380.16	1,319.50	11.72	6.96	-97.31	-1,220.40	-5,309.63	5,737.24	5,719.16	18.08	317.388		
3,200.00	3,172.49	1,421.16	1,353.43	12.13	7.31	-97.15	-1,203.53	-5,325.30	5,768.53	5,749.81	18.72	308.123		
3,300.00	3,271.23	1,436.00	1,365.60	12.53	7.43	-97.10	-1,197.33	-5,331.10	5,800.96	5,781.81	19.15	302.882		
3,400.00	3,369.98	1,471.12	1,394.25	12.93	7.76	-96.96	-1,182.69	-5,345.19	5,834.48	5,814.70	19.77	295.053		
3,500.00	3,468.73	1,498.00	1,416.09	13.34	8.03	-96.86	-1,171.65	-5,356.31	5,869.19	5,848.87	20.32	288.842		
3,600.00	3,567.48	1,529.00	1,441.15	13.74	8.32	-96.74	-1,158.98	-5,369.44	5,904.99	5,884.10	20.89	282.619		
3,700.00	3,666.23	1,573.40	1,476.87	14.14	8.76	-96.58	-1,140.80	-5,388.55	5,941.69	5,920.10	21.59	275.209		
3,800.00	3,764.97	1,629.59	1,521.64	14.55	9.33	-96.36	-1,117.32	-5,413.06	5,979.10	5,956.68	22.42	266.697		
3,900.00	3,863.72	1,697.54	1,575.13	14.95	10.06	-96.09	-1,087.97	-5,442.98	6,017.02	5,993.65	23.38	257.371		
4,000.00	3,962.47	3,253.00	2,925.31	15.36	22.92	-92.33	-572.86	-5,936.50	6,047.22	6,011.08	36.13	167.358		
4,100.00	4,061.22	3,253.00	2,925.31	15.76	22.92	-92.33	-572.86	-5,936.50	6,064.12	6,027.61	36.51	166.101		
4,200.00	4,159.97	3,253.00	2,925.31	16.17	22.92	-92.33	-572.86	-5,936.50	6,082.62	6,045.75	36.87	164.958		
4,300.00	4,258.71	3,253.00	2,925.31	16.57	22.92	-92.33	-572.86	-5,936.50	6,102.71	6,065.48	37.23	163.926		
4,400.00	4,357.46	3,253.00	2,925.31	16.98	22.92	-92.33	-572.86	-5,936.50	6,124.36	6,086.78	37.57	163.000		
4,500.00	4,456.21	3,253.00	2,925.31	17.38	22.92	-92.33	-572.86	-5,936.50	6,147.56	6,109.65	37.91	162.176		
4,600.00	4,554.96	3,253.00	2,925.31	17.79	22.92	-92.33	-572.86	-5,936.50	6,172.29	6,134.06	38.23	161.451		
4,700.00	4,653.71	3,253.00	2,925.31	18.19	22.92	-92.33	-572.86	-5,936.50	6,198.54	6,160.00	38.54	160.819		
4,800.00	4,752.45	3,253.00	2,925.31	18.60	22.92	-92.33	-572.86	-5,936.50	6,226.29	6,187.44	38.85	160.278		
4,900.00	4,851.20	3,253.00	2,925.31	19.00	22.92	-92.33	-572.86	-5,936.50	6,255.51	6,216.37	39.14	159.824		

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 #692H
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 #692H	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)					
5,000.00	4,949.95	3,253.00	2,925.31	19.41	22.92	-92.33	-572.86	-5,936.50	6,286.19	6,246.76	39.42	159.454			
5,100.00	5,048.70	3,253.00	2,925.31	19.81	22.92	-92.33	-572.86	-5,936.50	6,318.30	6,278.60	39.70	159.165			
5,200.00	5,147.45	3,253.00	2,925.31	20.22	22.92	-92.33	-572.86	-5,936.50	6,351.82	6,311.86	39.96	158.953			
5,300.00	5,246.19	3,253.00	2,925.31	20.62	22.92	-92.33	-572.86	-5,936.50	6,386.73	6,346.52	40.21	158.816			
5,400.00	5,344.94	3,253.00	2,925.31	21.03	22.92	-92.33	-572.86	-5,936.50	6,423.01	6,382.55	40.46	158.750			
5,455.76	5,400.00	3,253.00	2,925.31	21.25	22.92	-92.33	-572.86	-5,936.50	6,443.82	6,403.23	40.59	158.744	SF		
5,500.00	5,443.72	3,253.00	2,925.31	21.43	22.92	-92.51	-572.86	-5,936.50	6,460.63	6,419.93	40.70	158.757			
5,600.00	5,542.71	3,253.00	2,925.31	21.83	22.92	-92.94	-572.86	-5,936.50	6,499.51	6,458.59	40.91	158.859			
5,700.00	5,641.93	3,253.00	2,925.31	22.22	22.92	-93.37	-572.86	-5,936.50	6,539.60	6,498.49	41.11	159.059			
5,800.00	5,741.36	3,253.00	2,925.31	22.60	22.92	-93.82	-572.86	-5,936.50	6,580.88	6,539.58	41.30	159.352			
5,900.00	5,840.96	3,253.00	2,925.31	22.97	22.92	-94.29	-572.86	-5,936.50	6,623.30	6,581.84	41.46	159.734			
6,000.00	5,940.70	3,253.00	2,925.31	23.33	22.92	-94.77	-572.86	-5,936.50	6,666.84	6,625.22	41.62	160.202			
6,100.00	6,040.55	3,253.00	2,925.31	23.68	22.92	-95.27	-572.86	-5,936.50	6,711.45	6,669.70	41.75	160.752			
6,200.00	6,140.48	3,253.00	2,925.31	24.02	22.92	-95.78	-572.86	-5,936.50	6,757.11	6,715.24	41.87	161.380			
6,300.00	6,240.45	3,253.00	2,925.31	24.35	22.92	-96.31	-572.86	-5,936.50	6,803.78	6,761.80	41.98	162.082			
6,408.05	6,348.50	3,253.00	2,925.31	24.69	22.92	83.11	-572.86	-5,936.50	6,855.29	6,813.23	42.07	162.965			
6,450.00	6,390.43	3,253.00	2,925.31	24.82	22.92	-169.12	-572.86	-5,936.50	6,876.75	6,834.65	42.10	163.338			
6,500.00	6,440.15	3,253.00	2,925.31	24.99	22.92	-164.56	-572.86	-5,936.50	6,905.45	6,863.29	42.15	163.811			
6,550.00	6,489.32	3,253.00	2,925.31	25.16	22.92	-162.32	-572.86	-5,936.50	6,937.34	6,895.12	42.21	164.340			
6,600.00	6,537.64	3,253.00	2,925.31	25.34	22.92	-160.31	-572.86	-5,936.50	6,972.18	6,929.90	42.28	164.924			
6,650.00	6,584.80	3,253.00	2,925.31	25.52	22.92	-158.11	-572.86	-5,936.50	7,009.71	6,967.37	42.34	165.561			
6,700.00	6,630.52	3,253.00	2,925.31	25.71	22.92	-155.47	-572.86	-5,936.50	7,049.67	7,007.26	42.41	166.246			
6,750.00	6,674.51	3,253.00	2,925.31	25.89	22.92	-152.15	-572.86	-5,936.50	7,091.76	7,049.29	42.47	166.972			
6,800.00	6,716.50	3,253.00	2,925.31	26.08	22.92	-147.81	-572.86	-5,936.50	7,135.70	7,093.15	42.54	167.734			
6,850.00	6,756.24	3,253.00	2,925.31	26.28	22.92	-141.98	-572.86	-5,936.50	7,181.17	7,138.56	42.61	168.524			
6,900.00	6,793.47	3,253.00	2,925.31	26.48	22.92	-133.93	-572.86	-5,936.50	7,227.88	7,185.19	42.68	169.334			
6,950.00	6,827.97	3,253.00	2,925.31	26.69	22.92	-122.75	-572.86	-5,936.50	7,275.51	7,232.75	42.76	170.156			
7,000.00	6,859.53	3,253.00	2,925.31	26.91	22.92	-107.72	-572.86	-5,936.50	7,323.75	7,280.92	42.83	170.981			
7,050.00	6,887.94	3,253.00	2,925.31	27.14	22.92	-89.64	-572.86	-5,936.50	7,372.31	7,329.40	42.91	171.799			
7,100.00	6,913.05	3,253.00	2,925.31	27.38	22.92	-71.62	-572.86	-5,936.50	7,420.87	7,377.87	42.99	172.600			
7,150.00	6,934.68	3,253.00	2,925.31	27.64	22.92	-56.71	-572.86	-5,936.50	7,469.14	7,426.05	43.08	173.374			
7,200.00	6,952.71	3,253.00	2,925.31	27.92	22.92	-45.64	-572.86	-5,936.50	7,516.82	7,473.65	43.17	174.110			
7,250.00	6,967.02	3,253.00	2,925.31	28.21	22.92	-37.70	-572.86	-5,936.50	7,563.65	7,520.38	43.27	174.797			
7,300.00	6,977.54	3,253.00	2,925.31	28.52	22.92	-31.96	-572.86	-5,936.50	7,609.35	7,565.97	43.38	175.423			
7,350.00	6,984.18	3,253.00	2,925.31	28.83	22.92	-27.73	-572.86	-5,936.50	7,653.65	7,610.16	43.49	175.979			
7,400.00	6,986.92	3,253.00	2,925.31	29.16	22.92	-24.53	-572.86	-5,936.50	7,696.32	7,652.71	43.62	176.454			
7,409.89	6,987.00	3,253.00	2,925.31	29.23	22.92	-23.99	-572.86	-5,936.50	7,704.55	7,660.91	43.64	176.549			
7,500.00	6,987.00	3,253.00	2,925.31	29.85	22.92	-23.99	-572.86	-5,936.50	7,779.32	7,735.43	43.89	177.242			
7,600.00	6,987.00	3,253.00	2,925.31	30.61	22.92	-23.99	-572.86	-5,936.50	7,862.67	7,818.50	44.17	177.999			
7,700.00	6,987.00	3,253.00	2,925.31	31.41	22.92	-23.99	-572.86	-5,936.50	7,946.41	7,901.95	44.46	178.751			
7,800.00	6,987.00	3,253.00	2,925.31	32.27	22.92	-23.99	-572.86	-5,936.50	8,030.52	7,985.78	44.74	179.497			
7,900.00	6,987.00	3,253.00	2,925.31	33.17	22.92	-23.99	-572.86	-5,936.50	8,114.99	8,069.97	45.02	180.241			
8,000.00	6,987.00	3,253.00	2,925.31	34.12	22.92	-23.99	-572.86	-5,936.50	8,199.81	8,154.50	45.31	180.982			
8,100.00	6,987.00	3,253.00	2,925.31	35.10	22.92	-23.99	-572.86	-5,936.50	8,284.97	8,239.37	45.59	181.723			
8,200.00	6,987.00	3,253.00	2,925.31	36.12	22.92	-23.99	-572.86	-5,936.50	8,370.45	8,324.58	45.87	182.464			
8,300.00	6,987.00	3,253.00	2,925.31	37.17	22.92	-23.99	-572.86	-5,936.50	8,456.26	8,410.10	46.16	183.206			
8,314.89	6,987.00	3,253.00	2,925.31	37.33	22.92	-23.99	-572.86	-5,936.50	8,469.06	8,422.86	46.20	183.317			
8,400.00	6,987.00	3,253.00	2,925.31	38.25	22.92	-18.47	-572.86	-5,936.50	8,542.85	8,496.42	46.43	184.004			
8,500.00	6,987.00	3,253.00	2,925.31	39.35	22.92	-11.33	-572.86	-5,936.50	8,630.78	8,584.11	46.66	184.954			
8,600.00	6,987.00	3,253.00	2,925.31	40.45	22.92	-3.67	-572.86	-5,936.50	8,719.60	8,672.73	46.86	186.059			
8,700.00	6,987.00	3,253.00	2,925.31	41.56	22.92	4.24	-572.86	-5,936.50	8,808.86	8,761.83	47.03	187.309			
8,800.00	6,987.00	3,253.00	2,925.31	42.66	22.92	12.08	-572.86	-5,936.50	8,898.12	8,850.97	47.16	188.696			

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	Warning	
8,900.00	6,987.00	3,253.00	2,925.31	43.75	22.92	19.52	-572.86	-5,936.50	8,986.95	8,939.70	47.25	190.206		
9,000.00	6,987.00	3,253.00	2,925.31	44.83	22.92	26.33	-572.86	-5,936.50	9,074.94	9,027.63	47.31	191.824		
9,071.74	6,987.00	3,253.00	2,925.31	45.59	22.92	30.77	-572.86	-5,936.50	9,137.32	9,089.98	47.33	193.045		
9,100.00	6,987.00	3,253.00	2,925.31	45.89	22.92	30.77	-572.86	-5,936.50	9,161.76	9,114.42	47.34	193.535		
9,200.00	6,987.00	3,253.00	2,925.31	46.97	22.92	30.77	-572.86	-5,936.50	9,248.41	9,201.04	47.37	195.239		
9,300.00	6,987.00	3,253.00	2,925.31	48.07	22.92	30.77	-572.86	-5,936.50	9,335.33	9,287.92	47.41	196.924		
9,400.00	6,987.00	3,253.00	2,925.31	49.20	22.92	30.77	-572.86	-5,936.50	9,422.51	9,375.06	47.45	198.593		
9,500.00	6,987.00	3,253.00	2,925.31	50.36	22.92	30.77	-572.86	-5,936.50	9,509.94	9,462.45	47.49	200.244		
9,600.00	6,987.00	3,253.00	2,925.31	51.54	22.92	30.77	-572.86	-5,936.50	9,597.62	9,550.07	47.54	201.878		
9,700.00	6,987.00	3,253.00	2,925.31	52.74	22.92	30.77	-572.86	-5,936.50	9,685.53	9,637.93	47.60	203.495		
9,800.00	6,987.00	3,253.00	2,925.31	53.96	22.92	30.77	-572.86	-5,936.50	9,773.68	9,726.02	47.65	205.097		
9,900.00	6,987.00	3,253.00	2,925.31	55.21	22.92	30.77	-572.86	-5,936.50	9,862.05	9,814.34	47.72	206.683		
10,000.00	6,987.00	3,253.00	2,925.31	56.47	22.92	30.77	-572.86	-5,936.50	9,950.65	9,902.87	47.78	208.255		
10,100.00	6,987.00	3,253.00	2,925.31	57.75	22.92	30.77	-572.86	-5,936.50	10,039.46	9,991.61	47.85	209.811		
10,200.00	6,987.00	3,253.00	2,925.31	59.04	22.92	30.77	-572.86	-5,936.50	10,128.47	10,080.55	47.92	211.354		
10,300.00	6,987.00	3,253.00	2,925.31	60.35	22.92	30.77	-572.86	-5,936.50	10,217.69	10,169.70	48.00	212.882		
10,400.00	6,987.00	3,253.00	2,925.31	61.67	22.92	30.77	-572.86	-5,936.50	10,307.11	10,259.04	48.07	214.397		
10,500.00	6,987.00	3,253.00	2,925.31	63.01	22.92	30.77	-572.86	-5,936.50	10,396.72	10,348.57	48.16	215.900		
10,600.00	6,987.00	3,253.00	2,925.31	64.36	22.92	30.77	-572.86	-5,936.50	10,486.52	10,438.28	48.24	217.390		
10,700.00	6,987.00	3,253.00	2,925.31	65.72	22.92	30.77	-572.86	-5,936.50	10,576.50	10,528.18	48.32	218.867		
10,800.00	6,987.00	3,253.00	2,925.31	67.09	22.92	30.77	-572.86	-5,936.50	10,666.66	10,618.25	48.41	220.333		
10,900.00	6,987.00	3,253.00	2,925.31	68.47	22.92	30.77	-572.86	-5,936.50	10,757.00	10,708.50	48.50	221.788		
11,000.00	6,987.00	3,253.00	2,925.31	69.86	22.92	30.77	-572.86	-5,936.50	10,847.50	10,798.91	48.59	223.231		
11,100.00	6,987.00	3,253.00	2,925.31	71.26	22.92	30.77	-572.86	-5,936.50	10,938.17	10,889.48	48.69	224.664		
11,200.00	6,987.00	3,253.00	2,925.31	72.67	22.92	30.77	-572.86	-5,936.50	11,029.00	10,980.22	48.78	226.087		
11,300.00	6,987.00	3,253.00	2,925.31	74.09	22.92	30.77	-572.86	-5,936.50	11,119.99	11,071.11	48.88	227.499		
11,400.00	6,987.00	3,253.00	2,925.31	75.51	22.92	30.77	-572.86	-5,936.50	11,211.13	11,162.15	48.98	228.902		
11,500.00	6,987.00	3,253.00	2,925.31	76.94	22.92	30.77	-572.86	-5,936.50	11,302.42	11,253.34	49.08	230.295		
11,600.00	6,987.00	3,253.00	2,925.31	78.38	22.92	30.77	-572.86	-5,936.50	11,393.86	11,344.68	49.18	231.680		
11,700.00	6,987.00	3,253.00	2,925.31	79.82	22.92	30.77	-572.86	-5,936.50	11,485.44	11,436.16	49.28	233.055		
11,800.00	6,987.00	3,253.00	2,925.31	81.27	22.92	30.77	-572.86	-5,936.50	11,577.16	11,527.77	49.39	234.422		
11,900.00	6,987.00	3,253.00	2,925.31	82.73	22.92	30.77	-572.86	-5,936.50	11,669.01	11,619.52	49.49	235.780		
12,000.00	6,987.00	3,253.00	2,925.31	84.19	22.92	30.77	-572.86	-5,936.50	11,761.00	11,711.41	49.60	237.131		
12,100.00	6,987.00	3,253.00	2,925.31	85.66	22.92	30.77	-572.86	-5,936.50	11,853.12	11,803.42	49.70	238.473		
12,200.00	6,987.00	3,253.00	2,925.31	87.13	22.92	30.77	-572.86	-5,936.50	11,945.37	11,895.55	49.81	239.808		
12,300.00	6,987.00	3,253.00	2,925.31	88.61	22.92	30.77	-572.86	-5,936.50	12,037.74	11,987.81	49.92	241.136		
12,400.00	6,987.00	3,253.00	2,925.31	90.09	22.92	30.77	-572.86	-5,936.50	12,130.22	12,080.19	50.03	242.456		
12,500.00	6,987.00	3,253.00	2,925.31	91.57	22.92	30.77	-572.86	-5,936.50	12,222.83	12,172.69	50.14	243.769		
12,600.00	6,987.00	3,253.00	2,925.31	93.06	22.92	30.77	-572.86	-5,936.50	12,315.56	12,265.30	50.25	245.076		
12,700.00	6,987.00	3,253.00	2,925.31	94.55	22.92	30.77	-572.86	-5,936.50	12,408.39	12,358.03	50.36	246.375		
12,800.00	6,987.00	3,253.00	2,925.31	96.05	22.92	30.77	-572.86	-5,936.50	12,501.34	12,450.86	50.48	247.669		
12,900.00	6,987.00	3,253.00	2,925.31	97.55	22.92	30.77	-572.86	-5,936.50	12,594.40	12,543.81	50.59	248.956		
13,000.00	6,987.00	3,253.00	2,925.31	99.05	22.92	30.77	-572.86	-5,936.50	12,687.56	12,636.85	50.70	250.236		
13,100.00	6,987.00	3,253.00	2,925.31	100.56	22.92	30.77	-572.86	-5,936.50	12,780.82	12,730.01	50.82	251.511		
13,200.00	6,987.00	3,253.00	2,925.31	102.07	22.92	30.77	-572.86	-5,936.50	12,874.19	12,823.26	50.93	252.780		
13,300.00	6,987.00	3,253.00	2,925.31	103.58	22.92	30.77	-572.86	-5,936.50	12,967.65	12,916.61	51.05	254.043		
13,400.00	6,987.00	3,253.00	2,925.31	105.09	22.92	30.77	-572.86	-5,936.50	13,061.21	13,010.05	51.16	255.300		
13,500.00	6,987.00	3,253.00	2,925.31	106.61	22.92	30.77	-572.86	-5,936.50	13,154.87	13,103.59	51.28	256.552		
13,600.00	6,987.00	3,253.00	2,925.31	108.13	22.92	30.77	-572.86	-5,936.50	13,248.62	13,197.23	51.39	257.799		
13,700.00	6,987.00	3,253.00	2,925.31	109.65	22.92	30.77	-572.86	-5,936.50	13,342.46	13,290.95	51.51	259.040		
13,800.00	6,987.00	3,253.00	2,925.31	111.18	22.92	30.77	-572.86	-5,936.50	13,436.38	13,384.76	51.62	260.276		
13,900.00	6,987.00	3,253.00	2,925.31	112.71	22.92	30.77	-572.86	-5,936.50	13,530.40	13,478.66	51.74	261.506		

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 #692H
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 #692H	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	Warning	
14,000.00	6,987.00	3,253.00	2,925.31	114.23	22.92	30.77	-572.86	-5,936.50	13,624.50	13,572.64	51.86	262.732		
14,100.00	6,987.00	3,253.00	2,925.31	115.77	22.92	30.77	-572.86	-5,936.50	13,718.68	13,666.71	51.97	263.953		
14,200.00	6,987.00	3,253.00	2,925.31	117.30	22.92	30.77	-572.86	-5,936.50	13,812.95	13,760.86	52.09	265.169		
14,300.00	6,987.00	3,253.00	2,925.31	118.83	22.92	30.77	-572.86	-5,936.50	13,907.30	13,855.09	52.21	266.380		
14,400.00	6,987.00	3,253.00	2,925.31	120.37	22.92	30.77	-572.86	-5,936.50	14,001.72	13,949.39	52.33	267.587		
14,500.00	6,987.00	3,253.00	2,925.31	121.91	22.92	30.77	-572.86	-5,936.50	14,096.22	14,043.78	52.44	268.788		
14,600.00	6,987.00	3,253.00	2,925.31	123.45	22.92	30.77	-572.86	-5,936.50	14,190.80	14,138.24	52.56	269.986		
14,700.00	6,987.00	3,253.00	2,925.31	124.99	22.92	30.77	-572.86	-5,936.50	14,285.45	14,232.77	52.68	271.178		
14,800.00	6,987.00	3,253.00	2,925.31	126.53	22.92	30.77	-572.86	-5,936.50	14,380.17	14,327.37	52.80	272.366		
14,900.00	6,987.00	3,253.00	2,925.31	128.08	22.92	30.77	-572.86	-5,936.50	14,474.97	14,422.05	52.92	273.550		
15,000.00	6,987.00	3,253.00	2,925.31	129.63	22.92	30.77	-572.86	-5,936.50	14,569.83	14,516.80	53.03	274.730		
15,100.00	6,987.00	3,253.00	2,925.31	131.17	22.92	30.77	-572.86	-5,936.50	14,664.76	14,611.61	53.15	275.905		
15,200.00	6,987.00	3,253.00	2,925.31	132.72	22.92	30.77	-572.86	-5,936.50	14,759.76	14,706.49	53.27	277.076		
15,300.00	6,987.00	3,253.00	2,925.31	134.27	22.92	30.77	-572.86	-5,936.50	14,854.82	14,801.44	53.39	278.242		
15,400.00	6,987.00	3,253.00	2,925.31	135.83	22.92	30.77	-572.86	-5,936.50	14,949.95	14,896.45	53.51	279.405		
15,500.00	6,987.00	3,253.00	2,925.31	137.38	22.92	30.77	-572.86	-5,936.50	15,045.14	14,991.52	53.62	280.563		
15,600.00	6,987.00	3,253.00	2,925.31	138.93	22.92	30.77	-572.86	-5,936.50	15,140.40	15,086.66	53.74	281.718		
15,700.00	6,987.00	3,253.00	2,925.31	140.49	22.92	30.77	-572.86	-5,936.50	15,235.71	15,181.85	53.86	282.868		
15,800.00	6,987.00	3,253.00	2,925.31	142.04	22.92	30.77	-572.86	-5,936.50	15,331.09	15,277.11	53.98	284.014		
15,900.00	6,987.00	3,253.00	2,925.31	143.60	22.92	30.77	-572.86	-5,936.50	15,426.52	15,372.42	54.10	285.156		
16,000.00	6,987.00	3,253.00	2,925.31	145.16	22.92	30.77	-572.86	-5,936.50	15,522.01	15,467.79	54.22	286.294		
16,100.00	6,987.00	3,253.00	2,925.31	146.72	22.92	30.77	-572.86	-5,936.50	15,617.56	15,563.22	54.34	287.429		
16,200.00	6,987.00	3,253.00	2,925.31	148.28	22.92	30.77	-572.86	-5,936.50	15,713.16	15,658.71	54.45	288.559		
16,300.00	6,987.00	3,253.00	2,925.31	149.84	22.92	30.77	-572.86	-5,936.50	15,808.82	15,754.24	54.57	289.685		
16,400.00	6,987.00	1,436.00	1,365.60	151.40	7.43	28.35	-1,197.33	-5,331.10	15,901.35	15,855.98	45.37	350.502		
16,500.00	6,987.00	1,436.00	1,365.60	152.97	7.43	28.35	-1,197.33	-5,331.10	15,993.33	15,947.78	45.54	351.155		
16,600.00	6,987.00	1,420.47	1,352.86	154.53	7.30	28.35	-1,203.82	-5,325.03	16,085.34	16,039.69	45.65	352.341		
16,700.00	6,987.00	1,405.00	1,340.10	156.10	7.17	28.35	-1,210.22	-5,319.08	16,177.50	16,131.73	45.76	353.513		
16,800.00	6,987.00	1,405.00	1,340.10	157.66	7.17	28.35	-1,210.22	-5,319.08	16,269.68	16,223.75	45.94	354.167		
16,900.00	6,987.00	1,405.00	1,340.10	159.23	7.17	28.35	-1,210.22	-5,319.08	16,361.96	16,315.85	46.11	354.824		
17,000.00	6,987.00	1,393.66	1,330.71	160.80	7.07	28.34	-1,214.88	-5,314.76	16,454.32	16,408.08	46.24	355.843		
17,100.00	6,987.00	1,374.00	1,314.38	162.36	6.92	28.34	-1,222.90	-5,307.30	16,546.74	16,500.40	46.34	357.107		
17,200.00	6,987.00	1,374.00	1,314.38	163.93	6.92	28.34	-1,222.90	-5,307.30	16,639.21	16,592.70	46.51	357.765		
17,300.00	6,987.00	1,374.00	1,314.38	165.50	6.92	28.34	-1,222.90	-5,307.30	16,731.77	16,685.09	46.68	358.428		
17,400.00	6,987.00	1,374.00	1,314.38	167.07	6.92	28.34	-1,222.90	-5,307.30	16,824.42	16,777.57	46.85	359.094		
17,500.00	6,987.00	1,374.00	1,314.38	168.64	6.92	28.34	-1,222.90	-5,307.30	16,917.15	16,870.12	47.02	359.763		
17,600.00	6,987.00	1,374.00	1,314.38	170.21	6.92	28.34	-1,222.90	-5,307.30	17,009.96	16,962.77	47.19	360.437		
17,700.00	6,987.00	1,374.00	1,314.38	171.78	6.92	28.34	-1,222.90	-5,307.30	17,102.85	17,055.49	47.36	361.113		
17,800.00	6,987.00	1,342.95	1,288.44	173.36	6.64	28.32	-1,235.44	-5,295.73	17,195.60	17,148.20	47.40	362.798		
17,900.00	6,987.00	1,311.00	1,261.52	174.93	6.43	28.31	-1,248.23	-5,284.21	17,288.75	17,241.30	47.45	364.340		
18,000.00	6,987.00	1,311.00	1,261.52	176.50	6.43	28.31	-1,248.23	-5,284.21	17,381.75	17,334.13	47.62	365.007		
18,100.00	6,987.00	1,311.00	1,261.52	178.08	6.43	28.31	-1,248.23	-5,284.21	17,474.82	17,427.03	47.79	365.676		
18,200.00	6,987.00	1,311.00	1,261.52	179.65	6.43	28.31	-1,248.23	-5,284.21	17,567.97	17,520.02	47.95	366.349		
18,300.00	6,987.00	1,311.00	1,261.52	181.23	6.43	28.31	-1,248.23	-5,284.21	17,661.19	17,613.07	48.12	367.025		
18,400.00	6,987.00	1,311.00	1,261.52	182.80	6.43	28.31	-1,248.23	-5,284.21	17,754.49	17,706.21	48.28	367.704		
18,500.00	6,987.00	1,311.00	1,261.52	184.38	6.43	28.31	-1,248.23	-5,284.21	17,847.86	17,799.41	48.45	368.385		
18,600.00	6,987.00	1,311.00	1,261.52	185.96	6.43	28.31	-1,248.23	-5,284.21	17,941.30	17,892.69	48.61	369.069		
18,700.00	6,987.00	1,311.00	1,261.52	187.53	6.43	28.31	-1,248.23	-5,284.21	18,034.81	17,986.04	48.77	369.756		
18,800.00	6,987.00	1,296.41	1,249.14	189.11	6.36	28.30	-1,253.99	-5,279.07	18,128.36	18,079.45	48.90	370.715		
18,900.00	6,987.00	1,279.00	1,234.28	190.69	6.30	28.29	-1,260.76	-5,273.03	18,222.00	18,172.98	49.02	371.762		
19,000.00	6,987.00	1,279.00	1,234.28	192.27	6.30	28.29	-1,260.76	-5,273.03	18,315.66	18,266.48	49.18	372.447		
19,100.00	6,987.00	1,279.00	1,234.28	193.85	6.30	28.29	-1,260.76	-5,273.03	18,409.38	18,360.04	49.34	373.135		

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 #692H
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 #692H	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		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		
19,200.00	6,987.00	1,279.00	1,234.28	195.43	6.30	28.29	-1,260.76	-5,273.03	18,503.16	18,453.67	49.50	373.826		
19,255.69	6,987.00	1,279.00	1,234.28	196.31	6.30	28.29	-1,260.76	-5,273.03	18,555.43	18,505.84	49.59	374.211		
19,300.00	6,987.00	1,279.00	1,234.28	197.01	6.30	28.29	-1,260.76	-5,273.03	18,597.02	18,547.36	49.66	374.518		
19,400.00	6,987.00	1,264.91	1,222.19	198.59	6.25	28.28	-1,266.14	-5,268.21	18,690.90	18,641.11	49.79	375.425		
19,468.80	6,987.00	1,261.18	1,218.98	199.49	6.24	28.28	-1,267.56	-5,266.93	18,755.53	18,703.52	52.01	360.585		

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 #692H
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 #692H	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)			
0.00	0.00	0.00	0.00	0.00	0.00	-161.25	-131.79	-44.73	141.96				
100.00	100.00	72.00	72.00	0.25	1.33	-161.25	-131.79	-44.73	139.18	137.59	1.58	87.973	
200.00	200.00	172.00	172.00	0.61	3.18	-161.25	-131.79	-44.73	139.18	135.39	3.79	36.732	
300.00	300.00	272.00	272.00	0.97	5.03	-161.25	-131.79	-44.73	139.18	133.18	6.00	23.212	
400.00	400.00	372.00	372.00	1.33	6.88	-161.25	-131.79	-44.73	139.18	130.97	8.21	16.952	
500.00	500.00	472.00	472.00	1.68	8.79	-161.25	-131.79	-44.73	139.18	128.71	10.47	13.292	
600.00	600.00	572.00	572.00	2.04	10.69	-161.25	-131.79	-44.73	139.18	126.45	12.73	10.932	
641.13	641.13	613.12	613.11	2.19	11.47	-161.18	-131.25	-44.73	138.66	125.00	13.66	10.151	CC
700.00	700.00	671.86	671.85	2.40	12.59	-161.19	-131.29	-44.73	138.70	123.71	14.99	9.254	
800.00	799.98	771.61	771.60	2.76	14.48	-155.11	-131.49	-44.73	140.47	123.22	17.24	8.146	ES
900.00	899.84	871.87	871.84	3.12	16.41	-155.98	-131.79	-44.73	145.52	125.99	19.53	7.451	
1,000.00	999.45	971.49	971.45	3.48	18.43	-157.24	-131.79	-44.73	153.53	131.62	21.91	7.007	
1,100.00	1,098.70	1,070.74	1,070.70	3.85	20.44	-158.80	-131.79	-44.73	164.84	140.55	24.29	6.787	
1,153.80	1,151.90	1,123.94	1,123.90	4.04	21.52	-159.70	-131.79	-44.73	172.32	146.76	25.56	6.741	
1,200.00	1,197.53	1,169.42	1,169.38	4.21	22.44	-160.44	-130.90	-44.73	178.31	151.66	26.65	6.690	
1,300.00	1,296.27	1,267.73	1,267.68	4.59	24.44	-162.01	-131.10	-44.73	193.46	164.45	29.01	6.669	
1,400.00	1,395.02	1,365.96	1,365.92	4.97	26.43	-163.36	-131.52	-44.73	208.96	177.60	31.36	6.663	
1,500.00	1,493.77	1,465.87	1,465.77	5.36	28.62	-164.54	-131.79	-44.73	224.40	190.48	33.92	6.616	
1,600.00	1,592.52	1,564.62	1,564.52	5.74	30.93	-165.55	-131.79	-44.73	239.66	203.06	36.59	6.549	
1,700.00	1,691.27	1,663.37	1,663.27	6.14	33.24	-166.43	-131.79	-44.73	254.97	215.70	39.27	6.493	
1,800.00	1,790.01	1,761.66	1,761.55	6.53	35.54	-167.18	-130.57	-44.73	269.12	227.19	41.94	6.418	
1,900.00	1,888.76	1,859.58	1,859.46	6.92	37.84	-167.89	-130.88	-44.73	284.85	240.25	44.59	6.388	
2,000.00	1,987.51	1,957.41	1,957.28	7.32	40.12	-168.52	-131.47	-44.73	300.89	253.65	47.24	6.369	
2,100.00	2,086.26	2,058.53	2,058.26	7.72	42.72	-169.11	-131.79	-44.73	316.69	266.48	50.21	6.307	
2,200.00	2,185.01	2,155.39	2,155.10	8.11	45.35	-169.60	-131.04	-44.73	331.45	278.25	53.20	6.230	
2,300.00	2,283.75	2,256.15	2,255.75	8.51	48.16	-170.09	-131.79	-44.73	347.73	291.35	56.38	6.167	
2,400.00	2,382.50	2,354.90	2,354.50	8.91	51.09	-170.52	-131.79	-44.73	363.29	303.61	59.68	6.087	
2,500.00	2,481.25	2,453.65	2,453.25	9.31	54.02	-170.91	-131.79	-44.73	378.86	315.88	62.98	6.015	
2,600.00	2,580.00	2,551.86	2,551.41	9.71	56.93	-171.26	-129.19	-44.73	391.84	325.58	66.26	5.913	
2,700.00	2,678.75	2,648.37	2,647.91	10.11	59.80	-171.59	-129.59	-44.73	407.86	338.37	69.49	5.869	
2,800.00	2,777.49	2,744.74	2,744.25	10.52	62.66	-171.90	-130.53	-44.73	424.44	351.73	72.71	5.837	
2,900.00	2,876.24	2,849.05	2,848.24	10.92	65.80	-172.21	-131.79	-44.73	441.30	365.05	76.24	5.788	
3,000.00	2,974.99	2,947.80	2,946.99	11.32	68.99	-172.47	-131.79	-44.73	456.93	377.14	79.79	5.727	SF
3,100.00	3,073.74	2,977.00	2,976.06	11.72	69.93	-172.55	-131.79	-44.73	477.69	397.57	80.11	5.963	
3,200.00	3,172.49	2,977.00	2,976.06	12.13	69.93	-172.55	-131.79	-44.73	516.47	439.63	76.83	6.722	
3,300.00	3,271.23	2,977.00	2,976.06	12.53	69.93	-172.55	-131.79	-44.73	570.34	498.19	72.16	7.904	
3,400.00	3,369.98	2,977.00	2,976.06	12.93	69.93	-172.55	-131.79	-44.73	635.49	568.32	67.17	9.461	
3,500.00	3,468.73	2,977.00	2,976.06	13.34	69.93	-172.55	-131.79	-44.73	708.80	646.34	62.46	11.347	
3,600.00	3,567.48	2,977.00	2,976.06	13.74	69.93	-172.55	-131.79	-44.73	788.00	729.73	58.27	13.523	
3,700.00	3,666.23	2,977.00	2,976.06	14.14	69.93	-172.55	-131.79	-44.73	871.49	816.86	54.64	15.950	
3,800.00	3,764.97	2,977.00	2,976.06	14.55	69.93	-172.55	-131.79	-44.73	958.15	906.63	51.52	18.596	
3,900.00	3,863.72	2,977.00	2,976.06	14.95	69.93	-172.55	-131.79	-44.73	1,047.19	998.33	48.86	21.431	
4,000.00	3,962.47	2,977.00	2,976.06	15.36	69.93	-172.55	-131.79	-44.73	1,138.05	1,091.46	46.59	24.428	
4,100.00	4,061.22	2,977.00	2,976.06	15.76	69.93	-172.55	-131.79	-44.73	1,230.33	1,185.69	44.64	27.563	
4,200.00	4,159.97	2,977.00	2,976.06	16.17	69.93	-172.55	-131.79	-44.73	1,323.73	1,280.77	42.96	30.814	
4,300.00	4,258.71	2,977.00	2,976.06	16.57	69.93	-172.55	-131.79	-44.73	1,418.03	1,376.52	41.51	34.162	
4,400.00	4,357.46	2,977.00	2,976.06	16.98	69.93	-172.55	-131.79	-44.73	1,513.07	1,472.82	40.25	37.591	
4,500.00	4,456.21	2,977.00	2,976.06	17.38	69.93	-172.55	-131.79	-44.73	1,608.70	1,569.55	39.16	41.085	
4,600.00	4,554.96	2,977.00	2,976.06	17.79	69.93	-172.55	-131.79	-44.73	1,704.84	1,666.64	38.20	44.630	
4,700.00	4,653.71	2,977.00	2,976.06	18.19	69.93	-172.55	-131.79	-44.73	1,801.40	1,764.03	37.36	48.215	
4,800.00	4,752.45	2,977.00	2,976.06	18.60	69.93	-172.55	-131.79	-44.73	1,898.31	1,861.68	36.63	51.828	
4,900.00	4,851.20	2,977.00	2,976.06	19.00	69.93	-172.55	-131.79	-44.73	1,995.53	1,959.55	35.98	55.460	

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 #692H
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 #692H	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	4,949.95	2,977.00	2,976.06	19.41	69.93	-172.55	-131.79	-44.73	2,093.01	2,057.60	35.41	59.103	
5,100.00	5,048.70	2,977.00	2,976.06	19.81	69.93	-172.55	-131.79	-44.73	2,190.72	2,155.80	34.91	62.748	
5,200.00	5,147.45	2,977.00	2,976.06	20.22	69.93	-172.55	-131.79	-44.73	2,288.62	2,254.15	34.47	66.390	
5,300.00	5,246.19	2,977.00	2,976.06	20.62	69.93	-172.55	-131.79	-44.73	2,386.70	2,352.62	34.09	70.021	
5,400.00	5,344.94	2,977.00	2,976.06	21.03	69.93	-172.55	-131.79	-44.73	2,484.93	2,451.19	33.75	73.636	
5,455.76	5,400.00	2,977.00	2,976.06	21.25	69.93	-172.55	-131.79	-44.73	2,539.77	2,506.19	33.58	75.643	
5,500.00	5,443.72	2,977.00	2,976.06	21.43	69.93	-172.85	-131.79	-44.73	2,583.27	2,549.83	33.44	77.241	
5,600.00	5,542.71	2,977.00	2,976.06	21.83	69.93	-173.47	-131.79	-44.73	2,681.47	2,648.33	33.15	80.900	
5,700.00	5,641.93	2,977.00	2,976.06	22.22	69.93	-174.01	-131.79	-44.73	2,779.47	2,746.63	32.84	84.627	
5,800.00	5,741.36	2,977.00	2,976.06	22.60	69.93	-174.48	-131.79	-44.73	2,877.27	2,844.73	32.54	88.421	
5,900.00	5,840.96	2,977.00	2,976.06	22.97	69.93	-174.89	-131.79	-44.73	2,974.86	2,942.62	32.24	92.283	
6,000.00	5,940.70	2,977.00	2,976.06	23.33	69.93	-175.26	-131.79	-44.73	3,072.22	3,040.29	31.93	96.211	
6,100.00	6,040.55	2,977.00	2,976.06	23.68	69.93	-175.59	-131.79	-44.73	3,169.36	3,137.73	31.63	100.207	
6,200.00	6,140.48	2,977.00	2,976.06	24.02	69.93	-175.88	-131.79	-44.73	3,266.26	3,234.94	31.33	104.270	
6,300.00	6,240.45	2,977.00	2,976.06	24.35	69.93	-176.14	-131.79	-44.73	3,362.92	3,331.89	31.02	108.398	
6,408.05	6,348.50	2,977.00	2,976.06	24.69	69.93	3.61	-131.79	-44.73	3,467.07	3,436.37	30.70	112.939	
6,450.00	6,390.43	2,977.00	2,976.06	24.82	69.93	97.46	-131.79	-44.73	3,507.61	3,477.02	30.59	114.672	
6,500.00	6,440.15	2,977.00	2,976.06	24.99	69.93	82.88	-131.79	-44.73	3,556.16	3,525.67	30.49	116.615	
6,550.00	6,489.32	2,977.00	2,976.06	25.16	69.93	66.31	-131.79	-44.73	3,604.69	3,574.25	30.44	118.427	
6,600.00	6,537.64	2,977.00	2,976.06	25.34	69.93	52.51	-131.79	-44.73	3,652.90	3,622.48	30.42	120.094	
6,650.00	6,584.80	2,977.00	2,976.06	25.52	69.93	42.27	-131.79	-44.73	3,700.51	3,670.08	30.43	121.599	
6,700.00	6,630.52	2,977.00	2,976.06	25.71	69.93	34.89	-131.79	-44.73	3,747.25	3,716.77	30.48	122.925	
6,750.00	6,674.51	2,977.00	2,976.06	25.89	69.93	29.54	-131.79	-44.73	3,792.88	3,762.31	30.57	124.058	
6,800.00	6,716.50	2,977.00	2,976.06	26.08	69.93	25.56	-131.79	-44.73	3,837.16	3,806.45	30.70	124.980	
6,850.00	6,756.24	2,977.00	2,976.06	26.28	69.93	22.54	-131.79	-44.73	3,879.86	3,848.99	30.87	125.679	
6,900.00	6,793.47	2,977.00	2,976.06	26.48	69.93	20.19	-131.79	-44.73	3,920.78	3,889.69	31.08	126.142	
6,950.00	6,827.97	2,977.00	2,976.06	26.69	69.93	18.33	-131.79	-44.73	3,959.72	3,928.38	31.34	126.361	
7,000.00	6,859.53	2,977.00	2,976.06	26.91	69.93	16.85	-131.79	-44.73	3,996.51	3,964.87	31.64	126.330	
7,050.00	6,887.94	2,977.00	2,976.06	27.14	69.93	15.64	-131.79	-44.73	4,030.98	3,999.00	31.98	126.045	
7,100.00	6,913.05	2,977.00	2,976.06	27.38	69.93	14.65	-131.79	-44.73	4,062.98	4,030.61	32.37	125.508	
7,150.00	6,934.68	2,977.00	2,976.06	27.64	69.93	13.84	-131.79	-44.73	4,092.37	4,059.56	32.81	124.724	
7,200.00	6,952.71	2,977.00	2,976.06	27.92	69.93	13.17	-131.79	-44.73	4,119.03	4,085.74	33.30	123.702	
7,250.00	6,967.02	2,977.00	2,976.06	28.21	69.93	12.62	-131.79	-44.73	4,142.85	4,109.02	33.83	122.454	
7,300.00	6,977.54	2,977.00	2,976.06	28.52	69.93	12.16	-131.79	-44.73	4,163.73	4,129.32	34.41	120.995	
7,350.00	6,984.18	2,977.00	2,976.06	28.83	69.93	11.80	-131.79	-44.73	4,181.59	4,146.56	35.04	119.346	
7,400.00	6,986.92	2,977.00	2,976.06	29.16	69.93	11.51	-131.79	-44.73	4,196.36	4,160.65	35.71	117.525	
7,409.89	6,987.00	2,977.00	2,976.06	29.23	69.93	11.46	-131.79	-44.73	4,198.91	4,163.07	35.84	117.158	
7,500.00	6,987.00	2,977.00	2,976.06	29.85	69.93	11.46	-131.79	-44.73	4,222.47	4,185.33	37.14	113.698	
7,600.00	6,987.00	2,977.00	2,976.06	30.61	69.93	11.46	-131.79	-44.73	4,250.70	4,212.07	38.64	110.022	
7,700.00	6,987.00	2,977.00	2,976.06	31.41	69.93	11.46	-131.79	-44.73	4,281.09	4,240.91	40.18	106.555	
7,800.00	6,987.00	2,977.00	2,976.06	32.27	69.93	11.46	-131.79	-44.73	4,313.57	4,271.82	41.75	103.316	
7,900.00	6,987.00	2,977.00	2,976.06	33.17	69.93	11.46	-131.79	-44.73	4,348.12	4,304.77	43.35	100.313	
8,000.00	6,987.00	2,977.00	2,976.06	34.12	69.93	11.46	-131.79	-44.73	4,384.67	4,339.72	44.95	97.545	
8,100.00	6,987.00	2,977.00	2,976.06	35.10	69.93	11.46	-131.79	-44.73	4,423.18	4,376.63	46.56	95.006	
8,200.00	6,987.00	2,977.00	2,976.06	36.12	69.93	11.46	-131.79	-44.73	4,463.61	4,415.45	48.16	92.688	
8,300.00	6,987.00	2,977.00	2,976.06	37.17	69.93	11.46	-131.79	-44.73	4,505.88	4,456.14	49.75	90.577	
8,314.89	6,987.00	2,977.00	2,976.06	37.33	69.93	11.46	-131.79	-44.73	4,512.34	4,462.35	49.98	90.280	
8,400.00	6,987.00	2,977.00	2,976.06	38.25	69.93	13.07	-131.79	-44.73	4,549.50	4,498.19	51.31	88.672	
8,500.00	6,987.00	2,977.00	2,976.06	39.35	69.93	14.98	-131.79	-44.73	4,593.48	4,540.66	52.82	86.966	
8,600.00	6,987.00	2,977.00	2,976.06	40.45	69.93	16.87	-131.79	-44.73	4,637.60	4,583.32	54.28	85.434	
8,700.00	6,987.00	2,977.00	2,976.06	41.56	69.93	18.73	-131.79	-44.73	4,681.64	4,625.94	55.70	84.057	
8,800.00	6,987.00	2,977.00	2,976.06	42.66	69.93	20.57	-131.79	-44.73	4,725.39	4,668.33	57.06	82.814	

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 #692H
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 #692H	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		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		
8,900.00	6,987.00	2,977.00	2,976.06	43.75	69.93	22.35	-131.79	-44.73	4,768.64	4,710.27	58.37	81.690			
9,000.00	6,987.00	2,977.00	2,976.06	44.83	69.93	24.08	-131.79	-44.73	4,811.21	4,751.57	59.64	80.669			
9,071.74	6,987.00	2,977.00	2,976.06	45.59	69.93	25.28	-131.79	-44.73	4,841.22	4,780.70	60.52	79.993			
9,100.00	6,987.00	2,977.00	2,976.06	45.89	69.93	25.28	-131.79	-44.73	4,853.02	4,792.15	60.86	79.738			
9,200.00	6,987.00	2,977.00	2,976.06	46.97	69.93	25.28	-131.79	-44.73	4,895.83	4,833.76	62.07	78.874			
9,300.00	6,987.00	2,977.00	2,976.06	48.07	69.93	25.28	-131.79	-44.73	4,940.29	4,877.02	63.27	78.079			
9,400.00	6,987.00	2,977.00	2,976.06	49.20	69.93	25.28	-131.79	-44.73	4,986.37	4,921.90	64.46	77.350			
9,500.00	6,987.00	2,977.00	2,976.06	50.36	69.93	25.28	-131.79	-44.73	5,034.01	4,968.37	65.64	76.687			
9,600.00	6,987.00	2,977.00	2,976.06	51.54	69.93	25.28	-131.79	-44.73	5,083.17	5,016.36	66.81	76.088			
9,700.00	6,987.00	2,977.00	2,976.06	52.74	69.93	25.28	-131.79	-44.73	5,133.81	5,065.86	67.95	75.550			
9,800.00	6,987.00	2,977.00	2,976.06	53.96	69.93	25.28	-131.79	-44.73	5,185.88	5,116.80	69.08	75.071			
9,900.00	6,987.00	2,977.00	2,976.06	55.21	69.93	25.28	-131.79	-44.73	5,239.35	5,169.16	70.19	74.649			
10,000.00	6,987.00	2,977.00	2,976.06	56.47	69.93	25.28	-131.79	-44.73	5,294.16	5,222.89	71.27	74.282			
10,100.00	6,987.00	2,977.00	2,976.06	57.75	69.93	25.28	-131.79	-44.73	5,350.28	5,277.95	72.33	73.967			
10,200.00	6,987.00	2,977.00	2,976.06	59.04	69.93	25.28	-131.79	-44.73	5,407.67	5,334.29	73.37	73.701			
10,300.00	6,987.00	2,977.00	2,976.06	60.35	69.93	25.28	-131.79	-44.73	5,466.28	5,391.89	74.39	73.482			
10,400.00	6,987.00	2,977.00	2,976.06	61.67	69.93	25.28	-131.79	-44.73	5,526.08	5,450.70	75.38	73.309			
10,500.00	6,987.00	2,977.00	2,976.06	63.01	69.93	25.28	-131.79	-44.73	5,587.04	5,510.69	76.35	73.178			
10,600.00	6,987.00	2,977.00	2,976.06	64.36	69.93	25.28	-131.79	-44.73	5,649.10	5,571.81	77.29	73.087			
10,700.00	6,987.00	2,977.00	2,976.06	65.72	69.93	25.28	-131.79	-44.73	5,712.24	5,634.03	78.21	73.035			
10,800.00	6,987.00	2,977.00	2,976.06	67.09	69.93	25.28	-131.79	-44.73	5,776.42	5,697.32	79.11	73.019			
10,900.00	6,987.00	2,977.00	2,976.06	68.47	69.93	25.28	-131.79	-44.73	5,841.61	5,761.63	79.98	73.038			
11,000.00	6,987.00	2,977.00	2,976.06	69.86	69.93	25.28	-131.79	-44.73	5,907.78	5,826.95	80.83	73.090			
11,100.00	6,987.00	2,977.00	2,976.06	71.26	69.93	25.28	-131.79	-44.73	5,974.88	5,893.23	81.65	73.173			
11,200.00	6,987.00	2,977.00	2,976.06	72.67	69.93	25.28	-131.79	-44.73	6,042.89	5,960.44	82.46	73.285			
11,300.00	6,987.00	2,977.00	2,976.06	74.09	69.93	25.28	-131.79	-44.73	6,111.79	6,028.55	83.24	73.426			
11,400.00	6,987.00	2,977.00	2,976.06	75.51	69.93	25.28	-131.79	-44.73	6,181.53	6,097.53	84.00	73.593			
11,500.00	6,987.00	2,977.00	2,976.06	76.94	69.93	25.28	-131.79	-44.73	6,252.09	6,167.36	84.73	73.786			
11,600.00	6,987.00	2,977.00	2,976.06	78.38	69.93	25.28	-131.79	-44.73	6,323.45	6,238.00	85.45	74.002			
11,700.00	6,987.00	2,977.00	2,976.06	79.82	69.93	25.28	-131.79	-44.73	6,395.58	6,309.43	86.15	74.242			
11,800.00	6,987.00	2,977.00	2,976.06	81.27	69.93	25.28	-131.79	-44.73	6,468.45	6,381.62	86.82	74.503			
11,900.00	6,987.00	2,977.00	2,976.06	82.73	69.93	25.28	-131.79	-44.73	6,542.03	6,454.55	87.48	74.784			
12,000.00	6,987.00	2,977.00	2,976.06	84.19	69.93	25.28	-131.79	-44.73	6,616.31	6,528.19	88.12	75.085			
12,100.00	6,987.00	2,977.00	2,976.06	85.66	69.93	25.28	-131.79	-44.73	6,691.26	6,602.52	88.74	75.405			
12,200.00	6,987.00	2,977.00	2,976.06	87.13	69.93	25.28	-131.79	-44.73	6,766.85	6,677.51	89.34	75.743			
12,300.00	6,987.00	2,977.00	2,976.06	88.61	69.93	25.28	-131.79	-44.73	6,843.07	6,753.15	89.93	76.097			
12,400.00	6,987.00	2,977.00	2,976.06	90.09	69.93	25.28	-131.79	-44.73	6,919.90	6,829.41	90.49	76.467			
12,500.00	6,987.00	2,977.00	2,976.06	91.57	69.93	25.28	-131.79	-44.73	6,997.31	6,906.27	91.05	76.853			
12,600.00	6,987.00	2,977.00	2,976.06	93.06	69.93	25.28	-131.79	-44.73	7,075.29	6,983.71	91.59	77.253			
12,700.00	6,987.00	2,977.00	2,976.06	94.55	69.93	25.28	-131.79	-44.73	7,153.82	7,061.71	92.11	77.667			
12,800.00	6,987.00	2,977.00	2,976.06	96.05	69.93	25.28	-131.79	-44.73	7,232.88	7,140.26	92.62	78.095			
12,900.00	6,987.00	2,977.00	2,976.06	97.55	69.93	25.28	-131.79	-44.73	7,312.45	7,219.34	93.11	78.535			
13,000.00	6,987.00	2,977.00	2,976.06	99.05	69.93	25.28	-131.79	-44.73	7,392.51	7,298.92	93.59	78.987			
13,100.00	6,987.00	2,977.00	2,976.06	100.56	69.93	25.28	-131.79	-44.73	7,473.06	7,379.00	94.06	79.450			
13,200.00	6,987.00	2,977.00	2,976.06	102.07	69.93	25.28	-131.79	-44.73	7,554.07	7,459.56	94.51	79.925			
13,300.00	6,987.00	2,977.00	2,976.06	103.58	69.93	25.28	-131.79	-44.73	7,635.53	7,540.58	94.96	80.410			
13,400.00	6,987.00	2,977.00	2,976.06	105.09	69.93	25.28	-131.79	-44.73	7,717.43	7,622.04	95.39	80.905			
13,500.00	6,987.00	2,977.00	2,976.06	106.61	69.93	25.28	-131.79	-44.73	7,799.75	7,703.94	95.81	81.409			
13,600.00	6,987.00	2,977.00	2,976.06	108.13	69.93	25.28	-131.79	-44.73	7,882.48	7,786.26	96.22	81.923			
13,700.00	6,987.00	2,977.00	2,976.06	109.65	69.93	25.28	-131.79	-44.73	7,965.61	7,868.99	96.62	82.445			
13,800.00	6,987.00	2,977.00	2,976.06	111.18	69.93	25.28	-131.79	-44.73	8,049.11	7,952.11	97.01	82.976			
13,900.00	6,987.00	2,977.00	2,976.06	112.71	69.93	25.28	-131.79	-44.73	8,133.00	8,035.61	97.38	83.515			

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 #692H
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 #692H	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		Semi Major Axis		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		
14,000.00	6,987.00	2,977.00	2,976.06	114.23	69.93	25.28	-131.79	-44.73	8,217.24	8,119.48	97.75	84.061			
14,100.00	6,987.00	2,977.00	2,976.06	115.77	69.93	25.28	-131.79	-44.73	8,301.83	8,203.72	98.11	84.615			
14,200.00	6,987.00	2,977.00	2,976.06	117.30	69.93	25.28	-131.79	-44.73	8,386.76	8,288.29	98.46	85.175			
14,300.00	6,987.00	2,977.00	2,976.06	118.83	69.93	25.28	-131.79	-44.73	8,472.02	8,373.21	98.81	85.743			
14,400.00	6,987.00	2,977.00	2,976.06	120.37	69.93	25.28	-131.79	-44.73	8,557.60	8,458.45	99.14	86.316			
14,500.00	6,987.00	2,977.00	2,976.06	121.91	69.93	25.28	-131.79	-44.73	8,643.49	8,544.02	99.47	86.896			
14,600.00	6,987.00	2,977.00	2,976.06	123.45	69.93	25.28	-131.79	-44.73	8,729.67	8,629.89	99.79	87.482			
14,700.00	6,987.00	2,977.00	2,976.06	124.99	69.93	25.28	-131.79	-44.73	8,816.15	8,716.05	100.10	88.073			
14,800.00	6,987.00	2,977.00	2,976.06	126.53	69.93	25.28	-131.79	-44.73	8,902.92	8,802.51	100.41	88.669			
14,900.00	6,987.00	2,977.00	2,976.06	128.08	69.93	25.28	-131.79	-44.73	8,989.96	8,889.25	100.70	89.271			
15,000.00	6,987.00	2,977.00	2,976.06	129.63	69.93	25.28	-131.79	-44.73	9,077.26	8,976.27	101.00	89.878			
15,100.00	6,987.00	2,977.00	2,976.06	131.17	69.93	25.28	-131.79	-44.73	9,164.83	9,063.55	101.28	90.489			
15,200.00	6,987.00	2,977.00	2,976.06	132.72	69.93	25.28	-131.79	-44.73	9,252.65	9,151.09	101.56	91.105			
15,300.00	6,987.00	2,977.00	2,976.06	134.27	69.93	25.28	-131.79	-44.73	9,340.71	9,238.87	101.83	91.725			
15,400.00	6,987.00	2,977.00	2,976.06	135.83	69.93	25.28	-131.79	-44.73	9,429.01	9,326.91	102.10	92.349			
15,500.00	6,987.00	2,977.00	2,976.06	137.38	69.93	25.28	-131.79	-44.73	9,517.54	9,415.18	102.36	92.978			
15,600.00	6,987.00	2,977.00	2,976.06	138.93	69.93	25.28	-131.79	-44.73	9,606.30	9,503.68	102.62	93.610			
15,700.00	6,987.00	2,977.00	2,976.06	140.49	69.93	25.28	-131.79	-44.73	9,695.27	9,592.40	102.87	94.245			
15,800.00	6,987.00	2,977.00	2,976.06	142.04	69.93	25.28	-131.79	-44.73	9,784.46	9,681.34	103.12	94.884			
15,900.00	6,987.00	2,977.00	2,976.06	143.60	69.93	25.28	-131.79	-44.73	9,873.86	9,770.49	103.36	95.527			
16,000.00	6,987.00	2,977.00	2,976.06	145.16	69.93	25.28	-131.79	-44.73	9,963.45	9,859.85	103.60	96.172			
16,100.00	6,987.00	2,977.00	2,976.06	146.72	69.93	25.28	-131.79	-44.73	10,053.25	9,949.41	103.83	96.821			
16,200.00	6,987.00	2,977.00	2,976.06	148.28	69.93	25.28	-131.79	-44.73	10,143.23	10,039.17	104.06	97.472			
16,300.00	6,987.00	2,977.00	2,976.06	149.84	69.93	25.28	-131.79	-44.73	10,233.40	10,129.12	104.29	98.126			
16,400.00	6,987.00	2,977.00	2,976.06	151.40	69.93	25.28	-131.79	-44.73	10,323.75	10,219.25	104.51	98.783			
16,500.00	6,987.00	2,977.00	2,976.06	152.97	69.93	25.28	-131.79	-44.73	10,414.28	10,309.56	104.73	99.443			
16,600.00	6,987.00	2,977.00	2,976.06	154.53	69.93	25.28	-131.79	-44.73	10,504.98	10,400.04	104.94	100.105			
16,700.00	6,987.00	2,977.00	2,976.06	156.10	69.93	25.28	-131.79	-44.73	10,595.85	10,490.70	105.15	100.769			
16,800.00	6,987.00	2,977.00	2,976.06	157.66	69.93	25.28	-131.79	-44.73	10,686.88	10,581.52	105.36	101.435			
16,900.00	6,987.00	2,977.00	2,976.06	159.23	69.93	25.28	-131.79	-44.73	10,778.07	10,672.51	105.56	102.103			
17,000.00	6,987.00	2,977.00	2,976.06	160.80	69.93	25.28	-131.79	-44.73	10,869.41	10,763.65	105.76	102.774			
17,100.00	6,987.00	2,977.00	2,976.06	162.36	69.93	25.28	-131.79	-44.73	10,960.91	10,854.95	105.96	103.446			
17,200.00	6,987.00	2,977.00	2,976.06	163.93	69.93	25.28	-131.79	-44.73	11,052.55	10,946.40	106.15	104.120			
17,300.00	6,987.00	2,977.00	2,976.06	165.50	69.93	25.28	-131.79	-44.73	11,144.34	11,037.99	106.34	104.796			
17,400.00	6,987.00	2,977.00	2,976.06	167.07	69.93	25.28	-131.79	-44.73	11,236.26	11,129.73	106.53	105.473			
17,500.00	6,987.00	2,977.00	2,976.06	168.64	69.93	25.28	-131.79	-44.73	11,328.33	11,221.61	106.72	106.152			
17,600.00	6,987.00	2,977.00	2,976.06	170.21	69.93	25.28	-131.79	-44.73	11,420.52	11,313.62	106.90	106.833			
17,700.00	6,987.00	2,977.00	2,976.06	171.78	69.93	25.28	-131.79	-44.73	11,512.85	11,405.77	107.08	107.515			
17,800.00	6,987.00	2,977.00	2,976.06	173.36	69.93	25.28	-131.79	-44.73	11,605.31	11,498.05	107.26	108.198			
17,900.00	6,987.00	2,977.00	2,976.06	174.93	69.93	25.28	-131.79	-44.73	11,697.88	11,590.45	107.44	108.882			
18,000.00	6,987.00	2,977.00	2,976.06	176.50	69.93	25.28	-131.79	-44.73	11,790.58	11,682.97	107.61	109.568			
18,100.00	6,987.00	2,977.00	2,976.06	178.08	69.93	25.28	-131.79	-44.73	11,883.40	11,775.62	107.78	110.254			
18,200.00	6,987.00	2,977.00	2,976.06	179.65	69.93	25.28	-131.79	-44.73	11,976.34	11,868.38	107.95	110.942			
18,300.00	6,987.00	2,977.00	2,976.06	181.23	69.93	25.28	-131.79	-44.73	12,069.38	11,961.26	108.12	111.631			
18,400.00	6,987.00	2,977.00	2,976.06	182.80	69.93	25.28	-131.79	-44.73	12,162.54	12,054.25	108.28	112.320			
18,500.00	6,987.00	2,977.00	2,976.06	184.38	69.93	25.28	-131.79	-44.73	12,255.80	12,147.36	108.45	113.011			
18,600.00	6,987.00	2,977.00	2,976.06	185.96	69.93	25.28	-131.79	-44.73	12,349.17	12,240.56	108.61	113.702			
18,700.00	6,987.00	2,977.00	2,976.06	187.53	69.93	25.28	-131.79	-44.73	12,442.65	12,333.88	108.77	114.394			
18,800.00	6,987.00	2,977.00	2,976.06	189.11	69.93	25.28	-131.79	-44.73	12,536.22	12,427.29	108.93	115.087			
18,900.00	6,987.00	2,977.00	2,976.06	190.69	69.93	25.28	-131.79	-44.73	12,629.89	12,520.81	109.09	115.780			
19,000.00	6,987.00	2,977.00	2,976.06	192.27	69.93	25.28	-131.79	-44.73	12,723.66	12,614.42	109.24	116.474			
19,100.00	6,987.00	2,977.00	2,976.06	193.85	69.93	25.28	-131.79	-44.73	12,817.53	12,708.13	109.39	117.169			

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 #692H
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 #692H	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		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	Warning	
19,200.00	6,987.00	2,977.00	2,976.06	195.43	69.93	25.28	-131.79	-44.73	12,911.48	12,801.93	109.55	117.863		
19,255.69	6,987.00	2,977.00	2,976.06	196.31	69.93	25.28	-131.79	-44.73	12,963.85	12,854.22	109.63	118.251		
19,300.00	6,987.00	2,977.00	2,976.06	197.01	69.93	25.28	-131.79	-44.73	13,005.53	12,895.83	109.70	118.559		
19,400.00	6,987.00	2,977.00	2,976.06	198.59	69.93	25.28	-131.79	-44.73	13,099.66	12,989.81	109.85	119.255		
19,468.80	6,987.00	2,977.00	2,976.06	199.49	69.93	25.28	-131.79	-44.73	13,164.48	13,052.34	112.14	117.396		

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 #692H
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 #692H	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	-109.72	-852.88	-2,379.26	2,528.71				
100.00	100.00	22.00	22.00	0.25	0.41	-109.72	-852.88	-2,379.26	2,527.50	2,526.85	0.66	3,842.379	
200.00	200.00	122.00	122.00	0.61	2.26	-109.72	-852.88	-2,379.26	2,527.50	2,524.64	2.86	882.277	
300.00	300.00	222.00	222.00	0.97	4.10	-109.72	-852.88	-2,379.26	2,527.50	2,522.43	5.07	498.354	
400.00	400.00	322.00	322.00	1.33	5.95	-109.72	-852.88	-2,379.26	2,527.50	2,520.22	7.28	347.249	
500.00	500.00	422.00	422.00	1.68	7.94	-109.72	-852.88	-2,379.26	2,527.50	2,517.88	9.63	262.545	
600.00	600.00	522.00	522.00	2.04	9.97	-109.72	-852.88	-2,379.26	2,527.50	2,515.49	12.01	210.404	
672.87	672.87	594.83	594.82	2.30	11.45	-109.71	-852.34	-2,379.26	2,527.32	2,513.57	13.75	183.803 CC	
700.00	700.00	621.55	621.55	2.40	11.99	-109.71	-852.34	-2,379.26	2,527.32	2,512.93	14.39	175.640	
800.00	799.98	720.06	720.05	2.76	13.98	-103.35	-852.48	-2,379.26	2,527.77	2,511.03	16.74	150.965	
900.00	899.84	818.43	818.42	3.12	15.98	-103.45	-852.79	-2,379.26	2,529.09	2,510.00	19.10	132.441	
1,000.00	999.45	921.52	921.45	3.48	18.34	-103.60	-852.88	-2,379.26	2,531.17	2,509.35	21.81	116.037 ES	
1,100.00	1,098.70	1,020.77	1,020.70	3.85	20.67	-103.81	-852.88	-2,379.26	2,534.08	2,509.56	24.52	103.365	
1,153.80	1,151.90	1,073.97	1,073.90	4.04	21.93	-103.95	-852.88	-2,379.26	2,536.01	2,510.05	25.97	97.660	
1,200.00	1,197.53	1,118.05	1,117.97	4.21	22.97	-104.08	-851.60	-2,379.26	2,537.35	2,510.17	27.18	93.359	
1,300.00	1,296.27	1,212.88	1,212.79	4.59	25.20	-104.41	-851.97	-2,379.26	2,541.42	2,511.63	29.79	85.314	
1,400.00	1,395.02	1,307.58	1,307.48	4.97	27.43	-104.75	-852.75	-2,379.26	2,545.74	2,513.34	32.40	78.570	
1,500.00	1,493.77	1,415.97	1,415.77	5.36	29.85	-105.13	-852.88	-2,379.26	2,549.89	2,514.68	35.20	72.433	
1,600.00	1,592.52	1,514.72	1,514.52	5.74	32.04	-105.46	-852.88	-2,379.26	2,554.10	2,516.32	37.78	67.610	
1,700.00	1,691.27	1,611.37	1,611.14	6.14	34.18	-105.76	-851.29	-2,379.26	2,557.79	2,517.49	40.31	63.459	
1,800.00	1,790.01	1,705.27	1,705.03	6.53	36.26	-106.09	-851.72	-2,379.26	2,562.35	2,519.57	42.78	59.901	
1,900.00	1,888.76	1,799.03	1,798.78	6.92	38.33	-106.42	-852.62	-2,379.26	2,567.19	2,521.95	45.24	56.741	
2,000.00	1,987.51	1,909.81	1,909.51	7.32	40.48	-106.80	-852.88	-2,379.26	2,571.84	2,524.05	47.79	53.820	
2,100.00	2,086.26	2,008.56	2,008.26	7.72	42.33	-107.14	-852.88	-2,379.26	2,576.49	2,526.46	50.03	51.498	
2,200.00	2,185.01	2,107.31	2,107.01	8.11	44.18	-107.47	-852.88	-2,379.26	2,581.24	2,528.96	52.28	49.376	
2,300.00	2,283.75	2,203.81	2,203.49	8.51	45.99	-107.77	-852.03	-2,379.26	2,585.72	2,531.24	54.48	47.461	
2,400.00	2,382.50	2,300.18	2,299.86	8.91	47.80	-108.10	-852.34	-2,379.26	2,590.77	2,534.09	56.68	45.706	
2,500.00	2,481.25	2,403.59	2,403.25	9.31	49.74	-108.45	-852.88	-2,379.26	2,596.00	2,536.98	59.02	43.984	
2,600.00	2,580.00	2,502.34	2,502.00	9.71	51.68	-108.78	-852.88	-2,379.26	2,601.09	2,539.73	61.36	42.393	
2,700.00	2,678.75	2,597.51	2,597.17	10.11	53.55	-109.09	-852.76	-2,379.26	2,606.22	2,542.60	63.62	40.964	
2,800.00	2,777.49	2,699.85	2,699.49	10.52	55.79	-109.43	-852.88	-2,379.26	2,611.53	2,545.27	66.26	39.413	
2,900.00	2,876.24	2,798.60	2,798.24	10.92	58.05	-109.75	-852.88	-2,379.26	2,616.88	2,547.96	68.92	37.971	
3,000.00	2,974.99	2,809.00	2,808.60	11.32	58.29	-109.78	-852.88	-2,379.26	2,623.80	2,554.30	69.50	37.750 SF	
3,100.00	3,073.74	2,809.00	2,808.60	11.72	58.29	-109.78	-852.88	-2,379.26	2,634.48	2,564.72	69.76	37.767	
3,200.00	3,172.49	2,809.00	2,808.60	12.13	58.29	-109.78	-852.88	-2,379.26	2,648.90	2,578.98	69.91	37.888	
3,300.00	3,271.23	2,809.00	2,808.60	12.53	58.29	-109.78	-852.88	-2,379.26	2,666.99	2,597.01	69.98	38.110	
3,400.00	3,369.98	2,809.00	2,808.60	12.93	58.29	-109.78	-852.88	-2,379.26	2,688.68	2,618.72	69.96	38.432	
3,500.00	3,468.73	2,809.00	2,808.60	13.34	58.29	-109.78	-852.88	-2,379.26	2,713.88	2,644.02	69.85	38.851	
3,600.00	3,567.48	2,809.00	2,808.60	13.74	58.29	-109.78	-852.88	-2,379.26	2,742.50	2,672.83	69.67	39.363	
3,700.00	3,666.23	2,809.00	2,808.60	14.14	58.29	-109.78	-852.88	-2,379.26	2,774.43	2,705.01	69.42	39.968	
3,800.00	3,764.97	2,809.00	2,808.60	14.55	58.29	-109.78	-852.88	-2,379.26	2,809.56	2,740.46	69.10	40.662	
3,900.00	3,863.72	2,809.00	2,808.60	14.95	58.29	-109.78	-852.88	-2,379.26	2,847.77	2,779.05	68.72	41.443	
4,000.00	3,962.47	2,809.00	2,808.60	15.36	58.29	-109.78	-852.88	-2,379.26	2,888.94	2,820.65	68.28	42.308	
4,100.00	4,061.22	2,809.00	2,808.60	15.76	58.29	-109.78	-852.88	-2,379.26	2,932.94	2,865.13	67.81	43.255	
4,200.00	4,159.97	2,809.00	2,808.60	16.17	58.29	-109.78	-852.88	-2,379.26	2,979.64	2,912.36	67.29	44.282	
4,300.00	4,258.71	2,809.00	2,808.60	16.57	58.29	-109.78	-852.88	-2,379.26	3,028.93	2,962.20	66.74	45.386	
4,400.00	4,357.46	2,809.00	2,808.60	16.98	58.29	-109.78	-852.88	-2,379.26	3,080.68	3,014.52	66.16	46.565	
4,500.00	4,456.21	2,809.00	2,808.60	17.38	58.29	-109.78	-852.88	-2,379.26	3,134.77	3,069.21	65.56	47.817	
4,600.00	4,554.96	2,809.00	2,808.60	17.79	58.29	-109.78	-852.88	-2,379.26	3,191.07	3,126.13	64.94	49.138	
4,700.00	4,653.71	2,809.00	2,808.60	18.19	58.29	-109.78	-852.88	-2,379.26	3,249.48	3,185.16	64.31	50.527	
4,800.00	4,752.45	2,809.00	2,808.60	18.60	58.29	-109.78	-852.88	-2,379.26	3,309.87	3,246.20	63.67	51.981	
4,900.00	4,851.20	2,809.00	2,808.60	19.00	58.29	-109.78	-852.88	-2,379.26	3,372.15	3,309.12	63.03	53.498	

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 #692H
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 #692H	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				Reference				Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)		Vertical Depth (usft)		Semi Major Axis		Offset		Highside Toolface (°)		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	4,949.95	2,809.00	2,808.60	19.41	58.29	-109.78	-852.88	-2,379.26	3,436.22	3,373.82	62.39	55.075	
5,100.00	5,048.70	2,809.00	2,808.60	19.81	58.29	-109.78	-852.88	-2,379.26	3,501.96	3,440.21	61.75	56.710	
5,200.00	5,147.45	2,809.00	2,808.60	20.22	58.29	-109.78	-852.88	-2,379.26	3,569.30	3,508.18	61.12	58.400	
5,300.00	5,246.19	2,809.00	2,808.60	20.62	58.29	-109.78	-852.88	-2,379.26	3,638.14	3,577.65	60.49	60.144	
5,400.00	5,344.94	2,809.00	2,808.60	21.03	58.29	-109.78	-852.88	-2,379.26	3,708.40	3,648.53	59.87	61.938	
5,455.76	5,400.00	2,809.00	2,808.60	21.25	58.29	-109.78	-852.88	-2,379.26	3,748.16	3,688.63	59.53	62.960	
5,500.00	5,443.72	2,809.00	2,808.60	21.43	58.29	-110.21	-852.88	-2,379.26	3,779.96	3,720.70	59.26	63.782	
5,600.00	5,542.71	2,809.00	2,808.60	21.83	58.29	-111.20	-852.88	-2,379.26	3,852.44	3,793.78	58.66	65.678	
5,700.00	5,641.93	2,809.00	2,808.60	22.22	58.29	-112.20	-852.88	-2,379.26	3,925.70	3,867.65	58.05	67.626	
5,800.00	5,741.36	2,809.00	2,808.60	22.60	58.29	-113.21	-852.88	-2,379.26	3,999.68	3,942.24	57.44	69.626	
5,900.00	5,840.96	2,809.00	2,808.60	22.97	58.29	-114.24	-852.88	-2,379.26	4,074.32	4,017.48	56.84	71.676	
6,000.00	5,940.70	2,809.00	2,808.60	23.33	58.29	-115.27	-852.88	-2,379.26	4,149.57	4,093.32	56.25	73.775	
6,100.00	6,040.55	2,809.00	2,808.60	23.68	58.29	-116.32	-852.88	-2,379.26	4,225.36	4,169.70	55.65	75.922	
6,200.00	6,140.48	2,809.00	2,808.60	24.02	58.29	-117.37	-852.88	-2,379.26	4,301.64	4,246.58	55.07	78.116	
6,300.00	6,240.45	2,809.00	2,808.60	24.35	58.29	-118.43	-852.88	-2,379.26	4,378.38	4,323.89	54.49	80.354	
6,408.05	6,348.50	2,809.00	2,808.60	24.69	58.29	60.42	-852.88	-2,379.26	4,461.73	4,407.87	53.86	82.835	
6,450.00	6,390.43	2,809.00	2,808.60	24.82	58.29	167.00	-852.88	-2,379.26	4,495.10	4,441.47	53.64	83.803	
6,500.00	6,440.15	2,809.00	2,808.60	24.99	58.29	169.75	-852.88	-2,379.26	4,537.10	4,483.68	53.42	84.936	
6,550.00	6,489.32	2,809.00	2,808.60	25.16	58.29	169.61	-852.88	-2,379.26	4,581.21	4,527.98	53.24	86.054	
6,600.00	6,537.64	2,809.00	2,808.60	25.34	58.29	168.40	-852.88	-2,379.26	4,627.11	4,574.01	53.09	87.149	
6,650.00	6,584.80	2,809.00	2,808.60	25.52	58.29	166.01	-852.88	-2,379.26	4,674.46	4,621.47	52.99	88.212	
6,700.00	6,630.52	2,809.00	2,808.60	25.71	58.29	161.49	-852.88	-2,379.26	4,722.93	4,670.01	52.93	89.235	
6,750.00	6,674.51	2,809.00	2,808.60	25.89	58.29	151.52	-852.88	-2,379.26	4,772.20	4,719.30	52.90	90.211	
6,800.00	6,716.50	2,809.00	2,808.60	26.08	58.29	121.58	-852.88	-2,379.26	4,821.94	4,769.03	52.91	91.134	
6,850.00	6,756.24	2,809.00	2,808.60	26.28	58.29	55.91	-852.88	-2,379.26	4,871.84	4,818.88	52.96	91.995	
6,900.00	6,793.47	2,809.00	2,808.60	26.48	58.29	26.42	-852.88	-2,379.26	4,921.58	4,868.54	53.04	92.790	
6,950.00	6,827.97	2,809.00	2,808.60	26.69	58.29	16.48	-852.88	-2,379.26	4,970.87	4,917.72	53.16	93.514	
7,000.00	6,859.53	2,809.00	2,808.60	26.91	58.29	11.85	-852.88	-2,379.26	5,019.43	4,966.12	53.31	94.161	
7,050.00	6,887.94	2,809.00	2,808.60	27.14	58.29	9.23	-852.88	-2,379.26	5,066.97	5,013.48	53.49	94.727	
7,100.00	6,913.05	2,809.00	2,808.60	27.38	58.29	7.55	-852.88	-2,379.26	5,113.24	5,059.54	53.71	95.207	
7,150.00	6,934.68	2,809.00	2,808.60	27.64	58.29	6.40	-852.88	-2,379.26	5,158.00	5,104.04	53.95	95.599	
7,200.00	6,952.71	2,809.00	2,808.60	27.92	58.29	5.56	-852.88	-2,379.26	5,201.00	5,146.76	54.23	95.898	
7,250.00	6,967.02	2,809.00	2,808.60	28.21	58.29	4.93	-852.88	-2,379.26	5,242.02	5,187.48	54.55	96.103	
7,300.00	6,977.54	2,809.00	2,808.60	28.52	58.29	4.45	-852.88	-2,379.26	5,280.88	5,225.99	54.89	96.211	
7,350.00	6,984.18	2,809.00	2,808.60	28.83	58.29	4.06	-852.88	-2,379.26	5,317.36	5,262.10	55.26	96.222	
7,400.00	6,986.92	2,809.00	2,808.60	29.16	58.29	3.75	-852.88	-2,379.26	5,351.31	5,295.65	55.67	96.134	
7,409.89	6,987.00	2,809.00	2,808.60	29.23	58.29	3.69	-852.88	-2,379.26	5,357.71	5,301.97	55.74	96.113	
7,500.00	6,987.00	2,809.00	2,808.60	29.85	58.29	3.69	-852.88	-2,379.26	5,415.98	5,359.46	56.52	95.820	
7,600.00	6,987.00	2,809.00	2,808.60	30.61	58.29	3.69	-852.88	-2,379.26	5,481.65	5,424.28	57.37	95.541	
7,700.00	6,987.00	2,809.00	2,808.60	31.41	58.29	3.69	-852.88	-2,379.26	5,548.35	5,490.14	58.21	95.312	
7,800.00	6,987.00	2,809.00	2,808.60	32.27	58.29	3.69	-852.88	-2,379.26	5,616.04	5,557.00	59.04	95.130	
7,900.00	6,987.00	2,809.00	2,808.60	33.17	58.29	3.69	-852.88	-2,379.26	5,684.68	5,624.84	59.84	94.993	
8,000.00	6,987.00	2,809.00	2,808.60	34.12	58.29	3.69	-852.88	-2,379.26	5,754.24	5,693.60	60.63	94.901	
8,100.00	6,987.00	2,809.00	2,808.60	35.10	58.29	3.69	-852.88	-2,379.26	5,824.68	5,763.27	61.41	94.851	
8,200.00	6,987.00	2,809.00	2,808.60	36.12	58.29	3.69	-852.88	-2,379.26	5,895.98	5,833.81	62.17	94.841	
8,300.00	6,987.00	2,809.00	2,808.60	37.17	58.29	3.69	-852.88	-2,379.26	5,968.10	5,905.20	62.91	94.869	
8,314.89	6,987.00	2,809.00	2,808.60	37.33	58.29	3.69	-852.88	-2,379.26	5,978.91	5,915.90	63.02	94.877	
8,400.00	6,987.00	2,809.00	2,808.60	38.25	58.29	7.29	-852.88	-2,379.26	6,040.88	5,977.25	63.63	94.938	
8,500.00	6,987.00	2,809.00	2,808.60	39.35	58.29	11.50	-852.88	-2,379.26	6,113.82	6,049.50	64.32	95.048	
8,600.00	6,987.00	2,809.00	2,808.60	40.45	58.29	15.62	-852.88	-2,379.26	6,186.58	6,121.59	64.99	95.192	
8,700.00	6,987.00	2,809.00	2,808.60	41.56	58.29	19.60	-852.88	-2,379.26	6,258.81	6,193.18	65.63	95.365	
8,800.00	6,987.00	2,809.00	2,808.60	42.66	58.29	23.39	-852.88	-2,379.26	6,330.19	6,263.94	66.24	95.560	

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 #692H
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 #692H	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)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	6,987.00	2,809.00	2,808.60	43.75	58.29	26.96	-852.88	-2,379.26	6,400.39	6,333.56	66.83	95.768	
9,000.00	6,987.00	2,809.00	2,808.60	44.83	58.29	30.29	-852.88	-2,379.26	6,469.14	6,401.74	67.40	95.983	
9,071.74	6,987.00	2,809.00	2,808.60	45.59	58.29	32.51	-852.88	-2,379.26	6,517.39	6,449.60	67.79	96.138	
9,100.00	6,987.00	2,809.00	2,808.60	45.89	58.29	32.51	-852.88	-2,379.26	6,536.24	6,468.30	67.94	96.200	
9,200.00	6,987.00	2,809.00	2,808.60	46.97	58.29	32.51	-852.88	-2,379.26	6,603.49	6,535.00	68.49	96.416	
9,300.00	6,987.00	2,809.00	2,808.60	48.07	58.29	32.51	-852.88	-2,379.26	6,671.55	6,602.52	69.03	96.644	
9,400.00	6,987.00	2,809.00	2,808.60	49.20	58.29	32.51	-852.88	-2,379.26	6,740.41	6,670.84	69.57	96.884	
9,500.00	6,987.00	2,809.00	2,808.60	50.36	58.29	32.51	-852.88	-2,379.26	6,810.05	6,739.94	70.11	97.137	
9,600.00	6,987.00	2,809.00	2,808.60	51.54	58.29	32.51	-852.88	-2,379.26	6,880.43	6,809.79	70.64	97.403	
9,700.00	6,987.00	2,809.00	2,808.60	52.74	58.29	32.51	-852.88	-2,379.26	6,951.54	6,880.38	71.17	97.682	
9,800.00	6,987.00	2,809.00	2,808.60	53.96	58.29	32.51	-852.88	-2,379.26	7,023.36	6,951.67	71.69	97.974	
9,900.00	6,987.00	2,809.00	2,808.60	55.21	58.29	32.51	-852.88	-2,379.26	7,095.85	7,023.65	72.20	98.279	
10,000.00	6,987.00	2,809.00	2,808.60	56.47	58.29	32.51	-852.88	-2,379.26	7,169.01	7,096.30	72.71	98.597	
10,100.00	6,987.00	2,809.00	2,808.60	57.75	58.29	32.51	-852.88	-2,379.26	7,242.81	7,169.60	73.21	98.928	
10,200.00	6,987.00	2,809.00	2,808.60	59.04	58.29	32.51	-852.88	-2,379.26	7,317.23	7,243.52	73.71	99.273	
10,300.00	6,987.00	2,809.00	2,808.60	60.35	58.29	32.51	-852.88	-2,379.26	7,392.26	7,318.06	74.20	99.630	
10,400.00	6,987.00	2,809.00	2,808.60	61.67	58.29	32.51	-852.88	-2,379.26	7,467.87	7,393.19	74.68	99.999	
10,500.00	6,987.00	2,809.00	2,808.60	63.01	58.29	32.51	-852.88	-2,379.26	7,544.04	7,468.89	75.15	100.381	
10,600.00	6,987.00	2,809.00	2,808.60	64.36	58.29	32.51	-852.88	-2,379.26	7,620.77	7,545.15	75.62	100.775	
10,700.00	6,987.00	2,809.00	2,808.60	65.72	58.29	32.51	-852.88	-2,379.26	7,698.04	7,621.96	76.08	101.181	
10,800.00	6,987.00	2,809.00	2,808.60	67.09	58.29	32.51	-852.88	-2,379.26	7,775.82	7,699.28	76.53	101.598	
10,900.00	6,987.00	2,809.00	2,808.60	68.47	58.29	32.51	-852.88	-2,379.26	7,854.10	7,777.12	76.98	102.027	
11,000.00	6,987.00	2,809.00	2,808.60	69.86	58.29	32.51	-852.88	-2,379.26	7,932.88	7,855.46	77.42	102.467	
11,100.00	6,987.00	2,809.00	2,808.60	71.26	58.29	32.51	-852.88	-2,379.26	8,012.12	7,934.27	77.85	102.917	
11,200.00	6,987.00	2,809.00	2,808.60	72.67	58.29	32.51	-852.88	-2,379.26	8,091.83	8,013.55	78.27	103.378	
11,300.00	6,987.00	2,809.00	2,808.60	74.09	58.29	32.51	-852.88	-2,379.26	8,171.98	8,093.29	78.69	103.849	
11,400.00	6,987.00	2,809.00	2,808.60	75.51	58.29	32.51	-852.88	-2,379.26	8,252.57	8,173.47	79.10	104.330	
11,500.00	6,987.00	2,809.00	2,808.60	76.94	58.29	32.51	-852.88	-2,379.26	8,333.57	8,254.07	79.50	104.820	
11,600.00	6,987.00	2,809.00	2,808.60	78.38	58.29	32.51	-852.88	-2,379.26	8,414.99	8,335.09	79.90	105.320	
11,700.00	6,987.00	2,809.00	2,808.60	79.82	58.29	32.51	-852.88	-2,379.26	8,496.80	8,416.51	80.29	105.829	
11,800.00	6,987.00	2,809.00	2,808.60	81.27	58.29	32.51	-852.88	-2,379.26	8,579.00	8,498.33	80.67	106.346	
11,900.00	6,987.00	2,809.00	2,808.60	82.73	58.29	32.51	-852.88	-2,379.26	8,661.57	8,580.52	81.05	106.872	
12,000.00	6,987.00	2,809.00	2,808.60	84.19	58.29	32.51	-852.88	-2,379.26	8,744.50	8,663.09	81.42	107.406	
12,100.00	6,987.00	2,809.00	2,808.60	85.66	58.29	32.51	-852.88	-2,379.26	8,827.79	8,746.02	81.78	107.947	
12,200.00	6,987.00	2,809.00	2,808.60	87.13	58.29	32.51	-852.88	-2,379.26	8,911.43	8,829.29	82.14	108.497	
12,300.00	6,987.00	2,809.00	2,808.60	88.61	58.29	32.51	-852.88	-2,379.26	8,995.39	8,912.91	82.49	109.053	
12,400.00	6,987.00	2,809.00	2,808.60	90.09	58.29	32.51	-852.88	-2,379.26	9,079.69	8,996.85	82.83	109.617	
12,500.00	6,987.00	2,809.00	2,808.60	91.57	58.29	32.51	-852.88	-2,379.26	9,164.29	9,081.12	83.17	110.188	
12,600.00	6,987.00	2,809.00	2,808.60	93.06	58.29	32.51	-852.88	-2,379.26	9,249.21	9,165.71	83.50	110.765	
12,700.00	6,987.00	2,809.00	2,808.60	94.55	58.29	32.51	-852.88	-2,379.26	9,334.42	9,250.59	83.83	111.349	
12,800.00	6,987.00	2,809.00	2,808.60	96.05	58.29	32.51	-852.88	-2,379.26	9,419.93	9,335.77	84.15	111.939	
12,900.00	6,987.00	2,809.00	2,808.60	97.55	58.29	32.51	-852.88	-2,379.26	9,505.71	9,421.25	84.47	112.535	
13,000.00	6,987.00	2,809.00	2,808.60	99.05	58.29	32.51	-852.88	-2,379.26	9,591.78	9,507.00	84.78	113.136	
13,100.00	6,987.00	2,809.00	2,808.60	100.56	58.29	32.51	-852.88	-2,379.26	9,678.11	9,593.02	85.09	113.743	
13,200.00	6,987.00	2,809.00	2,808.60	102.07	58.29	32.51	-852.88	-2,379.26	9,764.70	9,679.31	85.39	114.356	
13,300.00	6,987.00	2,809.00	2,808.60	103.58	58.29	32.51	-852.88	-2,379.26	9,851.55	9,765.86	85.69	114.973	
13,400.00	6,987.00	2,809.00	2,808.60	105.09	58.29	32.51	-852.88	-2,379.26	9,938.64	9,852.66	85.98	115.596	
13,500.00	6,987.00	2,809.00	2,808.60	106.61	58.29	32.51	-852.88	-2,379.26	10,025.97	9,939.71	86.26	116.223	
13,600.00	6,987.00	2,809.00	2,808.60	108.13	58.29	32.51	-852.88	-2,379.26	10,113.54	10,026.99	86.55	116.855	
13,700.00	6,987.00	2,809.00	2,808.60	109.65	58.29	32.51	-852.88	-2,379.26	10,201.34	10,114.51	86.83	117.492	
13,800.00	6,987.00	2,809.00	2,808.60	111.18	58.29	32.51	-852.88	-2,379.26	10,289.36	10,202.26	87.10	118.133	
13,900.00	6,987.00	2,809.00	2,808.60	112.71	58.29	32.51	-852.88	-2,379.26	10,377.59	10,290.22	87.37	118.778	

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 #692H
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 #692H	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)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
14,000.00	6,987.00	2,809.00	2,808.60	114.23	58.29	32.51	-852.88	-2,379.26	10,466.04	10,378.41	87.64	119.426			
14,100.00	6,987.00	2,809.00	2,808.60	115.77	58.29	32.51	-852.88	-2,379.26	10,554.70	10,466.80	87.90	120.079			
14,200.00	6,987.00	2,809.00	2,808.60	117.30	58.29	32.51	-852.88	-2,379.26	10,643.55	10,555.40	88.16	120.735			
14,300.00	6,987.00	2,809.00	2,808.60	118.83	58.29	32.51	-852.88	-2,379.26	10,732.60	10,644.19	88.41	121.395			
14,400.00	6,987.00	2,809.00	2,808.60	120.37	58.29	32.51	-852.88	-2,379.26	10,821.85	10,733.19	88.66	122.059			
14,500.00	6,987.00	2,809.00	2,808.60	121.91	58.29	32.51	-852.88	-2,379.26	10,911.28	10,822.37	88.91	122.725			
14,600.00	6,987.00	2,809.00	2,808.60	123.45	58.29	32.51	-852.88	-2,379.26	11,000.89	10,911.74	89.15	123.395			
14,700.00	6,987.00	2,809.00	2,808.60	124.99	58.29	32.51	-852.88	-2,379.26	11,090.68	11,001.28	89.39	124.067			
14,800.00	6,987.00	2,809.00	2,808.60	126.53	58.29	32.51	-852.88	-2,379.26	11,180.64	11,091.01	89.63	124.743			
14,900.00	6,987.00	2,809.00	2,808.60	128.08	58.29	32.51	-852.88	-2,379.26	11,270.77	11,180.91	89.86	125.421			
15,000.00	6,987.00	2,809.00	2,808.60	129.63	58.29	32.51	-852.88	-2,379.26	11,361.07	11,270.97	90.09	126.102			
15,100.00	6,987.00	2,809.00	2,808.60	131.17	58.29	32.51	-852.88	-2,379.26	11,451.53	11,361.20	90.32	126.786			
15,200.00	6,987.00	2,809.00	2,808.60	132.72	58.29	32.51	-852.88	-2,379.26	11,542.14	11,451.60	90.55	127.472			
15,300.00	6,987.00	2,809.00	2,808.60	134.27	58.29	32.51	-852.88	-2,379.26	11,632.91	11,542.14	90.77	128.161			
15,400.00	6,987.00	2,809.00	2,808.60	135.83	58.29	32.51	-852.88	-2,379.26	11,723.83	11,632.84	90.99	128.851			
15,500.00	6,987.00	2,809.00	2,808.60	137.38	58.29	32.51	-852.88	-2,379.26	11,814.90	11,723.69	91.20	129.544			
15,600.00	6,987.00	2,809.00	2,808.60	138.93	58.29	32.51	-852.88	-2,379.26	11,906.11	11,814.69	91.42	130.239			
15,700.00	6,987.00	2,809.00	2,808.60	140.49	58.29	32.51	-852.88	-2,379.26	11,997.46	11,905.83	91.63	130.936			
15,800.00	6,987.00	2,809.00	2,808.60	142.04	58.29	32.51	-852.88	-2,379.26	12,088.94	11,997.11	91.84	131.634			
15,900.00	6,987.00	2,809.00	2,808.60	143.60	58.29	32.51	-852.88	-2,379.26	12,180.56	12,088.52	92.04	132.335			
16,000.00	6,987.00	2,809.00	2,808.60	145.16	58.29	32.51	-852.88	-2,379.26	12,272.31	12,180.07	92.25	133.037			
16,100.00	6,987.00	2,809.00	2,808.60	146.72	58.29	32.51	-852.88	-2,379.26	12,364.19	12,271.75	92.45	133.741			
16,200.00	6,987.00	2,809.00	2,808.60	148.28	58.29	32.51	-852.88	-2,379.26	12,456.20	12,363.55	92.65	134.446			
16,300.00	6,987.00	2,809.00	2,808.60	149.84	58.29	32.51	-852.88	-2,379.26	12,548.32	12,455.48	92.85	135.153			
16,400.00	6,987.00	2,809.00	2,808.60	151.40	58.29	32.51	-852.88	-2,379.26	12,640.57	12,547.53	93.04	135.862			
16,500.00	6,987.00	2,809.00	2,808.60	152.97	58.29	32.51	-852.88	-2,379.26	12,732.93	12,639.70	93.23	136.571			
16,600.00	6,987.00	2,809.00	2,808.60	154.53	58.29	32.51	-852.88	-2,379.26	12,825.41	12,731.99	93.42	137.282			
16,700.00	6,987.00	2,809.00	2,808.60	156.10	58.29	32.51	-852.88	-2,379.26	12,918.00	12,824.39	93.61	137.994			
16,800.00	6,987.00	2,809.00	2,808.60	157.66	58.29	32.51	-852.88	-2,379.26	13,010.70	12,916.90	93.80	138.707			
16,900.00	6,987.00	2,809.00	2,808.60	159.23	58.29	32.51	-852.88	-2,379.26	13,103.51	13,009.52	93.98	139.422			
17,000.00	6,987.00	2,809.00	2,808.60	160.80	58.29	32.51	-852.88	-2,379.26	13,196.42	13,102.25	94.17	140.137			
17,100.00	6,987.00	2,809.00	2,808.60	162.36	58.29	32.51	-852.88	-2,379.26	13,289.44	13,195.09	94.35	140.853			
17,200.00	6,987.00	2,809.00	2,808.60	163.93	58.29	32.51	-852.88	-2,379.26	13,382.55	13,288.02	94.53	141.570			
17,300.00	6,987.00	2,809.00	2,808.60	165.50	58.29	32.51	-852.88	-2,379.26	13,475.77	13,381.06	94.71	142.288			
17,400.00	6,987.00	2,809.00	2,808.60	167.07	58.29	32.51	-852.88	-2,379.26	13,569.08	13,474.19	94.88	143.007			
17,500.00	6,987.00	2,809.00	2,808.60	168.64	58.29	32.51	-852.88	-2,379.26	13,662.48	13,567.42	95.06	143.726			
17,600.00	6,987.00	2,809.00	2,808.60	170.21	58.29	32.51	-852.88	-2,379.26	13,755.98	13,660.75	95.23	144.446			
17,700.00	6,987.00	2,809.00	2,808.60	171.78	58.29	32.51	-852.88	-2,379.26	13,849.57	13,754.17	95.40	145.167			
17,800.00	6,987.00	2,809.00	2,808.60	173.36	58.29	32.51	-852.88	-2,379.26	13,943.25	13,847.67	95.57	145.888			
17,900.00	6,987.00	2,809.00	2,808.60	174.93	58.29	32.51	-852.88	-2,379.26	14,037.02	13,941.27	95.74	146.610			
18,000.00	6,987.00	2,809.00	2,808.60	176.50	58.29	32.51	-852.88	-2,379.26	14,130.87	14,034.95	95.91	147.333			
18,100.00	6,987.00	2,809.00	2,808.60	178.08	58.29	32.51	-852.88	-2,379.26	14,224.80	14,128.72	96.08	148.055			
18,200.00	6,987.00	2,809.00	2,808.60	179.65	58.29	32.51	-852.88	-2,379.26	14,318.82	14,222.58	96.24	148.778			
18,300.00	6,987.00	2,809.00	2,808.60	181.23	58.29	32.51	-852.88	-2,379.26	14,412.92	14,316.51	96.41	149.502			
18,400.00	6,987.00	2,809.00	2,808.60	182.80	58.29	32.51	-852.88	-2,379.26	14,507.09	14,410.52	96.57	150.225			
18,500.00	6,987.00	2,809.00	2,808.60	184.38	58.29	32.51	-852.88	-2,379.26	14,601.35	14,504.62	96.73	150.949			
18,600.00	6,987.00	2,809.00	2,808.60	185.96	58.29	32.51	-852.88	-2,379.26	14,695.68	14,598.79	96.89	151.673			
18,700.00	6,987.00	2,809.00	2,808.60	187.53	58.29	32.51	-852.88	-2,379.26	14,790.08	14,693.03	97.05	152.398			
18,800.00	6,987.00	2,809.00	2,808.60	189.11	58.29	32.51	-852.88	-2,379.26	14,884.56	14,787.35	97.21	153.122			
18,900.00	6,987.00	2,809.00	2,808.60	190.69	58.29	32.51	-852.88	-2,379.26	14,979.11	14,881.74	97.36	153.847			
19,000.00	6,987.00	2,809.00	2,808.60	192.27	58.29	32.51	-852.88	-2,379.26	15,073.73	14,976.21	97.52	154.571			
19,100.00	6,987.00	2,809.00	2,808.60	193.85	58.29	32.51	-852.88	-2,379.26	15,168.41	15,070.74	97.67	155.296			

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 #692H
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 #692H	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		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		
19,200.00	6,987.00	2,809.00	2,808.60	195.43	58.29	32.51	-852.88	-2,379.26	15,263.17	15,165.34	97.83	156.021		
19,255.69	6,987.00	2,809.00	2,808.60	196.31	58.29	32.51	-852.88	-2,379.26	15,315.97	15,218.06	97.91	156.424		
19,300.00	6,987.00	2,809.00	2,808.60	197.01	58.29	32.51	-852.88	-2,379.26	15,357.99	15,260.01	97.98	156.745		
19,400.00	6,987.00	2,809.00	2,808.60	198.59	58.29	32.51	-852.88	-2,379.26	15,452.88	15,354.75	98.13	157.470		
19,468.80	6,987.00	2,809.00	2,808.60	199.49	58.29	32.51	-852.88	-2,379.26	15,518.21	15,417.55	100.66	154.171		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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												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)			
0.00	0.00	284.00	283.99	0.00	1.81	89.15	108.18	7,269.03	7,269.87				
100.00	100.00	365.22	365.21	0.25	2.14	89.14	108.59	7,269.38	7,270.31	7,268.00	2.31	3,147.561	
200.00	200.00	428.20	428.19	0.61	2.37	89.14	108.73	7,269.84	7,271.07	7,268.17	2.89	2,512.338	
300.00	300.00	500.00	499.98	0.97	2.61	89.14	108.66	7,270.97	7,272.56	7,269.06	3.50	2,078.361	
400.00	400.00	541.89	541.86	1.33	2.74	89.14	108.59	7,271.89	7,274.55	7,270.55	4.00	1,819.647	
500.00	500.00	600.00	599.95	1.68	2.93	89.14	108.65	7,273.26	7,276.99	7,272.44	4.55	1,599.225	
600.00	600.00	669.23	669.15	2.04	3.16	89.14	108.77	7,275.25	7,279.91	7,274.78	5.14	1,416.883	
700.00	700.00	700.00	699.91	2.40	3.26	89.14	108.78	7,276.30	7,283.55	7,277.95	5.60	1,301.193	
800.00	799.98	765.46	765.31	2.76	3.47	95.45	108.67	7,279.01	7,287.96	7,281.78	6.17	1,180.350	
900.00	899.84	800.00	799.81	3.12	3.59	95.36	108.50	7,280.73	7,293.52	7,286.87	6.65	1,097.441	
1,000.00	999.45	844.53	844.26	3.48	3.77	95.25	108.18	7,283.30	7,300.22	7,293.01	7.21	1,012.925	
1,100.00	1,098.70	900.00	899.59	3.85	4.02	95.16	107.61	7,287.19	7,308.20	7,300.38	7.82	934.155	
1,153.80	1,151.90	900.00	899.59	4.04	4.02	95.06	107.61	7,287.19	7,312.88	7,304.86	8.02	911.994	
1,200.00	1,197.53	931.18	930.68	4.21	4.15	95.10	107.22	7,289.60	7,317.15	7,308.82	8.33	878.528	
1,300.00	1,296.27	1,000.00	999.27	4.59	4.45	95.20	106.24	7,295.13	7,326.70	7,317.69	9.01	813.059	
1,400.00	1,395.02	1,043.31	1,042.41	4.97	4.60	95.26	105.59	7,298.85	7,336.86	7,327.32	9.54	769.135	
1,500.00	1,493.77	1,100.00	1,098.84	5.36	4.80	95.33	104.84	7,304.23	7,347.82	7,337.70	10.12	726.225	
1,600.00	1,592.52	1,100.00	1,098.84	5.74	4.80	95.33	104.84	7,304.23	7,359.63	7,349.14	10.49	701.345	
1,700.00	1,691.27	1,166.03	1,164.48	6.14	5.08	95.42	103.88	7,311.25	7,372.04	7,360.88	11.16	660.650	
1,800.00	1,790.01	1,200.00	1,198.22	6.53	5.22	95.47	103.27	7,315.20	7,385.39	7,373.70	11.68	632.072	
1,900.00	1,888.76	1,279.82	1,277.43	6.92	5.56	95.58	101.70	7,324.92	7,399.27	7,386.86	12.42	595.982	
2,000.00	1,987.51	1,300.00	1,297.45	7.32	5.64	95.61	101.28	7,327.43	7,413.80	7,400.92	12.88	575.560	
2,100.00	2,086.26	1,368.25	1,365.09	7.72	5.93	95.70	99.85	7,336.40	7,428.84	7,415.28	13.56	547.867	
2,200.00	2,185.01	1,400.00	1,396.52	8.11	6.07	95.75	99.17	7,340.88	7,444.81	7,430.74	14.08	528.931	
2,300.00	2,283.75	1,460.90	1,456.74	8.51	6.33	95.83	98.00	7,349.88	7,461.45	7,446.73	14.73	506.680	
2,400.00	2,382.50	1,500.00	1,495.37	8.91	6.50	95.88	97.42	7,355.90	7,478.77	7,463.49	15.28	489.554	
2,500.00	2,481.25	1,548.72	1,543.45	9.31	6.71	95.95	96.78	7,363.75	7,496.79	7,480.92	15.87	472.252	
2,600.00	2,580.00	1,600.00	1,593.97	9.71	6.94	96.01	96.12	7,372.49	7,515.63	7,499.15	16.48	455.941	
2,700.00	2,678.75	1,635.49	1,628.90	10.11	7.09	96.06	95.61	7,378.79	7,535.16	7,518.14	17.02	442.729	
2,800.00	2,777.49	1,700.00	1,692.30	10.52	7.38	96.15	94.31	7,390.62	7,555.38	7,537.68	17.70	426.973	
2,900.00	2,876.24	1,740.12	1,731.68	10.92	7.55	96.20	93.29	7,398.20	7,576.15	7,557.91	18.24	415.359	
3,000.00	2,974.99	1,800.00	1,790.40	11.32	7.80	96.29	91.54	7,409.78	7,597.50	7,578.63	18.87	402.525	
3,100.00	3,073.74	1,833.49	1,823.20	11.72	7.95	96.33	90.45	7,416.47	7,619.51	7,600.11	19.40	392.675	
3,200.00	3,172.49	1,900.00	1,888.18	12.13	8.26	96.43	88.08	7,430.45	7,642.47	7,622.37	20.10	380.151	
3,300.00	3,271.23	1,900.00	1,888.18	12.53	8.26	96.43	88.08	7,430.45	7,665.91	7,645.45	20.45	374.774	
3,400.00	3,369.98	1,962.75	1,949.35	12.93	8.56	96.52	85.80	7,444.26	7,690.12	7,668.98	21.14	363.831	
3,500.00	3,468.73	2,000.00	1,985.62	13.34	8.74	96.58	84.49	7,452.64	7,714.92	7,693.24	21.68	355.839	
3,600.00	3,567.48	2,042.78	2,027.21	13.74	8.95	96.64	82.93	7,462.56	7,740.44	7,718.17	22.26	347.690	
3,700.00	3,666.23	2,100.00	2,082.65	14.14	9.23	96.72	80.53	7,476.51	7,766.89	7,743.97	22.92	338.821	
3,800.00	3,764.97	2,100.00	2,082.65	14.55	9.23	96.72	80.53	7,476.51	7,793.93	7,770.67	23.26	335.088	
3,900.00	3,863.72	2,164.97	2,145.44	14.95	9.55	96.81	77.92	7,493.00	7,821.67	7,797.71	23.96	326.384	
4,000.00	3,962.47	2,200.00	2,179.25	15.36	9.72	96.86	76.76	7,502.07	7,850.01	7,825.51	24.50	320.448	
4,100.00	4,061.22	2,248.51	2,225.99	15.76	9.96	96.93	75.24	7,514.96	7,878.98	7,853.88	25.10	313.924	
4,200.00	4,159.97	2,300.00	2,275.46	16.17	10.21	97.00	73.58	7,529.14	7,908.75	7,883.03	25.72	307.548	
4,300.00	4,258.71	2,330.61	2,304.82	16.57	10.35	97.04	72.62	7,537.77	7,939.12	7,912.91	26.21	302.866	
4,400.00	4,357.46	2,400.00	2,371.27	16.98	10.69	97.13	70.87	7,557.67	7,970.09	7,943.16	26.93	295.903	
4,500.00	4,456.21	2,439.17	2,408.72	17.38	10.88	97.18	70.08	7,569.10	8,001.50	7,974.03	27.47	291.283	
4,600.00	4,554.96	2,500.00	2,466.82	17.79	11.16	97.25	68.95	7,587.11	8,033.42	8,005.30	28.13	285.627	
4,700.00	4,653.71	2,540.42	2,505.35	18.19	11.35	97.30	68.16	7,599.28	8,065.86	8,037.19	28.67	281.360	
4,800.00	4,752.45	2,600.00	2,562.03	18.60	11.63	97.38	66.71	7,617.57	8,098.92	8,069.60	29.32	276.245	
4,900.00	4,851.20	2,631.69	2,592.12	19.00	11.78	97.42	65.73	7,627.47	8,132.49	8,102.68	29.81	272.830	
5,000.00	4,949.95	2,700.00	2,656.85	19.41	12.11	97.51	62.90	7,649.13	8,166.71	8,136.19	30.51	267.654	

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 #692H
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 #692H	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	5,048.70	2,700.00	2,656.85	19.81	12.11	97.51	62.90	7,649.13	8,201.44	8,170.63	30.81	266.198	
5,200.00	5,147.45	2,756.76	2,710.44	20.22	12.39	97.60	59.74	7,667.55	8,236.75	8,205.29	31.46	261.818	
5,300.00	5,246.19	2,800.00	2,751.12	20.62	12.61	97.66	56.81	7,681.92	8,272.78	8,240.75	32.02	258.335	
5,400.00	5,344.94	2,800.00	2,751.12	21.03	12.61	97.66	56.81	7,681.92	8,309.57	8,277.26	32.31	257.181	
5,455.76	5,400.00	2,800.00	2,751.12	21.25	12.61	97.66	56.81	7,681.92	8,330.54	8,298.07	32.47	256.578	
5,500.00	5,443.72	2,846.20	2,794.40	21.43	12.88	97.91	53.34	7,697.71	8,346.93	8,314.00	32.93	253.505	
5,600.00	5,542.71	2,900.00	2,844.49	21.83	13.18	98.40	49.03	7,716.85	8,385.11	8,351.52	33.59	249.637	
5,700.00	5,641.93	2,900.00	2,844.49	22.22	13.18	98.81	49.03	7,716.85	8,423.46	8,389.61	33.85	248.844	
5,800.00	5,741.36	2,900.00	2,844.49	22.60	13.18	99.23	49.03	7,716.85	8,462.57	8,428.47	34.10	248.177	
5,900.00	5,840.96	2,963.29	2,903.09	22.97	13.53	99.71	44.25	7,740.27	8,501.78	8,467.00	34.78	244.455	
6,000.00	5,940.70	3,645.00	3,540.64	23.33	17.80	100.55	11.08	7,976.25	8,538.26	8,497.90	40.36	211.577	
6,100.00	6,040.55	3,645.00	3,540.64	23.68	17.80	100.90	11.08	7,976.25	8,571.48	8,530.88	40.60	211.107	
6,200.00	6,140.48	3,645.00	3,540.64	24.02	17.80	101.25	11.08	7,976.25	8,605.43	8,564.59	40.84	210.727	
6,300.00	6,240.45	3,645.00	3,540.64	24.35	17.80	101.61	11.08	7,976.25	8,640.09	8,599.03	41.06	210.433	
6,408.05	6,348.50	3,645.00	3,540.64	24.69	17.80	-77.99	11.08	7,976.25	8,678.30	8,637.03	41.27	210.270	
6,450.00	6,390.43	3,645.00	3,540.64	24.82	17.80	28.35	11.08	7,976.25	8,692.32	8,650.97	41.35	210.202	
6,500.00	6,440.15	3,645.00	3,540.64	24.99	17.80	31.19	11.08	7,976.25	8,706.45	8,664.99	41.46	210.003	
6,550.00	6,489.32	3,645.00	3,540.64	25.16	17.80	31.64	11.08	7,976.25	8,717.70	8,676.13	41.57	209.696	
6,600.00	6,537.64	3,645.00	3,540.64	25.34	17.80	31.71	11.08	7,976.25	8,726.02	8,684.32	41.69	209.287	
6,650.00	6,584.80	3,645.00	3,540.64	25.52	17.80	31.73	11.08	7,976.25	8,731.36	8,689.54	41.82	208.781	
6,700.00	6,630.52	3,645.00	3,540.64	25.71	17.80	31.79	11.08	7,976.25	8,733.70	8,691.74	41.95	208.183	
6,750.00	6,674.51	3,645.00	3,540.64	25.89	17.80	31.95	11.08	7,976.25	8,733.02	8,690.93	42.09	207.497	
6,800.00	6,716.50	3,645.00	3,540.64	26.08	17.80	32.23	11.08	7,976.25	8,729.33	8,687.10	42.23	206.727	
6,850.00	6,756.24	3,645.00	3,540.64	26.28	17.80	32.63	11.08	7,976.25	8,722.64	8,680.27	42.37	205.876	
6,900.00	6,793.47	3,645.00	3,540.64	26.48	17.80	33.17	11.08	7,976.25	8,713.00	8,670.48	42.51	204.947	
6,950.00	6,827.97	3,645.00	3,540.64	26.69	17.80	33.87	11.08	7,976.25	8,700.44	8,657.78	42.66	203.941	
7,000.00	6,859.53	3,645.00	3,540.64	26.91	17.80	34.73	11.08	7,976.25	8,685.04	8,642.23	42.81	202.862	
7,050.00	6,887.94	3,645.00	3,540.64	27.14	17.80	35.79	11.08	7,976.25	8,666.88	8,623.91	42.97	201.711	
7,100.00	6,913.05	3,645.00	3,540.64	27.38	17.80	37.05	11.08	7,976.25	8,646.05	8,602.92	43.12	200.491	
7,150.00	6,934.68	3,645.00	3,540.64	27.64	17.80	38.54	11.08	7,976.25	8,622.65	8,579.37	43.29	199.204	
7,200.00	6,952.71	3,645.00	3,540.64	27.92	17.80	40.30	11.08	7,976.25	8,596.82	8,553.37	43.45	197.855	
7,250.00	6,967.02	3,645.00	3,540.64	28.21	17.80	42.35	11.08	7,976.25	8,568.70	8,525.08	43.62	196.447	
7,300.00	6,977.54	3,645.00	3,540.64	28.52	17.80	44.73	11.08	7,976.25	8,538.42	8,494.63	43.79	194.985	
7,350.00	6,984.18	3,645.00	3,540.64	28.83	17.80	47.49	11.08	7,976.25	8,506.17	8,462.20	43.97	193.473	
7,400.00	6,986.92	3,645.00	3,540.64	29.16	17.80	50.68	11.08	7,976.25	8,472.11	8,427.97	44.14	191.918	
7,409.89	6,987.00	3,645.00	3,540.64	29.23	17.80	51.36	11.08	7,976.25	8,465.18	8,420.99	44.18	191.597	
7,500.00	6,987.00	3,645.00	3,540.64	29.85	17.80	51.36	11.08	7,976.25	8,401.96	8,357.45	44.51	188.754	
7,600.00	6,987.00	3,645.00	3,540.64	30.61	17.80	51.36	11.08	7,976.25	8,332.38	8,287.47	44.91	185.538	
7,700.00	6,987.00	3,645.00	3,540.64	31.41	17.80	51.36	11.08	7,976.25	8,263.43	8,218.09	45.34	182.267	
7,800.00	6,987.00	3,645.00	3,540.64	32.27	17.80	51.36	11.08	7,976.25	8,195.11	8,149.32	45.80	178.949	
7,900.00	6,987.00	3,645.00	3,540.64	33.17	17.80	51.36	11.08	7,976.25	8,127.45	8,081.17	46.29	175.592	
8,000.00	6,987.00	3,645.00	3,540.64	34.12	17.80	51.36	11.08	7,976.25	8,060.47	8,013.66	46.81	172.207	
8,100.00	6,987.00	3,645.00	3,540.64	35.10	17.80	51.36	11.08	7,976.25	7,994.18	7,946.82	47.36	168.802	
8,200.00	6,987.00	3,645.00	3,540.64	36.12	17.80	51.36	11.08	7,976.25	7,928.59	7,880.65	47.94	165.386	
8,300.00	6,987.00	3,645.00	3,540.64	37.17	17.80	51.36	11.08	7,976.25	7,863.72	7,815.17	48.55	161.967	
8,314.89	6,987.00	3,645.00	3,540.64	37.33	17.80	51.36	11.08	7,976.25	7,854.13	7,805.48	48.64	161.459	
8,400.00	6,987.00	3,645.00	3,540.64	38.25	17.80	49.47	11.08	7,976.25	7,798.11	7,748.94	49.17	158.581	
8,500.00	6,987.00	3,645.00	3,540.64	39.35	17.80	46.94	11.08	7,976.25	7,729.33	7,679.55	49.77	155.293	
8,600.00	6,987.00	3,645.00	3,540.64	40.45	17.80	44.05	11.08	7,976.25	7,657.57	7,607.23	50.34	152.131	
8,700.00	6,987.00	3,645.00	3,540.64	41.56	17.80	40.75	11.08	7,976.25	7,583.11	7,532.25	50.86	149.111	
8,800.00	6,987.00	3,645.00	3,540.64	42.66	17.80	37.01	11.08	7,976.25	7,506.23	7,454.91	51.33	146.246	
8,900.00	6,987.00	3,645.00	3,540.64	43.75	17.80	32.79	11.08	7,976.25	7,427.25	7,375.51	51.74	143.546	

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 #692H
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 #692H	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												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)			
9,000.00	6,987.00	3,645.00	3,540.64	44.83	17.80	28.07	11.08	7,976.25	7,346.49	7,294.40	52.09	141.021	
9,071.74	6,987.00	3,645.00	3,540.64	45.59	17.80	24.37	11.08	7,976.25	7,287.64	7,235.33	52.31	139.321	
9,100.00	6,987.00	3,645.00	3,540.64	45.89	17.80	24.37	11.08	7,976.25	7,264.35	7,211.96	52.39	138.670	
9,200.00	6,987.00	3,645.00	3,540.64	46.97	17.80	24.37	11.08	7,976.25	7,182.20	7,129.54	52.66	136.375	
9,300.00	6,987.00	3,645.00	3,540.64	48.07	17.80	24.37	11.08	7,976.25	7,100.52	7,047.56	52.96	134.083	
9,400.00	6,987.00	3,645.00	3,540.64	49.20	17.80	24.37	11.08	7,976.25	7,019.31	6,966.05	53.26	131.795	
9,500.00	6,987.00	3,645.00	3,540.64	50.36	17.80	24.37	11.08	7,976.25	6,938.59	6,885.02	53.58	129.512	
9,600.00	6,987.00	3,645.00	3,540.64	51.54	17.80	24.37	11.08	7,976.25	6,858.38	6,804.48	53.90	127.235	
9,700.00	6,987.00	3,645.00	3,540.64	52.74	17.80	24.37	11.08	7,976.25	6,778.70	6,724.45	54.24	124.965	
9,800.00	6,987.00	3,645.00	3,540.64	53.96	17.80	24.37	11.08	7,976.25	6,699.56	6,644.96	54.60	122.704	
9,900.00	6,987.00	3,645.00	3,540.64	55.21	17.80	24.37	11.08	7,976.25	6,620.98	6,566.01	54.97	120.452	
10,000.00	6,987.00	3,645.00	3,540.64	56.47	17.80	24.37	11.08	7,976.25	6,542.99	6,487.64	55.35	118.212	
10,100.00	6,987.00	3,645.00	3,540.64	57.75	17.80	24.37	11.08	7,976.25	6,465.60	6,409.86	55.75	115.985	
10,200.00	6,987.00	3,645.00	3,540.64	59.04	17.80	24.37	11.08	7,976.25	6,388.85	6,332.69	56.16	113.771	
10,300.00	6,987.00	3,645.00	3,540.64	60.35	17.80	24.37	11.08	7,976.25	6,312.74	6,256.16	56.58	111.573	
10,400.00	6,987.00	3,645.00	3,540.64	61.67	17.80	24.37	11.08	7,976.25	6,237.31	6,180.29	57.02	109.392	
10,500.00	6,987.00	3,645.00	3,540.64	63.01	17.80	24.37	11.08	7,976.25	6,162.58	6,105.11	57.47	107.229	
10,600.00	6,987.00	3,645.00	3,540.64	64.36	17.80	24.37	11.08	7,976.25	6,088.57	6,030.63	57.94	105.085	
10,700.00	6,987.00	3,645.00	3,540.64	65.72	17.80	24.37	11.08	7,976.25	6,015.32	5,956.89	58.42	102.963	
10,800.00	6,987.00	3,645.00	3,540.64	67.09	17.80	24.37	11.08	7,976.25	5,942.84	5,883.92	58.92	100.862	
10,900.00	6,987.00	3,645.00	3,540.64	68.47	17.80	24.37	11.08	7,976.25	5,871.18	5,811.74	59.43	98.786	
11,000.00	6,987.00	3,645.00	3,540.64	69.86	17.80	24.37	11.08	7,976.25	5,800.35	5,740.39	59.96	96.735	
11,100.00	6,987.00	3,645.00	3,540.64	71.26	17.80	24.37	11.08	7,976.25	5,730.39	5,669.89	60.50	94.711	
11,200.00	6,987.00	3,645.00	3,540.64	72.67	17.80	24.37	11.08	7,976.25	5,661.33	5,600.27	61.06	92.715	
11,300.00	6,987.00	3,645.00	3,540.64	74.09	17.80	24.37	11.08	7,976.25	5,593.21	5,531.58	61.63	90.749	
11,400.00	6,987.00	3,645.00	3,540.64	75.51	17.80	24.37	11.08	7,976.25	5,526.06	5,463.84	62.22	88.813	
11,500.00	6,987.00	3,645.00	3,540.64	76.94	17.80	24.37	11.08	7,976.25	5,459.92	5,397.09	62.82	86.910	
11,600.00	6,987.00	3,645.00	3,540.64	78.38	17.80	24.37	11.08	7,976.25	5,394.81	5,331.38	63.44	85.041	
11,700.00	6,987.00	3,645.00	3,540.64	79.82	17.80	24.37	11.08	7,976.25	5,330.79	5,266.73	64.07	83.206	
11,800.00	6,987.00	3,645.00	3,540.64	81.27	17.80	24.37	11.08	7,976.25	5,267.89	5,203.18	64.71	81.408	
11,900.00	6,987.00	3,645.00	3,540.64	82.73	17.80	24.37	11.08	7,976.25	5,206.15	5,140.79	65.37	79.647	
12,000.00	6,987.00	3,645.00	3,540.64	84.19	17.80	24.37	11.08	7,976.25	5,145.62	5,079.58	66.03	77.924	
12,100.00	6,987.00	3,645.00	3,540.64	85.66	17.80	24.37	11.08	7,976.25	5,086.32	5,019.61	66.71	76.242	
12,200.00	6,987.00	3,645.00	3,540.64	87.13	17.80	24.37	11.08	7,976.25	5,028.32	4,960.92	67.40	74.600	
12,300.00	6,987.00	3,645.00	3,540.64	88.61	17.80	24.37	11.08	7,976.25	4,971.65	4,903.55	68.10	73.000	
12,400.00	6,987.00	3,645.00	3,540.64	90.09	17.80	24.37	11.08	7,976.25	4,916.37	4,847.55	68.82	71.443	
12,500.00	6,987.00	3,645.00	3,540.64	91.57	17.80	24.37	11.08	7,976.25	4,862.51	4,792.98	69.53	69.930	
12,600.00	6,987.00	3,645.00	3,540.64	93.06	17.80	24.37	11.08	7,976.25	4,810.13	4,739.87	70.26	68.462	
12,700.00	6,987.00	3,645.00	3,540.64	94.55	17.80	24.37	11.08	7,976.25	4,759.27	4,688.28	70.99	67.039	
12,800.00	6,987.00	3,645.00	3,540.64	96.05	17.80	24.37	11.08	7,976.25	4,709.99	4,638.26	71.73	65.663	
12,900.00	6,987.00	3,645.00	3,540.64	97.55	17.80	24.37	11.08	7,976.25	4,662.33	4,589.86	72.47	64.334	
13,000.00	6,987.00	3,645.00	3,540.64	99.05	17.80	24.37	11.08	7,976.25	4,616.35	4,543.14	73.21	63.053	
13,100.00	6,987.00	3,645.00	3,540.64	100.56	17.80	24.37	11.08	7,976.25	4,572.09	4,498.13	73.96	61.820	
13,200.00	6,987.00	3,645.00	3,540.64	102.07	17.80	24.37	11.08	7,976.25	4,529.61	4,454.91	74.70	60.636	
13,300.00	6,987.00	3,645.00	3,540.64	103.58	17.80	24.37	11.08	7,976.25	4,488.95	4,413.51	75.44	59.502	
13,400.00	6,987.00	3,645.00	3,540.64	105.09	17.80	24.37	11.08	7,976.25	4,450.17	4,373.99	76.18	58.417	
13,500.00	6,987.00	3,645.00	3,540.64	106.61	17.80	24.37	11.08	7,976.25	4,413.31	4,336.40	76.91	57.383	
13,600.00	6,987.00	3,645.00	3,540.64	108.13	17.80	24.37	11.08	7,976.25	4,378.43	4,300.80	77.63	56.398	
13,700.00	6,987.00	3,645.00	3,540.64	109.65	17.80	24.37	11.08	7,976.25	4,345.57	4,267.22	78.35	55.465	
13,800.00	6,987.00	3,645.00	3,540.64	111.18	17.80	24.37	11.08	7,976.25	4,314.78	4,235.73	79.05	54.582	
13,900.00	6,987.00	3,645.00	3,540.64	112.71	17.80	24.37	11.08	7,976.25	4,286.10	4,206.36	79.74	53.750	
14,000.00	6,987.00	3,645.00	3,540.64	114.23	17.80	24.37	11.08	7,976.25	4,259.58	4,179.16	80.42	52.968	

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 #692H
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 #692H	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		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)
14,100.00	6,987.00	3,645.00	3,540.64	115.77	17.80	24.37	11.08	7,976.25	4,235.25	4,154.17	81.08	52.237	
14,200.00	6,987.00	3,645.00	3,540.64	117.30	17.80	24.37	11.08	7,976.25	4,213.15	4,131.43	81.72	51.556	
14,300.00	6,987.00	3,645.00	3,540.64	118.83	17.80	24.37	11.08	7,976.25	4,193.33	4,110.99	82.34	50.926	
14,400.00	6,987.00	3,645.00	3,540.64	120.37	17.80	24.37	11.08	7,976.25	4,175.80	4,092.86	82.94	50.344	
14,500.00	6,987.00	3,645.00	3,540.64	121.91	17.80	24.37	11.08	7,976.25	4,160.61	4,077.08	83.53	49.813	
14,600.00	6,987.00	3,645.00	3,540.64	123.45	17.80	24.37	11.08	7,976.25	4,147.77	4,063.69	84.08	49.330	
14,700.00	6,987.00	3,645.00	3,540.64	124.99	17.80	24.37	11.08	7,976.25	4,137.31	4,052.69	84.62	48.895	
14,800.00	6,987.00	3,645.00	3,540.64	126.53	17.80	24.37	11.08	7,976.25	4,129.24	4,044.12	85.13	48.507	
14,900.00	6,987.00	3,645.00	3,540.64	128.08	17.80	24.37	11.08	7,976.25	4,123.59	4,037.98	85.61	48.166	
15,000.00	6,987.00	3,645.00	3,540.64	129.63	17.80	24.37	11.08	7,976.25	4,120.36	4,034.28	86.07	47.871	
15,083.34	6,987.00	3,645.00	3,540.64	130.92	17.80	24.37	11.08	7,976.25	4,119.51	4,033.08	86.44	47.659 CC	
15,100.00	6,987.00	3,645.00	3,540.64	131.17	17.80	24.37	11.08	7,976.25	4,119.55	4,033.04	86.51	47.621 ES	
15,200.00	6,987.00	3,645.00	3,540.64	132.72	17.80	24.37	11.08	7,976.25	4,121.16	4,034.25	86.92	47.415	
15,300.00	6,987.00	3,645.00	3,540.64	134.27	17.80	24.37	11.08	7,976.25	4,125.21	4,037.90	87.30	47.252	
15,400.00	6,987.00	3,645.00	3,540.64	135.83	17.80	24.37	11.08	7,976.25	4,131.66	4,044.00	87.66	47.131	
15,500.00	6,987.00	3,645.00	3,540.64	137.38	17.80	24.37	11.08	7,976.25	4,140.53	4,052.53	88.00	47.051	
15,600.00	6,987.00	3,645.00	3,540.64	138.93	17.80	24.37	11.08	7,976.25	4,151.79	4,063.47	88.31	47.011	
15,700.00	6,987.00	3,645.00	3,540.64	140.49	17.80	24.37	11.08	7,976.25	4,165.41	4,076.81	88.61	47.011 SF	
15,800.00	6,987.00	3,645.00	3,540.64	142.04	17.80	24.37	11.08	7,976.25	4,181.39	4,092.51	88.87	47.048	
15,900.00	6,987.00	3,645.00	3,540.64	143.60	17.80	24.37	11.08	7,976.25	4,199.68	4,110.56	89.12	47.122	
16,000.00	6,987.00	3,645.00	3,540.64	145.16	17.80	24.37	11.08	7,976.25	4,220.27	4,130.92	89.35	47.233	
16,100.00	6,987.00	3,645.00	3,540.64	146.72	17.80	24.37	11.08	7,976.25	4,243.11	4,153.55	89.56	47.379	
16,200.00	6,987.00	3,645.00	3,540.64	148.28	17.80	24.37	11.08	7,976.25	4,268.17	4,178.43	89.74	47.560	
16,300.00	6,987.00	3,645.00	3,540.64	149.84	17.80	24.37	11.08	7,976.25	4,295.42	4,205.51	89.91	47.774	
16,400.00	6,987.00	3,645.00	3,540.64	151.40	17.80	24.37	11.08	7,976.25	4,324.81	4,234.75	90.06	48.021	
16,500.00	6,987.00	3,645.00	3,540.64	152.97	17.80	24.37	11.08	7,976.25	4,356.30	4,266.11	90.19	48.301	
16,600.00	6,987.00	3,645.00	3,540.64	154.53	17.80	24.37	11.08	7,976.25	4,389.83	4,299.53	90.30	48.613	
16,700.00	6,987.00	3,645.00	3,540.64	156.10	17.80	24.37	11.08	7,976.25	4,425.38	4,334.98	90.40	48.956	
16,800.00	6,987.00	3,645.00	3,540.64	157.66	17.80	24.37	11.08	7,976.25	4,462.88	4,372.41	90.47	49.329	
16,900.00	6,987.00	3,645.00	3,540.64	159.23	17.80	24.37	11.08	7,976.25	4,502.29	4,411.76	90.53	49.732	
17,000.00	6,987.00	3,645.00	3,540.64	160.80	17.80	24.37	11.08	7,976.25	4,543.56	4,452.99	90.57	50.165	
17,100.00	6,987.00	3,645.00	3,540.64	162.36	17.80	24.37	11.08	7,976.25	4,586.64	4,496.05	90.60	50.627	
17,200.00	6,987.00	3,645.00	3,540.64	163.93	17.80	24.37	11.08	7,976.25	4,631.48	4,540.88	90.61	51.116	
17,300.00	6,987.00	3,645.00	3,540.64	165.50	17.80	24.37	11.08	7,976.25	4,678.03	4,587.43	90.60	51.634	
17,400.00	6,987.00	3,645.00	3,540.64	167.07	17.80	24.37	11.08	7,976.25	4,726.24	4,635.66	90.58	52.178	
17,500.00	6,987.00	3,645.00	3,540.64	168.64	17.80	24.37	11.08	7,976.25	4,776.05	4,685.51	90.54	52.749	
17,600.00	6,987.00	3,645.00	3,540.64	170.21	17.80	24.37	11.08	7,976.25	4,827.42	4,736.92	90.49	53.345	
17,700.00	6,987.00	3,645.00	3,540.64	171.78	17.80	24.37	11.08	7,976.25	4,880.30	4,789.87	90.43	53.967	
17,800.00	6,987.00	3,645.00	3,540.64	173.36	17.80	24.37	11.08	7,976.25	4,934.64	4,844.28	90.36	54.613	
17,900.00	6,987.00	3,645.00	3,540.64	174.93	17.80	24.37	11.08	7,976.25	4,990.39	4,900.12	90.27	55.283	
18,000.00	6,987.00	3,645.00	3,540.64	176.50	17.80	24.37	11.08	7,976.25	5,047.50	4,957.33	90.17	55.976	
18,100.00	6,987.00	3,645.00	3,540.64	178.08	17.80	24.37	11.08	7,976.25	5,105.94	5,015.88	90.06	56.692	
18,200.00	6,987.00	3,645.00	3,540.64	179.65	17.80	24.37	11.08	7,976.25	5,165.65	5,075.70	89.95	57.430	
18,300.00	6,987.00	3,645.00	3,540.64	181.23	17.80	24.37	11.08	7,976.25	5,226.59	5,136.77	89.82	58.189	
18,400.00	6,987.00	3,645.00	3,540.64	182.80	17.80	24.37	11.08	7,976.25	5,288.73	5,199.04	89.69	58.968	
18,500.00	6,987.00	3,645.00	3,540.64	184.38	17.80	24.37	11.08	7,976.25	5,352.01	5,262.46	89.55	59.767	
18,600.00	6,987.00	3,645.00	3,540.64	185.96	17.80	24.37	11.08	7,976.25	5,416.39	5,326.99	89.40	60.586	
18,700.00	6,987.00	3,645.00	3,540.64	187.53	17.80	24.37	11.08	7,976.25	5,481.84	5,392.60	89.25	61.423	
18,800.00	6,987.00	3,645.00	3,540.64	189.11	17.80	24.37	11.08	7,976.25	5,548.33	5,459.24	89.09	62.279	
18,900.00	6,987.00	3,645.00	3,540.64	190.69	17.80	24.37	11.08	7,976.25	5,615.81	5,526.88	88.93	63.152	
19,000.00	6,987.00	3,645.00	3,540.64	192.27	17.80	24.37	11.08	7,976.25	5,684.24	5,595.48	88.76	64.042	
19,100.00	6,987.00	3,645.00	3,540.64	193.85	17.80	24.37	11.08	7,976.25	5,753.60	5,665.02	88.59	64.948	

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 #692H
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 #692H	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		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		
19,200.00	6,987.00	3,645.00	3,540.64	195.43	17.80	24.37	11.08	7,976.25	5,823.85	5,735.44	88.41	65.870		
19,255.69	6,987.00	3,645.00	3,540.64	196.31	17.80	24.37	11.08	7,976.25	5,863.35	5,775.04	88.32	66.390		
19,300.00	6,987.00	3,645.00	3,540.64	197.01	17.80	24.37	11.08	7,976.25	5,894.97	5,806.73	88.24	66.807		
19,400.00	6,987.00	3,645.00	3,540.64	198.59	17.80	24.37	11.08	7,976.25	5,966.90	5,878.84	88.06	67.759		
19,468.80	6,987.00	3,645.00	3,540.64	199.49	17.80	24.37	11.08	7,976.25	6,016.87	5,929.02	87.85	68.491		

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 #692H
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 #692H	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		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	140.63	-116.87	95.88	155.39				
100.00	100.00	64.00	64.00	0.25	1.14	140.63	-116.87	95.88	151.17	149.78	1.39	109.062	
197.63	197.63	161.63	161.63	0.60	2.90	140.61	-116.76	95.88	151.08	147.58	3.50	43.214	
200.00	200.00	163.99	163.99	0.61	2.94	140.61	-116.76	95.88	151.08	147.53	3.55	42.592	
300.00	300.00	264.00	264.00	0.97	4.74	140.63	-116.87	95.88	151.17	145.46	5.71	26.474	
400.00	400.00	364.00	364.00	1.33	6.69	140.63	-116.87	95.88	151.17	143.15	8.02	18.854	
500.00	500.00	464.00	464.00	1.68	8.64	140.63	-116.87	95.88	151.17	140.84	10.33	14.640	
539.74	539.74	503.71	503.70	1.83	9.42	140.51	-116.38	95.88	150.79	139.54	11.24	13.412 CC	
600.00	600.00	563.84	563.83	2.04	10.59	140.53	-116.43	95.88	150.83	138.20	12.63	11.941	
700.00	700.00	663.62	663.61	2.40	12.53	140.59	-116.67	95.88	151.01	136.08	14.93	10.112	
800.00	799.98	764.02	763.98	2.76	14.56	147.36	-116.87	95.88	152.63	135.31	17.32	8.811 ES	
900.00	899.84	863.88	863.84	3.12	16.66	148.35	-116.87	95.88	157.07	137.29	19.78	7.942	
1,000.00	999.45	963.00	962.95	3.48	18.74	149.73	-116.26	95.88	164.07	141.85	22.22	7.385	
1,100.00	1,098.70	1,062.80	1,062.70	3.85	20.82	151.76	-116.87	95.88	175.21	150.55	24.67	7.103	
1,153.80	1,151.90	1,116.00	1,115.90	4.04	21.87	152.88	-116.87	95.88	182.30	156.39	25.91	7.036	
1,200.00	1,197.53	1,161.62	1,161.53	4.21	22.77	153.88	-116.87	95.88	188.84	161.86	26.98	7.000	
1,300.00	1,296.27	1,260.37	1,260.27	4.59	24.72	155.84	-116.87	95.88	203.15	173.87	29.28	6.937	
1,400.00	1,395.02	1,359.12	1,359.02	4.97	26.66	157.54	-116.87	95.88	217.67	186.08	31.59	6.890	
1,500.00	1,493.77	1,457.68	1,457.57	5.36	28.60	158.84	-115.31	95.88	230.96	197.07	33.90	6.814	
1,600.00	1,592.52	1,555.91	1,555.79	5.74	30.54	160.18	-115.52	95.88	245.95	209.76	36.20	6.795	
1,700.00	1,691.27	1,654.06	1,653.94	6.14	32.47	161.39	-115.96	95.88	261.27	222.78	38.49	6.787	
1,800.00	1,790.01	1,752.15	1,752.02	6.53	34.40	162.48	-116.63	95.88	276.90	236.11	40.79	6.789	
1,900.00	1,888.76	1,852.92	1,852.76	6.92	36.29	163.45	-116.87	95.88	292.21	249.17	43.04	6.789	
2,000.00	1,987.51	1,951.67	1,951.51	7.32	38.10	164.29	-116.87	95.88	307.38	262.16	45.22	6.797	
2,100.00	2,086.26	2,050.12	2,049.95	7.72	39.91	165.01	-116.41	95.88	322.18	274.79	47.39	6.798	
2,200.00	2,185.01	2,148.23	2,148.07	8.11	41.70	165.71	-116.61	95.88	337.64	288.08	49.56	6.813	
2,300.00	2,283.75	2,247.93	2,247.75	8.51	43.52	166.36	-116.87	95.88	353.20	301.46	51.74	6.826	
2,400.00	2,382.50	2,346.68	2,346.50	8.91	45.27	166.94	-116.87	95.88	368.56	314.70	53.86	6.842	
2,500.00	2,481.25	2,445.43	2,445.25	9.31	47.03	167.47	-116.87	95.88	383.95	327.97	55.99	6.858	
2,600.00	2,580.00	2,544.18	2,544.00	9.71	48.78	167.96	-116.87	95.88	399.38	341.26	58.11	6.872	
2,700.00	2,678.75	2,642.65	2,642.47	10.11	50.54	168.38	-116.09	95.88	414.09	353.85	60.23	6.875	
2,800.00	2,777.49	2,740.91	2,740.73	10.52	52.28	168.81	-116.21	95.88	429.68	367.33	62.35	6.892	
2,900.00	2,876.24	2,839.14	2,838.95	10.92	54.03	169.21	-116.46	95.88	445.40	380.94	64.46	6.910	
3,000.00	2,974.99	2,937.33	2,937.14	11.32	55.78	169.59	-116.81	95.88	461.26	394.68	66.58	6.928	
3,100.00	3,073.74	3,037.93	3,037.74	11.72	57.57	169.94	-116.87	95.88	476.83	408.09	68.75	6.936	
3,200.00	3,172.49	3,136.68	3,136.49	12.13	59.34	170.26	-116.87	95.88	492.38	421.50	70.88	6.947	
3,300.00	3,271.23	3,235.27	3,235.08	12.53	61.10	170.55	-116.60	95.88	507.68	434.67	73.01	6.953	
3,400.00	3,369.98	3,333.58	3,333.39	12.93	62.86	170.84	-116.67	95.88	523.33	448.19	75.14	6.965	
3,500.00	3,468.73	3,431.87	3,431.67	13.34	64.61	171.11	-116.83	95.88	539.06	461.80	77.26	6.977	
3,600.00	3,567.48	3,531.68	3,531.48	13.74	66.64	171.36	-116.87	95.88	554.69	475.02	79.67	6.963	
3,700.00	3,666.23	3,630.43	3,630.23	14.14	68.70	171.60	-116.87	95.88	570.29	488.20	82.10	6.947	
3,800.00	3,764.97	3,729.18	3,728.97	14.55	70.76	171.83	-116.87	95.88	585.91	501.38	84.53	6.932	
3,900.00	3,863.72	3,827.93	3,827.72	14.95	72.82	172.04	-116.87	95.88	601.53	514.58	86.96	6.918	
4,000.00	3,962.47	3,926.14	3,925.93	15.36	74.87	172.22	-116.04	95.88	616.36	526.99	89.37	6.897	
4,100.00	4,061.22	4,024.21	4,024.00	15.76	76.92	172.42	-116.18	95.88	632.13	540.35	91.79	6.887	
4,200.00	4,159.97	4,122.25	4,122.04	16.17	78.96	172.61	-116.43	95.88	648.02	553.82	94.20	6.879	
4,300.00	4,258.71	4,220.27	4,220.05	16.57	81.00	172.79	-116.78	95.88	664.02	567.40	96.61	6.873	
4,400.00	4,357.46	4,321.80	4,321.46	16.98	83.35	172.96	-116.87	95.88	679.75	580.42	99.33	6.843	
4,500.00	4,456.21	4,414.70	4,414.34	17.38	85.54	173.10	-116.48	95.88	695.06	593.19	101.87	6.823	
4,600.00	4,554.96	4,519.37	4,518.96	17.79	88.17	173.27	-116.87	95.88	711.07	606.18	104.89	6.779	
4,700.00	4,653.71	4,616.07	4,615.65	18.19	90.67	173.40	-116.02	95.88	725.92	618.16	107.76	6.736	
4,800.00	4,752.45	4,708.39	4,707.96	18.60	93.07	173.54	-116.70	95.88	742.31	631.80	110.51	6.717	

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 #692H
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 #692H	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		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)	Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,900.00	4,851.20	4,815.76	4,815.20	19.00	95.88	173.69	-116.87	95.88	758.10	644.38	113.72	6.666	
5,000.00	4,949.95	4,902.64	4,902.04	19.41	98.17	173.80	-116.52	95.88	773.54	657.21	116.33	6.649	
5,100.00	5,048.70	5,013.36	5,012.70	19.81	100.96	173.94	-116.87	95.88	789.47	669.93	119.54	6.604	
5,200.00	5,147.45	5,112.19	5,111.45	20.22	103.43	174.06	-116.87	95.88	805.16	682.78	122.38	6.579	
5,300.00	5,246.19	5,210.77	5,210.02	20.62	105.83	174.16	-116.10	95.88	820.10	694.95	125.15	6.553	
5,400.00	5,344.94	5,298.66	5,297.89	21.03	107.97	174.27	-116.70	95.88	836.46	708.84	127.62	6.554	
5,455.76	5,400.00	5,364.81	5,364.00	21.25	109.45	174.34	-116.87	95.88	845.30	715.95	129.35	6.535	
5,500.00	5,443.72	5,408.53	5,407.72	21.43	110.42	174.40	-116.87	95.88	852.08	721.60	130.48	6.530	
5,600.00	5,542.71	5,494.00	5,493.16	21.83	112.30	174.49	-116.87	95.88	866.27	733.59	132.68	6.529 SF	
5,700.00	5,641.93	5,494.00	5,493.16	22.22	112.30	174.51	-116.87	95.88	885.74	753.97	131.77	6.722	
5,800.00	5,741.36	5,494.00	5,493.16	22.60	112.30	174.54	-116.87	95.88	914.14	784.70	129.44	7.062	
5,900.00	5,840.96	5,494.00	5,493.16	22.97	112.30	174.57	-116.87	95.88	950.66	824.66	126.00	7.545	
6,000.00	5,940.70	5,494.00	5,493.16	23.33	112.30	174.62	-116.87	95.88	994.41	872.64	121.77	8.167	
6,100.00	6,040.55	5,494.00	5,493.16	23.68	112.30	174.67	-116.87	95.88	1,044.46	927.42	117.03	8.924	
6,200.00	6,140.48	5,494.00	5,493.16	24.02	112.30	174.74	-116.87	95.88	1,099.93	987.89	112.04	9.817	
6,300.00	6,240.45	5,494.00	5,493.16	24.35	112.30	174.80	-116.87	95.88	1,160.04	1,053.06	106.97	10.844	
6,408.05	6,348.50	5,494.00	5,493.16	24.69	112.30	-5.11	-116.87	95.88	1,229.39	1,127.83	101.55	12.106	
6,450.00	6,390.43	5,494.00	5,493.16	24.82	112.30	98.67	-116.87	95.88	1,257.80	1,158.28	99.52	12.639	
6,500.00	6,440.15	5,494.00	5,493.16	24.99	112.30	97.84	-116.87	95.88	1,293.27	1,196.04	97.23	13.301	
6,550.00	6,489.32	5,494.00	5,493.16	25.16	112.30	94.00	-116.87	95.88	1,330.18	1,235.07	95.11	13.986	
6,600.00	6,537.64	5,494.00	5,493.16	25.34	112.30	89.23	-116.87	95.88	1,368.17	1,275.00	93.17	14.685	
6,650.00	6,584.80	5,494.00	5,493.16	25.52	112.30	83.99	-116.87	95.88	1,406.93	1,315.51	91.43	15.389	
6,700.00	6,630.52	5,494.00	5,493.16	25.71	112.30	78.53	-116.87	95.88	1,446.19	1,356.29	89.90	16.087	
6,750.00	6,674.51	5,494.00	5,493.16	25.89	112.30	73.02	-116.87	95.88	1,485.65	1,397.07	88.59	16.771	
6,800.00	6,716.50	5,494.00	5,493.16	26.08	112.30	67.66	-116.87	95.88	1,525.08	1,437.58	87.50	17.429	
6,850.00	6,756.24	5,494.00	5,493.16	26.28	112.30	62.56	-116.87	95.88	1,564.25	1,477.60	86.65	18.053	
6,900.00	6,793.47	5,494.00	5,493.16	26.48	112.30	57.82	-116.87	95.88	1,602.93	1,516.90	86.03	18.633	
6,950.00	6,827.97	5,494.00	5,493.16	26.69	112.30	53.49	-116.87	95.88	1,640.94	1,555.30	85.63	19.162	
7,000.00	6,859.53	5,494.00	5,493.16	26.91	112.30	49.58	-116.87	95.88	1,678.09	1,592.61	85.47	19.633	
7,050.00	6,887.94	5,494.00	5,493.16	27.14	112.30	46.09	-116.87	95.88	1,714.21	1,628.68	85.53	20.043	
7,100.00	6,913.05	5,494.00	5,493.16	27.38	112.30	43.00	-116.87	95.88	1,749.16	1,663.36	85.80	20.387	
7,150.00	6,934.68	5,494.00	5,493.16	27.64	112.30	40.28	-116.87	95.88	1,782.79	1,696.52	86.27	20.665	
7,200.00	6,952.71	5,494.00	5,493.16	27.92	112.30	37.88	-116.87	95.88	1,814.98	1,728.05	86.94	20.877	
7,250.00	6,967.02	5,494.00	5,493.16	28.21	112.30	35.78	-116.87	95.88	1,845.61	1,757.83	87.78	21.025	
7,300.00	6,977.54	5,494.00	5,493.16	28.52	112.30	33.94	-116.87	95.88	1,874.56	1,785.77	88.79	21.112	
7,350.00	6,984.18	5,494.00	5,493.16	28.83	112.30	32.33	-116.87	95.88	1,901.75	1,811.79	89.95	21.141	
7,400.00	6,986.92	5,494.00	5,493.16	29.16	112.30	30.93	-116.87	95.88	1,927.08	1,835.82	91.25	21.118	
7,409.89	6,987.00	5,494.00	5,493.16	29.23	112.30	30.68	-116.87	95.88	1,931.86	1,840.34	91.52	21.108	
7,500.00	6,987.00	5,494.00	5,493.16	29.85	112.30	30.68	-116.87	95.88	1,976.67	1,882.65	94.02	21.025	
7,600.00	6,987.00	5,494.00	5,493.16	30.61	112.30	30.68	-116.87	95.88	2,029.92	1,933.20	96.72	20.988	
7,700.00	6,987.00	5,494.00	5,493.16	31.41	112.30	30.68	-116.87	95.88	2,086.61	1,987.30	99.31	21.010	
7,800.00	6,987.00	5,494.00	5,493.16	32.27	112.30	30.68	-116.87	95.88	2,146.47	2,044.67	101.79	21.087	
7,900.00	6,987.00	5,494.00	5,493.16	33.17	112.30	30.68	-116.87	95.88	2,209.23	2,105.09	104.13	21.215	
8,000.00	6,987.00	5,494.00	5,493.16	34.12	112.30	30.68	-116.87	95.88	2,274.66	2,168.32	106.34	21.391	
8,100.00	6,987.00	5,494.00	5,493.16	35.10	112.30	30.68	-116.87	95.88	2,342.53	2,234.12	108.40	21.610	
8,200.00	6,987.00	5,494.00	5,493.16	36.12	112.30	30.68	-116.87	95.88	2,412.63	2,302.31	110.33	21.868	
8,300.00	6,987.00	5,494.00	5,493.16	37.17	112.30	30.68	-116.87	95.88	2,484.79	2,372.67	112.12	22.162	
8,314.89	6,987.00	5,494.00	5,493.16	37.33	112.30	30.68	-116.87	95.88	2,495.70	2,383.32	112.38	22.209	
8,400.00	6,987.00	5,494.00	5,493.16	38.25	112.30	33.76	-116.87	95.88	2,557.92	2,444.15	113.77	22.483	
8,500.00	6,987.00	5,494.00	5,493.16	39.35	112.30	37.18	-116.87	95.88	2,630.27	2,515.00	115.26	22.820	
8,600.00	6,987.00	5,494.00	5,493.16	40.45	112.30	40.34	-116.87	95.88	2,701.52	2,584.90	116.62	23.165	
8,700.00	6,987.00	5,494.00	5,493.16	41.56	112.30	43.26	-116.87	95.88	2,771.43	2,653.57	117.86	23.516	

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 #692H
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 #692H	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		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		
8,800.00	6,987.00	5,494.00	5,493.16	42.66	112.30	45.92	-116.87	95.88	2,839.76	2,720.78	118.98	23.867		
8,900.00	6,987.00	5,494.00	5,493.16	43.75	112.30	48.35	-116.87	95.88	2,906.32	2,786.30	120.02	24.216		
9,000.00	6,987.00	5,494.00	5,493.16	44.83	112.30	50.55	-116.87	95.88	2,970.90	2,849.93	120.97	24.560		
9,071.74	6,987.00	5,494.00	5,493.16	45.59	112.30	52.00	-116.87	95.88	3,015.91	2,894.31	121.60	24.802		
9,100.00	6,987.00	5,494.00	5,493.16	45.89	112.30	52.00	-116.87	95.88	3,033.49	2,911.66	121.84	24.898		
9,200.00	6,987.00	5,494.00	5,493.16	46.97	112.30	52.00	-116.87	95.88	3,096.99	2,974.31	122.68	25.244		
9,300.00	6,987.00	5,494.00	5,493.16	48.07	112.30	52.00	-116.87	95.88	3,162.37	3,038.88	123.50	25.607		
9,400.00	6,987.00	5,494.00	5,493.16	49.20	112.30	52.00	-116.87	95.88	3,229.53	3,105.25	124.28	25.986		
9,500.00	6,987.00	5,494.00	5,493.16	50.36	112.30	52.00	-116.87	95.88	3,298.35	3,173.32	125.04	26.379		
9,600.00	6,987.00	5,494.00	5,493.16	51.54	112.30	52.00	-116.87	95.88	3,368.74	3,242.98	125.76	26.786		
9,700.00	6,987.00	5,494.00	5,493.16	52.74	112.30	52.00	-116.87	95.88	3,440.59	3,314.13	126.46	27.207		
9,800.00	6,987.00	5,494.00	5,493.16	53.96	112.30	52.00	-116.87	95.88	3,513.82	3,386.70	127.12	27.641		
9,900.00	6,987.00	5,494.00	5,493.16	55.21	112.30	52.00	-116.87	95.88	3,588.34	3,460.58	127.76	28.087		
10,000.00	6,987.00	5,494.00	5,493.16	56.47	112.30	52.00	-116.87	95.88	3,664.08	3,535.71	128.37	28.543		
10,100.00	6,987.00	5,494.00	5,493.16	57.75	112.30	52.00	-116.87	95.88	3,740.95	3,612.00	128.95	29.011		
10,200.00	6,987.00	5,494.00	5,493.16	59.04	112.30	52.00	-116.87	95.88	3,818.90	3,689.40	129.51	29.488		
10,300.00	6,987.00	5,494.00	5,493.16	60.35	112.30	52.00	-116.87	95.88	3,897.85	3,767.82	130.03	29.975		
10,400.00	6,987.00	5,494.00	5,493.16	61.67	112.30	52.00	-116.87	95.88	3,977.75	3,847.21	130.54	30.471		
10,500.00	6,987.00	5,494.00	5,493.16	63.01	112.30	52.00	-116.87	95.88	4,058.55	3,927.52	131.02	30.976		
10,600.00	6,987.00	5,494.00	5,493.16	64.36	112.30	52.00	-116.87	95.88	4,140.18	4,008.69	131.49	31.488		
10,700.00	6,987.00	5,494.00	5,493.16	65.72	112.30	52.00	-116.87	95.88	4,222.60	4,090.67	131.93	32.007		
10,800.00	6,987.00	5,494.00	5,493.16	67.09	112.30	52.00	-116.87	95.88	4,305.76	4,173.41	132.35	32.534		
10,900.00	6,987.00	5,494.00	5,493.16	68.47	112.30	52.00	-116.87	95.88	4,389.63	4,256.88	132.75	33.067		
11,000.00	6,987.00	5,494.00	5,493.16	69.86	112.30	52.00	-116.87	95.88	4,474.16	4,341.03	133.14	33.606		
11,100.00	6,987.00	5,494.00	5,493.16	71.26	112.30	52.00	-116.87	95.88	4,559.32	4,425.81	133.50	34.151		
11,200.00	6,987.00	5,494.00	5,493.16	72.67	112.30	52.00	-116.87	95.88	4,645.07	4,511.21	133.86	34.702		
11,300.00	6,987.00	5,494.00	5,493.16	74.09	112.30	52.00	-116.87	95.88	4,731.38	4,597.18	134.20	35.257		
11,400.00	6,987.00	5,494.00	5,493.16	75.51	112.30	52.00	-116.87	95.88	4,818.21	4,683.69	134.52	35.817		
11,500.00	6,987.00	5,494.00	5,493.16	76.94	112.30	52.00	-116.87	95.88	4,905.55	4,770.72	134.83	36.382		
11,600.00	6,987.00	5,494.00	5,493.16	78.38	112.30	52.00	-116.87	95.88	4,993.37	4,858.23	135.13	36.951		
11,700.00	6,987.00	5,494.00	5,493.16	79.82	112.30	52.00	-116.87	95.88	5,081.63	4,946.21	135.42	37.525		
11,800.00	6,987.00	5,494.00	5,493.16	81.27	112.30	52.00	-116.87	95.88	5,170.32	5,034.62	135.70	38.101		
11,900.00	6,987.00	5,494.00	5,493.16	82.73	112.30	52.00	-116.87	95.88	5,259.42	5,123.45	135.97	38.682		
12,000.00	6,987.00	5,494.00	5,493.16	84.19	112.30	52.00	-116.87	95.88	5,348.90	5,212.68	136.22	39.266		
12,100.00	6,987.00	5,494.00	5,493.16	85.66	112.30	52.00	-116.87	95.88	5,438.75	5,302.28	136.47	39.853		
12,200.00	6,987.00	5,494.00	5,493.16	87.13	112.30	52.00	-116.87	95.88	5,528.95	5,392.24	136.71	40.442		
12,300.00	6,987.00	5,494.00	5,493.16	88.61	112.30	52.00	-116.87	95.88	5,619.48	5,482.54	136.94	41.035		
12,400.00	6,987.00	5,494.00	5,493.16	90.09	112.30	52.00	-116.87	95.88	5,710.33	5,573.16	137.17	41.630		
12,500.00	6,987.00	5,494.00	5,493.16	91.57	112.30	52.00	-116.87	95.88	5,801.47	5,664.09	137.39	42.228		
12,600.00	6,987.00	5,494.00	5,493.16	93.06	112.30	52.00	-116.87	95.88	5,892.91	5,755.31	137.60	42.827		
12,700.00	6,987.00	5,494.00	5,493.16	94.55	112.30	52.00	-116.87	95.88	5,984.62	5,846.81	137.80	43.430		
12,800.00	6,987.00	5,494.00	5,493.16	96.05	112.30	52.00	-116.87	95.88	6,076.59	5,938.59	138.00	44.034		
12,900.00	6,987.00	5,494.00	5,493.16	97.55	112.30	52.00	-116.87	95.88	6,168.80	6,030.61	138.19	44.639		
13,000.00	6,987.00	5,494.00	5,493.16	99.05	112.30	52.00	-116.87	95.88	6,261.26	6,122.88	138.38	45.247		
13,100.00	6,987.00	5,494.00	5,493.16	100.56	112.30	52.00	-116.87	95.88	6,353.95	6,215.39	138.56	45.856		
13,200.00	6,987.00	5,494.00	5,493.16	102.07	112.30	52.00	-116.87	95.88	6,446.86	6,308.12	138.74	46.467		
13,300.00	6,987.00	5,494.00	5,493.16	103.58	112.30	52.00	-116.87	95.88	6,539.97	6,401.06	138.91	47.080		
13,400.00	6,987.00	5,494.00	5,493.16	105.09	112.30	52.00	-116.87	95.88	6,633.29	6,494.20	139.08	47.693		
13,500.00	6,987.00	5,494.00	5,493.16	106.61	112.30	52.00	-116.87	95.88	6,726.79	6,587.55	139.25	48.308		
13,600.00	6,987.00	5,494.00	5,493.16	108.13	112.30	52.00	-116.87	95.88	6,820.48	6,681.08	139.41	48.924		
13,700.00	6,987.00	5,494.00	5,493.16	109.65	112.30	52.00	-116.87	95.88	6,914.35	6,774.79	139.57	49.542		
13,800.00	6,987.00	5,494.00	5,493.16	111.18	112.30	52.00	-116.87	95.88	7,008.39	6,868.67	139.72	50.160		

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 #692H
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 #692H	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		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		
13,900.00	6,987.00	5,494.00	5,493.16	112.71	112.30	52.00	-116.87	95.88	7,102.59	6,962.72	139.87	50.779		
14,000.00	6,987.00	5,494.00	5,493.16	114.23	112.30	52.00	-116.87	95.88	7,196.95	7,056.93	140.02	51.399		
14,100.00	6,987.00	5,494.00	5,493.16	115.77	112.30	52.00	-116.87	95.88	7,291.46	7,151.29	140.17	52.020		
14,200.00	6,987.00	5,494.00	5,493.16	117.30	112.30	52.00	-116.87	95.88	7,386.11	7,245.80	140.31	52.641		
14,300.00	6,987.00	5,494.00	5,493.16	118.83	112.30	52.00	-116.87	95.88	7,480.90	7,340.45	140.45	53.263		
14,400.00	6,987.00	5,494.00	5,493.16	120.37	112.30	52.00	-116.87	95.88	7,575.82	7,435.24	140.59	53.886		
14,500.00	6,987.00	5,494.00	5,493.16	121.91	112.30	52.00	-116.87	95.88	7,670.88	7,530.15	140.73	54.509		
14,600.00	6,987.00	5,494.00	5,493.16	123.45	112.30	52.00	-116.87	95.88	7,766.06	7,625.20	140.86	55.133		
14,700.00	6,987.00	5,494.00	5,493.16	124.99	112.30	52.00	-116.87	95.88	7,861.36	7,720.36	140.99	55.757		
14,800.00	6,987.00	5,494.00	5,493.16	126.53	112.30	52.00	-116.87	95.88	7,956.77	7,815.65	141.12	56.382		
14,900.00	6,987.00	5,494.00	5,493.16	128.08	112.30	52.00	-116.87	95.88	8,052.29	7,911.04	141.25	57.007		
15,000.00	6,987.00	5,494.00	5,493.16	129.63	112.30	52.00	-116.87	95.88	8,147.93	8,006.55	141.38	57.632		
15,100.00	6,987.00	5,494.00	5,493.16	131.17	112.30	52.00	-116.87	95.88	8,243.66	8,102.16	141.50	58.258		
15,200.00	6,987.00	5,494.00	5,493.16	132.72	112.30	52.00	-116.87	95.88	8,339.50	8,197.87	141.63	58.883		
15,300.00	6,987.00	5,494.00	5,493.16	134.27	112.30	52.00	-116.87	95.88	8,435.43	8,293.68	141.75	59.509		
15,400.00	6,987.00	5,494.00	5,493.16	135.83	112.30	52.00	-116.87	95.88	8,531.46	8,389.59	141.87	60.135		
15,500.00	6,987.00	5,494.00	5,493.16	137.38	112.30	52.00	-116.87	95.88	8,627.57	8,485.58	141.99	60.761		
15,600.00	6,987.00	5,494.00	5,493.16	138.93	112.30	52.00	-116.87	95.88	8,723.78	8,581.67	142.11	61.387		
15,700.00	6,987.00	5,494.00	5,493.16	140.49	112.30	52.00	-116.87	95.88	8,820.07	8,677.84	142.23	62.014		
15,800.00	6,987.00	5,494.00	5,493.16	142.04	112.30	52.00	-116.87	95.88	8,916.44	8,774.09	142.34	62.640		
15,900.00	6,987.00	5,494.00	5,493.16	143.60	112.30	52.00	-116.87	95.88	9,012.89	8,870.42	142.46	63.266		
16,000.00	6,987.00	5,494.00	5,493.16	145.16	112.30	52.00	-116.87	95.88	9,109.41	8,966.84	142.58	63.892		
16,100.00	6,987.00	5,494.00	5,493.16	146.72	112.30	52.00	-116.87	95.88	9,206.01	9,063.32	142.69	64.518		
16,200.00	6,987.00	5,494.00	5,493.16	148.28	112.30	52.00	-116.87	95.88	9,302.68	9,159.88	142.80	65.144		
16,300.00	6,987.00	5,494.00	5,493.16	149.84	112.30	52.00	-116.87	95.88	9,399.42	9,256.51	142.92	65.769		
16,400.00	6,987.00	5,494.00	5,493.16	151.40	112.30	52.00	-116.87	95.88	9,496.23	9,353.20	143.03	66.395		
16,500.00	6,987.00	5,494.00	5,493.16	152.97	112.30	52.00	-116.87	95.88	9,593.11	9,449.97	143.14	67.020		
16,600.00	6,987.00	5,494.00	5,493.16	154.53	112.30	52.00	-116.87	95.88	9,690.04	9,546.80	143.25	67.645		
16,700.00	6,987.00	5,494.00	5,493.16	156.10	112.30	52.00	-116.87	95.88	9,787.04	9,643.68	143.36	68.270		
16,800.00	6,987.00	5,494.00	5,493.16	157.66	112.30	52.00	-116.87	95.88	9,884.10	9,740.63	143.47	68.894		
16,900.00	6,987.00	5,494.00	5,493.16	159.23	112.30	52.00	-116.87	95.88	9,981.22	9,837.64	143.58	69.518		
17,000.00	6,987.00	5,494.00	5,493.16	160.80	112.30	52.00	-116.87	95.88	10,078.39	9,934.71	143.69	70.142		
17,100.00	6,987.00	5,494.00	5,493.16	162.36	112.30	52.00	-116.87	95.88	10,175.62	10,031.83	143.79	70.765		
17,200.00	6,987.00	5,494.00	5,493.16	163.93	112.30	52.00	-116.87	95.88	10,272.90	10,129.00	143.90	71.389		
17,300.00	6,987.00	5,494.00	5,493.16	165.50	112.30	52.00	-116.87	95.88	10,370.24	10,226.23	144.01	72.011		
17,400.00	6,987.00	5,494.00	5,493.16	167.07	112.30	52.00	-116.87	95.88	10,467.62	10,323.50	144.12	72.634		
17,500.00	6,987.00	5,494.00	5,493.16	168.64	112.30	52.00	-116.87	95.88	10,565.05	10,420.83	144.22	73.255		
17,600.00	6,987.00	5,494.00	5,493.16	170.21	112.30	52.00	-116.87	95.88	10,662.53	10,518.20	144.33	73.877		
17,700.00	6,987.00	5,494.00	5,493.16	171.78	112.30	52.00	-116.87	95.88	10,760.06	10,615.62	144.43	74.498		
17,800.00	6,987.00	5,494.00	5,493.16	173.36	112.30	52.00	-116.87	95.88	10,857.63	10,713.09	144.54	75.118		
17,900.00	6,987.00	5,494.00	5,493.16	174.93	112.30	52.00	-116.87	95.88	10,955.25	10,810.60	144.65	75.738		
18,000.00	6,987.00	5,494.00	5,493.16	176.50	112.30	52.00	-116.87	95.88	11,052.90	10,908.15	144.75	76.358		
18,100.00	6,987.00	5,494.00	5,493.16	178.08	112.30	52.00	-116.87	95.88	11,150.60	11,005.75	144.86	76.977		
18,200.00	6,987.00	5,494.00	5,493.16	179.65	112.30	52.00	-116.87	95.88	11,248.34	11,103.38	144.96	77.595		
18,300.00	6,987.00	5,494.00	5,493.16	181.23	112.30	52.00	-116.87	95.88	11,346.12	11,201.05	145.07	78.213		
18,400.00	6,987.00	5,494.00	5,493.16	182.80	112.30	52.00	-116.87	95.88	11,443.94	11,298.77	145.17	78.831		
18,500.00	6,987.00	5,494.00	5,493.16	184.38	112.30	52.00	-116.87	95.88	11,541.79	11,396.52	145.28	79.447		
18,600.00	6,987.00	5,494.00	5,493.16	185.96	112.30	52.00	-116.87	95.88	11,639.68	11,494.30	145.38	80.063		
18,700.00	6,987.00	5,494.00	5,493.16	187.53	112.30	52.00	-116.87	95.88	11,737.61	11,592.13	145.49	80.679		
18,800.00	6,987.00	5,494.00	5,493.16	189.11	112.30	52.00	-116.87	95.88	11,835.57	11,689.98	145.59	81.294		
18,900.00	6,987.00	5,494.00	5,493.16	190.69	112.30	52.00	-116.87	95.88	11,933.57	11,787.87	145.69	81.908		
19,000.00	6,987.00	5,494.00	5,493.16	192.27	112.30	52.00	-116.87	95.88	12,031.60	11,885.80	145.80	82.522		

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		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	Warning	
19,100.00	6,987.00	5,494.00	5,493.16	193.85	112.30	52.00	-116.87	95.88	12,129.66	11,983.75	145.90	83.135		
19,200.00	6,987.00	5,494.00	5,493.16	195.43	112.30	52.00	-116.87	95.88	12,227.75	12,081.74	146.01	83.747		
19,255.69	6,987.00	5,494.00	5,493.16	196.31	112.30	52.00	-116.87	95.88	12,282.39	12,136.33	146.07	84.088		
19,300.00	6,987.00	5,494.00	5,493.16	197.01	112.30	52.00	-116.87	95.88	12,325.87	12,179.76	146.11	84.359		
19,400.00	6,987.00	5,494.00	5,493.16	198.59	112.30	52.00	-116.87	95.88	12,424.02	12,277.81	146.22	84.970		
19,468.80	6,987.00	5,494.00	5,493.16	199.49	112.30	52.00	-116.87	95.88	12,491.57	12,341.45	150.13	83.207		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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													
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	-108.81	-837.98	-2,459.97	2,599.57				
100.00	100.00	34.49	34.49	0.25	0.36	-108.81	-837.99	-2,459.98	2,598.79	2,598.18	0.61	4,246.458	
200.00	200.00	130.28	130.28	0.61	1.37	-108.81	-838.13	-2,460.07	2,598.93	2,596.96	1.97	1,317.341	
300.00	300.00	226.07	226.07	0.97	2.37	-108.82	-838.44	-2,460.27	2,599.23	2,595.90	3.33	779.678	
400.00	400.00	321.81	321.81	1.33	3.19	-108.83	-838.92	-2,460.58	2,599.70	2,595.18	4.51	576.347	
500.00	500.00	633.45	632.27	1.68	3.58	-108.43	-818.23	-2,455.86	2,596.01	2,590.85	5.16	503.335	
600.00	600.00	775.46	771.84	2.04	3.85	-107.91	-792.51	-2,451.60	2,587.28	2,581.61	5.67	456.511	
700.00	700.00	856.00	850.15	2.40	4.04	-107.53	-773.79	-2,450.20	2,578.39	2,572.24	6.15	419.253	
800.00	799.98	936.38	927.66	2.76	4.27	-100.86	-752.52	-2,450.36	2,570.78	2,564.11	6.67	385.327	
900.00	899.84	1,008.06	995.99	3.12	4.50	-100.58	-730.95	-2,452.04	2,564.92	2,557.71	7.21	355.596	
1,000.00	999.45	1,087.03	1,070.36	3.48	4.78	-100.23	-704.62	-2,455.32	2,560.65	2,552.83	7.81	327.719	
1,100.00	1,098.70	1,157.02	1,135.52	3.85	5.03	-99.89	-679.39	-2,459.44	2,558.08	2,549.65	8.43	303.334	
1,153.80	1,151.90	1,188.10	1,164.25	4.04	5.15	-99.73	-667.76	-2,461.74	2,557.56	2,548.80	8.76	292.003	
1,168.21	1,166.14	1,196.08	1,171.63	4.10	5.17	-99.69	-664.80	-2,462.37	2,557.54	2,548.69	8.85	289.130	
1,200.00	1,197.53	1,211.90	1,186.27	4.21	5.23	-99.61	-658.95	-2,463.67	2,557.61	2,548.58	9.03	283.181	
1,300.00	1,296.27	1,378.29	1,340.66	4.59	5.87	-98.78	-598.26	-2,476.33	2,557.92	2,547.75	10.17	251.595	
1,400.00	1,395.02	1,459.47	1,415.18	4.97	6.23	-98.33	-566.51	-2,481.57	2,556.29	2,545.33	10.96	233.135	
1,500.00	1,493.77	1,565.85	1,512.83	5.36	6.70	-97.74	-524.93	-2,488.91	2,555.31	2,543.38	11.92	214.301	
1,600.00	1,592.52	1,695.84	1,630.23	5.74	7.37	-96.92	-469.77	-2,497.16	2,553.09	2,539.99	13.10	194.870	
1,700.00	1,691.27	1,769.00	1,694.95	6.14	7.85	-96.39	-436.12	-2,502.60	2,551.56	2,537.57	13.99	182.390	
1,800.00	1,790.01	1,887.89	1,801.01	6.53	8.66	-95.58	-383.14	-2,511.26	2,550.63	2,535.45	15.19	167.952	
1,900.00	1,888.76	1,968.68	1,873.34	6.92	9.20	-95.04	-347.57	-2,516.71	2,549.63	2,533.50	16.13	158.079	
2,000.00	1,987.51	2,163.66	2,050.24	7.32	10.48	-93.85	-266.22	-2,525.62	2,547.31	2,529.52	17.79	143.188	
2,100.00	2,086.26	2,230.26	2,111.52	7.72	10.89	-93.49	-240.18	-2,527.39	2,543.99	2,525.38	18.60	136.772	
2,200.00	2,185.01	2,313.57	2,188.75	8.11	11.38	-93.07	-209.08	-2,530.23	2,541.86	2,522.37	19.49	130.405	
2,300.00	2,283.75	2,424.24	2,292.30	8.51	12.00	-92.57	-170.18	-2,533.71	2,540.07	2,519.57	20.51	123.854	
2,400.00	2,382.50	2,527.40	2,389.63	8.91	12.54	-92.16	-136.09	-2,536.20	2,538.03	2,516.58	21.45	118.307	
2,500.00	2,481.25	2,623.76	2,481.27	9.31	13.02	-91.82	-106.34	-2,537.84	2,535.73	2,513.40	22.33	113.563	
2,600.00	2,580.00	2,730.50	2,583.55	9.71	13.51	-91.51	-75.88	-2,539.27	2,533.48	2,510.26	23.22	109.119	
2,700.00	2,678.75	2,823.22	2,673.06	10.11	13.90	-91.29	-51.70	-2,540.26	2,531.36	2,507.35	24.01	105.429	
2,800.00	2,777.49	2,917.13	2,764.23	10.52	14.27	-91.12	-29.27	-2,541.68	2,530.00	2,505.22	24.78	102.106	
2,900.00	2,876.24	2,999.00	2,844.30	10.92	14.55	-91.02	-12.20	-2,542.38	2,528.47	2,503.01	25.46	99.305	
3,000.00	2,974.99	3,101.38	2,945.02	11.32	14.85	-90.97	6.11	-2,543.42	2,527.46	2,501.29	26.17	96.594	
3,100.00	3,073.74	3,184.97	3,027.71	11.72	15.06	-90.99	18.31	-2,544.13	2,526.69	2,499.92	26.77	94.375	
3,200.00	3,172.49	3,318.00	3,159.71	12.13	15.35	-91.10	34.79	-2,544.27	2,525.45	2,497.99	27.45	91.989	
3,300.00	3,271.23	3,404.34	3,245.51	12.53	15.53	-91.19	44.40	-2,543.93	2,523.92	2,495.90	28.02	90.070	
3,400.00	3,369.98	3,481.25	3,322.03	12.93	15.70	-91.30	52.13	-2,544.31	2,523.36	2,494.80	28.56	88.353	
3,426.70	3,396.35	3,500.87	3,341.56	13.04	15.75	-91.32	53.98	-2,544.46	2,523.32	2,494.62	28.70	87.922 CC	
3,500.00	3,468.73	3,572.54	3,413.01	13.34	15.93	-91.45	59.53	-2,545.14	2,523.51	2,494.42	29.10	86.733	
3,600.00	3,567.48	3,649.57	3,489.95	13.74	16.15	-91.64	63.33	-2,545.75	2,524.05	2,494.48	29.57	85.362	
3,700.00	3,666.23	3,756.03	3,596.35	14.14	16.43	-91.95	66.41	-2,546.60	2,524.94	2,494.90	30.04	84.056	
3,800.00	3,764.97	3,855.24	3,695.54	14.55	20.75	-92.26	68.40	-2,547.13	2,525.75	2,491.08	34.67	72.841	
3,900.00	3,863.72	3,954.57	3,794.85	14.95	28.31	-92.57	70.36	-2,547.64	2,526.63	2,483.99	42.64	59.252	
4,000.00	3,962.47	4,053.90	3,894.16	15.36	35.87	-92.88	72.30	-2,548.14	2,527.58	2,476.96	50.61	49.941	
4,100.00	4,061.22	4,153.22	3,993.45	15.76	43.43	-93.19	74.22	-2,548.62	2,528.58	2,470.00	58.58	43.165	
4,200.00	4,159.97	4,252.53	4,092.75	16.17	50.99	-93.50	76.11	-2,549.08	2,529.66	2,463.11	66.55	38.012	
4,300.00	4,258.71	4,351.83	4,192.03	16.57	58.55	-93.81	77.97	-2,549.53	2,530.79	2,456.28	74.52	33.963	
4,400.00	4,357.46	4,451.12	4,291.31	16.98	66.11	-94.13	79.80	-2,549.96	2,532.00	2,449.51	82.48	30.697	
4,500.00	4,456.21	4,550.41	4,390.58	17.38	73.67	-94.44	81.61	-2,550.38	2,533.27	2,442.81	90.45	28.007	
4,600.00	4,554.96	4,649.69	4,489.84	17.79	81.22	-94.75	83.40	-2,550.79	2,534.60	2,436.18	98.42	25.754	
4,700.00	4,653.71	4,748.96	4,589.10	18.19	88.78	-95.06	85.15	-2,551.17	2,536.00	2,429.62	106.38	23.839	
4,800.00	4,752.45	4,848.23	4,688.34	18.60	96.34	-95.38	86.88	-2,551.55	2,537.47	2,423.12	114.35	22.191	

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 #692H
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 #692H	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	
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)						
4,900.00	4,851.20	4,947.48	4,787.59	19.00	103.89	-95.69	88.59	-2,551.90	2,539.00	2,416.69	122.31	20.759				
5,000.00	4,949.95	5,046.73	4,886.82	19.41	111.45	-96.00	90.27	-2,552.24	2,540.60	2,410.33	130.27	19.502				
5,100.00	5,048.70	5,145.97	4,986.05	19.81	119.00	-96.31	91.92	-2,552.57	2,542.27	2,404.04	138.23	18.391				
5,200.00	5,147.45	5,245.21	5,085.26	20.22	126.55	-96.63	93.55	-2,552.88	2,544.01	2,397.81	146.19	17.402				
5,300.00	5,246.19	5,344.43	5,184.48	20.62	134.11	-96.94	95.15	-2,553.17	2,545.82	2,391.66	154.16	16.515				
5,400.00	5,344.94	5,443.65	5,283.68	21.03	141.66	-97.26	96.72	-2,553.45	2,547.69	2,385.57	162.12	15.715				
5,455.76	5,400.00	5,498.96	5,338.99	21.25	145.87	-97.43	97.59	-2,553.60	2,548.76	2,382.21	166.55	15.303				
5,500.00	5,443.72	5,542.88	5,382.90	21.43	149.21	-97.58	98.27	-2,553.72	2,549.61	2,379.53	170.07	14.991				
5,600.00	5,542.71	5,642.30	5,482.31	21.83	156.78	-97.87	99.79	-2,553.97	2,551.40	2,373.35	178.04	14.330				
5,700.00	5,641.93	5,741.92	5,581.92	22.22	164.37	-98.13	101.30	-2,554.20	2,552.99	2,366.97	186.01	13.725				
5,800.00	5,741.36	5,841.72	5,681.70	22.60	171.96	-98.35	102.77	-2,554.42	2,554.36	2,360.37	193.99	13.167				
5,900.00	5,840.96	5,941.65	5,781.62	22.97	179.57	-98.52	104.23	-2,554.62	2,555.50	2,353.53	201.97	12.653				
6,000.00	5,940.70	6,041.69	5,881.66	23.33	187.19	-98.66	105.66	-2,554.81	2,556.39	2,346.45	209.95	12.176				
6,100.00	6,040.55	6,141.82	5,981.77	23.68	194.81	-98.76	107.06	-2,554.98	2,557.02	2,339.10	217.92	11.734				
6,200.00	6,140.48	6,242.00	6,081.95	24.02	202.44	-98.81	108.44	-2,555.14	2,557.38	2,331.49	225.89	11.321				
6,300.00	6,240.45	6,342.21	6,182.14	24.35	210.06	-98.83	109.79	-2,555.28	2,557.47	2,323.61	233.86	10.936				
6,408.05	6,348.50	6,450.47	6,290.40	24.69	218.31	81.20	111.22	-2,555.41	2,557.25	2,314.81	242.44	10.548				
6,410.15	6,350.60	6,452.58	6,292.50	24.70	218.47	106.19	111.25	-2,555.42	2,557.25	2,314.64	242.60	10.541				
6,450.00	6,390.43	6,492.44	6,332.37	24.82	220.83	-171.65	111.77	-2,555.46	2,558.44	2,313.35	245.09	10.439	ES			
6,500.00	6,440.15	6,542.23	6,382.14	24.99	223.53	-167.95	112.42	-2,555.52	2,563.34	2,315.38	247.95	10.338				
6,550.00	6,489.32	6,591.48	6,431.39	25.16	226.20	-166.74	113.08	-2,555.58	2,571.99	2,321.20	250.79	10.256				
6,600.00	6,537.64	6,639.89	6,479.80	25.34	228.83	-166.01	113.73	-2,555.64	2,584.35	2,330.77	253.58	10.191				
6,650.00	6,584.80	6,687.18	6,527.08	25.52	231.39	-165.40	114.37	-2,555.69	2,600.35	2,344.03	256.32	10.145				
6,700.00	6,630.52	6,733.04	6,572.94	25.71	233.88	-164.79	115.00	-2,555.75	2,619.88	2,360.90	258.97	10.116				
6,750.00	6,674.51	6,777.19	6,617.09	25.89	236.27	-164.13	115.61	-2,555.81	2,642.82	2,381.29	261.53	10.105	SF			
6,800.00	6,716.50	6,819.37	6,659.26	26.08	238.56	-163.37	116.20	-2,555.86	2,669.06	2,405.08	263.98	10.111				
6,850.00	6,756.24	6,859.31	6,699.20	26.28	240.72	-162.48	116.76	-2,555.91	2,698.42	2,432.12	266.30	10.133				
6,900.00	6,793.47	6,896.76	6,736.65	26.48	242.75	-161.40	117.28	-2,555.96	2,730.73	2,462.25	268.48	10.171				
6,950.00	6,827.97	6,931.50	6,771.38	26.69	244.64	-160.08	117.78	-2,556.01	2,765.80	2,495.30	270.51	10.225				
7,000.00	6,859.53	6,963.31	6,803.19	26.91	246.36	-158.44	118.23	-2,556.05	2,803.42	2,531.06	272.36	10.293				
7,050.00	6,887.94	6,992.00	6,831.87	27.14	247.92	-156.36	118.64	-2,556.09	2,843.36	2,569.32	274.04	10.376				
7,100.00	6,913.05	7,017.38	6,857.25	27.38	249.29	-153.67	119.01	-2,556.12	2,885.38	2,609.84	275.53	10.472				
7,150.00	6,934.68	7,039.31	6,879.18	27.64	250.48	-150.09	119.33	-2,556.15	2,929.22	2,652.39	276.83	10.581				
7,200.00	6,952.71	7,057.64	6,897.50	27.92	251.48	-145.20	119.60	-2,556.18	2,974.62	2,696.70	277.91	10.703				
7,250.00	6,967.02	7,072.26	6,912.12	28.21	252.27	-138.30	119.81	-2,556.20	3,021.29	2,742.50	278.79	10.837				
7,300.00	6,977.54	7,083.08	6,922.94	28.52	252.85	-128.34	119.97	-2,556.21	3,068.96	2,789.51	279.45	10.982				
7,350.00	6,984.18	7,090.04	6,929.90	28.83	253.23	-114.00	120.07	-2,556.22	3,117.33	2,837.44	279.89	11.138				
7,400.00	6,986.92	7,093.08	6,932.95	29.16	253.40	-94.99	120.11	-2,556.23	3,166.10	2,885.99	280.12	11.303				
7,409.89	6,987.00	7,093.22	6,933.09	29.23	253.40	-90.87	120.12	-2,556.23	3,175.77	2,895.64	280.14	11.337				
7,500.00	6,987.00	7,093.77	6,933.64	29.85	253.43	-90.91	120.12	-2,556.23	3,263.93	2,983.67	280.26	11.646				
7,600.00	6,987.00	7,094.39	6,934.25	30.61	253.47	-90.97	120.13	-2,556.23	3,361.89	3,081.49	280.39	11.990				
7,700.00	6,987.00	7,095.00	6,934.86	31.41	253.50	-91.02	120.14	-2,556.23	3,459.96	3,179.43	280.52	12.334				
7,800.00	6,987.00	7,095.61	6,935.48	32.27	253.53	-91.07	120.15	-2,556.23	3,558.14	3,277.49	280.65	12.678				
7,900.00	6,987.00	7,096.23	6,936.09	33.17	253.57	-91.13	120.16	-2,556.23	3,656.41	3,375.64	280.77	13.023				
8,000.00	6,987.00	7,096.84	6,936.71	34.12	253.60	-91.18	120.17	-2,556.23	3,754.78	3,473.88	280.90	13.367				
8,100.00	6,987.00	7,097.46	6,937.32	35.10	253.63	-91.23	120.18	-2,556.23	3,853.23	3,572.22	281.02	13.712				
8,200.00	6,987.00	7,098.07	6,937.93	36.12	253.67	-91.28	120.19	-2,556.23	3,951.76	3,670.63	281.14	14.056				
8,300.00	6,987.00	7,098.68	6,938.55	37.17	253.70	-91.34	120.20	-2,556.24	4,050.36	3,769.11	281.25	14.401				
8,314.89	6,987.00	7,098.78	6,938.64	37.33	253.71	-91.34	120.20	-2,556.24	4,065.05	3,783.78	281.27	14.453				
8,400.00	6,987.00	7,099.26	6,939.13	38.25	253.73	-92.17	120.20	-2,556.24	4,149.39	3,868.03	281.36	14.748				
8,500.00	6,987.00	7,099.75	6,939.61	39.35	253.76	-97.16	120.21	-2,556.24	4,249.15	3,967.72	281.43	15.099				
8,600.00	6,987.00	7,100.14	6,940.00	40.45	253.78	95.78	120.22	-2,556.24	4,349.12	4,067.66	281.46	15.452				

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 #692H
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 #692H	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													
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)			
8,700.00	6,987.00	7,100.42	6,940.29	41.56	253.79	92.09	120.22	-2,556.24	4,448.84	4,167.37	281.47	15.806	
8,800.00	6,987.00	7,100.61	6,940.47	42.66	253.80	91.27	120.22	-2,556.24	4,547.84	4,266.39	281.45	16.159	
8,900.00	6,987.00	7,100.69	6,940.55	43.75	253.81	90.91	120.23	-2,556.24	4,645.70	4,364.30	281.40	16.509	
9,000.00	6,987.00	7,100.67	6,940.53	44.83	253.81	90.71	120.23	-2,556.24	4,742.03	4,460.71	281.32	16.856	
9,071.74	6,987.00	7,100.59	6,940.45	45.59	253.80	90.61	120.22	-2,556.24	4,810.00	4,528.74	281.25	17.102	
9,100.00	6,987.00	7,100.54	6,940.41	45.89	253.80	90.61	120.22	-2,556.24	4,836.57	4,555.35	281.23	17.198	
9,200.00	6,987.00	7,100.40	6,940.26	46.97	253.79	90.60	120.22	-2,556.24	4,930.75	4,649.62	281.13	17.539	
9,300.00	6,987.00	7,100.25	6,940.11	48.07	253.79	90.60	120.22	-2,556.24	5,025.16	4,744.11	281.05	17.880	
9,400.00	6,987.00	7,100.10	6,939.97	49.20	253.78	90.59	120.22	-2,556.24	5,119.78	4,838.81	280.97	18.222	
9,500.00	6,987.00	7,099.95	6,939.82	50.36	253.77	90.59	120.21	-2,556.24	5,214.60	4,933.70	280.90	18.564	
9,600.00	6,987.00	7,099.81	6,939.67	51.54	253.76	90.58	120.21	-2,556.24	5,309.61	5,028.78	280.83	18.907	
9,700.00	6,987.00	7,099.66	6,939.52	52.74	253.75	90.58	120.21	-2,556.24	5,404.80	5,124.03	280.77	19.250	
9,800.00	6,987.00	7,099.51	6,939.38	53.96	253.75	90.57	120.21	-2,556.24	5,500.16	5,219.44	280.72	19.593	
9,900.00	6,987.00	7,099.37	6,939.23	55.21	253.74	90.57	120.21	-2,556.24	5,595.69	5,315.02	280.67	19.937	
10,000.00	6,987.00	7,099.22	6,939.08	56.47	253.73	90.56	120.20	-2,556.24	5,691.36	5,410.74	280.63	20.281	
10,100.00	6,987.00	7,099.07	6,938.93	57.75	253.72	90.56	120.20	-2,556.24	5,787.19	5,506.60	280.59	20.625	
10,200.00	6,987.00	7,098.92	6,938.79	59.04	253.71	90.55	120.20	-2,556.24	5,883.15	5,602.60	280.55	20.970	
10,300.00	6,987.00	7,098.78	6,938.64	60.35	253.71	90.55	120.20	-2,556.24	5,979.24	5,698.72	280.52	21.315	
10,400.00	6,987.00	7,098.63	6,938.49	61.67	253.70	90.54	120.20	-2,556.24	6,075.46	5,794.97	280.49	21.660	
10,500.00	6,987.00	7,098.48	6,938.35	63.01	253.69	90.54	120.19	-2,556.23	6,171.80	5,891.34	280.47	22.006	
10,600.00	6,987.00	7,098.33	6,938.20	64.36	253.68	90.53	120.19	-2,556.23	6,268.26	5,987.81	280.44	22.351	
10,700.00	6,987.00	7,098.19	6,938.05	65.72	253.67	90.53	120.19	-2,556.23	6,364.82	6,084.40	280.43	22.697	
10,800.00	6,987.00	7,098.04	6,937.90	67.09	253.67	90.52	120.19	-2,556.23	6,461.49	6,181.08	280.41	23.043	
10,900.00	6,987.00	7,097.89	6,937.76	68.47	253.66	90.52	120.18	-2,556.23	6,558.26	6,277.86	280.40	23.389	
11,000.00	6,987.00	7,097.75	6,937.61	69.86	253.65	90.51	120.18	-2,556.23	6,655.13	6,374.73	280.39	23.735	
11,100.00	6,987.00	7,097.60	6,937.46	71.26	253.64	90.50	120.18	-2,556.23	6,752.08	6,471.69	280.39	24.081	
11,200.00	6,987.00	7,097.45	6,937.31	72.67	253.63	90.50	120.18	-2,556.23	6,849.13	6,568.74	280.38	24.428	
11,300.00	6,987.00	7,097.30	6,937.17	74.09	253.63	90.49	120.18	-2,556.23	6,946.25	6,665.87	280.38	24.774	
11,400.00	6,987.00	7,097.16	6,937.02	75.51	253.62	90.49	120.17	-2,556.23	7,043.46	6,763.07	280.39	25.121	
11,500.00	6,987.00	7,097.01	6,936.87	76.94	253.61	90.48	120.17	-2,556.23	7,140.75	6,860.35	280.39	25.467	
11,600.00	6,987.00	7,096.86	6,936.73	78.38	253.60	90.48	120.17	-2,556.23	7,238.10	6,957.71	280.40	25.814	
11,700.00	6,987.00	7,096.72	6,936.58	79.82	253.59	90.47	120.17	-2,556.23	7,335.53	7,055.13	280.41	26.160	
11,800.00	6,987.00	7,096.57	6,936.43	81.27	253.59	90.47	120.17	-2,556.23	7,433.03	7,152.62	280.42	26.507	
11,900.00	6,987.00	7,096.42	6,936.29	82.73	253.58	90.46	120.16	-2,556.23	7,530.60	7,250.17	280.43	26.854	
12,000.00	6,987.00	7,096.27	6,936.14	84.19	253.57	90.46	120.16	-2,556.23	7,628.22	7,347.78	280.44	27.200	
12,100.00	6,987.00	7,096.13	6,935.99	85.66	253.56	90.45	120.16	-2,556.23	7,725.91	7,445.45	280.46	27.547	
12,200.00	6,987.00	7,095.98	6,935.84	87.13	253.55	90.45	120.16	-2,556.23	7,823.66	7,543.18	280.48	27.894	
12,300.00	6,987.00	7,095.83	6,935.70	88.61	253.55	90.44	120.15	-2,556.23	7,921.46	7,640.96	280.50	28.240	
12,400.00	6,987.00	7,095.69	6,935.55	90.09	253.54	90.44	120.15	-2,556.23	8,019.32	7,738.79	280.52	28.587	
12,500.00	6,987.00	7,095.54	6,935.40	91.57	253.53	90.43	120.15	-2,556.23	8,117.22	7,836.68	280.55	28.934	
12,600.00	6,987.00	7,095.39	6,935.26	93.06	253.52	90.43	120.15	-2,556.23	8,215.18	7,934.61	280.57	29.280	
12,700.00	6,987.00	7,095.25	6,935.11	94.55	253.51	90.42	120.15	-2,556.23	8,313.19	8,032.59	280.60	29.627	
12,800.00	6,987.00	7,095.10	6,934.96	96.05	253.51	90.42	120.14	-2,556.23	8,411.25	8,130.62	280.63	29.973	
12,900.00	6,987.00	7,094.95	6,934.82	97.55	253.50	90.41	120.14	-2,556.23	8,509.35	8,228.69	280.66	30.319	
13,000.00	6,987.00	7,094.80	6,934.67	99.05	253.49	90.41	120.14	-2,556.23	8,607.49	8,326.80	280.69	30.666	
13,100.00	6,987.00	7,094.66	6,934.52	100.56	253.48	90.40	120.14	-2,556.23	8,705.68	8,424.95	280.72	31.012	
13,200.00	6,987.00	7,094.51	6,934.37	102.07	253.47	90.40	120.13	-2,556.23	8,803.90	8,523.15	280.76	31.358	
13,300.00	6,987.00	7,094.36	6,934.23	103.58	253.47	90.39	120.13	-2,556.23	8,902.17	8,621.38	280.79	31.704	
13,400.00	6,987.00	7,094.22	6,934.08	105.09	253.46	90.39	120.13	-2,556.23	9,000.47	8,719.64	280.83	32.050	
13,500.00	6,987.00	7,094.07	6,933.93	106.61	253.45	90.38	120.13	-2,556.23	9,098.81	8,817.95	280.87	32.396	
13,600.00	6,987.00	7,093.92	6,933.79	108.13	253.44	90.38	120.13	-2,556.23	9,197.19	8,916.29	280.90	32.741	
13,700.00	6,987.00	7,093.78	6,933.64	109.65	253.43	90.37	120.12	-2,556.23	9,295.60	9,014.66	280.95	33.087	

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 #692H
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 #692H	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)			
13,800.00	6,987.00	7,093.63	6,933.49	111.18	253.43	90.37	120.12	-2,556.23	9,394.05	9,113.06	280.99	33.432	
13,900.00	6,987.00	7,093.48	6,933.35	112.71	253.42	90.36	120.12	-2,556.23	9,492.53	9,211.50	281.03	33.778	
14,000.00	6,987.00	7,093.34	6,933.20	114.23	253.41	90.36	120.12	-2,556.23	9,591.03	9,309.96	281.07	34.123	
14,100.00	6,987.00	7,093.19	6,933.05	115.77	253.40	90.35	120.12	-2,556.23	9,689.57	9,408.46	281.12	34.468	
14,200.00	6,987.00	7,093.04	6,932.91	117.30	253.39	90.35	120.11	-2,556.23	9,788.14	9,506.98	281.16	34.813	
14,300.00	6,987.00	7,092.90	6,932.76	118.83	253.39	90.34	120.11	-2,556.23	9,886.74	9,605.53	281.21	35.158	
14,400.00	6,987.00	7,092.75	6,932.61	120.37	253.38	90.34	120.11	-2,556.23	9,985.37	9,704.11	281.26	35.502	
14,500.00	6,987.00	7,092.60	6,932.47	121.91	253.37	90.33	120.11	-2,556.23	10,084.02	9,802.71	281.31	35.847	
14,600.00	6,987.00	7,092.46	6,932.32	123.45	253.36	90.33	120.10	-2,556.23	10,182.70	9,901.34	281.36	36.191	
14,700.00	6,987.00	7,092.31	6,932.17	124.99	253.35	90.32	120.10	-2,556.23	10,281.41	10,000.00	281.41	36.535	
14,800.00	6,987.00	7,092.16	6,932.03	126.53	253.35	90.32	120.10	-2,556.23	10,380.14	10,098.67	281.46	36.879	
14,900.00	6,987.00	7,092.01	6,931.88	128.08	253.34	90.31	120.10	-2,556.23	10,478.89	10,197.37	281.52	37.223	
15,000.00	6,987.00	7,091.87	6,931.73	129.63	253.33	90.30	120.10	-2,556.23	10,577.67	10,296.10	281.57	37.567	
15,100.00	6,987.00	7,091.72	6,931.59	131.17	253.32	90.30	120.09	-2,556.23	10,676.47	10,394.84	281.62	37.910	
15,200.00	6,987.00	7,091.57	6,931.44	132.72	253.31	90.29	120.09	-2,556.23	10,775.29	10,493.61	281.68	38.254	
15,300.00	6,987.00	7,091.43	6,931.29	134.27	253.31	90.29	120.09	-2,556.23	10,874.13	10,592.40	281.74	38.597	
15,400.00	6,987.00	7,091.28	6,931.15	135.83	253.30	90.28	120.09	-2,556.22	10,973.00	10,691.20	281.79	38.940	
15,500.00	6,987.00	7,091.13	6,931.00	137.38	253.29	90.28	120.09	-2,556.22	11,071.88	10,790.03	281.85	39.283	
15,600.00	6,987.00	7,090.99	6,930.85	138.93	253.28	90.27	120.08	-2,556.22	11,170.79	10,888.87	281.91	39.625	
15,700.00	6,987.00	7,090.84	6,930.71	140.49	253.28	90.27	120.08	-2,556.22	11,269.71	10,987.74	281.97	39.968	
15,800.00	6,987.00	7,090.70	6,930.56	142.04	253.27	90.26	120.08	-2,556.22	11,368.65	11,086.62	282.03	40.310	
15,900.00	6,987.00	7,090.55	6,930.41	143.60	253.26	90.26	120.08	-2,556.22	11,467.61	11,185.52	282.09	40.652	
16,000.00	6,987.00	7,090.40	6,930.27	145.16	253.25	90.25	120.07	-2,556.22	11,566.59	11,284.44	282.16	40.994	
16,100.00	6,987.00	7,090.26	6,930.12	146.72	253.24	90.25	120.07	-2,556.22	11,665.59	11,383.37	282.22	41.335	
16,200.00	6,987.00	7,090.11	6,929.97	148.28	253.24	90.24	120.07	-2,556.22	11,764.60	11,482.32	282.28	41.677	
16,300.00	6,987.00	7,089.96	6,929.83	149.84	253.23	90.24	120.07	-2,556.22	11,863.63	11,581.29	282.35	42.018	
16,400.00	6,987.00	7,089.82	6,929.68	151.40	253.22	90.23	120.07	-2,556.22	11,962.68	11,680.27	282.41	42.359	
16,500.00	6,987.00	7,089.67	6,929.53	152.97	253.21	90.23	120.06	-2,556.22	12,061.74	11,779.26	282.48	42.699	
16,600.00	6,987.00	7,089.52	6,929.39	154.53	253.20	90.22	120.06	-2,556.22	12,160.82	11,878.27	282.55	43.040	
16,700.00	6,987.00	7,089.38	6,929.24	156.10	253.20	90.22	120.06	-2,556.22	12,259.91	11,977.30	282.61	43.380	
16,800.00	6,987.00	7,089.23	6,929.09	157.66	253.19	90.21	120.06	-2,556.22	12,359.02	12,076.34	282.68	43.720	
16,900.00	6,987.00	7,089.08	6,928.95	159.23	253.18	90.21	120.06	-2,556.22	12,458.14	12,175.39	282.75	44.060	
17,000.00	6,987.00	7,088.94	6,928.80	160.80	253.17	90.20	120.05	-2,556.22	12,557.27	12,274.45	282.82	44.400	
17,100.00	6,987.00	7,088.79	6,928.65	162.36	253.16	90.20	120.05	-2,556.22	12,656.42	12,373.53	282.89	44.739	
17,200.00	6,987.00	7,088.64	6,928.51	163.93	253.16	90.19	120.05	-2,556.22	12,755.59	12,472.62	282.96	45.079	
17,300.00	6,987.00	7,088.50	6,928.36	165.50	253.15	90.19	120.05	-2,556.22	12,854.76	12,571.73	283.03	45.418	
17,400.00	6,987.00	7,088.35	6,928.22	167.07	253.14	90.18	120.04	-2,556.22	12,953.95	12,670.84	283.11	45.756	
17,500.00	6,987.00	7,088.20	6,928.07	168.64	253.13	90.18	120.04	-2,556.22	13,053.15	12,769.97	283.18	46.095	
17,600.00	6,987.00	7,088.06	6,927.92	170.21	253.12	90.17	120.04	-2,556.22	13,152.36	12,869.11	283.25	46.433	
17,700.00	6,987.00	7,087.91	6,927.78	171.78	253.12	90.17	120.04	-2,556.22	13,251.58	12,968.26	283.33	46.771	
17,800.00	6,987.00	7,087.77	6,927.63	173.36	253.11	90.16	120.04	-2,556.22	13,350.82	13,067.42	283.40	47.109	
17,900.00	6,987.00	7,087.62	6,927.48	174.93	253.10	90.16	120.03	-2,556.22	13,450.07	13,166.59	283.48	47.447	
18,000.00	6,987.00	7,087.47	6,927.34	176.50	253.09	90.15	120.03	-2,556.22	13,549.33	13,265.77	283.55	47.784	
18,100.00	6,987.00	7,087.33	6,927.19	178.08	253.08	90.15	120.03	-2,556.22	13,648.59	13,364.96	283.63	48.121	
18,200.00	6,987.00	7,087.18	6,927.05	179.65	253.08	90.14	120.03	-2,556.22	13,747.87	13,464.17	283.71	48.458	
18,300.00	6,987.00	7,087.03	6,926.90	181.23	253.07	90.14	120.03	-2,556.22	13,847.16	13,563.38	283.79	48.794	
18,400.00	6,987.00	7,086.89	6,926.75	182.80	253.06	90.13	120.02	-2,556.22	13,946.46	13,662.60	283.86	49.131	
18,500.00	6,987.00	7,086.74	6,926.61	184.38	253.05	90.13	120.02	-2,556.22	14,045.77	13,761.83	283.94	49.467	
18,600.00	6,987.00	7,086.60	6,926.46	185.96	253.05	90.12	120.02	-2,556.22	14,145.09	13,861.07	284.02	49.803	
18,700.00	6,987.00	7,086.45	6,926.31	187.53	253.04	90.12	120.02	-2,556.22	14,244.42	13,960.32	284.10	50.138	
18,800.00	6,987.00	7,086.30	6,926.17	189.11	253.03	90.11	120.01	-2,556.22	14,343.76	14,059.58	284.18	50.474	
18,900.00	6,987.00	7,086.16	6,926.02	190.69	253.02	90.11	120.01	-2,556.22	14,443.11	14,158.84	284.26	50.809	

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 #692H
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 #692H	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		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		
19,000.00	6,987.00	7,086.01	6,925.88	192.27	253.01	90.10	120.01	-2,556.22	14,542.46	14,258.12	284.35	51.143		
19,100.00	6,987.00	7,085.86	6,925.73	193.85	253.01	90.10	120.01	-2,556.22	14,641.83	14,357.40	284.43	51.478		
19,200.00	6,987.00	7,085.72	6,925.58	195.43	253.00	90.09	120.01	-2,556.22	14,741.20	14,456.69	284.51	51.812		
19,255.69	6,987.00	7,085.64	6,925.50	196.31	252.99	90.09	120.00	-2,556.22	14,796.55	14,511.99	284.56	51.998		
19,300.00	6,987.00	7,085.57	6,925.44	197.01	252.99	90.09	120.00	-2,556.22	14,840.59	14,555.99	284.59	52.146		
19,400.00	6,987.00	7,085.43	6,925.29	198.59	252.98	90.08	120.00	-2,556.22	14,939.98	14,655.30	284.68	52.480		
19,468.80	6,987.00	7,085.33	6,925.19	199.49	252.98	90.08	120.00	-2,556.22	15,008.37	14,718.83	289.53	51.837		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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		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	429.01	429.00	0.00	9.13	93.70	-398.16	6,156.06	6,168.92				
100.00	100.00	528.53	528.51	0.25	11.25	93.69	-397.06	6,156.06	6,168.85	6,157.35	11.50	536.433	
200.00	200.00	627.22	627.19	0.61	13.35	93.69	-397.35	6,156.06	6,168.87	6,154.91	13.96	441.941	
300.00	300.00	725.91	725.87	0.97	15.45	93.70	-397.96	6,156.06	6,168.91	6,152.49	16.42	375.751	
400.00	400.00	829.09	829.00	1.33	17.65	93.70	-398.16	6,156.06	6,168.92	6,149.95	18.97	325.158	
500.00	500.00	929.09	929.00	1.68	19.77	93.70	-398.16	6,156.06	6,168.92	6,147.46	21.46	287.477	
572.94	572.94	1,002.01	1,001.91	1.95	21.33	93.69	-397.07	6,156.06	6,168.85	6,145.58	23.27	265.074	
600.00	600.00	1,028.69	1,028.59	2.04	21.89	93.69	-397.09	6,156.06	6,168.85	6,144.92	23.94	257.709	
700.00	700.00	1,127.34	1,127.23	2.40	23.99	93.69	-397.36	6,156.06	6,168.87	6,142.48	26.40	233.712	
800.00	799.98	1,225.96	1,225.85	2.76	26.09	100.10	-397.96	6,156.06	6,169.22	6,140.37	28.85	213.823	
900.00	899.84	1,329.00	1,328.84	3.12	28.36	100.13	-398.16	6,156.06	6,170.15	6,138.68	31.47	196.051	
1,000.00	999.45	1,428.62	1,428.45	3.48	30.56	100.18	-398.16	6,156.06	6,171.69	6,137.65	34.04	181.312	
1,100.00	1,098.70	1,527.35	1,527.17	3.85	32.75	100.24	-397.12	6,156.06	6,173.80	6,137.21	36.59	168.725	
1,153.80	1,151.90	1,579.73	1,579.55	4.04	33.91	100.28	-397.24	6,156.06	6,175.24	6,137.29	37.95	162.720	
1,200.00	1,197.53	1,624.63	1,624.45	4.21	34.91	100.35	-397.41	6,156.06	6,176.58	6,137.46	39.12	157.900	
1,300.00	1,296.27	1,721.73	1,721.54	4.59	37.06	100.49	-398.04	6,156.06	6,179.51	6,137.87	41.65	148.383	
1,400.00	1,395.02	1,824.28	1,824.02	4.97	39.41	100.64	-398.16	6,156.06	6,182.45	6,138.07	44.38	139.304	
1,500.00	1,493.77	1,923.03	1,922.77	5.36	41.69	100.78	-398.16	6,156.06	6,185.42	6,138.37	47.05	131.478	
1,600.00	1,592.52	2,021.01	2,020.74	5.74	43.96	100.91	-396.83	6,156.06	6,188.32	6,138.62	49.69	124.527	
1,700.00	1,691.27	2,117.58	2,117.29	6.14	46.19	101.05	-397.18	6,156.06	6,191.39	6,139.07	52.31	118.352	
1,800.00	1,790.01	2,214.02	2,213.73	6.53	48.41	101.20	-397.93	6,156.06	6,194.54	6,139.60	54.93	112.769	
1,900.00	1,888.76	2,318.14	2,317.76	6.92	50.89	101.35	-398.16	6,156.06	6,197.68	6,139.87	57.81	107.212	
2,000.00	1,987.51	2,416.89	2,416.51	7.32	53.27	101.49	-398.16	6,156.06	6,200.84	6,140.26	60.58	102.363	
2,100.00	2,086.26	2,514.95	2,514.55	7.72	55.63	101.62	-396.81	6,156.06	6,203.91	6,140.58	63.33	97.960	
2,200.00	2,185.01	2,611.21	2,610.81	8.11	57.94	101.76	-397.12	6,156.06	6,207.18	6,141.13	66.04	93.988	
2,300.00	2,283.75	2,707.35	2,706.94	8.51	60.26	101.90	-397.84	6,156.06	6,210.52	6,141.77	68.75	90.332	
2,400.00	2,382.50	2,812.03	2,811.50	8.91	62.85	102.05	-398.16	6,156.06	6,213.87	6,142.12	71.74	86.615	
2,500.00	2,481.25	2,910.77	2,910.25	9.31	65.32	102.19	-398.16	6,156.06	6,217.22	6,142.60	74.61	83.324	
2,600.00	2,580.00	3,008.84	3,008.29	9.71	67.78	102.32	-396.54	6,156.06	6,220.44	6,142.97	77.47	80.293	
2,700.00	2,678.75	3,104.23	3,103.67	10.11	70.17	102.46	-396.88	6,156.06	6,223.90	6,143.64	80.26	77.545	
2,800.00	2,777.49	3,199.49	3,198.92	10.52	72.56	102.60	-397.69	6,156.06	6,227.46	6,144.41	83.05	74.986	
2,900.00	2,876.24	3,305.94	3,305.24	10.92	75.37	102.75	-398.16	6,156.06	6,231.01	6,144.76	86.25	72.242	
3,000.00	2,974.99	3,401.96	3,401.25	11.32	77.97	102.88	-397.40	6,156.06	6,234.47	6,145.21	89.25	69.851	
3,100.00	3,073.74	3,503.55	3,502.74	11.72	80.74	103.03	-398.16	6,156.06	6,238.14	6,145.71	92.43	67.490	
3,200.00	3,172.49	3,602.30	3,601.49	12.13	83.63	103.17	-398.16	6,156.06	6,241.76	6,146.04	95.72	65.209	
3,300.00	3,271.23	3,701.05	3,700.23	12.53	86.52	103.31	-398.16	6,156.06	6,245.41	6,146.40	99.01	63.080	
3,400.00	3,369.98	3,796.81	3,795.95	12.93	89.32	103.43	-396.09	6,156.06	6,248.85	6,146.64	102.21	61.138	
3,500.00	3,468.73	3,890.35	3,889.47	13.34	92.06	103.57	-396.75	6,156.06	6,252.66	6,147.32	105.34	59.354	
3,600.00	3,567.48	3,997.60	3,996.48	13.74	95.18	103.73	-398.16	6,156.06	6,256.61	6,147.74	108.87	57.471	
3,700.00	3,666.23	4,096.35	4,095.23	14.14	97.77	103.87	-398.16	6,156.06	6,260.42	6,148.55	111.86	55.966	
3,800.00	3,764.97	4,195.09	4,193.97	14.55	100.37	104.01	-398.16	6,156.06	6,264.26	6,149.40	114.86	54.540	
3,900.00	3,863.72	4,290.91	4,289.75	14.95	102.88	104.12	-396.07	6,156.06	6,267.85	6,150.08	117.77	53.219	
4,000.00	3,962.47	4,383.97	4,382.79	15.36	105.33	104.26	-396.69	6,156.06	6,271.86	6,151.24	120.62	51.997	
4,100.00	4,061.22	4,476.86	4,475.65	15.76	107.77	104.40	-397.91	6,156.06	6,276.00	6,152.54	123.46	50.834	
4,200.00	4,159.97	4,590.29	4,588.97	16.17	110.44	104.56	-398.16	6,156.06	6,280.01	6,153.48	126.53	49.631	
4,300.00	4,258.71	4,689.04	4,687.71	16.57	112.73	104.70	-398.16	6,156.06	6,284.04	6,154.82	129.22	48.630	
4,400.00	4,357.46	4,785.94	4,784.60	16.98	114.97	104.82	-396.85	6,156.06	6,287.91	6,156.05	131.86	47.685	
4,500.00	4,456.21	4,880.71	4,879.36	17.38	117.16	104.95	-397.23	6,156.06	6,292.07	6,157.62	134.46	46.796	
4,600.00	4,554.96	4,975.36	4,974.00	17.79	119.35	105.09	-398.01	6,156.06	6,296.34	6,159.29	137.05	45.942	
4,700.00	4,653.71	5,084.15	5,082.71	18.19	121.87	105.24	-398.16	6,156.06	6,300.53	6,160.56	139.97	45.014	
4,800.00	4,752.45	5,182.90	5,181.45	18.60	124.15	105.38	-398.16	6,156.06	6,304.75	6,162.09	142.65	44.196	
4,900.00	4,851.20	5,279.87	5,278.41	19.00	126.40	105.50	-396.83	6,156.06	6,308.78	6,163.48	145.30	43.419	

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 #692H
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 #692H	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	4,949.95	5,374.35	5,372.88	19.41	128.59	105.64	-397.19	6,156.06	6,313.13	6,165.24	147.89	42.689			
5,100.00	5,048.70	5,468.71	5,467.23	19.81	130.77	105.77	-397.94	6,156.06	6,317.58	6,167.11	150.47	41.985			
5,200.00	5,147.45	5,578.01	5,576.45	20.22	133.39	105.93	-398.16	6,156.06	6,321.97	6,168.48	153.49	41.187			
5,300.00	5,246.19	5,676.76	5,675.19	20.62	135.78	106.06	-398.16	6,156.06	6,326.37	6,170.08	156.28	40.480			
5,400.00	5,344.94	5,775.50	5,773.94	21.03	138.17	106.20	-398.16	6,156.06	6,330.80	6,171.73	159.07	39.798			
5,455.76	5,400.00	5,830.56	5,829.00	21.25	139.50	106.27	-398.16	6,156.06	6,333.29	6,172.66	160.63	39.428			
5,500.00	5,443.72	5,874.28	5,872.72	21.43	140.56	106.35	-398.16	6,156.06	6,335.22	6,173.36	161.86	39.140			
5,600.00	5,542.71	5,973.27	5,971.71	21.83	142.95	106.51	-398.16	6,156.06	6,339.26	6,174.61	164.65	38.502			
5,700.00	5,641.93	5,990.00	5,988.29	22.22	143.36	106.57	-398.16	6,156.06	6,343.37	6,177.95	165.42	38.348			
5,800.00	5,741.36	5,990.00	5,988.29	22.60	143.36	106.62	-398.16	6,156.06	6,348.53	6,182.80	165.73	38.306			
5,900.00	5,840.96	5,990.00	5,988.29	22.97	143.36	106.68	-398.16	6,156.06	6,354.76	6,188.77	166.00	38.283			
6,000.00	5,940.70	5,990.00	5,988.29	23.33	143.36	106.75	-398.16	6,156.06	6,362.06	6,195.85	166.21	38.277			
6,100.00	6,040.55	5,990.00	5,988.29	23.68	143.36	106.83	-398.16	6,156.06	6,370.42	6,204.04	166.38	38.288			
6,200.00	6,140.48	5,990.00	5,988.29	24.02	143.36	106.92	-398.16	6,156.06	6,379.84	6,213.33	166.51	38.316			
6,300.00	6,240.45	5,990.00	5,988.29	24.35	143.36	107.02	-398.16	6,156.06	6,390.30	6,223.72	166.58	38.362			
6,408.05	6,348.50	5,990.00	5,988.29	24.69	143.36	-72.86	-398.16	6,156.06	6,402.77	6,236.17	166.60	38.433			
6,450.00	6,390.43	5,990.00	5,988.29	24.82	143.36	34.00	-398.16	6,156.06	6,406.94	6,240.35	166.59	38.460			
6,500.00	6,440.15	5,990.00	5,988.29	24.99	143.36	37.45	-398.16	6,156.06	6,409.53	6,242.94	166.59	38.476			
6,550.00	6,489.32	5,990.00	5,988.29	25.16	143.36	38.48	-398.16	6,156.06	6,409.51	6,242.93	166.58	38.476			
6,600.00	6,537.64	5,990.00	5,988.29	25.34	143.36	39.11	-398.16	6,156.06	6,406.90	6,240.31	166.58	38.461			
6,650.00	6,584.80	5,990.00	5,988.29	25.52	143.36	39.70	-398.16	6,156.06	6,401.69	6,235.11	166.58	38.430			
6,700.00	6,630.52	5,990.00	5,988.29	25.71	143.36	40.35	-398.16	6,156.06	6,393.93	6,227.35	166.58	38.384			
6,750.00	6,674.51	5,990.00	5,988.29	25.89	143.36	41.10	-398.16	6,156.06	6,383.64	6,217.06	166.58	38.322			
6,800.00	6,716.50	5,990.00	5,988.29	26.08	143.36	41.99	-398.16	6,156.06	6,370.87	6,204.29	166.58	38.245			
6,850.00	6,756.24	5,990.00	5,988.29	26.28	143.36	43.04	-398.16	6,156.06	6,355.70	6,189.11	166.59	38.152			
6,900.00	6,793.47	5,990.00	5,988.29	26.48	143.36	44.27	-398.16	6,156.06	6,338.20	6,171.60	166.60	38.044			
6,950.00	6,827.97	5,990.00	5,988.29	26.69	143.36	45.70	-398.16	6,156.06	6,318.46	6,151.83	166.62	37.921			
7,000.00	6,859.53	5,990.00	5,988.29	26.91	143.36	47.33	-398.16	6,156.06	6,296.57	6,129.92	166.65	37.783			
7,050.00	6,887.94	5,990.00	5,988.29	27.14	143.36	49.21	-398.16	6,156.06	6,272.65	6,105.96	166.70	37.629			
7,100.00	6,913.05	5,990.00	5,988.29	27.38	143.36	51.33	-398.16	6,156.06	6,246.84	6,080.08	166.75	37.461			
7,150.00	6,934.68	5,990.00	5,988.29	27.64	143.36	53.72	-398.16	6,156.06	6,219.25	6,052.42	166.83	37.279			
7,200.00	6,952.71	5,990.00	5,988.29	27.92	143.36	56.41	-398.16	6,156.06	6,190.05	6,023.13	166.92	37.083			
7,250.00	6,967.02	5,990.00	5,988.29	28.21	143.36	59.39	-398.16	6,156.06	6,159.39	5,992.35	167.04	36.874			
7,300.00	6,977.54	5,990.00	5,988.29	28.52	143.36	62.68	-398.16	6,156.06	6,127.43	5,960.26	167.18	36.652			
7,350.00	6,984.18	5,990.00	5,988.29	28.83	143.36	66.28	-398.16	6,156.06	6,094.37	5,927.03	167.34	36.419			
7,400.00	6,986.92	5,990.00	5,988.29	29.16	143.36	70.17	-398.16	6,156.06	6,060.37	5,892.85	167.53	36.175			
7,409.89	6,987.00	5,990.00	5,988.29	29.23	143.36	70.97	-398.16	6,156.06	6,053.56	5,885.99	167.57	36.126			
7,500.00	6,987.00	5,990.00	5,988.29	29.85	143.36	70.97	-398.16	6,156.06	5,991.68	5,823.72	167.95	35.675			
7,600.00	6,987.00	5,990.00	5,988.29	30.61	143.36	70.97	-398.16	6,156.06	5,923.85	5,755.43	168.42	35.173			
7,700.00	6,987.00	5,990.00	5,988.29	31.41	143.36	70.97	-398.16	6,156.06	5,856.95	5,688.03	168.92	34.672			
7,800.00	6,987.00	5,990.00	5,988.29	32.27	143.36	70.97	-398.16	6,156.06	5,791.00	5,621.53	169.47	34.171			
7,900.00	6,987.00	5,990.00	5,988.29	33.17	143.36	70.97	-398.16	6,156.06	5,726.04	5,555.98	170.06	33.670			
8,000.00	6,987.00	5,990.00	5,988.29	34.12	143.36	70.97	-398.16	6,156.06	5,662.10	5,491.41	170.69	33.172			
8,100.00	6,987.00	5,990.00	5,988.29	35.10	143.36	70.97	-398.16	6,156.06	5,599.22	5,427.86	171.36	32.675			
8,200.00	6,987.00	5,990.00	5,988.29	36.12	143.36	70.97	-398.16	6,156.06	5,537.43	5,365.35	172.07	32.181			
8,300.00	6,987.00	5,990.00	5,988.29	37.17	143.36	70.97	-398.16	6,156.06	5,476.76	5,303.94	172.82	31.690			
8,314.89	6,987.00	5,990.00	5,988.29	37.33	143.36	70.97	-398.16	6,156.06	5,467.83	5,294.89	172.94	31.617			
8,400.00	6,987.00	5,990.00	5,988.29	38.25	143.36	70.08	-398.16	6,156.06	5,415.37	5,241.77	173.59	31.196			
8,500.00	6,987.00	5,990.00	5,988.29	39.35	143.36	68.87	-398.16	6,156.06	5,350.06	5,175.72	174.34	30.687			
8,600.00	6,987.00	5,990.00	5,988.29	40.45	143.36	67.44	-398.16	6,156.06	5,280.95	5,105.89	175.06	30.167			
8,700.00	6,987.00	5,990.00	5,988.29	41.56	143.36	65.76	-398.16	6,156.06	5,208.24	5,032.51	175.73	29.638			
8,800.00	6,987.00	5,990.00	5,988.29	42.66	143.36	63.76	-398.16	6,156.06	5,132.14	4,955.79	176.35	29.102			

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 #692H
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 #692H	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	Warning		
8,900.00	6,987.00	5,990.00	5,988.29	43.75	143.36	61.36	-398.16	6,156.06	5,052.88	4,875.96	176.91	28.562			
9,000.00	6,987.00	5,990.00	5,988.29	44.83	143.36	58.47	-398.16	6,156.06	4,970.68	4,793.28	177.40	28.019			
9,071.74	6,987.00	5,990.00	5,988.29	45.59	143.36	56.02	-398.16	6,156.06	4,910.07	4,732.36	177.71	27.630			
9,100.00	6,987.00	5,990.00	5,988.29	45.89	143.36	56.02	-398.16	6,156.06	4,885.95	4,708.13	177.82	27.477			
9,200.00	6,987.00	5,990.00	5,988.29	46.97	143.36	56.02	-398.16	6,156.06	4,800.99	4,622.77	178.23	26.938			
9,300.00	6,987.00	5,990.00	5,988.29	48.07	143.36	56.02	-398.16	6,156.06	4,716.62	4,537.97	178.65	26.402			
9,400.00	6,987.00	5,990.00	5,988.29	49.20	143.36	56.02	-398.16	6,156.06	4,632.87	4,453.78	179.08	25.870			
9,500.00	6,987.00	5,990.00	5,988.29	50.36	143.36	56.02	-398.16	6,156.06	4,549.77	4,370.24	179.54	25.342			
9,600.00	6,987.00	5,990.00	5,988.29	51.54	143.36	56.02	-398.16	6,156.06	4,467.37	4,287.36	180.01	24.817			
9,700.00	6,987.00	5,990.00	5,988.29	52.74	143.36	56.02	-398.16	6,156.06	4,385.70	4,205.20	180.50	24.298			
9,800.00	6,987.00	5,990.00	5,988.29	53.96	143.36	56.02	-398.16	6,156.06	4,304.81	4,123.80	181.01	23.783			
9,900.00	6,987.00	5,990.00	5,988.29	55.21	143.36	56.02	-398.16	6,156.06	4,224.73	4,043.20	181.53	23.273			
10,000.00	6,987.00	5,990.00	5,988.29	56.47	143.36	56.02	-398.16	6,156.06	4,145.52	3,963.44	182.08	22.768			
10,100.00	6,987.00	5,990.00	5,988.29	57.75	143.36	56.02	-398.16	6,156.06	4,067.22	3,884.58	182.64	22.269			
10,200.00	6,987.00	5,990.00	5,988.29	59.04	143.36	56.02	-398.16	6,156.06	3,989.89	3,806.67	183.22	21.777			
10,300.00	6,987.00	5,990.00	5,988.29	60.35	143.36	56.02	-398.16	6,156.06	3,913.59	3,729.78	183.82	21.290			
10,400.00	6,987.00	5,990.00	5,988.29	61.67	143.36	56.02	-398.16	6,156.06	3,838.39	3,653.95	184.44	20.811			
10,500.00	6,987.00	5,990.00	5,988.29	63.01	143.36	56.02	-398.16	6,156.06	3,764.33	3,579.26	185.07	20.340			
10,600.00	6,987.00	5,990.00	5,988.29	64.36	143.36	56.02	-398.16	6,156.06	3,691.50	3,505.77	185.73	19.876			
10,700.00	6,987.00	5,990.00	5,988.29	65.72	143.36	56.02	-398.16	6,156.06	3,619.96	3,433.56	186.40	19.420			
10,800.00	6,987.00	5,990.00	5,988.29	67.09	143.36	56.02	-398.16	6,156.06	3,549.80	3,362.71	187.09	18.974			
10,900.00	6,987.00	5,990.00	5,988.29	68.47	143.36	56.02	-398.16	6,156.06	3,481.10	3,293.31	187.80	18.537			
11,000.00	6,987.00	5,990.00	5,988.29	69.86	143.36	56.02	-398.16	6,156.06	3,413.95	3,225.43	188.52	18.109			
11,100.00	6,987.00	5,990.00	5,988.29	71.26	143.36	56.02	-398.16	6,156.06	3,348.44	3,159.18	189.25	17.693			
11,200.00	6,987.00	5,990.00	5,988.29	72.67	143.36	56.02	-398.16	6,156.06	3,284.66	3,094.66	190.00	17.287			
11,300.00	6,987.00	5,990.00	5,988.29	74.09	143.36	56.02	-398.16	6,156.06	3,222.73	3,031.96	190.76	16.894			
11,400.00	6,987.00	5,990.00	5,988.29	75.51	143.36	56.02	-398.16	6,156.06	3,162.74	2,971.21	191.54	16.513			
11,500.00	6,987.00	5,990.00	5,988.29	76.94	143.36	56.02	-398.16	6,156.06	3,104.82	2,912.50	192.32	16.144			
11,600.00	6,987.00	5,990.00	5,988.29	78.38	143.36	56.02	-398.16	6,156.06	3,049.08	2,855.98	193.10	15.790			
11,700.00	6,987.00	5,990.00	5,988.29	79.82	143.36	56.02	-398.16	6,156.06	2,995.64	2,801.74	193.90	15.450			
11,800.00	6,987.00	5,990.00	5,988.29	81.27	143.36	56.02	-398.16	6,156.06	2,944.63	2,749.93	194.69	15.124			
11,900.00	6,987.00	5,990.00	5,988.29	82.73	143.36	56.02	-398.16	6,156.06	2,896.17	2,700.68	195.49	14.815			
12,000.00	6,987.00	5,990.00	5,988.29	84.19	143.36	56.02	-398.16	6,156.06	2,850.40	2,654.11	196.29	14.522			
12,100.00	6,987.00	5,990.00	5,988.29	85.66	143.36	56.02	-398.16	6,156.06	2,807.45	2,610.37	197.08	14.245			
12,200.00	6,987.00	5,990.00	5,988.29	87.13	143.36	56.02	-398.16	6,156.06	2,767.44	2,569.58	197.86	13.987			
12,300.00	6,987.00	5,990.00	5,988.29	88.61	143.36	56.02	-398.16	6,156.06	2,730.51	2,531.87	198.64	13.746			
12,400.00	6,987.00	5,990.00	5,988.29	90.09	143.36	56.02	-398.16	6,156.06	2,696.79	2,497.38	199.41	13.524			
12,500.00	6,987.00	5,990.00	5,988.29	91.57	143.36	56.02	-398.16	6,156.06	2,666.39	2,466.23	200.16	13.321			
12,600.00	6,987.00	5,990.00	5,988.29	93.06	143.36	56.02	-398.16	6,156.06	2,639.44	2,438.54	200.90	13.138			
12,700.00	6,987.00	5,990.00	5,988.29	94.55	143.36	56.02	-398.16	6,156.06	2,616.03	2,414.41	201.61	12.975			
12,800.00	6,987.00	5,990.00	5,988.29	96.05	143.36	56.02	-398.16	6,156.06	2,596.26	2,393.95	202.31	12.833			
12,900.00	6,987.00	5,990.00	5,988.29	97.55	143.36	56.02	-398.16	6,156.06	2,580.22	2,377.24	202.98	12.711			
13,000.00	6,987.00	5,990.00	5,988.29	99.05	143.36	56.02	-398.16	6,156.06	2,567.98	2,364.35	203.63	12.611			
13,100.00	6,987.00	5,990.00	5,988.29	100.56	143.36	56.02	-398.16	6,156.06	2,559.59	2,355.34	204.25	12.531			
13,200.00	6,987.00	5,990.00	5,988.29	102.07	143.36	56.02	-398.16	6,156.06	2,555.09	2,350.24	204.84	12.473			
13,265.13	6,987.00	5,990.00	5,988.29	103.05	143.36	56.02	-398.16	6,156.06	2,554.26	2,349.05	205.21	12.447	CC, ES		
13,300.00	6,987.00	5,990.00	5,988.29	103.58	143.36	56.02	-398.16	6,156.06	2,554.50	2,349.10	205.40	12.437			
13,400.00	6,987.00	5,990.00	5,988.29	105.09	143.36	56.02	-398.16	6,156.06	2,557.82	2,351.90	205.92	12.421	SF		
13,500.00	6,987.00	5,990.00	5,988.29	106.61	143.36	56.02	-398.16	6,156.06	2,565.03	2,358.63	206.40	12.427			
13,600.00	6,987.00	5,990.00	5,988.29	108.13	143.36	56.02	-398.16	6,156.06	2,576.11	2,369.28	206.84	12.455			
13,700.00	6,987.00	5,990.00	5,988.29	109.65	143.36	56.02	-398.16	6,156.06	2,591.01	2,383.78	207.24	12.503			
13,800.00	6,987.00	5,990.00	5,988.29	111.18	143.36	56.02	-398.16	6,156.06	2,609.66	2,402.07	207.59	12.571			

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 #692H
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 #692H	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		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	
13,900.00	6,987.00	5,990.00	5,988.29	112.71	143.36	56.02	-398.16	6,156.06	2,631.97	2,424.08	207.89	12.660		
14,000.00	6,987.00	5,990.00	5,988.29	114.23	143.36	56.02	-398.16	6,156.06	2,657.87	2,449.72	208.15	12.769		
14,100.00	6,987.00	5,990.00	5,988.29	115.77	143.36	56.02	-398.16	6,156.06	2,687.24	2,478.88	208.35	12.897		
14,200.00	6,987.00	5,990.00	5,988.29	117.30	143.36	56.02	-398.16	6,156.06	2,719.97	2,511.45	208.51	13.045		
14,300.00	6,987.00	5,990.00	5,988.29	118.83	143.36	56.02	-398.16	6,156.06	2,755.94	2,547.32	208.62	13.210		
14,400.00	6,987.00	5,990.00	5,988.29	120.37	143.36	56.02	-398.16	6,156.06	2,795.02	2,586.34	208.68	13.394		
14,500.00	6,987.00	5,990.00	5,988.29	121.91	143.36	56.02	-398.16	6,156.06	2,837.10	2,628.40	208.70	13.594		
14,600.00	6,987.00	5,990.00	5,988.29	123.45	143.36	56.02	-398.16	6,156.06	2,882.03	2,673.36	208.67	13.811		
14,700.00	6,987.00	5,990.00	5,988.29	124.99	143.36	56.02	-398.16	6,156.06	2,929.69	2,721.09	208.60	14.044		
14,800.00	6,987.00	5,990.00	5,988.29	126.53	143.36	56.02	-398.16	6,156.06	2,979.94	2,771.45	208.50	14.293		
14,900.00	6,987.00	5,990.00	5,988.29	128.08	143.36	56.02	-398.16	6,156.06	3,032.66	2,824.31	208.35	14.555		
15,000.00	6,987.00	5,990.00	5,988.29	129.63	143.36	56.02	-398.16	6,156.06	3,087.72	2,879.54	208.18	14.832		
15,100.00	6,987.00	5,990.00	5,988.29	131.17	143.36	56.02	-398.16	6,156.06	3,144.99	2,937.02	207.97	15.122		
15,200.00	6,987.00	5,990.00	5,988.29	132.72	143.36	56.02	-398.16	6,156.06	3,204.36	2,996.63	207.74	15.425		
15,300.00	6,987.00	5,990.00	5,988.29	134.27	143.36	56.02	-398.16	6,156.06	3,265.72	3,058.24	207.48	15.740		
15,400.00	6,987.00	5,990.00	5,988.29	135.83	143.36	56.02	-398.16	6,156.06	3,328.95	3,121.75	207.20	16.066		
15,500.00	6,987.00	5,990.00	5,988.29	137.38	143.36	56.02	-398.16	6,156.06	3,393.95	3,187.04	206.90	16.403		
15,600.00	6,987.00	5,990.00	5,988.29	138.93	143.36	56.02	-398.16	6,156.06	3,460.61	3,254.02	206.59	16.751		
15,700.00	6,987.00	5,990.00	5,988.29	140.49	143.36	56.02	-398.16	6,156.06	3,528.86	3,322.59	206.27	17.108		
15,800.00	6,987.00	5,990.00	5,988.29	142.04	143.36	56.02	-398.16	6,156.06	3,598.58	3,392.65	205.93	17.474		
15,900.00	6,987.00	5,990.00	5,988.29	143.60	143.36	56.02	-398.16	6,156.06	3,669.71	3,464.12	205.59	17.849		
16,000.00	6,987.00	5,990.00	5,988.29	145.16	143.36	56.02	-398.16	6,156.06	3,742.16	3,536.91	205.24	18.233		
16,100.00	6,987.00	5,990.00	5,988.29	146.72	143.36	56.02	-398.16	6,156.06	3,815.85	3,610.96	204.89	18.624		
16,200.00	6,987.00	5,990.00	5,988.29	148.28	143.36	56.02	-398.16	6,156.06	3,890.72	3,686.19	204.53	19.022		
16,300.00	6,987.00	5,990.00	5,988.29	149.84	143.36	56.02	-398.16	6,156.06	3,966.69	3,762.52	204.18	19.428		
16,400.00	6,987.00	5,990.00	5,988.29	151.40	143.36	56.02	-398.16	6,156.06	4,043.72	3,839.90	203.82	19.840		
16,500.00	6,987.00	5,990.00	5,988.29	152.97	143.36	56.02	-398.16	6,156.06	4,121.72	3,918.26	203.46	20.258		
16,600.00	6,987.00	5,990.00	5,988.29	154.53	143.36	56.02	-398.16	6,156.06	4,200.67	3,997.56	203.11	20.682		
16,700.00	6,987.00	5,990.00	5,988.29	156.10	143.36	56.02	-398.16	6,156.06	4,280.49	4,077.73	202.75	21.112		
16,800.00	6,987.00	5,990.00	5,988.29	157.66	143.36	56.02	-398.16	6,156.06	4,361.14	4,158.73	202.41	21.546		
16,900.00	6,987.00	5,990.00	5,988.29	159.23	143.36	56.02	-398.16	6,156.06	4,442.58	4,240.52	202.06	21.986		
17,000.00	6,987.00	5,990.00	5,988.29	160.80	143.36	56.02	-398.16	6,156.06	4,524.76	4,323.04	201.72	22.430		
17,100.00	6,987.00	5,990.00	5,988.29	162.36	143.36	56.02	-398.16	6,156.06	4,607.65	4,406.26	201.39	22.879		
17,200.00	6,987.00	5,990.00	5,988.29	163.93	143.36	56.02	-398.16	6,156.06	4,691.21	4,490.14	201.06	23.332		
17,300.00	6,987.00	5,990.00	5,988.29	165.50	143.36	56.02	-398.16	6,156.06	4,775.40	4,574.65	200.74	23.789		
17,400.00	6,987.00	5,990.00	5,988.29	167.07	143.36	56.02	-398.16	6,156.06	4,860.18	4,659.75	200.43	24.249		
17,500.00	6,987.00	5,990.00	5,988.29	168.64	143.36	56.02	-398.16	6,156.06	4,945.54	4,745.42	200.12	24.713		
17,600.00	6,987.00	5,990.00	5,988.29	170.21	143.36	56.02	-398.16	6,156.06	5,031.43	4,831.61	199.82	25.180		
17,700.00	6,987.00	5,990.00	5,988.29	171.78	143.36	56.02	-398.16	6,156.06	5,117.84	4,918.32	199.53	25.650		
17,800.00	6,987.00	5,990.00	5,988.29	173.36	143.36	56.02	-398.16	6,156.06	5,204.74	5,005.50	199.24	26.123		
17,900.00	6,987.00	5,990.00	5,988.29	174.93	143.36	56.02	-398.16	6,156.06	5,292.09	5,093.13	198.96	26.599		
18,000.00	6,987.00	5,990.00	5,988.29	176.50	143.36	56.02	-398.16	6,156.06	5,379.89	5,181.20	198.69	27.077		
18,100.00	6,987.00	5,990.00	5,988.29	178.08	143.36	56.02	-398.16	6,156.06	5,468.11	5,269.68	198.42	27.558		
18,200.00	6,987.00	5,990.00	5,988.29	179.65	143.36	56.02	-398.16	6,156.06	5,556.72	5,358.56	198.17	28.041		
18,300.00	6,987.00	5,990.00	5,988.29	181.23	143.36	56.02	-398.16	6,156.06	5,645.72	5,447.80	197.92	28.526		
18,400.00	6,987.00	5,990.00	5,988.29	182.80	143.36	56.02	-398.16	6,156.06	5,735.08	5,537.41	197.67	29.013		
18,500.00	6,987.00	5,990.00	5,988.29	184.38	143.36	56.02	-398.16	6,156.06	5,824.78	5,627.35	197.44	29.502		
18,600.00	6,987.00	5,990.00	5,988.29	185.96	143.36	56.02	-398.16	6,156.06	5,914.82	5,717.61	197.21	29.993		
18,700.00	6,987.00	5,990.00	5,988.29	187.53	143.36	56.02	-398.16	6,156.06	6,005.17	5,808.18	196.98	30.485		
18,800.00	6,987.00	5,990.00	5,988.29	189.11	143.36	56.02	-398.16	6,156.06	6,095.82	5,899.05	196.77	30.980		
18,900.00	6,987.00	5,990.00	5,988.29	190.69	143.36	56.02	-398.16	6,156.06	6,186.76	5,990.20	196.56	31.475		
19,000.00	6,987.00	5,990.00	5,988.29	192.27	143.36	56.02	-398.16	6,156.06	6,277.97	6,081.62	196.36	31.972		

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 #692H
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 #692H	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		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		
19,100.00	6,987.00	5,990.00	5,988.29	193.85	143.36	56.02	-398.16	6,156.06	6,369.45	6,173.29	196.16	32.470		
19,200.00	6,987.00	5,990.00	5,988.29	195.43	143.36	56.02	-398.16	6,156.06	6,461.19	6,265.21	195.97	32.970		
19,255.69	6,987.00	5,990.00	5,988.29	196.31	143.36	56.02	-398.16	6,156.06	6,512.38	6,316.51	195.87	33.248		
19,300.00	6,987.00	5,990.00	5,988.29	197.01	143.36	56.02	-398.16	6,156.06	6,553.16	6,357.37	195.79	33.470		
19,400.00	6,987.00	5,990.00	5,988.29	198.59	143.36	56.02	-398.16	6,156.06	6,645.36	6,449.75	195.61	33.972		
19,468.80	6,987.00	5,990.00	5,988.29	199.49	143.36	56.02	-398.16	6,156.06	6,708.94	6,511.70	197.24	34.015		

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 #692H
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 #692H	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	-52.11	3,032.90	-3,897.82	4,938.86				
100.00	100.00	77.22	77.22	0.25	0.08	-52.11	3,032.82	-3,897.82	4,938.73	4,938.39	0.33	N/A	
200.00	200.00	185.99	185.99	0.61	0.20	-52.12	3,032.44	-3,897.82	4,938.51	4,937.70	0.81	6,088.752	
300.00	300.00	294.75	294.75	0.97	0.32	-52.12	3,031.74	-3,897.83	4,938.12	4,936.83	1.29	3,835.564	
400.00	400.00	375.58	375.57	1.33	0.43	-52.13	3,030.99	-3,897.91	4,937.67	4,935.92	1.75	2,817.037	
407.88	407.88	378.89	378.88	1.35	0.43	-52.13	3,030.95	-3,897.94	4,937.67	4,935.88	1.79	2,761.189 CC, ES	
500.00	500.00	419.00	418.98	1.68	0.52	-52.14	3,030.38	-3,898.74	4,938.23	4,936.02	2.20	2,241.547	
600.00	600.00	438.20	438.16	2.04	0.57	-52.15	3,030.12	-3,899.46	4,940.14	4,937.54	2.60	1,897.451	
700.00	700.00	462.39	462.32	2.40	0.62	-52.16	3,029.77	-3,900.78	4,943.59	4,940.58	3.02	1,639.585	
800.00	799.98	480.00	479.88	2.76	0.67	-45.73	3,029.54	-3,902.03	4,947.39	4,943.98	3.41	1,450.602	
900.00	899.84	510.00	509.75	3.12	0.75	-45.72	3,029.23	-3,904.77	4,950.33	4,946.50	3.83	1,291.176	
1,000.00	999.45	523.87	523.54	3.48	0.78	-45.72	3,029.16	-3,906.30	4,952.46	4,948.23	4.22	1,173.206	
1,100.00	1,098.70	541.00	540.54	3.85	0.83	-45.73	3,029.18	-3,908.39	4,953.80	4,949.18	4.62	1,072.565	
1,153.80	1,151.90	541.00	540.54	4.04	0.83	-45.72	3,029.18	-3,908.39	4,954.26	4,949.45	4.81	1,029.527	
1,200.00	1,197.53	572.00	571.23	4.21	0.92	-45.79	3,029.48	-3,912.76	4,954.66	4,949.60	5.05	980.253	
1,300.00	1,296.27	572.00	571.23	4.59	0.92	-45.79	3,029.48	-3,912.76	4,956.74	4,951.32	5.42	914.967	
1,400.00	1,395.02	602.00	600.79	4.97	1.01	-45.86	3,030.07	-3,917.79	4,960.49	4,954.63	5.86	846.482	
1,500.00	1,493.77	615.14	613.70	5.36	1.05	-45.89	3,030.42	-3,920.24	4,965.92	4,959.66	6.26	793.036	
1,600.00	1,592.52	633.00	631.19	5.74	1.11	-45.93	3,030.98	-3,923.80	4,972.99	4,966.32	6.68	744.910	
1,700.00	1,691.27	664.00	661.42	6.14	1.21	-46.01	3,032.08	-3,930.57	4,981.70	4,974.56	7.13	698.546	
1,800.00	1,790.01	679.40	676.38	6.53	1.27	-46.05	3,032.66	-3,934.20	4,991.90	4,984.36	7.54	661.853	
1,900.00	1,888.76	708.23	704.28	6.92	1.40	-46.13	3,033.72	-3,941.41	5,003.61	4,995.61	8.00	625.711	
2,000.00	1,987.51	739.60	734.48	7.32	1.54	-46.22	3,034.73	-3,949.80	5,016.68	5,008.22	8.46	592.751	
2,100.00	2,086.26	787.00	779.87	7.72	1.79	-46.36	3,036.07	-3,963.39	5,031.08	5,022.09	8.99	559.353	
2,200.00	2,185.01	818.00	809.43	8.11	1.97	-46.46	3,036.66	-3,972.71	5,046.50	5,037.03	9.47	532.919	
2,300.00	2,283.75	848.00	837.89	8.51	2.15	-46.56	3,037.15	-3,982.17	5,063.23	5,053.29	9.94	509.178	
2,400.00	2,382.50	879.00	867.07	8.91	2.35	-46.66	3,037.68	-3,992.63	5,081.54	5,071.12	10.43	487.390	
2,500.00	2,481.25	879.00	867.07	9.31	2.35	-46.66	3,037.68	-3,992.63	5,101.34	5,090.58	10.77	473.851	
2,600.00	2,580.00	910.00	895.96	9.71	2.57	-46.78	3,038.23	-4,003.85	5,122.59	5,111.35	11.25	455.441	
2,700.00	2,678.75	940.00	923.64	10.11	2.80	-46.89	3,038.63	-4,015.41	5,145.37	5,133.64	11.73	438.666	
2,800.00	2,777.49	956.68	938.91	10.52	2.93	-46.95	3,038.79	-4,022.12	5,169.53	5,157.39	12.14	425.671	
2,900.00	2,876.24	971.00	951.95	10.92	3.05	-47.01	3,038.91	-4,028.04	5,195.15	5,182.61	12.54	414.272	
3,000.00	2,974.99	1,000.00	978.17	11.32	3.29	-47.13	3,039.16	-4,040.43	5,222.15	5,209.13	13.02	401.149	
3,100.00	3,073.74	1,031.00	1,005.93	11.72	3.57	-47.25	3,039.49	-4,054.23	5,250.60	5,237.09	13.51	388.707	
3,200.00	3,172.49	1,047.09	1,020.24	12.13	3.72	-47.32	3,039.67	-4,061.58	5,280.33	5,266.42	13.91	379.655	
3,300.00	3,271.23	1,062.00	1,033.44	12.53	3.86	-47.38	3,039.84	-4,068.51	5,311.41	5,297.11	14.30	371.553	
3,400.00	3,369.98	1,091.00	1,058.95	12.93	4.15	-47.51	3,040.20	-4,082.29	5,343.73	5,328.96	14.77	361.852	
3,500.00	3,468.73	1,122.00	1,085.90	13.34	4.46	-47.64	3,040.68	-4,097.60	5,377.51	5,362.26	15.25	352.531	
3,600.00	3,567.48	1,122.00	1,085.90	13.74	4.46	-47.64	3,040.68	-4,097.60	5,412.54	5,397.01	15.53	348.486	
3,700.00	3,666.23	1,152.00	1,111.56	14.14	4.79	-47.77	3,041.30	-4,113.12	5,449.08	5,433.07	16.01	340.433	
3,800.00	3,764.97	1,152.00	1,111.56	14.55	4.79	-47.77	3,041.30	-4,113.12	5,486.82	5,470.55	16.27	337.207	
3,900.00	3,863.72	1,182.00	1,136.86	14.95	5.13	-47.90	3,042.09	-4,129.24	5,525.95	5,509.21	16.74	330.106	
4,000.00	3,962.47	1,196.54	1,149.01	15.36	5.30	-47.97	3,042.48	-4,137.22	5,566.25	5,549.15	17.10	325.540	
4,100.00	4,061.22	1,229.47	1,176.31	15.76	5.70	-48.12	3,043.26	-4,155.61	5,607.69	5,590.11	17.59	318.877	
4,200.00	4,159.97	1,276.00	1,214.55	16.17	6.27	-48.34	3,043.93	-4,182.11	5,650.03	5,631.86	18.17	310.885	
4,300.00	4,258.71	1,312.13	1,244.02	16.57	6.73	-48.51	3,044.39	-4,203.00	5,693.25	5,674.57	18.69	304.660	
4,400.00	4,357.46	1,404.00	1,318.90	16.98	7.82	-48.94	3,045.27	-4,256.22	5,736.83	5,717.23	19.60	292.731	
4,500.00	4,456.21	1,435.00	1,344.17	17.38	8.20	-49.08	3,045.63	-4,274.17	5,780.88	5,760.83	20.05	288.258	
4,600.00	4,554.96	1,467.00	1,370.00	17.79	8.62	-49.23	3,045.95	-4,293.06	5,825.98	5,805.45	20.53	283.790	
4,700.00	4,653.71	1,499.00	1,395.64	18.19	9.04	-49.38	3,046.42	-4,312.19	5,872.07	5,851.08	20.99	279.718	
4,800.00	4,752.45	1,545.41	1,432.75	18.60	9.65	-49.59	3,047.34	-4,340.06	5,918.89	5,897.32	21.57	274.440	
4,900.00	4,851.20	1,585.74	1,464.86	19.00	10.19	-49.77	3,048.28	-4,364.44	5,966.44	5,944.35	22.09	270.104	

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 #692H
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 #692H	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												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	4,949.95	1,653.74	1,518.74	19.41	11.09	-50.08	3,049.87	-4,405.90	6,014.67	5,991.84	22.82	263.527	
5,100.00	5,048.70	1,704.46	1,558.76	19.81	11.78	-50.32	3,050.55	-4,437.04	6,063.22	6,039.80	23.42	258.853	
5,200.00	5,147.45	1,754.00	1,597.83	20.22	12.45	-50.54	3,051.88	-4,467.47	6,112.44	6,088.43	24.00	254.638	
5,300.00	5,246.19	1,771.71	1,611.70	20.62	12.70	-50.61	3,052.40	-4,478.46	6,162.46	6,138.13	24.33	253.258	
5,400.00	5,344.94	1,796.63	1,631.07	21.03	13.06	-50.72	3,053.08	-4,494.13	6,213.42	6,188.70	24.72	251.380	
5,455.76	5,400.00	5,966.32	5,453.64	21.25	38.03	-61.71	2,975.28	-5,599.07	5,966.88	5,925.93	40.95	145.720	
5,500.00	5,443.72	6,008.89	5,496.17	21.43	38.06	-61.75	2,973.47	-5,599.18	5,963.01	5,921.86	41.15	144.919	
5,600.00	5,542.71	6,105.36	5,592.56	21.83	38.12	-61.83	2,969.43	-5,599.43	5,954.92	5,913.32	41.60	143.147	
5,700.00	5,641.93	6,202.16	5,689.27	22.22	38.19	-61.90	2,965.47	-5,599.67	5,947.72	5,905.66	42.05	141.431	
5,800.00	5,741.36	6,299.25	5,786.29	22.60	38.26	-61.97	2,961.59	-5,599.91	5,941.40	5,898.89	42.51	139.767	
5,900.00	5,840.96	6,396.61	5,883.57	22.97	38.32	-62.03	2,957.79	-5,600.14	5,935.96	5,893.00	42.97	138.156	
6,000.00	5,940.70	6,494.19	5,981.08	23.33	38.39	-62.09	2,954.08	-5,600.36	5,931.39	5,887.96	43.42	136.597	
6,100.00	6,040.55	6,591.96	6,078.79	23.68	38.45	-62.13	2,950.46	-5,600.59	5,927.67	5,883.79	43.88	135.088	
6,200.00	6,140.48	6,689.89	6,176.65	24.02	38.52	-62.17	2,946.93	-5,600.80	5,924.82	5,880.48	44.34	133.628	
6,300.00	6,240.45	6,787.94	6,274.64	24.35	38.59	-62.20	2,943.49	-5,601.01	5,922.81	5,878.01	44.80	132.216	
6,408.05	6,348.50	6,893.98	6,380.62	24.69	38.66	-117.77	2,939.88	-5,601.23	5,921.59	5,876.32	45.28	130.783	
6,414.84	6,355.30	6,900.65	6,387.29	24.71	38.66	-172.04	2,939.66	-5,601.24	5,921.57	5,876.26	45.31	130.695	
6,450.00	6,390.43	6,935.11	6,421.73	24.82	38.69	-135.09	2,938.51	-5,601.31	5,922.18	5,876.71	45.46	130.261	
6,500.00	6,440.15	6,983.84	6,470.43	24.99	38.72	-131.34	2,936.91	-5,601.41	5,925.14	5,879.44	45.69	129.675	
6,550.00	6,489.32	7,031.96	6,518.53	25.16	38.75	-130.01	2,935.35	-5,601.51	5,930.54	5,884.62	45.92	129.146	
6,600.00	6,537.64	7,079.18	6,565.72	25.34	38.78	-129.06	2,933.85	-5,601.60	5,938.37	5,892.22	46.15	128.675	
6,650.00	6,584.80	7,125.21	6,611.73	25.52	38.82	-128.17	2,932.40	-5,601.69	5,948.59	5,902.22	46.38	128.266	
6,700.00	6,630.52	7,169.77	6,656.27	25.71	38.85	-127.20	2,931.02	-5,601.77	5,961.17	5,914.57	46.60	127.918	
6,750.00	6,674.51	7,212.59	6,699.06	25.89	38.88	-126.11	2,929.71	-5,601.85	5,976.04	5,929.21	46.82	127.631	
6,800.00	6,716.50	7,253.40	6,739.86	26.08	38.90	-124.87	2,928.49	-5,601.93	5,993.13	5,946.09	47.04	127.403	
6,850.00	6,756.24	7,291.95	6,778.39	26.28	38.93	-123.44	2,927.34	-5,602.00	6,012.38	5,965.12	47.25	127.233	
6,900.00	6,793.47	7,328.01	6,814.44	26.48	38.95	-121.81	2,926.28	-5,602.06	6,033.67	5,986.21	47.47	127.118	
6,950.00	6,827.97	7,361.35	6,847.76	26.69	38.98	-119.96	2,925.31	-5,602.12	6,056.92	6,009.25	47.67	127.054	
7,000.00	6,859.53	7,391.77	6,878.17	26.91	39.00	-117.86	2,924.44	-5,602.17	6,082.00	6,034.13	47.87	127.040	
7,050.00	6,887.94	7,419.09	6,905.47	27.14	39.02	-115.50	2,923.67	-5,602.22	6,108.78	6,060.71	48.07	127.071	
7,100.00	6,913.05	7,443.12	6,929.49	27.38	39.03	-112.86	2,922.99	-5,602.26	6,137.12	6,088.85	48.27	127.144	
7,150.00	6,934.68	7,463.72	6,950.09	27.64	39.05	-109.94	2,922.42	-5,602.30	6,166.87	6,118.41	48.46	127.255	
7,200.00	6,952.71	7,480.76	6,967.12	27.92	39.06	-106.73	2,921.94	-5,602.32	6,197.85	6,149.20	48.65	127.400	
7,250.00	6,967.02	7,494.13	6,980.49	28.21	39.07	-103.23	2,921.57	-5,602.35	6,229.89	6,181.06	48.83	127.577	
7,300.00	6,977.54	7,503.75	6,990.11	28.52	39.07	-99.47	2,921.31	-5,602.36	6,262.80	6,213.79	49.01	127.783	
7,350.00	6,984.18	7,509.56	6,995.91	28.83	39.08	-95.49	2,921.15	-5,602.37	6,296.39	6,247.20	49.19	128.013	
7,400.00	6,986.92	7,511.52	6,997.87	29.16	39.08	-91.33	2,921.10	-5,602.38	6,330.44	6,281.09	49.35	128.266	
7,409.89	6,987.00	7,511.45	6,997.80	29.23	39.08	-90.49	2,921.10	-5,602.38	6,337.21	6,287.83	49.39	128.318	
7,500.00	6,987.00	7,510.10	6,996.45	29.85	39.08	-90.48	2,921.14	-5,602.37	6,399.30	6,349.60	49.69	128.773	
7,600.00	6,987.00	7,508.61	6,994.96	30.61	39.08	-90.46	2,921.18	-5,602.37	6,468.97	6,418.91	50.06	129.227	
7,700.00	6,987.00	7,507.12	6,993.47	31.41	39.08	-90.44	2,921.22	-5,602.37	6,539.42	6,488.98	50.44	129.638	
7,800.00	6,987.00	7,505.62	6,991.98	32.27	39.08	-90.42	2,921.26	-5,602.37	6,610.64	6,559.80	50.85	130.012	
7,900.00	6,987.00	7,504.13	6,990.48	33.17	39.07	-90.40	2,921.30	-5,602.36	6,682.60	6,631.33	51.26	130.357	
8,000.00	6,987.00	7,502.63	6,988.99	34.12	39.07	-90.38	2,921.34	-5,602.36	6,755.27	6,703.57	51.69	130.677	
8,100.00	6,987.00	7,501.13	6,987.49	35.10	39.07	-90.37	2,921.38	-5,602.36	6,828.63	6,776.49	52.14	130.979	
8,200.00	6,987.00	7,499.63	6,985.99	36.12	39.07	-90.35	2,921.42	-5,602.36	6,902.65	6,850.07	52.59	131.266	
8,300.00	6,987.00	7,498.13	6,984.48	37.17	39.07	-90.33	2,921.46	-5,602.35	6,977.33	6,924.29	53.04	131.542	
8,314.89	6,987.00	7,497.90	6,984.26	37.33	39.07	-90.33	2,921.47	-5,602.35	6,988.50	6,935.39	53.11	131.583	
8,400.00	6,987.00	7,496.68	6,983.04	38.25	39.07	-90.33	2,921.50	-5,602.35	7,054.25	7,000.75	53.50	131.867	
8,500.00	6,987.00	7,495.40	6,981.75	39.35	39.07	-90.35	2,921.54	-5,602.35	7,135.89	7,081.97	53.92	132.346	
8,600.00	6,987.00	7,494.28	6,980.64	40.45	39.07	-90.38	2,921.57	-5,602.35	7,221.75	7,167.45	54.30	132.988	
8,700.00	6,987.00	7,493.34	6,979.70	41.56	39.07	-90.41	2,921.60	-5,602.35	7,311.27	7,256.63	54.65	133.795	

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 #692H
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 #692H	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		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)			
8,800.00	6,987.00	7,492.59	6,978.95	42.66	39.07	-90.47	2,921.62	-5,602.34	7,403.90	7,348.96	54.94	134.767	
8,900.00	6,987.00	7,492.01	6,978.37	43.75	39.07	-90.57	2,921.63	-5,602.34	7,499.06	7,443.88	55.18	135.900	
9,000.00	6,987.00	7,491.63	6,977.99	44.83	39.07	-90.75	2,921.64	-5,602.34	7,596.22	7,540.85	55.37	137.189	
9,071.74	6,987.00	7,491.47	6,977.83	45.59	39.07	-90.99	2,921.65	-5,602.34	7,666.84	7,611.37	55.47	138.207	
9,100.00	6,987.00	7,491.43	6,977.79	45.89	39.07	-90.99	2,921.65	-5,602.34	7,694.79	7,639.28	55.51	138.623	
9,200.00	6,987.00	7,491.27	6,977.63	46.97	39.07	-90.98	2,921.65	-5,602.34	7,793.69	7,738.06	55.63	140.098	
9,300.00	6,987.00	7,491.12	6,977.48	48.07	39.07	-90.97	2,921.66	-5,602.34	7,892.61	7,836.86	55.75	141.572	
9,400.00	6,987.00	7,490.97	6,977.33	49.20	39.07	-90.97	2,921.66	-5,602.34	7,991.57	7,935.70	55.87	143.043	
9,500.00	6,987.00	7,490.81	6,977.17	50.36	39.07	-90.96	2,921.67	-5,602.34	8,090.55	8,034.56	55.99	144.513	
9,600.00	6,987.00	7,490.66	6,977.02	51.54	39.06	-90.95	2,921.67	-5,602.34	8,189.55	8,133.45	56.10	145.980	
9,700.00	6,987.00	7,490.51	6,976.86	52.74	39.06	-90.94	2,921.67	-5,602.34	8,288.58	8,232.37	56.21	147.446	
9,800.00	6,987.00	7,490.35	6,976.71	53.96	39.06	-90.94	2,921.68	-5,602.34	8,387.63	8,331.30	56.33	148.910	
9,900.00	6,987.00	7,490.20	6,976.56	55.21	39.06	-90.93	2,921.68	-5,602.34	8,486.71	8,430.27	56.44	150.372	
10,000.00	6,987.00	7,490.04	6,976.40	56.47	39.06	-90.92	2,921.69	-5,602.34	8,585.80	8,529.25	56.55	151.831	
10,100.00	6,987.00	7,489.89	6,976.25	57.75	39.06	-90.91	2,921.69	-5,602.34	8,684.92	8,628.26	56.66	153.289	
10,200.00	6,987.00	7,489.74	6,976.10	59.04	39.06	-90.90	2,921.70	-5,602.34	8,784.05	8,727.29	56.76	154.745	
10,300.00	6,987.00	7,489.58	6,975.94	60.35	39.06	-90.90	2,921.70	-5,602.34	8,883.21	8,826.34	56.87	156.198	
10,400.00	6,987.00	7,489.43	6,975.79	61.67	39.06	-90.89	2,921.70	-5,602.34	8,982.38	8,925.40	56.98	157.650	
10,500.00	6,987.00	7,489.28	6,975.64	63.01	39.06	-90.88	2,921.71	-5,602.34	9,081.57	9,024.49	57.08	159.099	
10,600.00	6,987.00	7,489.12	6,975.48	64.36	39.06	-90.87	2,921.71	-5,602.34	9,180.78	9,123.60	57.18	160.546	
10,700.00	6,987.00	7,488.97	6,975.33	65.72	39.06	-90.87	2,921.72	-5,602.34	9,280.01	9,222.72	57.29	161.991	
10,800.00	6,987.00	7,488.81	6,975.17	67.09	39.06	-90.86	2,921.72	-5,602.34	9,379.25	9,321.86	57.39	163.434	
10,900.00	6,987.00	7,488.66	6,975.02	68.47	39.06	-90.85	2,921.73	-5,602.34	9,478.51	9,421.02	57.49	164.875	
11,000.00	6,987.00	7,488.51	6,974.87	69.86	39.06	-90.84	2,921.73	-5,602.34	9,577.79	9,520.20	57.59	166.313	
11,100.00	6,987.00	7,488.35	6,974.71	71.26	39.06	-90.84	2,921.73	-5,602.34	9,677.08	9,619.39	57.69	167.749	
11,200.00	6,987.00	7,488.20	6,974.56	72.67	39.06	-90.83	2,921.74	-5,602.34	9,776.38	9,718.59	57.79	169.183	
11,300.00	6,987.00	7,488.05	6,974.41	74.09	39.06	-90.82	2,921.74	-5,602.34	9,875.70	9,817.81	57.88	170.615	
11,400.00	6,987.00	7,487.89	6,974.25	75.51	39.06	-90.81	2,921.75	-5,602.34	9,975.03	9,917.05	57.98	172.044	
11,500.00	6,987.00	7,487.74	6,974.10	76.94	39.06	-90.81	2,921.75	-5,602.34	10,074.37	10,016.30	58.08	173.471	
11,600.00	6,987.00	7,487.58	6,973.94	78.38	39.06	-90.80	2,921.75	-5,602.34	10,173.73	10,115.56	58.17	174.895	
11,700.00	6,987.00	7,487.43	6,973.79	79.82	39.06	-90.79	2,921.76	-5,602.34	10,273.10	10,214.84	58.26	176.317	
11,800.00	6,987.00	7,487.28	6,973.64	81.27	39.06	-90.78	2,921.76	-5,602.33	10,372.48	10,314.12	58.36	177.737	
11,900.00	6,987.00	7,487.12	6,973.48	82.73	39.06	-90.77	2,921.77	-5,602.33	10,471.88	10,413.42	58.45	179.154	
12,000.00	6,987.00	7,486.97	6,973.33	84.19	39.06	-90.77	2,921.77	-5,602.33	10,571.28	10,512.74	58.54	180.569	
12,100.00	6,987.00	7,486.81	6,973.17	85.66	39.06	-90.76	2,921.78	-5,602.33	10,670.70	10,612.06	58.64	181.981	
12,200.00	6,987.00	7,486.66	6,973.02	87.13	39.06	-90.75	2,921.78	-5,602.33	10,770.12	10,711.40	58.73	183.390	
12,300.00	6,987.00	7,486.51	6,972.87	88.61	39.06	-90.74	2,921.78	-5,602.33	10,869.56	10,810.74	58.82	184.798	
12,400.00	6,987.00	7,486.35	6,972.71	90.09	39.06	-90.74	2,921.79	-5,602.33	10,969.01	10,910.10	58.91	186.202	
12,500.00	6,987.00	7,486.20	6,972.56	91.57	39.06	-90.73	2,921.79	-5,602.33	11,068.47	11,009.47	59.00	187.604	
12,600.00	6,987.00	7,486.04	6,972.40	93.06	39.06	-90.72	2,921.80	-5,602.33	11,167.94	11,108.85	59.09	189.003	
12,700.00	6,987.00	7,485.89	6,972.25	94.55	39.06	-90.71	2,921.80	-5,602.33	11,267.41	11,208.24	59.18	190.400	
12,800.00	6,987.00	7,485.74	6,972.10	96.05	39.06	-90.70	2,921.81	-5,602.33	11,366.90	11,307.63	59.27	191.794	
12,900.00	6,987.00	7,485.58	6,971.94	97.55	39.06	-90.70	2,921.81	-5,602.33	11,466.39	11,407.04	59.35	193.185	
13,000.00	6,987.00	7,485.43	6,971.79	99.05	39.06	-90.69	2,921.81	-5,602.33	11,565.90	11,506.46	59.44	194.574	
13,100.00	6,987.00	7,485.27	6,971.63	100.56	39.06	-90.68	2,921.82	-5,602.33	11,665.41	11,605.88	59.53	195.960	
13,200.00	6,987.00	7,485.12	6,971.48	102.07	39.06	-90.67	2,921.82	-5,602.33	11,764.93	11,705.31	59.62	197.343	
13,300.00	6,987.00	7,484.96	6,971.33	103.58	39.06	-90.67	2,921.83	-5,602.33	11,864.46	11,804.76	59.70	198.723	
13,400.00	6,987.00	7,484.81	6,971.17	105.09	39.06	-90.66	2,921.83	-5,602.33	11,964.00	11,904.21	59.79	200.100	
13,500.00	6,987.00	1,091.00	1,058.95	106.61	4.15	-12.16	3,040.20	-4,082.29	12,101.47	12,051.95	49.52	244.379	
13,600.00	6,987.00	1,091.00	1,058.95	108.13	4.15	-12.16	3,040.20	-4,082.29	12,188.25	12,138.49	49.77	244.912	
13,700.00	6,987.00	1,091.00	1,058.95	109.65	4.15	-12.16	3,040.20	-4,082.29	12,275.24	12,225.23	50.01	245.461	
13,800.00	6,987.00	1,091.00	1,058.95	111.18	4.15	-12.16	3,040.20	-4,082.29	12,362.41	12,312.17	50.25	246.023	

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 #692H
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 #692H	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		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	
13,900.00	6,987.00	1,091.00	1,058.95	112.71	4.15	-12.16	3,040.20	-4,082.29	12,449.79	12,399.30	50.49	246.599		
14,000.00	6,987.00	1,062.00	1,033.44	114.23	3.86	-12.11	3,039.84	-4,068.51	12,537.28	12,486.63	50.65	247.532		
14,100.00	6,987.00	1,062.00	1,033.44	115.77	3.86	-12.11	3,039.84	-4,068.51	12,624.92	12,574.04	50.88	248.126		
14,200.00	6,987.00	1,062.00	1,033.44	117.30	3.86	-12.11	3,039.84	-4,068.51	12,712.74	12,661.63	51.11	248.733		
14,300.00	6,987.00	1,062.00	1,033.44	118.83	3.86	-12.11	3,039.84	-4,068.51	12,800.74	12,749.40	51.34	249.352		
14,400.00	6,987.00	1,062.00	1,033.44	120.37	3.86	-12.11	3,039.84	-4,068.51	12,888.91	12,837.35	51.56	249.982		
14,500.00	6,987.00	1,031.00	1,005.93	121.91	3.57	-12.05	3,039.49	-4,054.23	12,977.19	12,925.48	51.71	250.946		
14,600.00	6,987.00	1,031.00	1,005.93	123.45	3.57	-12.05	3,039.49	-4,054.23	13,065.60	13,013.67	51.93	251.590		
14,700.00	6,987.00	1,031.00	1,005.93	124.99	3.57	-12.05	3,039.49	-4,054.23	13,154.17	13,102.02	52.15	252.245		
14,800.00	6,987.00	1,031.00	1,005.93	126.53	3.57	-12.05	3,039.49	-4,054.23	13,242.90	13,190.54	52.36	252.911		
14,900.00	6,987.00	1,031.00	1,005.93	128.08	3.57	-12.05	3,039.49	-4,054.23	13,331.80	13,279.22	52.57	253.586		
15,000.00	6,987.00	1,016.69	993.14	129.63	3.44	-12.03	3,039.32	-4,047.80	13,420.78	13,368.02	52.76	254.397		
15,100.00	6,987.00	1,000.00	978.17	131.17	3.29	-12.00	3,039.16	-4,040.43	13,509.97	13,457.04	52.93	255.237		
15,200.00	6,987.00	1,000.00	978.17	132.72	3.29	-12.00	3,039.16	-4,040.43	13,599.22	13,546.08	53.14	255.933		
15,300.00	6,987.00	1,000.00	978.17	134.27	3.29	-12.00	3,039.16	-4,040.43	13,688.62	13,635.28	53.34	256.638		
15,400.00	6,987.00	1,000.00	978.17	135.83	3.29	-12.00	3,039.16	-4,040.43	13,778.17	13,724.63	53.54	257.351		
15,500.00	6,987.00	1,000.00	978.17	137.38	3.29	-12.00	3,039.16	-4,040.43	13,867.85	13,814.12	53.74	258.071		
15,600.00	6,987.00	1,000.00	978.17	138.93	3.29	-12.00	3,039.16	-4,040.43	13,957.68	13,903.75	53.93	258.800		
15,700.00	6,987.00	986.00	965.55	140.49	3.17	-11.97	3,039.03	-4,034.38	14,047.57	13,993.46	54.10	259.638		
15,800.00	6,987.00	971.00	951.95	142.04	3.05	-11.94	3,038.91	-4,028.04	14,137.67	14,083.40	54.27	260.488		
15,900.00	6,987.00	971.00	951.95	143.60	3.05	-11.94	3,038.91	-4,028.04	14,227.82	14,173.36	54.46	261.234		
16,000.00	6,987.00	971.00	951.95	145.16	3.05	-11.94	3,038.91	-4,028.04	14,318.10	14,263.45	54.65	261.985		
16,100.00	6,987.00	971.00	951.95	146.72	3.05	-11.94	3,038.91	-4,028.04	14,408.50	14,353.67	54.84	262.744		
16,200.00	6,987.00	971.00	951.95	148.28	3.05	-11.94	3,038.91	-4,028.04	14,499.04	14,444.01	55.02	263.508		
16,300.00	6,987.00	971.00	951.95	149.84	3.05	-11.94	3,038.91	-4,028.04	14,589.69	14,534.49	55.21	264.279		
16,400.00	6,987.00	971.00	951.95	151.40	3.05	-11.94	3,038.91	-4,028.04	14,680.47	14,625.08	55.39	265.055		
16,500.00	6,987.00	971.00	951.95	152.97	3.05	-11.94	3,038.91	-4,028.04	14,771.37	14,715.80	55.57	265.837		
16,600.00	6,987.00	940.00	923.64	154.53	2.80	-11.89	3,038.63	-4,015.41	14,862.34	14,806.63	55.71	266.801		
16,700.00	6,987.00	940.00	923.64	156.10	2.80	-11.89	3,038.63	-4,015.41	14,953.38	14,897.50	55.88	267.589		
16,800.00	6,987.00	940.00	923.64	157.66	2.80	-11.89	3,038.63	-4,015.41	15,044.54	14,988.48	56.06	268.382		
16,900.00	6,987.00	940.00	923.64	159.23	2.80	-11.89	3,038.63	-4,015.41	15,135.81	15,079.58	56.23	269.180		
17,000.00	6,987.00	940.00	923.64	160.80	2.80	-11.89	3,038.63	-4,015.41	15,227.19	15,170.78	56.40	269.983		
17,100.00	6,987.00	940.00	923.64	162.36	2.80	-11.89	3,038.63	-4,015.41	15,318.67	15,262.10	56.57	270.790		
17,200.00	6,987.00	940.00	923.64	163.93	2.80	-11.89	3,038.63	-4,015.41	15,410.26	15,353.53	56.74	271.602		
17,300.00	6,987.00	940.00	923.64	165.50	2.80	-11.89	3,038.63	-4,015.41	15,501.96	15,445.06	56.91	272.418		
17,400.00	6,987.00	940.00	923.64	167.07	2.80	-11.89	3,038.63	-4,015.41	15,593.76	15,536.69	57.07	273.237		
17,500.00	6,987.00	925.51	910.30	168.64	2.69	-11.86	3,038.46	-4,009.74	15,685.57	15,628.35	57.22	274.121		
17,600.00	6,987.00	910.00	895.96	170.21	2.57	-11.83	3,038.23	-4,003.85	15,777.59	15,720.22	57.37	275.014		
17,700.00	6,987.00	910.00	895.96	171.78	2.57	-11.83	3,038.23	-4,003.85	15,869.61	15,812.08	57.53	275.841		
17,800.00	6,987.00	910.00	895.96	173.36	2.57	-11.83	3,038.23	-4,003.85	15,961.73	15,904.04	57.69	276.672		
17,900.00	6,987.00	910.00	895.96	174.93	2.57	-11.83	3,038.23	-4,003.85	16,053.94	15,996.09	57.85	277.506		
18,000.00	6,987.00	910.00	895.96	176.50	2.57	-11.83	3,038.23	-4,003.85	16,146.25	16,088.24	58.01	278.344		
18,100.00	6,987.00	910.00	895.96	178.08	2.57	-11.83	3,038.23	-4,003.85	16,238.64	16,180.48	58.16	279.184		
18,200.00	6,987.00	910.00	895.96	179.65	2.57	-11.83	3,038.23	-4,003.85	16,331.13	16,272.81	58.32	280.028		
18,300.00	6,987.00	910.00	895.96	181.23	2.57	-11.83	3,038.23	-4,003.85	16,423.70	16,365.23	58.47	280.874		
18,400.00	6,987.00	910.00	895.96	182.80	2.57	-11.83	3,038.23	-4,003.85	16,516.36	16,457.74	58.63	281.723		
18,500.00	6,987.00	910.00	895.96	184.38	2.57	-11.83	3,038.23	-4,003.85	16,609.11	16,550.33	58.78	282.575		
18,600.00	6,987.00	910.00	895.96	185.96	2.57	-11.83	3,038.23	-4,003.85	16,701.94	16,643.01	58.93	283.429		
18,700.00	6,987.00	894.02	881.10	187.53	2.46	-11.80	3,037.95	-3,997.97	16,794.73	16,735.66	59.07	284.327		
18,800.00	6,987.00	879.00	867.07	189.11	2.35	-11.77	3,037.68	-3,992.63	16,887.76	16,828.55	59.21	285.225		
18,900.00	6,987.00	879.00	867.07	190.69	2.35	-11.77	3,037.68	-3,992.63	16,980.76	16,921.41	59.36	286.083		
19,000.00	6,987.00	879.00	867.07	192.27	2.35	-11.77	3,037.68	-3,992.63	17,073.85	17,014.35	59.50	286.943		

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 #692H
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 #692H	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		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	
19,100.00	6,987.00	879.00	867.07	193.85	2.35	-11.77	3,037.68	-3,992.63	17,167.01	17,107.36	59.65	287.805	
19,200.00	6,987.00	879.00	867.07	195.43	2.35	-11.77	3,037.68	-3,992.63	17,260.25	17,200.46	59.79	288.668	
19,255.69	6,987.00	879.00	867.07	196.31	2.35	-11.77	3,037.68	-3,992.63	17,312.21	17,252.34	59.87	289.150	
19,300.00	6,987.00	879.00	867.07	197.01	2.35	-11.77	3,037.68	-3,992.63	17,353.57	17,293.63	59.94	289.534	
19,400.00	6,987.00	879.00	867.07	198.59	2.35	-11.77	3,037.68	-3,992.63	17,446.95	17,386.88	60.08	290.401	
19,468.80	6,987.00	879.00	867.07	199.49	2.35	-11.77	3,037.68	-3,992.63	17,511.25	17,449.47	61.78	283.424	

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 #692H
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 #692H	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												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	-84.87	1,262.13	-14,052.17	14,108.79				
100.00	100.00	61.00	61.00	0.25	1.13	-84.87	1,262.13	-14,052.17	14,108.74	14,107.36	1.38	N/A	
200.00	200.00	161.00	161.00	0.61	2.98	-84.87	1,262.13	-14,052.17	14,108.74	14,105.15	3.59	3,934.809	
300.00	300.00	261.00	261.00	0.97	4.85	-84.87	1,262.13	-14,052.17	14,108.74	14,102.92	5.82	2,426.108	
400.00	400.00	361.00	361.00	1.33	6.87	-84.87	1,262.13	-14,052.17	14,108.74	14,100.54	8.20	1,721.122	
500.00	500.00	464.70	464.69	1.68	8.97	-84.87	1,262.29	-14,052.17	14,108.75	14,098.10	10.65	1,324.247	
600.00	600.00	561.04	561.00	2.04	11.14	-84.87	1,262.13	-14,052.17	14,108.74	14,095.56	13.18	1,070.375	
700.00	700.00	664.17	664.12	2.40	13.64	-84.86	1,262.80	-14,052.17	14,108.80	14,092.75	16.04	879.352	
800.00	799.98	776.15	776.10	2.76	16.36	-78.49	1,261.98	-14,052.17	14,108.38	14,089.26	19.12	737.796	
900.00	899.84	860.96	860.84	3.12	18.67	-78.53	1,262.13	-14,052.17	14,107.34	14,085.56	21.79	647.540	
1,000.00	999.45	963.84	963.69	3.48	21.43	-78.60	1,263.40	-14,052.17	14,105.72	14,080.82	24.90	566.434	
1,100.00	1,098.70	1,075.33	1,075.16	3.85	24.41	-78.70	1,262.56	-14,052.17	14,103.24	14,074.99	28.25	499.151	
1,153.80	1,151.90	1,113.19	1,112.90	4.04	25.43	-78.76	1,262.13	-14,052.17	14,101.62	14,072.15	29.46	478.620	
1,200.00	1,197.53	1,158.81	1,158.53	4.21	26.62	-78.79	1,262.13	-14,052.17	14,100.18	14,069.35	30.83	457.352	
1,300.00	1,296.27	1,257.56	1,257.27	4.59	29.21	-78.85	1,262.13	-14,052.17	14,097.08	14,063.29	33.79	417.156	
1,400.00	1,395.02	1,356.42	1,356.10	4.97	31.80	-78.90	1,264.03	-14,052.17	14,094.16	14,057.40	36.76	383.368	
1,500.00	1,493.77	1,462.83	1,462.51	5.36	34.59	-78.97	1,263.68	-14,052.17	14,091.07	14,051.14	39.94	352.838	
1,600.00	1,592.52	1,569.06	1,568.71	5.74	37.37	-79.04	1,262.63	-14,052.17	14,087.95	14,044.84	43.11	326.817	
1,700.00	1,691.27	1,652.75	1,652.27	6.14	39.41	-79.10	1,262.13	-14,052.17	14,084.87	14,039.33	45.54	309.284	
1,800.00	1,790.01	1,751.50	1,751.01	6.53	41.70	-79.16	1,262.13	-14,052.17	14,081.86	14,033.64	48.22	292.045	
1,900.00	1,888.76	1,850.25	1,849.76	6.92	43.98	-79.22	1,262.13	-14,052.17	14,078.86	14,027.97	50.90	276.613	
2,000.00	1,987.51	1,954.78	1,954.26	7.32	46.40	-79.28	1,263.50	-14,052.17	14,075.99	14,022.28	53.71	262.065	
2,100.00	2,086.26	2,059.37	2,058.84	7.72	48.83	-79.35	1,262.67	-14,052.17	14,072.97	14,016.44	56.53	248.951	
2,200.00	2,185.01	2,146.61	2,146.01	8.11	50.76	-79.41	1,262.13	-14,052.17	14,069.98	14,011.13	58.86	239.045	
2,300.00	2,283.75	2,245.36	2,244.75	8.51	52.84	-79.47	1,262.13	-14,052.17	14,067.06	14,005.72	61.34	229.320	
2,400.00	2,382.50	2,344.83	2,344.21	8.91	54.95	-79.53	1,263.10	-14,052.17	14,064.22	14,000.38	63.84	220.297	
2,500.00	2,481.25	2,447.64	2,447.02	9.31	57.12	-79.60	1,262.82	-14,052.17	14,061.31	13,994.90	66.41	211.726	
2,600.00	2,580.00	2,550.34	2,549.71	9.71	59.29	-79.67	1,262.13	-14,052.17	14,058.39	13,989.40	68.98	203.799	
2,700.00	2,678.75	2,640.42	2,639.75	10.11	61.02	-79.72	1,262.13	-14,052.17	14,055.53	13,984.41	71.11	197.653	
2,800.00	2,777.49	2,739.17	2,738.49	10.52	62.91	-79.79	1,262.13	-14,052.17	14,052.69	13,979.28	73.41	191.427	
2,900.00	2,876.24	2,839.40	2,838.72	10.92	64.84	-79.84	1,263.17	-14,052.17	14,049.93	13,974.20	75.74	185.510	
3,000.00	2,974.99	2,941.52	2,940.83	11.32	66.80	-79.91	1,262.83	-14,052.17	14,047.10	13,969.00	78.10	179.859	
3,100.00	3,073.74	3,043.54	3,042.84	11.72	68.76	-79.98	1,262.11	-14,052.17	14,044.27	13,963.81	80.46	174.545	
3,200.00	3,172.49	3,134.20	3,133.49	12.13	70.26	-80.04	1,262.13	-14,052.17	14,041.50	13,959.13	82.36	170.481	
3,300.00	3,271.23	3,232.95	3,232.23	12.53	71.90	-80.10	1,262.13	-14,052.17	14,038.74	13,954.33	84.41	166.322	
3,400.00	3,369.98	3,331.70	3,330.98	12.93	73.54	-80.16	1,262.13	-14,052.17	14,036.00	13,949.55	86.45	162.359	
3,500.00	3,468.73	3,431.17	3,430.45	13.34	75.20	-80.22	1,262.82	-14,052.17	14,033.33	13,944.82	88.51	158.558	
3,600.00	3,567.48	3,531.02	3,530.30	13.74	76.86	-80.29	1,262.67	-14,052.17	14,030.61	13,940.04	90.57	154.919	
3,700.00	3,666.23	3,630.84	3,630.11	14.14	78.51	-80.35	1,262.39	-14,052.17	14,027.91	13,935.28	92.63	151.442	
3,800.00	3,764.97	3,726.71	3,725.97	14.55	80.14	-80.41	1,262.13	-14,052.17	14,025.23	13,930.56	94.66	148.162	
3,900.00	3,863.72	3,825.45	3,824.72	14.95	81.90	-80.47	1,262.13	-14,052.17	14,022.57	13,925.76	96.82	144.834	
4,000.00	3,962.47	3,925.50	3,924.76	15.36	83.67	-80.54	1,262.19	-14,052.17	14,019.94	13,920.95	99.00	141.619	
4,100.00	4,061.22	4,022.96	4,022.22	15.76	85.94	-80.60	1,262.13	-14,052.17	14,017.32	13,915.66	101.66	137.878	
4,200.00	4,159.97	4,122.01	4,121.26	16.17	88.48	-80.66	1,262.64	-14,052.17	14,014.75	13,910.14	104.61	133.966	
4,300.00	4,258.71	4,223.86	4,223.11	16.57	91.10	-80.73	1,262.39	-14,052.17	14,012.16	13,904.52	107.64	130.181	
4,400.00	4,357.46	4,319.34	4,318.46	16.98	93.88	-80.79	1,262.13	-14,052.17	14,009.58	13,898.76	110.82	126.415	
4,500.00	4,456.21	4,434.92	4,433.99	17.38	97.60	-80.86	1,261.95	-14,052.17	14,007.03	13,892.08	114.95	121.855	
4,600.00	4,554.96	4,525.37	4,524.32	17.79	100.64	-80.92	1,262.60	-14,052.17	14,004.52	13,886.14	118.39	118.295	
4,700.00	4,653.71	4,615.87	4,614.71	18.19	103.74	-80.98	1,262.13	-14,052.17	14,001.99	13,880.09	121.89	114.871	
4,800.00	4,752.45	4,714.77	4,713.45	18.60	107.20	-81.04	1,262.13	-14,052.17	13,999.49	13,873.73	125.76	111.318	
4,900.00	4,851.20	4,813.67	4,812.20	19.00	110.76	-81.10	1,262.13	-14,052.17	13,997.01	13,867.28	129.73	107.896	
5,000.00	4,949.95	4,927.92	4,926.40	19.41	115.01	-81.18	1,262.21	-14,052.17	13,994.56	13,860.19	134.38	104.144	

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 #692H
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 #692H	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	Warning		
5,100.00	5,048.70	5,011.34	5,009.70	19.81	118.22	-81.23	1,262.13	-14,052.17	13,992.11	13,854.11	137.99	101.397			
5,200.00	5,147.45	5,126.96	5,125.23	20.22	122.68	-81.30	1,261.91	-14,052.17	13,989.68	13,846.83	142.85	97.931			
5,300.00	5,246.19	5,218.88	5,216.92	20.62	126.25	-81.36	1,262.70	-14,052.17	13,987.30	13,840.47	146.83	95.261			
5,400.00	5,344.94	5,308.05	5,305.94	21.03	129.59	-81.42	1,262.13	-14,052.17	13,984.88	13,834.30	150.58	92.873			
5,455.76	5,400.00	5,372.45	5,370.30	21.25	131.98	-81.46	1,262.73	-14,052.17	13,983.58	13,830.39	153.19	91.284			
5,500.00	5,443.72	5,407.02	5,404.72	21.43	133.25	-81.47	1,262.13	-14,052.17	13,982.53	13,827.89	154.64	90.421			
5,600.00	5,542.71	5,517.12	5,514.77	21.83	137.22	-81.51	1,262.31	-14,052.17	13,980.43	13,821.42	159.00	87.925			
5,700.00	5,641.93	5,605.38	5,602.93	22.22	140.41	-81.54	1,262.13	-14,052.17	13,978.57	13,815.99	162.59	85.976			
5,800.00	5,741.36	5,710.68	5,708.18	22.60	144.22	-81.56	1,263.29	-14,052.17	13,977.04	13,810.26	166.78	83.806			
5,900.00	5,840.96	5,804.69	5,801.96	22.97	147.67	-81.59	1,262.13	-14,052.17	13,975.68	13,805.09	170.59	81.926			
6,000.00	5,940.70	5,904.80	5,902.03	23.33	151.42	-81.60	1,263.63	-14,052.17	13,974.67	13,799.97	174.71	79.989			
6,100.00	6,040.55	6,015.01	6,012.19	23.68	155.56	-81.62	1,262.38	-14,052.17	13,973.84	13,794.64	179.19	77.982			
6,200.00	6,140.48	6,104.52	6,101.48	24.02	159.02	-81.63	1,262.13	-14,052.17	13,973.28	13,790.28	183.00	76.358			
6,300.00	6,240.45	6,213.41	6,210.29	24.35	163.25	-81.63	1,262.86	-14,052.17	13,973.02	13,785.46	187.56	74.499			
6,363.36	6,303.81	6,268.16	6,264.81	24.55	165.35	-88.03	1,262.13	-14,052.17	13,972.94	13,783.08	189.86	73.595 CC			
6,408.05	6,348.50	6,313.82	6,310.45	24.69	167.08	98.37	1,262.95	-14,052.17	13,973.00	13,781.27	191.73	72.879			
6,450.00	6,390.43	6,366.16	6,362.76	24.82	169.06	-154.47	1,262.28	-14,052.17	13,974.20	13,780.36	193.84	72.092 ES			
6,500.00	6,440.15	6,404.66	6,401.15	24.99	170.48	-150.67	1,262.13	-14,052.17	13,978.70	13,783.27	195.43	71.528			
6,550.00	6,489.32	6,453.83	6,450.32	25.16	172.28	-149.28	1,262.13	-14,052.17	13,986.50	13,789.09	197.41	70.849			
6,600.00	6,537.64	6,506.41	6,502.86	25.34	174.22	-148.27	1,263.13	-14,052.17	13,997.59	13,798.06	199.53	70.153			
6,650.00	6,584.80	6,559.53	6,555.95	25.52	176.17	-147.29	1,262.30	-14,052.17	14,011.80	13,810.13	201.67	69.479			
6,700.00	6,630.52	6,595.25	6,591.52	25.71	177.48	-146.21	1,262.13	-14,052.17	14,029.13	13,825.96	203.18	69.049			
6,750.00	6,674.51	6,639.24	6,635.51	25.89	179.10	-144.98	1,262.13	-14,052.17	14,049.47	13,844.48	204.99	68.537			
6,800.00	6,716.50	6,687.79	6,684.01	26.08	180.89	-143.55	1,262.65	-14,052.17	14,072.70	13,865.73	206.97	67.993			
6,850.00	6,756.24	6,721.14	6,717.24	26.28	182.10	-141.86	1,262.13	-14,052.17	14,098.64	13,890.26	208.37	67.660			
6,900.00	6,793.47	6,758.37	6,754.47	26.48	183.34	-139.88	1,262.13	-14,052.17	14,127.17	13,917.36	209.81	67.332			
6,950.00	6,827.97	6,792.87	6,788.97	26.69	184.49	-137.56	1,262.13	-14,052.17	14,158.12	13,946.97	211.16	67.050			
7,000.00	6,859.53	6,824.43	6,820.53	26.91	185.54	-134.82	1,262.13	-14,052.17	14,191.30	13,978.90	212.41	66.812			
7,050.00	6,887.94	6,852.85	6,848.94	27.14	186.49	-131.61	1,262.13	-14,052.17	14,226.51	14,012.96	213.55	66.620			
7,100.00	6,913.05	6,878.33	6,874.38	27.38	187.34	-127.84	1,264.01	-14,052.17	14,263.58	14,048.99	214.59	66.470			
7,150.00	6,934.68	6,900.96	6,897.00	27.64	188.10	-123.46	1,263.94	-14,052.17	14,302.19	14,086.66	215.53	66.358			
7,200.00	6,952.71	6,919.66	6,915.70	27.92	188.72	-118.38	1,263.82	-14,052.17	14,342.16	14,125.82	216.34	66.294			
7,250.00	6,967.02	6,934.36	6,930.39	28.21	189.21	-112.58	1,263.70	-14,052.17	14,383.25	14,166.24	217.01	66.278 SF			
7,300.00	6,977.54	6,945.01	6,941.03	28.52	189.57	-106.08	1,263.58	-14,052.17	14,425.20	14,207.65	217.55	66.308			
7,350.00	6,984.18	6,951.57	6,947.60	28.83	189.79	-98.99	1,263.51	-14,052.17	14,467.77	14,249.82	217.95	66.382			
7,400.00	6,986.92	6,954.07	6,950.09	29.16	189.87	-91.52	1,263.47	-14,052.17	14,510.68	14,292.47	218.21	66.500			
7,409.89	6,987.00	6,954.08	6,950.10	29.23	189.87	-90.02	1,263.47	-14,052.17	14,519.19	14,300.95	218.24	66.529			
7,500.00	6,987.00	6,953.49	6,949.51	29.85	189.85	-90.01	1,263.48	-14,052.17	14,596.77	14,378.23	218.54	66.793			
7,600.00	6,987.00	6,952.85	6,948.87	30.61	189.83	-90.01	1,263.49	-14,052.17	14,683.04	14,464.16	218.88	67.083			
7,700.00	6,987.00	6,952.21	6,948.23	31.41	189.81	-90.00	1,263.50	-14,052.17	14,769.47	14,550.24	219.23	67.370			
7,800.00	6,987.00	6,951.59	6,947.61	32.27	189.79	-90.00	1,263.50	-14,052.17	14,856.08	14,636.49	219.59	67.653			
7,900.00	6,987.00	6,950.97	6,946.99	33.17	189.77	-89.99	1,263.51	-14,052.17	14,942.86	14,722.90	219.96	67.934			
8,000.00	6,987.00	6,950.36	6,946.39	34.12	189.75	-89.99	1,263.52	-14,052.17	15,029.80	14,809.46	220.34	68.213			
8,100.00	6,987.00	6,949.76	6,945.79	35.10	189.73	-89.98	1,263.53	-14,052.17	15,116.90	14,896.18	220.72	68.488			
8,200.00	6,987.00	6,949.18	6,945.20	36.12	189.71	-89.98	1,263.53	-14,052.17	15,204.16	14,983.05	221.11	68.762			
8,300.00	6,987.00	6,948.60	6,944.62	37.17	189.69	-89.97	1,263.54	-14,052.17	15,291.58	15,070.07	221.51	69.034			
8,314.89	6,987.00	6,948.51	6,944.53	37.33	189.69	-89.97	1,263.54	-14,052.17	15,304.61	15,083.04	221.57	69.074			
8,400.00	6,987.00	6,948.05	6,944.07	38.25	189.67	-89.97	1,263.55	-14,052.17	15,380.32	15,158.43	221.89	69.314			
8,500.00	6,987.00	6,947.58	6,943.60	39.35	189.65	-89.96	1,263.55	-14,052.17	15,472.14	15,249.91	222.24	69.620			
8,600.00	6,987.00	6,947.19	6,943.21	40.45	189.64	-89.94	1,263.56	-14,052.17	15,566.57	15,344.05	222.53	69.954			
8,700.00	6,987.00	6,946.87	6,942.89	41.56	189.63	-89.92	1,263.56	-14,052.17	15,663.11	15,440.35	222.76	70.314			
8,800.00	6,987.00	6,946.63	6,942.65	42.66	189.62	-89.88	1,263.56	-14,052.17	15,761.26	15,538.32	222.94	70.698			

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 #692H
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 #692H	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)	
8,900.00	6,987.00	6,946.47	6,942.49	43.75	189.62	-89.77	1,263.57	-14,052.17	15,860.51	15,637.46	71.106
9,000.00	6,987.00	6,946.38	6,942.40	44.83	189.61	-88.71	1,263.57	-14,052.17	15,960.36	15,737.25	71.535
9,071.74	6,987.00	6,946.36	6,942.39	45.59	189.61	89.42	1,263.57	-14,052.17	16,032.09	15,808.97	71.855
9,100.00	6,987.00	6,946.36	6,942.39	45.89	189.61	89.42	1,263.57	-14,052.17	16,060.33	15,837.22	71.983
9,200.00	6,987.00	6,946.37	6,942.39	46.97	189.61	89.42	1,263.57	-14,052.17	16,160.28	15,937.18	72.436
9,300.00	6,987.00	6,946.37	6,942.40	48.07	189.61	89.42	1,263.57	-14,052.17	16,260.22	16,037.13	72.888
9,400.00	6,987.00	6,946.38	6,942.40	49.20	189.61	89.42	1,263.57	-14,052.17	16,360.16	16,137.09	73.340
9,500.00	6,987.00	6,946.38	6,942.41	50.36	189.61	89.42	1,263.57	-14,052.17	16,460.10	16,237.04	73.791
9,600.00	6,987.00	6,946.39	6,942.41	51.54	189.61	89.42	1,263.57	-14,052.17	16,560.05	16,336.99	74.242
9,700.00	6,987.00	6,946.39	6,942.42	52.74	189.62	89.42	1,263.57	-14,052.17	16,659.99	16,436.95	74.693
9,800.00	6,987.00	6,946.40	6,942.42	53.96	189.62	89.42	1,263.57	-14,052.17	16,759.94	16,536.90	75.144
9,900.00	6,987.00	6,946.40	6,942.43	55.21	189.62	89.42	1,263.57	-14,052.17	16,859.88	16,636.85	75.594
10,000.00	6,987.00	6,946.41	6,942.43	56.47	189.62	89.42	1,263.57	-14,052.17	16,959.83	16,736.80	76.044
10,100.00	6,987.00	6,946.41	6,942.44	57.75	189.62	89.42	1,263.57	-14,052.17	17,059.78	16,836.75	76.494
10,200.00	6,987.00	6,946.41	6,942.44	59.04	189.62	89.42	1,263.57	-14,052.17	17,159.72	16,936.70	76.943
10,300.00	6,987.00	6,946.42	6,942.44	60.35	189.62	89.42	1,263.57	-14,052.17	17,259.67	17,036.66	77.392
10,400.00	6,987.00	6,946.42	6,942.45	61.67	189.62	89.42	1,263.57	-14,052.17	17,359.62	17,136.60	77.840
10,500.00	6,987.00	6,946.43	6,942.45	63.01	189.62	89.43	1,263.57	-14,052.17	17,459.57	17,236.55	78.288
10,600.00	6,987.00	6,946.43	6,942.46	64.36	189.62	89.43	1,263.57	-14,052.17	17,559.52	17,336.50	78.736
10,700.00	6,987.00	6,946.44	6,942.46	65.72	189.62	89.43	1,263.57	-14,052.17	17,659.47	17,436.45	79.183
10,800.00	6,987.00	6,946.44	6,942.47	67.09	189.62	89.43	1,263.57	-14,052.17	17,759.42	17,536.40	79.630
10,900.00	6,987.00	6,946.45	6,942.47	68.47	189.62	89.43	1,263.57	-14,052.17	17,859.37	17,636.35	80.077
11,000.00	6,987.00	6,946.45	6,942.48	69.86	189.62	89.43	1,263.57	-14,052.17	17,959.33	17,736.29	80.523
11,100.00	6,987.00	6,946.46	6,942.48	71.26	189.62	89.43	1,263.57	-14,052.17	18,059.28	17,836.24	80.969
11,200.00	6,987.00	6,946.46	6,942.49	72.67	189.62	89.43	1,263.57	-14,052.17	18,159.23	17,936.19	81.414
11,300.00	6,987.00	6,946.47	6,942.49	74.09	189.62	89.43	1,263.57	-14,052.17	18,259.19	18,036.13	81.860
11,400.00	6,987.00	6,946.47	6,942.50	75.51	189.62	89.43	1,263.57	-14,052.17	18,359.14	18,136.08	82.304
11,500.00	6,987.00	6,946.48	6,942.50	76.94	189.62	89.43	1,263.57	-14,052.17	18,459.10	18,236.02	82.748
11,600.00	6,987.00	6,946.48	6,942.51	78.38	189.62	89.43	1,263.57	-14,052.17	18,559.05	18,335.97	83.192
11,700.00	6,987.00	6,946.48	6,942.51	79.82	189.62	89.43	1,263.57	-14,052.17	18,659.01	18,435.91	83.636
11,800.00	6,987.00	6,946.49	6,942.51	81.27	189.62	89.43	1,263.57	-14,052.17	18,758.96	18,535.85	84.079
11,900.00	6,987.00	6,946.49	6,942.52	82.73	189.62	89.43	1,263.57	-14,052.17	18,858.92	18,635.79	84.521
12,000.00	6,987.00	6,946.50	6,942.52	84.19	189.62	89.43	1,263.57	-14,052.17	18,958.88	18,735.74	84.964
12,100.00	6,987.00	6,946.50	6,942.53	85.66	189.62	89.43	1,263.57	-14,052.17	19,058.84	18,835.68	85.405
12,200.00	6,987.00	6,946.51	6,942.53	87.13	189.62	89.43	1,263.57	-14,052.17	19,158.79	18,935.62	85.847
12,300.00	6,987.00	6,946.51	6,942.54	88.61	189.62	89.43	1,263.57	-14,052.17	19,258.75	19,035.56	86.288
12,400.00	6,987.00	6,946.52	6,942.54	90.09	189.62	89.43	1,263.57	-14,052.17	19,358.71	19,135.50	86.728
12,500.00	6,987.00	6,946.52	6,942.55	91.57	189.62	89.43	1,263.57	-14,052.17	19,458.67	19,235.44	87.168
12,600.00	6,987.00	6,946.53	6,942.55	93.06	189.62	89.44	1,263.57	-14,052.17	19,558.63	19,335.38	87.608
12,700.00	6,987.00	6,946.53	6,942.56	94.55	189.62	89.44	1,263.57	-14,052.17	19,658.59	19,435.32	88.047
12,800.00	6,987.00	6,946.54	6,942.56	96.05	189.62	89.44	1,263.57	-14,052.17	19,758.55	19,535.25	88.486
12,900.00	6,987.00	6,946.54	6,942.57	97.55	189.62	89.44	1,263.57	-14,052.17	19,858.51	19,635.19	88.924
13,000.00	6,987.00	6,946.55	6,942.57	99.05	189.62	89.44	1,263.57	-14,052.17	19,958.47	19,735.13	89.362
13,100.00	6,987.00	6,946.55	6,942.57	100.56	189.62	89.44	1,263.57	-14,052.17	20,058.44	19,835.07	89.799
13,200.00	6,987.00	6,946.55	6,942.58	102.07	189.62	89.44	1,263.57	-14,052.17	20,158.40	19,935.00	90.236
13,300.00	6,987.00	6,946.56	6,942.58	103.58	189.62	89.44	1,263.57	-14,052.17	20,258.36	20,034.94	90.672
13,400.00	6,987.00	6,946.56	6,942.59	105.09	189.62	89.44	1,263.57	-14,052.17	20,358.32	20,134.87	91.108
13,500.00	6,987.00	6,946.57	6,942.59	106.61	189.62	89.44	1,263.57	-14,052.17	20,458.29	20,234.81	91.544
13,600.00	6,987.00	6,946.57	6,942.60	108.13	189.62	89.44	1,263.57	-14,052.17	20,558.25	20,334.74	91.979
13,700.00	6,987.00	6,946.58	6,942.60	109.65	189.62	89.44	1,263.57	-14,052.17	20,658.21	20,434.67	92.414
13,800.00	6,987.00	6,946.58	6,942.61	111.18	189.62	89.44	1,263.57	-14,052.17	20,758.18	20,534.61	92.848
13,900.00	6,987.00	6,946.59	6,942.61	112.71	189.62	89.44	1,263.57	-14,052.17	20,858.14	20,634.54	93.281

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 #692H
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 #692H	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: Reference		248-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
14,000.00	6,987.00	6,946.59	6,942.62	114.23	189.62	89.44	1,263.57	-14,052.17	20,958.11	20,734.47	223.64	93.714	
14,100.00	6,987.00	6,946.60	6,942.62	115.77	189.62	89.44	1,263.57	-14,052.17	21,058.07	20,834.40	223.67	94.147	
14,200.00	6,987.00	6,946.60	6,942.63	117.30	189.62	89.44	1,263.56	-14,052.17	21,158.04	20,934.33	223.71	94.579	
14,300.00	6,987.00	6,946.61	6,942.63	118.83	189.62	89.44	1,263.56	-14,052.17	21,258.01	21,034.26	223.74	95.011	
14,400.00	6,987.00	6,946.61	6,942.64	120.37	189.62	89.44	1,263.56	-14,052.17	21,357.97	21,134.19	223.78	95.442	
14,500.00	6,987.00	6,946.62	6,942.64	121.91	189.62	89.44	1,263.56	-14,052.17	21,457.94	21,234.12	223.82	95.873	
14,600.00	6,987.00	6,946.62	6,942.65	123.45	189.62	89.45	1,263.56	-14,052.17	21,557.91	21,334.05	223.85	96.303	
14,700.00	6,987.00	6,946.62	6,942.65	124.99	189.62	89.45	1,263.56	-14,052.17	21,657.87	21,433.98	223.89	96.733	
14,800.00	6,987.00	6,946.63	6,942.65	126.53	189.62	89.45	1,263.56	-14,052.17	21,757.84	21,533.91	223.93	97.162	
14,900.00	6,987.00	6,946.63	6,942.66	128.08	189.62	89.45	1,263.56	-14,052.17	21,857.81	21,633.83	223.97	97.591	
15,000.00	6,987.00	6,946.64	6,942.66	129.63	189.62	89.45	1,263.56	-14,052.17	21,957.78	21,733.76	224.02	98.019	
15,100.00	6,987.00	6,946.64	6,942.67	131.17	189.62	89.45	1,263.56	-14,052.17	22,057.74	21,833.69	224.06	98.447	
15,200.00	6,987.00	6,946.65	6,942.67	132.72	189.62	89.45	1,263.56	-14,052.17	22,157.71	21,933.61	224.10	98.874	
15,300.00	6,987.00	6,946.65	6,942.68	134.27	189.62	89.45	1,263.56	-14,052.17	22,257.68	22,033.54	224.14	99.300	
15,400.00	6,987.00	6,946.66	6,942.68	135.83	189.62	89.45	1,263.56	-14,052.17	22,357.65	22,133.46	224.19	99.727	
15,500.00	6,987.00	6,946.66	6,942.69	137.38	189.62	89.45	1,263.56	-14,052.17	22,457.62	22,233.39	224.23	100.152	
15,600.00	6,987.00	6,946.67	6,942.69	138.93	189.62	89.45	1,263.56	-14,052.17	22,557.59	22,333.31	224.28	100.577	
15,700.00	6,987.00	6,946.67	6,942.70	140.49	189.62	89.45	1,263.56	-14,052.17	22,657.56	22,433.23	224.33	101.002	
15,800.00	6,987.00	6,946.68	6,942.70	142.04	189.62	89.45	1,263.56	-14,052.17	22,757.53	22,533.16	224.38	101.426	
15,900.00	6,987.00	6,946.68	6,942.71	143.60	189.62	89.45	1,263.56	-14,052.17	22,857.50	22,633.08	224.42	101.850	
16,000.00	6,987.00	6,946.69	6,942.71	145.16	189.62	89.45	1,263.56	-14,052.17	22,957.47	22,733.00	224.47	102.273	
16,100.00	6,987.00	6,946.69	6,942.72	146.72	189.63	89.45	1,263.56	-14,052.17	23,057.44	22,832.92	224.52	102.696	
16,200.00	6,987.00	6,946.69	6,942.72	148.28	189.63	89.45	1,263.56	-14,052.17	23,157.42	22,932.84	224.57	103.118	
16,300.00	6,987.00	6,946.70	6,942.72	149.84	189.63	89.45	1,263.56	-14,052.17	23,257.39	23,032.76	224.62	103.539	
16,400.00	6,987.00	6,946.70	6,942.73	151.40	189.63	89.45	1,263.56	-14,052.17	23,357.36	23,132.68	224.68	103.960	
16,500.00	6,987.00	6,946.71	6,942.73	152.97	189.63	89.45	1,263.56	-14,052.17	23,457.33	23,232.60	224.73	104.380	
16,600.00	6,987.00	6,946.71	6,942.74	154.53	189.63	89.45	1,263.56	-14,052.17	23,557.30	23,332.52	224.78	104.800	
16,700.00	6,987.00	6,946.72	6,942.74	156.10	189.63	89.46	1,263.56	-14,052.17	23,657.28	23,432.44	224.84	105.220	
16,800.00	6,987.00	6,946.72	6,942.75	157.66	189.63	89.46	1,263.56	-14,052.17	23,757.25	23,532.36	224.89	105.639	
16,900.00	6,987.00	6,946.73	6,942.75	159.23	189.63	89.46	1,263.56	-14,052.17	23,857.22	23,632.27	224.95	106.057	
17,000.00	6,987.00	6,946.73	6,942.76	160.80	189.63	89.46	1,263.56	-14,052.17	23,957.20	23,732.19	225.00	106.475	
17,100.00	6,987.00	6,946.74	6,942.76	162.36	189.63	89.46	1,263.56	-14,052.17	24,057.17	23,832.11	225.06	106.892	
17,200.00	6,987.00	6,946.74	6,942.77	163.93	189.63	89.46	1,263.56	-14,052.17	24,157.14	23,932.02	225.12	107.309	
17,300.00	6,987.00	6,946.75	6,942.77	165.50	189.63	89.46	1,263.56	-14,052.17	24,257.12	24,031.94	225.18	107.725	
17,400.00	6,987.00	6,946.75	6,942.78	167.07	189.63	89.46	1,263.56	-14,052.17	24,357.09	24,131.85	225.24	108.141	
17,500.00	6,987.00	6,946.76	6,942.78	168.64	189.63	89.46	1,263.56	-14,052.17	24,457.06	24,231.77	225.30	108.556	
17,600.00	6,987.00	6,946.76	6,942.79	170.21	189.63	89.46	1,263.56	-14,052.17	24,557.04	24,331.68	225.36	108.970	
17,700.00	6,987.00	6,946.77	6,942.79	171.78	189.63	89.46	1,263.56	-14,052.17	24,657.01	24,431.60	225.42	109.384	
17,800.00	6,987.00	6,946.77	6,942.79	173.36	189.63	89.46	1,263.56	-14,052.17	24,756.99	24,531.51	225.48	109.798	
17,900.00	6,987.00	6,946.77	6,942.80	174.93	189.63	89.46	1,263.56	-14,052.17	24,856.96	24,631.42	225.54	110.211	
18,000.00	6,987.00	6,946.78	6,942.80	176.50	189.63	89.46	1,263.56	-14,052.17	24,956.94	24,731.34	225.60	110.623	
18,100.00	6,987.00	6,946.78	6,942.81	178.08	189.63	89.46	1,263.56	-14,052.17	25,056.92	24,831.25	225.67	111.035	
18,200.00	6,987.00	6,946.79	6,942.81	179.65	189.63	89.46	1,263.56	-14,052.17	25,156.89	24,931.16	225.73	111.446	
18,300.00	6,987.00	6,946.79	6,942.82	181.23	189.63	89.46	1,263.56	-14,052.17	25,256.87	25,031.07	225.80	111.857	
18,400.00	6,987.00	6,946.80	6,942.82	182.80	189.63	89.46	1,263.56	-14,052.17	25,356.84	25,130.98	225.86	112.267	
18,500.00	6,987.00	6,946.80	6,942.83	184.38	189.63	89.46	1,263.56	-14,052.17	25,456.82	25,230.89	225.93	112.677	
18,600.00	6,987.00	6,946.81	6,942.83	185.96	189.63	89.46	1,263.56	-14,052.17	25,556.80	25,330.80	225.99	113.086	
18,700.00	6,987.00	6,946.81	6,942.84	187.53	189.63	89.46	1,263.56	-14,052.17	25,656.77	25,430.71	226.06	113.494	
18,800.00	6,987.00	6,946.82	6,942.84	189.11	189.63	89.47	1,263.56	-14,052.17	25,756.75	25,530.62	226.13	113.902	
18,900.00	6,987.00	6,946.82	6,942.85	190.69	189.63	89.47	1,263.56	-14,052.17	25,856.73	25,630.53	226.20	114.310	
19,000.00	6,987.00	6,946.83	6,942.85	192.27	189.63	89.47	1,263.56	-14,052.17	25,956.70	25,730.44	226.27	114.717	
19,100.00	6,987.00	6,946.83	6,942.86	193.85	189.63	89.47	1,263.56	-14,052.17	26,056.68	25,830.34	226.34	115.123	

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 #692H
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 #692H	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		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		
19,200.00	6,987.00	6,946.84	6,942.86	195.43	189.63	89.47	1,263.56	-14,052.17	26,156.66	25,930.25	226.41	115.529		
19,255.69	6,987.00	6,946.84	6,942.86	196.31	189.63	89.47	1,263.56	-14,052.17	26,212.34	25,985.89	226.45	115.755		
19,300.00	6,987.00	6,946.84	6,942.87	197.01	189.63	89.47	1,263.56	-14,052.17	26,256.64	26,030.16	226.48	115.934		
19,400.00	6,987.00	6,946.84	6,942.87	198.59	189.63	89.47	1,263.56	-14,052.17	26,356.61	26,130.06	226.55	116.339		
19,468.80	6,987.00	6,946.85	6,942.87	199.49	189.63	89.47	1,263.56	-14,052.17	26,425.40	26,194.40	231.01	114.392		

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 #692H
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 #692H	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	29.14	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	CC, ES
600.00	600.00	598.02	598.00	2.04	2.04	28.63	54.08	29.52	61.64	57.56	4.08	15.111	
700.00	700.00	695.81	695.66	2.40	2.39	27.25	59.01	30.39	66.52	61.74	4.79	13.899	
800.00	799.98	793.30	792.78	2.76	2.74	32.37	67.20	31.84	73.24	67.75	5.49	13.351	
900.00	899.84	890.54	889.33	3.12	3.10	31.96	78.60	33.85	80.28	74.10	6.18	12.996	
1,000.00	999.45	987.53	985.18	3.48	3.46	32.20	93.18	36.42	87.63	80.77	6.87	12.764	
1,100.00	1,098.70	1,084.54	1,080.50	3.85	3.83	32.76	110.97	39.24	95.17	87.61	7.56	12.594	
1,153.80	1,151.90	1,136.68	1,131.47	4.04	4.04	33.05	121.85	40.65	99.21	91.28	7.93	12.508	
1,200.00	1,197.53	1,181.38	1,175.00	4.21	4.22	33.23	131.92	41.80	102.99	94.74	8.25	12.483	SF
1,300.00	1,296.27	1,277.75	1,268.30	4.59	4.62	32.94	155.93	44.08	113.26	104.31	8.94	12.662	
1,400.00	1,395.02	1,373.42	1,360.09	4.97	5.04	31.94	182.84	46.08	126.39	116.75	9.64	13.114	
1,500.00	1,493.77	1,468.20	1,450.08	5.36	5.48	30.49	212.51	47.80	142.43	132.11	10.32	13.799	
1,600.00	1,592.52	1,565.14	1,541.35	5.74	5.95	28.90	245.14	49.36	160.73	149.68	11.05	14.544	
1,700.00	1,691.27	1,663.33	1,633.75	6.14	6.43	27.59	278.33	50.92	179.27	167.46	11.81	15.178	
1,800.00	1,790.01	1,761.53	1,726.15	6.53	6.93	26.53	311.52	52.49	197.88	185.31	12.58	15.735	
1,900.00	1,888.76	1,859.72	1,818.55	6.92	7.43	25.65	344.72	54.05	216.55	203.20	13.34	16.227	
2,000.00	1,987.51	1,957.91	1,910.95	7.32	7.94	24.91	377.91	55.62	235.25	221.14	14.12	16.665	
2,100.00	2,086.26	2,056.11	2,003.35	7.72	8.45	24.28	411.10	57.19	253.99	239.10	14.89	17.055	
2,200.00	2,185.01	2,154.30	2,095.75	8.11	8.97	23.73	444.30	58.75	272.76	257.09	15.67	17.406	
2,300.00	2,283.75	2,252.49	2,188.15	8.51	9.49	23.26	477.49	60.32	291.54	275.09	16.45	17.723	
2,400.00	2,382.50	2,350.68	2,280.55	8.91	10.01	22.84	510.68	61.88	310.34	293.11	17.23	18.010	
2,500.00	2,481.25	2,448.88	2,372.95	9.31	10.53	22.48	543.87	63.45	329.16	311.15	18.02	18.271	
2,600.00	2,580.00	2,547.07	2,465.35	9.71	11.06	22.15	577.07	65.01	347.99	329.19	18.80	18.510	
2,700.00	2,678.75	2,645.26	2,557.75	10.11	11.59	21.85	610.26	66.58	366.83	347.24	19.59	18.729	
2,800.00	2,777.49	2,743.46	2,650.15	10.52	12.12	21.58	643.45	68.14	385.67	365.30	20.37	18.931	
2,900.00	2,876.24	2,841.65	2,742.55	10.92	12.65	21.34	676.64	69.71	404.53	383.37	21.16	19.117	
3,000.00	2,974.99	2,939.84	2,834.94	11.32	13.18	21.12	709.84	71.27	423.39	401.44	21.95	19.289	
3,100.00	3,073.74	3,038.04	2,927.34	11.72	13.71	20.92	743.03	72.84	442.25	419.51	22.74	19.449	
3,200.00	3,172.49	3,136.23	3,019.74	12.13	14.25	20.74	776.22	74.40	461.12	437.59	23.53	19.598	
3,300.00	3,271.23	3,234.42	3,112.14	12.53	14.78	20.57	809.41	75.97	480.00	455.68	24.32	19.737	
3,400.00	3,369.98	3,332.61	3,204.54	12.93	15.32	20.41	842.61	77.53	498.88	473.77	25.11	19.867	
3,500.00	3,468.73	3,430.81	3,296.94	13.34	15.85	20.26	875.80	79.10	517.76	491.86	25.90	19.989	
3,600.00	3,567.48	3,529.00	3,389.34	13.74	16.39	20.13	908.99	80.66	536.64	509.95	26.69	20.103	
3,700.00	3,666.23	3,627.19	3,481.74	14.14	16.93	20.00	942.18	82.23	555.53	528.04	27.49	20.211	
3,800.00	3,764.97	3,725.39	3,574.14	14.55	17.47	19.88	975.38	83.80	574.42	546.14	28.28	20.312	
3,900.00	3,863.72	3,823.58	3,666.54	14.95	18.01	19.77	1,008.57	85.36	593.31	564.24	29.07	20.407	
4,000.00	3,962.47	3,921.77	3,758.94	15.36	18.54	19.67	1,041.76	86.93	612.21	582.34	29.87	20.498	
4,100.00	4,061.22	4,019.97	3,851.34	15.76	19.08	19.57	1,074.95	88.49	631.10	600.44	30.66	20.583	
4,200.00	4,159.97	4,118.16	3,943.74	16.17	19.62	19.48	1,108.15	90.06	650.00	618.55	31.46	20.664	
4,300.00	4,258.71	4,216.35	4,036.14	16.57	20.16	19.39	1,141.34	91.62	668.90	636.65	32.25	20.741	
4,400.00	4,357.46	4,314.54	4,128.54	16.98	20.70	19.31	1,174.53	93.19	687.80	654.76	33.04	20.814	
4,500.00	4,456.21	4,412.74	4,220.94	17.38	21.24	19.23	1,207.72	94.75	706.70	672.86	33.84	20.884	
4,600.00	4,554.96	4,510.93	4,313.34	17.79	21.78	19.16	1,240.92	96.32	725.61	690.97	34.64	20.950	
4,700.00	4,653.71	4,609.12	4,405.74	18.19	22.32	19.09	1,274.11	97.88	744.51	709.08	35.43	21.013	
4,800.00	4,752.45	4,707.32	4,498.14	18.60	22.86	19.02	1,307.30	99.45	763.42	727.19	36.23	21.074	
4,900.00	4,851.20	4,805.51	4,590.53	19.00	23.41	18.96	1,340.49	101.01	782.32	745.30	37.02	21.131	
5,000.00	4,949.95	4,903.70	4,682.93	19.41	23.95	18.90	1,373.69	102.58	801.23	763.41	37.82	21.186	

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 #692H
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 #692H	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		Separation		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	
5,100.00	5,048.70	5,001.89	4,775.33	19.81	24.49	18.84	1,406.88	104.14	820.14	781.52	38.61	21.239		
5,200.00	5,147.45	5,100.09	4,867.73	20.22	25.03	18.79	1,440.07	105.71	839.05	799.64	39.41	21.290		
5,300.00	5,246.19	5,198.28	4,960.13	20.62	25.57	18.73	1,473.26	107.27	857.96	817.75	40.21	21.338		
5,400.00	5,344.94	5,296.47	5,052.53	21.03	26.11	18.68	1,506.46	108.84	876.87	835.86	41.00	21.385		
5,455.76	5,400.00	5,351.22	5,104.05	21.25	26.42	18.66	1,524.96	109.71	887.41	845.96	41.45	21.410		
5,500.00	5,443.72	5,394.63	5,144.90	21.43	26.66	18.66	1,539.64	110.40	895.94	854.14	41.80	21.434		
5,600.00	5,542.71	5,492.51	5,237.01	21.83	27.20	18.65	1,572.72	111.96	916.38	873.79	42.59	21.516		
5,700.00	5,641.93	5,590.03	5,328.77	22.22	27.73	18.61	1,605.69	113.52	938.43	895.06	43.37	21.636		
5,800.00	5,741.36	5,691.42	5,424.20	22.60	28.29	18.54	1,639.91	115.13	962.06	917.87	44.19	21.772		
5,900.00	5,840.96	5,808.06	5,534.52	22.97	28.92	18.44	1,677.72	116.92	985.94	940.82	45.12	21.851		
6,000.00	5,940.70	5,925.38	5,646.24	23.33	29.54	18.32	1,713.49	118.60	1,009.48	963.45	46.03	21.930		
6,100.00	6,040.55	6,043.38	5,759.33	23.68	30.13	18.20	1,747.15	120.19	1,032.67	985.75	46.92	22.010		
6,200.00	6,140.48	6,162.07	5,873.74	24.02	30.71	18.07	1,778.65	121.68	1,055.50	1,007.72	47.78	22.091		
6,300.00	6,240.45	6,281.43	5,989.44	24.35	31.27	17.93	1,807.94	123.06	1,077.95	1,029.33	48.62	22.173		
6,408.05	6,348.50	6,411.16	6,115.86	24.69	31.85	-162.23	1,837.03	124.43	1,101.77	1,052.30	49.47	22.271		
6,450.00	6,390.43	6,461.94	6,165.52	24.82	32.07	-54.72	1,847.64	124.93	1,109.86	1,060.07	49.79	22.291		
6,500.00	6,440.15	6,522.88	6,225.23	24.99	32.33	-51.02	1,859.79	125.50	1,116.67	1,066.50	50.17	22.258		
6,550.00	6,489.32	6,583.81	6,285.06	25.16	32.59	-50.26	1,871.30	126.05	1,120.40	1,069.86	50.54	22.170		
6,600.00	6,537.64	6,644.26	6,344.54	25.34	32.83	-50.42	1,882.10	126.55	1,121.10	1,070.20	50.89	22.030		
6,650.00	6,584.80	6,703.76	6,403.19	25.52	33.07	-51.15	1,892.11	127.03	1,118.86	1,067.63	51.23	21.839		
6,700.00	6,630.52	6,738.63	6,437.58	25.71	33.21	-51.89	1,897.84	127.15	1,114.16	1,062.64	51.52	21.626		
6,750.00	6,674.51	6,750.00	6,448.76	25.89	33.26	-52.42	1,899.92	126.95	1,108.31	1,056.58	51.73	21.424		
6,800.00	6,716.50	6,782.11	6,480.15	26.08	33.40	-53.66	1,906.50	125.59	1,101.20	1,049.19	52.00	21.176		
6,850.00	6,756.24	6,800.00	6,497.51	26.28	33.48	-54.72	1,910.62	124.31	1,093.31	1,041.10	52.21	20.939		
6,900.00	6,793.47	6,819.56	6,516.37	26.48	33.57	-55.98	1,915.50	122.50	1,084.71	1,032.27	52.44	20.687		
6,950.00	6,827.97	6,835.76	6,531.87	26.69	33.65	-57.26	1,919.83	120.67	1,075.59	1,022.94	52.65	20.430		
7,000.00	6,859.53	6,850.00	6,545.40	26.91	33.72	-58.56	1,923.85	118.81	1,066.12	1,013.26	52.87	20.167		
7,050.00	6,887.94	6,850.00	6,545.40	27.14	33.72	-59.27	1,923.85	118.81	1,056.68	1,003.69	52.99	19.941		
7,100.00	6,913.05	6,873.80	6,567.80	27.38	33.84	-61.13	1,931.02	115.19	1,046.91	993.55	53.36	19.618		
7,150.00	6,934.68	6,882.96	6,576.35	27.64	33.89	-62.34	1,933.92	113.62	1,037.52	983.86	53.66	19.335		
7,200.00	6,952.71	6,900.00	6,592.13	27.92	33.97	-63.97	1,939.54	110.46	1,028.58	974.47	54.11	19.010		
7,250.00	6,967.02	6,900.00	6,592.13	28.21	33.97	-64.67	1,939.54	110.46	1,019.96	965.52	54.44	18.735		
7,300.00	6,977.54	6,900.00	6,592.13	28.52	33.97	-65.31	1,939.54	110.46	1,012.04	957.20	54.84	18.454		
7,350.00	6,984.18	6,900.00	6,592.13	28.83	33.97	-65.90	1,939.54	110.46	1,004.88	949.57	55.32	18.166		
7,400.00	6,986.92	6,900.00	6,592.13	29.16	33.97	-66.42	1,939.54	110.46	998.56	942.69	55.87	17.873		
7,409.89	6,987.00	6,900.00	6,592.13	29.23	33.97	-66.51	1,939.54	110.46	997.41	941.42	55.99	17.814		
7,500.00	6,987.00	6,900.00	6,592.13	29.85	33.97	-66.51	1,939.54	110.46	991.15	933.98	57.17	17.336		
7,523.98	6,987.00	6,900.00	6,592.13	30.03	33.97	-66.51	1,939.54	110.46	990.86	933.35	57.52	17.228		
7,600.00	6,987.00	6,900.00	6,592.13	30.61	33.97	-66.51	1,939.54	110.46	993.77	935.14	58.63	16.950		
7,700.00	6,987.00	6,900.00	6,592.13	31.41	33.97	-66.51	1,939.54	110.46	1,006.37	946.24	60.14	16.734		
7,800.00	6,987.00	6,900.00	6,592.13	32.27	33.97	-66.51	1,939.54	110.46	1,028.59	966.98	61.61	16.695		
7,900.00	6,987.00	6,900.00	6,592.13	33.17	33.97	-66.51	1,939.54	110.46	1,059.81	996.84	62.97	16.830		
8,000.00	6,987.00	6,900.00	6,592.13	34.12	33.97	-66.51	1,939.54	110.46	1,099.27	1,035.10	64.18	17.129		
8,100.00	6,987.00	6,900.00	6,592.13	35.10	33.97	-66.51	1,939.54	110.46	1,146.13	1,080.92	65.21	17.577		
8,200.00	6,987.00	6,900.00	6,592.13	36.12	33.97	-66.51	1,939.54	110.46	1,199.50	1,133.44	66.06	18.157		
8,300.00	6,987.00	6,900.00	6,592.13	37.17	33.97	-66.51	1,939.54	110.46	1,258.58	1,191.82	66.76	18.853		
8,314.89	6,987.00	6,900.00	6,592.13	37.33	33.97	-66.51	1,939.54	110.46	1,267.81	1,200.96	66.85	18.966		
8,400.00	6,987.00	6,900.00	6,592.13	38.25	33.97	-65.28	1,939.54	110.46	1,324.28	1,256.97	67.31	19.674		
8,500.00	6,987.00	6,900.00	6,592.13	39.35	33.97	-63.36	1,939.54	110.46	1,398.31	1,330.55	67.76	20.637		
8,600.00	6,987.00	6,900.00	6,592.13	40.45	33.97	-60.79	1,939.54	110.46	1,479.12	1,411.00	68.12	21.715		
8,700.00	6,987.00	6,900.00	6,592.13	41.56	33.97	-57.28	1,939.54	110.46	1,565.30	1,496.89	68.41	22.882		
8,800.00	6,987.00	6,900.00	6,592.13	42.66	33.97	-52.41	1,939.54	110.46	1,655.62	1,586.98	68.65	24.118		

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 #692H
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 #692H	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)	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)			
8,900.00	6,987.00	6,900.00	6,592.13	43.75	33.97	-45.51	1,939.54	110.46	1,749.05	1,680.20	68.85	25.404	
9,000.00	6,987.00	6,900.00	6,592.13	44.83	33.97	-35.53	1,939.54	110.46	1,844.69	1,775.66	69.02	26.726	
9,071.74	6,987.00	6,880.87	6,574.41	45.59	33.87	-24.09	1,933.25	113.98	1,913.90	1,845.02	68.87	27.788	
9,100.00	6,987.00	6,879.47	6,573.10	45.89	33.87	-23.98	1,932.81	114.23	1,941.37	1,872.47	68.90	28.177	
9,200.00	6,987.00	6,874.70	6,568.65	46.97	33.84	-23.58	1,931.30	115.03	2,038.72	1,969.74	68.98	29.556	
9,300.00	6,987.00	6,870.23	6,564.46	48.07	33.82	-23.21	1,929.91	115.77	2,136.28	2,067.23	69.05	30.938	
9,400.00	6,987.00	6,850.00	6,545.40	49.20	33.72	-21.63	1,923.85	118.81	2,234.25	2,165.33	68.92	32.418	
9,500.00	6,987.00	6,850.00	6,545.40	50.36	33.72	-21.63	1,923.85	118.81	2,332.06	2,263.03	69.03	33.783	
9,600.00	6,987.00	6,850.00	6,545.40	51.54	33.72	-21.63	1,923.85	118.81	2,430.05	2,360.91	69.13	35.151	
9,700.00	6,987.00	6,850.00	6,545.40	52.74	33.72	-21.63	1,923.85	118.81	2,528.19	2,458.97	69.22	36.523	
9,800.00	6,987.00	6,850.00	6,545.40	53.96	33.72	-21.63	1,923.85	118.81	2,626.48	2,557.17	69.31	37.897	
9,900.00	6,987.00	6,850.00	6,545.40	55.21	33.72	-21.63	1,923.85	118.81	2,724.89	2,655.50	69.38	39.273	
10,000.00	6,987.00	6,850.00	6,545.40	56.47	33.72	-21.63	1,923.85	118.81	2,823.41	2,753.95	69.46	40.650	
10,100.00	6,987.00	6,850.00	6,545.40	57.75	33.72	-21.63	1,923.85	118.81	2,922.03	2,852.51	69.52	42.030	
10,200.00	6,987.00	6,850.00	6,545.40	59.04	33.72	-21.63	1,923.85	118.81	3,020.75	2,951.16	69.59	43.410	
10,300.00	6,987.00	6,850.00	6,545.40	60.35	33.72	-21.63	1,923.85	118.81	3,119.54	3,049.90	69.65	44.791	
10,400.00	6,987.00	6,850.00	6,545.40	61.67	33.72	-21.63	1,923.85	118.81	3,218.41	3,148.71	69.70	46.173	
10,500.00	6,987.00	6,850.00	6,545.40	63.01	33.72	-21.63	1,923.85	118.81	3,317.35	3,247.59	69.76	47.555	
10,600.00	6,987.00	6,829.72	6,526.11	64.36	33.62	-20.19	1,918.19	121.38	3,416.03	3,346.41	69.63	49.061	
10,700.00	6,987.00	6,827.54	6,524.02	65.72	33.61	-20.04	1,917.60	121.63	3,515.02	3,445.36	69.66	50.458	
10,800.00	6,987.00	6,825.45	6,522.01	67.09	33.60	-19.90	1,917.04	121.87	3,614.06	3,544.36	69.70	51.855	
10,900.00	6,987.00	6,823.44	6,520.09	68.47	33.59	-19.77	1,916.51	122.09	3,713.14	3,643.41	69.73	53.252	
11,000.00	6,987.00	6,821.52	6,518.25	69.86	33.58	-19.64	1,916.01	122.29	3,812.26	3,742.50	69.76	54.647	
11,100.00	6,987.00	6,800.00	6,497.51	71.26	33.48	-18.30	1,910.62	124.31	3,911.71	3,842.08	69.63	56.178	
11,200.00	6,987.00	6,800.00	6,497.51	72.67	33.48	-18.30	1,910.62	124.31	4,010.86	3,941.18	69.68	57.561	
11,300.00	6,987.00	6,800.00	6,497.51	74.09	33.48	-18.30	1,910.62	124.31	4,110.05	4,040.32	69.73	58.944	
11,400.00	6,987.00	6,800.00	6,497.51	75.51	33.48	-18.30	1,910.62	124.31	4,209.28	4,139.51	69.78	60.326	
11,500.00	6,987.00	6,800.00	6,497.51	76.94	33.48	-18.30	1,910.62	124.31	4,308.55	4,238.72	69.82	61.708	
11,600.00	6,987.00	6,800.00	6,497.51	78.38	33.48	-18.30	1,910.62	124.31	4,407.84	4,337.98	69.87	63.088	
11,700.00	6,987.00	6,800.00	6,497.51	79.82	33.48	-18.30	1,910.62	124.31	4,507.17	4,437.26	69.91	64.468	
11,800.00	6,987.00	6,800.00	6,497.51	81.27	33.48	-18.30	1,910.62	124.31	4,606.53	4,536.57	69.96	65.847	
11,900.00	6,987.00	6,800.00	6,497.51	82.73	33.48	-18.30	1,910.62	124.31	4,705.92	4,635.91	70.00	67.224	
12,000.00	6,987.00	6,800.00	6,497.51	84.19	33.48	-18.30	1,910.62	124.31	4,805.33	4,735.28	70.05	68.601	
12,100.00	6,987.00	6,800.00	6,497.51	85.66	33.48	-18.30	1,910.62	124.31	4,904.76	4,834.67	70.09	69.976	
12,200.00	6,987.00	6,800.00	6,497.51	87.13	33.48	-18.30	1,910.62	124.31	5,004.22	4,934.08	70.14	71.350	
12,300.00	6,987.00	6,800.00	6,497.51	88.61	33.48	-18.30	1,910.62	124.31	5,103.70	5,033.51	70.18	72.722	
12,400.00	6,987.00	6,800.00	6,497.51	90.09	33.48	-18.30	1,910.62	124.31	5,203.19	5,132.97	70.23	74.093	
12,500.00	6,987.00	6,800.00	6,497.51	91.57	33.48	-18.30	1,910.62	124.31	5,302.71	5,232.44	70.27	75.462	
12,600.00	6,987.00	6,800.00	6,497.51	93.06	33.48	-18.30	1,910.62	124.31	5,402.25	5,331.93	70.31	76.830	
12,700.00	6,987.00	6,800.00	6,497.51	94.55	33.48	-18.30	1,910.62	124.31	5,501.80	5,431.44	70.36	78.196	
12,800.00	6,987.00	6,800.00	6,497.51	96.05	33.48	-18.30	1,910.62	124.31	5,601.37	5,530.96	70.40	79.560	
12,900.00	6,987.00	6,800.00	6,497.51	97.55	33.48	-18.30	1,910.62	124.31	5,700.95	5,630.50	70.45	80.923	
13,000.00	6,987.00	6,800.00	6,497.51	99.05	33.48	-18.30	1,910.62	124.31	5,800.55	5,730.05	70.49	82.284	
13,100.00	6,987.00	6,800.00	6,497.51	100.56	33.48	-18.30	1,910.62	124.31	5,900.16	5,829.62	70.54	83.643	
13,200.00	6,987.00	6,800.00	6,497.51	102.07	33.48	-18.30	1,910.62	124.31	5,999.78	5,929.19	70.59	85.000	
13,300.00	6,987.00	6,800.00	6,497.51	103.58	33.48	-18.30	1,910.62	124.31	6,099.42	6,028.78	70.63	86.355	
13,400.00	6,987.00	6,800.00	6,497.51	105.09	33.48	-18.30	1,910.62	124.31	6,199.06	6,128.39	70.68	87.709	
13,500.00	6,987.00	6,800.00	6,497.51	106.61	33.48	-18.30	1,910.62	124.31	6,298.72	6,228.00	70.72	89.060	
13,600.00	6,987.00	6,800.00	6,497.51	108.13	33.48	-18.30	1,910.62	124.31	6,398.39	6,327.62	70.77	90.409	
13,700.00	6,987.00	6,800.00	6,497.51	109.65	33.48	-18.30	1,910.62	124.31	6,498.07	6,427.25	70.82	91.756	
13,800.00	6,987.00	6,800.00	6,497.51	111.18	33.48	-18.30	1,910.62	124.31	6,597.76	6,526.90	70.87	93.101	
13,900.00	6,987.00	6,800.00	6,497.51	112.71	33.48	-18.30	1,910.62	124.31	6,697.46	6,626.55	70.91	94.444	

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 #692H
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 #692H	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 Maior 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)
14,000.00	6,987.00	6,800.00	6,497.51	114.23	33.48	-18.30	1,910.62	124.31	6,797.17	6,726.21	70.96	95.784	
14,100.00	6,987.00	6,800.00	6,497.51	115.77	33.48	-18.30	1,910.62	124.31	6,896.88	6,825.87	71.01	97.123	
14,200.00	6,987.00	6,800.00	6,497.51	117.30	33.48	-18.30	1,910.62	124.31	6,996.61	6,925.55	71.06	98.459	
14,300.00	6,987.00	6,800.00	6,497.51	118.83	33.48	-18.30	1,910.62	124.31	7,096.34	7,025.23	71.11	99.792	
14,400.00	6,987.00	6,800.00	6,497.51	120.37	33.48	-18.30	1,910.62	124.31	7,196.08	7,124.92	71.16	101.124	
14,500.00	6,987.00	6,800.00	6,497.51	121.91	33.48	-18.30	1,910.62	124.31	7,295.83	7,224.62	71.21	102.452	
14,600.00	6,987.00	6,800.00	6,497.51	123.45	33.48	-18.30	1,910.62	124.31	7,395.58	7,324.32	71.26	103.779	
14,700.00	6,987.00	6,800.00	6,497.51	124.99	33.48	-18.30	1,910.62	124.31	7,495.34	7,424.03	71.31	105.103	
14,800.00	6,987.00	6,800.00	6,497.51	126.53	33.48	-18.30	1,910.62	124.31	7,595.11	7,523.74	71.37	106.425	
14,900.00	6,987.00	6,800.00	6,497.51	128.08	33.48	-18.30	1,910.62	124.31	7,694.88	7,623.46	71.42	107.744	
15,000.00	6,987.00	6,800.00	6,497.51	129.63	33.48	-18.30	1,910.62	124.31	7,794.66	7,723.19	71.47	109.060	
15,100.00	6,987.00	6,800.00	6,497.51	131.17	33.48	-18.30	1,910.62	124.31	7,894.44	7,822.92	71.52	110.374	
15,200.00	6,987.00	6,800.00	6,497.51	132.72	33.48	-18.30	1,910.62	124.31	7,994.23	7,922.65	71.58	111.686	
15,300.00	6,987.00	6,800.00	6,497.51	134.27	33.48	-18.30	1,910.62	124.31	8,094.02	8,022.39	71.63	112.995	
15,400.00	6,987.00	6,800.00	6,497.51	135.83	33.48	-18.30	1,910.62	124.31	8,193.82	8,122.14	71.69	114.301	
15,500.00	6,987.00	6,777.09	6,475.26	137.38	33.38	-17.03	1,905.40	125.88	8,293.28	8,221.68	71.60	115.828	
15,600.00	6,987.00	6,776.58	6,474.77	138.93	33.37	-17.00	1,905.29	125.91	8,393.08	8,321.42	71.65	117.136	
15,700.00	6,987.00	6,776.08	6,474.28	140.49	33.37	-16.97	1,905.18	125.93	8,492.88	8,421.17	71.71	118.441	
15,800.00	6,987.00	6,775.59	6,473.80	142.04	33.37	-16.95	1,905.07	125.96	8,592.68	8,520.92	71.76	119.743	
15,900.00	6,987.00	6,775.11	6,473.33	143.60	33.37	-16.92	1,904.97	125.99	8,692.49	8,620.67	71.81	121.042	
16,000.00	6,987.00	6,774.64	6,472.88	145.16	33.37	-16.90	1,904.87	126.01	8,792.30	8,720.43	71.87	122.339	
16,100.00	6,987.00	6,774.18	6,472.43	146.72	33.36	-16.87	1,904.77	126.03	8,892.11	8,820.19	71.92	123.632	
16,200.00	6,987.00	6,773.73	6,471.99	148.28	33.36	-16.85	1,904.68	126.06	8,991.93	8,919.95	71.98	124.923	
16,300.00	6,987.00	6,773.29	6,471.55	149.84	33.36	-16.83	1,904.58	126.08	9,091.75	9,019.72	72.04	126.211	
16,400.00	6,987.00	6,750.00	6,448.76	151.40	33.26	-15.69	1,899.92	126.95	9,191.92	9,119.96	71.96	127.735	
16,500.00	6,987.00	6,750.00	6,448.76	152.97	33.26	-15.69	1,899.92	126.95	9,291.74	9,219.71	72.02	129.014	
16,600.00	6,987.00	6,750.00	6,448.76	154.53	33.26	-15.69	1,899.92	126.95	9,391.56	9,319.47	72.08	130.290	
16,700.00	6,987.00	6,750.00	6,448.76	156.10	33.26	-15.69	1,899.92	126.95	9,491.38	9,419.24	72.14	131.564	
16,800.00	6,987.00	6,750.00	6,448.76	157.66	33.26	-15.69	1,899.92	126.95	9,591.21	9,519.00	72.20	132.834	
16,900.00	6,987.00	6,750.00	6,448.76	159.23	33.26	-15.69	1,899.92	126.95	9,691.04	9,618.77	72.27	134.102	
17,000.00	6,987.00	6,750.00	6,448.76	160.80	33.26	-15.69	1,899.92	126.95	9,790.88	9,718.55	72.33	135.366	
17,100.00	6,987.00	6,750.00	6,448.76	162.36	33.26	-15.69	1,899.92	126.95	9,890.71	9,818.32	72.39	136.627	
17,200.00	6,987.00	6,750.00	6,448.76	163.93	33.26	-15.69	1,899.92	126.95	9,990.56	9,918.10	72.46	137.886	
17,300.00	6,987.00	6,750.00	6,448.76	165.50	33.26	-15.69	1,899.92	126.95	10,090.40	10,017.88	72.52	139.141	
17,400.00	6,987.00	6,750.00	6,448.76	167.07	33.26	-15.69	1,899.92	126.95	10,190.25	10,117.66	72.58	140.393	
17,500.00	6,987.00	6,750.00	6,448.76	168.64	33.26	-15.69	1,899.92	126.95	10,290.10	10,217.45	72.65	141.643	
17,600.00	6,987.00	6,750.00	6,448.76	170.21	33.26	-15.69	1,899.92	126.95	10,389.95	10,317.24	72.71	142.889	
17,700.00	6,987.00	6,750.00	6,448.76	171.78	33.26	-15.69	1,899.92	126.95	10,489.81	10,417.03	72.78	144.132	
17,800.00	6,987.00	6,750.00	6,448.76	173.36	33.26	-15.69	1,899.92	126.95	10,589.67	10,516.82	72.85	145.372	
17,900.00	6,987.00	6,750.00	6,448.76	174.93	33.26	-15.69	1,899.92	126.95	10,689.53	10,616.62	72.91	146.608	
18,000.00	6,987.00	6,750.00	6,448.76	176.50	33.26	-15.69	1,899.92	126.95	10,789.39	10,716.42	72.98	147.842	
18,100.00	6,987.00	6,750.00	6,448.76	178.08	33.26	-15.69	1,899.92	126.95	10,889.26	10,816.21	73.05	149.072	
18,200.00	6,987.00	6,750.00	6,448.76	179.65	33.26	-15.69	1,899.92	126.95	10,989.13	10,916.02	73.11	150.300	
18,300.00	6,987.00	6,750.00	6,448.76	181.23	33.26	-15.69	1,899.92	126.95	11,089.00	11,015.82	73.18	151.524	
18,400.00	6,987.00	6,750.00	6,448.76	182.80	33.26	-15.69	1,899.92	126.95	11,188.88	11,115.62	73.25	152.745	
18,500.00	6,987.00	6,750.00	6,448.76	184.38	33.26	-15.69	1,899.92	126.95	11,288.75	11,215.43	73.32	153.962	
18,600.00	6,987.00	6,750.00	6,448.76	185.96	33.26	-15.69	1,899.92	126.95	11,388.63	11,315.24	73.39	155.177	
18,700.00	6,987.00	6,750.00	6,448.76	187.53	33.26	-15.69	1,899.92	126.95	11,488.51	11,415.05	73.46	156.388	
18,800.00	6,987.00	6,750.00	6,448.76	189.11	33.26	-15.69	1,899.92	126.95	11,588.39	11,514.86	73.53	157.596	
18,900.00	6,987.00	6,750.00	6,448.76	190.69	33.26	-15.69	1,899.92	126.95	11,688.28	11,614.68	73.60	158.801	
19,000.00	6,987.00	6,750.00	6,448.76	192.27	33.26	-15.69	1,899.92	126.95	11,788.17	11,714.49	73.68	160.002	
19,100.00	6,987.00	6,750.00	6,448.76	193.85	33.26	-15.69	1,899.92	126.95	11,888.05	11,814.31	73.75	161.200	

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 #692H
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 #692H	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		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		
19,200.00	6,987.00	6,750.00	6,448.76	195.43	33.26	-15.69	1,899.92	126.95	11,987.94	11,914.12	73.82	162.395		
19,255.69	6,987.00	6,750.00	6,448.76	196.31	33.26	-15.69	1,899.92	126.95	12,043.58	11,969.72	73.86	163.059		
19,300.00	6,987.00	6,750.00	6,448.76	197.01	33.26	-15.69	1,899.92	126.95	12,087.84	12,013.94	73.89	163.587		
19,400.00	6,987.00	6,750.00	6,448.76	198.59	33.26	-15.69	1,899.92	126.95	12,187.73	12,113.76	73.97	164.775		
19,468.80	6,987.00	6,750.00	6,448.76	199.49	33.26	-15.69	1,899.92	126.95	12,256.46	12,178.56	77.90	157.327		

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 #692H
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 #692H	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	29.27	34.95	19.59	40.06				
100.00	100.00	100.00	100.00	0.25	0.25	29.27	34.95	19.59	40.06	39.56	0.50	79.832	
200.00	200.00	200.00	200.00	0.61	0.61	29.27	34.95	19.59	40.06	38.85	1.22	32.872	
300.00	300.00	300.00	300.00	0.97	0.97	29.27	34.95	19.59	40.06	38.13	1.94	20.697	
400.00	400.00	400.00	400.00	1.33	1.33	29.27	34.95	19.59	40.06	37.41	2.65	15.103	
500.00	500.00	500.00	500.00	1.68	1.68	29.27	34.95	19.59	40.06	36.69	3.37	11.890	
510.00	510.00	510.00	510.00	1.72	1.72	29.27	34.95	19.59	40.06	36.62	3.44	11.642	CC
600.00	600.00	599.41	599.40	2.04	2.04	28.95	35.38	19.57	40.43	36.35	4.08	9.899	ES
700.00	700.00	698.10	698.04	2.40	2.40	26.61	38.77	19.43	43.41	38.62	4.80	9.053	
800.00	799.98	796.58	796.27	2.76	2.75	30.14	45.55	19.14	48.03	42.53	5.50	8.732	
900.00	899.84	894.88	894.05	3.12	3.11	28.05	55.67	18.72	52.81	46.61	6.20	8.517	
1,000.00	999.45	993.01	991.25	3.48	3.47	26.54	69.11	18.16	57.68	50.79	6.90	8.365	
1,100.00	1,098.70	1,090.98	1,087.77	3.85	3.84	25.48	85.83	17.47	62.62	55.03	7.59	8.253	
1,153.80	1,151.90	1,143.89	1,139.65	4.04	4.04	25.08	96.21	17.03	65.27	57.30	7.97	8.194	
1,200.00	1,197.53	1,190.04	1,184.86	4.21	4.22	24.85	105.49	16.65	67.37	59.07	8.30	8.113	
1,300.00	1,296.27	1,289.94	1,282.71	4.59	4.62	24.40	125.57	15.81	71.93	62.89	9.04	7.956	
1,400.00	1,395.02	1,389.83	1,380.56	4.97	5.03	24.01	145.66	14.97	76.50	66.71	9.79	7.816	
1,500.00	1,493.77	1,489.73	1,478.41	5.36	5.44	23.66	165.74	14.14	81.07	70.53	10.53	7.695	
1,600.00	1,592.52	1,589.62	1,576.26	5.74	5.85	23.35	185.83	13.30	85.64	74.35	11.29	7.588	
1,700.00	1,691.27	1,689.51	1,674.11	6.14	6.27	23.06	205.92	12.46	90.21	78.17	12.04	7.493	
1,800.00	1,790.01	1,789.41	1,771.96	6.53	6.69	22.81	226.00	11.63	94.78	81.99	12.79	7.409	
1,900.00	1,888.76	1,889.30	1,869.81	6.92	7.11	22.58	246.09	10.79	99.36	85.81	13.55	7.333	
2,000.00	1,987.51	1,989.20	1,967.66	7.32	7.53	22.37	266.18	9.95	103.94	89.63	14.31	7.264	
2,100.00	2,086.26	2,089.09	2,065.52	7.72	7.96	22.18	286.26	9.12	108.52	93.45	15.07	7.202	
2,200.00	2,185.01	2,188.99	2,163.37	8.11	8.38	22.00	306.35	8.28	113.10	97.27	15.83	7.146	
2,300.00	2,283.75	2,288.88	2,261.22	8.51	8.81	21.84	326.43	7.45	117.68	101.09	16.59	7.094	
2,400.00	2,382.50	2,388.78	2,359.07	8.91	9.23	21.69	346.52	6.61	122.26	104.91	17.35	7.047	
2,500.00	2,481.25	2,488.67	2,456.92	9.31	9.66	21.55	366.61	5.77	126.85	108.73	18.11	7.004	
2,600.00	2,580.00	2,588.56	2,554.77	9.71	10.09	21.42	386.69	4.94	131.43	112.56	18.87	6.964	
2,700.00	2,678.75	2,688.46	2,652.62	10.11	10.52	21.30	406.78	4.10	136.01	116.38	19.64	6.927	
2,800.00	2,777.49	2,788.35	2,750.47	10.52	10.95	21.18	426.87	3.26	140.60	120.20	20.40	6.892	
2,900.00	2,876.24	2,888.25	2,848.32	10.92	11.38	21.08	446.95	2.43	145.18	124.02	21.16	6.860	
3,000.00	2,974.99	2,988.14	2,946.17	11.32	11.81	20.98	467.04	1.59	149.77	127.84	21.93	6.831	
3,100.00	3,073.74	3,088.04	3,044.02	11.72	12.24	20.88	487.12	0.75	154.36	131.67	22.69	6.803	
3,200.00	3,172.49	3,187.93	3,141.87	12.13	12.67	20.79	507.21	-0.08	158.94	135.49	23.45	6.777	
3,300.00	3,271.23	3,287.83	3,239.72	12.53	13.10	20.71	527.30	-0.92	163.53	139.31	24.22	6.752	
3,400.00	3,369.98	3,387.72	3,337.57	12.93	13.53	20.63	547.38	-1.76	168.12	143.13	24.98	6.729	
3,500.00	3,468.73	3,487.61	3,435.42	13.34	13.96	20.56	567.47	-2.59	172.70	146.96	25.75	6.707	
3,600.00	3,567.48	3,587.51	3,533.27	13.74	14.40	20.49	587.56	-3.43	177.29	150.78	26.51	6.687	
3,700.00	3,666.23	3,687.40	3,631.13	14.14	14.83	20.42	607.64	-4.27	181.88	154.60	27.28	6.667	
3,800.00	3,764.97	3,787.30	3,728.98	14.55	15.26	20.35	627.73	-5.10	186.47	158.42	28.04	6.649	
3,900.00	3,863.72	3,887.19	3,826.83	14.95	15.69	20.29	647.81	-5.94	191.06	162.25	28.81	6.632	
4,000.00	3,962.47	3,987.09	3,924.68	15.36	16.13	20.24	667.90	-6.78	195.65	166.07	29.58	6.615	
4,100.00	4,061.22	4,086.98	4,022.53	15.76	16.56	20.18	687.99	-7.61	200.24	169.89	30.34	6.599	
4,200.00	4,159.97	4,186.88	4,120.38	16.17	16.99	20.13	708.07	-8.45	204.83	173.72	31.11	6.584	
4,300.00	4,258.71	4,286.77	4,218.23	16.57	17.43	20.08	728.16	-9.29	209.41	177.54	31.87	6.570	
4,400.00	4,357.46	4,386.67	4,316.08	16.98	17.86	20.03	748.25	-10.12	214.00	181.36	32.64	6.557	
4,500.00	4,456.21	4,486.56	4,413.93	17.38	18.29	19.98	768.33	-10.96	218.59	185.19	33.41	6.544	
4,600.00	4,554.96	4,586.45	4,511.78	17.79	18.73	19.94	788.42	-11.80	223.18	189.01	34.17	6.531	
4,700.00	4,653.71	4,686.35	4,609.63	18.19	19.16	19.89	808.50	-12.63	227.77	192.84	34.94	6.519	
4,800.00	4,752.45	4,786.24	4,707.48	18.60	19.59	19.85	828.59	-13.47	232.36	196.66	35.70	6.508	
4,900.00	4,851.20	4,886.14	4,805.33	19.00	20.03	19.81	848.68	-14.31	236.95	200.48	36.47	6.497	

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 #692H
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 #692H	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												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)			
5,000.00	4,949.95	4,986.03	4,903.18	19.41	20.46	19.78	868.76	-15.14	241.54	204.31	37.24	6.487	
5,100.00	5,048.70	5,085.93	5,001.03	19.81	20.89	19.74	888.85	-15.98	246.13	208.13	38.00	6.477	
5,200.00	5,147.45	5,185.82	5,098.89	20.22	21.33	19.70	908.94	-16.82	250.73	211.96	38.77	6.467	
5,300.00	5,246.19	5,285.72	5,196.74	20.62	21.76	19.67	929.02	-17.65	255.32	215.78	39.54	6.458	
5,400.00	5,344.94	5,385.61	5,294.59	21.03	22.20	19.64	949.11	-18.49	259.91	219.60	40.30	6.449	
5,455.76	5,400.00	5,441.31	5,349.14	21.25	22.44	19.62	960.31	-18.96	262.47	221.74	40.73	6.444 SF	
5,500.00	5,443.72	5,485.50	5,392.43	21.43	22.63	19.60	969.19	-19.33	264.66	223.59	41.07	6.444	
5,600.00	5,542.71	5,587.45	5,492.37	21.83	23.07	19.49	989.31	-20.16	270.43	228.58	41.85	6.462	
5,700.00	5,641.93	5,689.58	5,592.67	22.22	23.51	19.32	1,008.58	-20.97	277.00	234.38	42.62	6.500	
5,800.00	5,741.36	5,791.71	5,693.13	22.60	23.94	19.09	1,026.95	-21.73	284.35	240.98	43.38	6.556	
5,900.00	5,840.96	5,893.85	5,793.76	22.97	24.36	18.80	1,044.43	-22.46	292.50	248.37	44.12	6.629	
6,000.00	5,940.70	5,996.00	5,894.55	23.33	24.78	18.47	1,061.02	-23.15	301.44	256.58	44.86	6.720	
6,100.00	6,040.55	6,098.14	5,995.48	23.68	25.19	18.10	1,076.70	-23.80	311.19	265.60	45.58	6.827	
6,200.00	6,140.48	6,200.30	6,096.55	24.02	25.60	17.70	1,091.49	-24.42	321.74	275.44	46.30	6.949	
6,300.00	6,240.45	6,302.45	6,197.76	24.35	26.00	17.27	1,105.37	-25.00	333.10	286.10	47.01	7.086	
6,408.05	6,348.50	6,412.84	6,307.25	24.69	26.42	-163.22	1,119.36	-25.58	346.29	298.56	47.74	7.254	
6,450.00	6,390.43	6,455.77	6,349.88	24.82	26.59	-56.19	1,124.52	-25.80	350.64	302.63	48.01	7.303	
6,500.00	6,440.15	6,505.36	6,399.12	24.99	26.78	-53.28	1,130.30	-26.07	353.36	305.03	48.33	7.311	
6,550.00	6,489.32	6,550.00	6,443.29	25.16	26.95	-53.70	1,136.38	-28.10	354.41	305.78	48.63	7.288	
6,600.00	6,537.64	6,585.49	6,478.11	25.34	27.10	-55.08	1,142.25	-31.68	354.59	305.71	48.88	7.255	
6,633.88	6,569.74	6,610.50	6,502.41	25.46	27.20	-56.55	1,146.92	-35.23	354.56	305.54	49.02	7.233	
6,650.00	6,584.80	6,621.92	6,513.45	25.52	27.25	-57.34	1,149.20	-37.14	354.58	305.50	49.08	7.224	
6,700.00	6,630.52	6,650.00	6,540.33	25.71	27.38	-59.48	1,155.18	-42.57	355.18	306.02	49.16	7.225	
6,750.00	6,674.51	6,685.13	6,573.46	25.89	27.54	-62.67	1,163.42	-50.86	357.06	307.72	49.33	7.238	
6,800.00	6,716.50	6,711.51	6,597.90	26.08	27.66	-65.19	1,170.14	-58.16	361.15	311.77	49.37	7.315	
6,850.00	6,756.24	6,734.40	6,618.77	26.28	27.77	-67.31	1,176.32	-65.23	368.07	318.70	49.36	7.456	
6,900.00	6,793.47	6,750.00	6,632.80	26.48	27.84	-68.37	1,180.73	-70.43	378.32	329.13	49.19	7.692	
6,950.00	6,827.97	6,770.18	6,650.70	26.69	27.94	-69.80	1,186.66	-77.62	392.06	342.77	49.29	7.953	
7,000.00	6,859.53	6,783.46	6,662.32	26.91	28.00	-70.02	1,190.69	-82.63	409.40	360.11	49.30	8.305	
7,050.00	6,887.94	6,800.00	6,676.60	27.14	28.09	-70.38	1,195.85	-89.18	430.21	380.58	49.62	8.669	
7,100.00	6,913.05	6,800.00	6,676.60	27.38	28.09	-68.09	1,195.85	-89.18	453.94	404.55	49.40	9.189	
7,150.00	6,934.68	6,800.00	6,676.60	27.64	28.09	-65.49	1,195.85	-89.18	480.50	431.15	49.35	9.737	
7,200.00	6,952.71	6,800.00	6,676.60	27.92	28.09	-62.64	1,195.85	-89.18	509.28	459.81	49.47	10.295	
7,250.00	6,967.02	6,812.06	6,686.88	28.21	28.15	-61.25	1,199.72	-94.16	539.52	489.24	50.29	10.729	
7,300.00	6,977.54	6,800.00	6,676.60	28.52	28.09	-56.48	1,195.85	-89.18	571.53	521.36	50.16	11.393	
7,350.00	6,984.18	6,800.00	6,676.60	28.83	28.09	-53.32	1,195.85	-89.18	604.16	553.48	50.68	11.921	
7,400.00	6,986.92	6,800.00	6,676.60	29.16	28.09	-50.20	1,195.85	-89.18	637.36	586.10	51.26	12.433	
7,409.89	6,987.00	6,800.00	6,676.60	29.23	28.09	-49.59	1,195.85	-89.18	643.97	592.59	51.38	12.533	
7,500.00	6,987.00	6,800.00	6,676.60	29.85	28.09	-49.59	1,195.85	-89.18	707.41	655.03	52.38	13.505	
7,600.00	6,987.00	6,800.00	6,676.60	30.61	28.09	-49.59	1,195.85	-89.18	783.95	730.71	53.24	14.724	
7,700.00	6,987.00	6,778.64	6,658.12	31.41	27.98	-47.15	1,189.21	-80.79	864.71	811.39	53.32	16.217	
7,800.00	6,987.00	6,770.93	6,651.36	32.27	27.94	-46.29	1,186.88	-77.90	949.18	895.50	53.68	17.682	
7,900.00	6,987.00	6,750.00	6,632.80	33.17	27.84	-44.00	1,180.73	-70.43	1,036.51	982.87	53.64	19.322	
8,000.00	6,987.00	6,750.00	6,632.80	34.12	27.84	-44.00	1,180.73	-70.43	1,125.51	1,071.48	54.03	20.831	
8,100.00	6,987.00	6,750.00	6,632.80	35.10	27.84	-44.00	1,180.73	-70.43	1,216.22	1,161.88	54.34	22.382	
8,200.00	6,987.00	6,750.00	6,632.80	36.12	27.84	-44.00	1,180.73	-70.43	1,308.29	1,253.70	54.59	23.966	
8,300.00	6,987.00	6,750.00	6,632.80	37.17	27.84	-44.00	1,180.73	-70.43	1,401.44	1,346.64	54.79	25.577	
8,314.89	6,987.00	6,750.00	6,632.80	37.33	27.84	-44.00	1,180.73	-70.43	1,415.39	1,360.57	54.82	25.819	
8,400.00	6,987.00	6,733.60	6,618.04	38.25	27.76	-34.50	1,176.10	-64.97	1,495.76	1,441.05	54.70	27.342	
8,500.00	6,987.00	6,727.38	6,612.40	39.35	27.73	-21.50	1,174.39	-62.99	1,591.90	1,537.11	54.79	29.053	
8,600.00	6,987.00	6,720.68	6,606.30	40.45	27.70	-5.09	1,172.58	-60.91	1,689.03	1,634.15	54.88	30.779	
8,700.00	6,987.00	6,700.00	6,587.28	41.56	27.60	12.85	1,167.15	-54.86	1,786.69	1,731.93	54.76	32.627	

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 #692H
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 #692H	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	
8,800.00	6,987.00	6,700.00	6,587.28	42.66	27.60	28.36	1,167.15	-54.86	1,883.91	1,828.97	54.94	34.290		
8,900.00	6,987.00	6,700.00	6,587.28	43.75	27.60	40.90	1,167.15	-54.86	1,980.65	1,925.54	55.11	35.939		
9,000.00	6,987.00	6,700.00	6,587.28	44.83	27.60	50.34	1,167.15	-54.86	2,076.54	2,021.26	55.27	37.568		
9,071.74	6,987.00	6,700.00	6,587.28	45.59	27.60	55.54	1,167.15	-54.86	2,144.61	2,089.23	55.38	38.722		
9,100.00	6,987.00	6,700.00	6,587.28	45.89	27.60	55.54	1,167.15	-54.86	2,171.32	2,115.89	55.43	39.175		
9,200.00	6,987.00	6,676.98	6,565.83	46.97	27.50	54.39	1,161.43	-48.79	2,265.68	2,210.37	55.31	40.961		
9,300.00	6,987.00	6,670.44	6,559.68	48.07	27.47	54.07	1,159.87	-47.20	2,360.63	2,305.25	55.38	42.624		
9,400.00	6,987.00	6,650.00	6,540.33	49.20	27.38	53.07	1,155.18	-42.57	2,456.08	2,400.78	55.30	44.413		
9,500.00	6,987.00	6,650.00	6,540.33	50.36	27.38	53.07	1,155.18	-42.57	2,551.57	2,496.14	55.43	46.036		
9,600.00	6,987.00	6,650.00	6,540.33	51.54	27.38	53.07	1,155.18	-42.57	2,647.39	2,591.85	55.54	47.667		
9,700.00	6,987.00	6,650.00	6,540.33	52.74	27.38	53.07	1,155.18	-42.57	2,743.51	2,687.87	55.65	49.304		
9,800.00	6,987.00	6,650.00	6,540.33	53.96	27.38	53.07	1,155.18	-42.57	2,839.90	2,784.15	55.74	50.946		
9,900.00	6,987.00	6,650.00	6,540.33	55.21	27.38	53.07	1,155.18	-42.57	2,936.53	2,880.69	55.84	52.592		
10,000.00	6,987.00	6,650.00	6,540.33	56.47	27.38	53.07	1,155.18	-42.57	3,033.38	2,977.45	55.92	54.243		
10,100.00	6,987.00	6,650.00	6,540.33	57.75	27.38	53.07	1,155.18	-42.57	3,130.42	3,074.42	56.00	55.897		
10,200.00	6,987.00	6,627.32	6,518.64	59.04	27.28	51.99	1,150.31	-38.10	3,227.25	3,171.35	55.90	57.731		
10,300.00	6,987.00	6,623.78	6,515.24	60.35	27.26	51.82	1,149.58	-37.46	3,324.50	3,268.55	55.95	59.417		
10,400.00	6,987.00	6,620.42	6,512.00	61.67	27.25	51.66	1,148.89	-36.88	3,421.90	3,365.90	56.00	61.104		
10,500.00	6,987.00	6,600.00	6,492.24	63.01	27.16	50.70	1,144.90	-33.64	3,519.66	3,463.74	55.92	62.936		
10,600.00	6,987.00	6,600.00	6,492.24	64.36	27.16	50.70	1,144.90	-33.64	3,617.23	3,561.24	56.00	64.597		
10,700.00	6,987.00	6,600.00	6,492.24	65.72	27.16	50.70	1,144.90	-33.64	3,714.94	3,658.87	56.07	66.260		
10,800.00	6,987.00	6,600.00	6,492.24	67.09	27.16	50.70	1,144.90	-33.64	3,812.76	3,756.62	56.13	67.922		
10,900.00	6,987.00	6,600.00	6,492.24	68.47	27.16	50.70	1,144.90	-33.64	3,910.69	3,854.49	56.20	69.585		
11,000.00	6,987.00	6,600.00	6,492.24	69.86	27.16	50.70	1,144.90	-33.64	4,008.72	3,952.46	56.26	71.249		
11,100.00	6,987.00	6,600.00	6,492.24	71.26	27.16	50.70	1,144.90	-33.64	4,106.85	4,050.53	56.33	72.912		
11,200.00	6,987.00	6,600.00	6,492.24	72.67	27.16	50.70	1,144.90	-33.64	4,205.07	4,148.68	56.39	74.574		
11,300.00	6,987.00	6,600.00	6,492.24	74.09	27.16	50.70	1,144.90	-33.64	4,303.37	4,246.92	56.45	76.236		
11,400.00	6,987.00	6,600.00	6,492.24	75.51	27.16	50.70	1,144.90	-33.64	4,401.75	4,345.24	56.51	77.897		
11,500.00	6,987.00	6,600.00	6,492.24	76.94	27.16	50.70	1,144.90	-33.64	4,500.19	4,443.63	56.57	79.556		
11,600.00	6,987.00	6,600.00	6,492.24	78.38	27.16	50.70	1,144.90	-33.64	4,598.71	4,542.08	56.62	81.215		
11,700.00	6,987.00	6,600.00	6,492.24	79.82	27.16	50.70	1,144.90	-33.64	4,697.29	4,640.60	56.68	82.872		
11,800.00	6,987.00	6,600.00	6,492.24	81.27	27.16	50.70	1,144.90	-33.64	4,795.92	4,739.18	56.74	84.527		
11,900.00	6,987.00	6,600.00	6,492.24	82.73	27.16	50.70	1,144.90	-33.64	4,894.61	4,837.82	56.80	86.180		
12,000.00	6,987.00	6,600.00	6,492.24	84.19	27.16	50.70	1,144.90	-33.64	4,993.36	4,936.51	56.85	87.832		
12,100.00	6,987.00	6,600.00	6,492.24	85.66	27.16	50.70	1,144.90	-33.64	5,092.15	5,035.24	56.91	89.481		
12,200.00	6,987.00	6,600.00	6,492.24	87.13	27.16	50.70	1,144.90	-33.64	5,190.99	5,134.03	56.96	91.128		
12,300.00	6,987.00	6,600.00	6,492.24	88.61	27.16	50.70	1,144.90	-33.64	5,289.87	5,232.85	57.02	92.773		
12,400.00	6,987.00	6,577.21	6,470.02	90.09	27.06	49.65	1,140.80	-30.69	5,388.41	5,331.46	56.95	94.615		
12,500.00	6,987.00	6,575.81	6,468.65	91.57	27.06	49.59	1,140.56	-30.53	5,487.32	5,430.32	57.00	96.268		
12,600.00	6,987.00	6,574.46	6,467.32	93.06	27.05	49.53	1,140.33	-30.38	5,586.27	5,529.22	57.05	97.919		
12,700.00	6,987.00	6,573.15	6,466.04	94.55	27.05	49.47	1,140.11	-30.24	5,685.26	5,628.16	57.10	99.566		
12,800.00	6,987.00	6,550.00	6,443.29	96.05	26.95	48.43	1,136.38	-28.10	5,784.63	5,727.59	57.04	101.415		
12,900.00	6,987.00	6,550.00	6,443.29	97.55	26.95	48.43	1,136.38	-28.10	5,883.64	5,826.54	57.10	103.046		
13,000.00	6,987.00	6,550.00	6,443.29	99.05	26.95	48.43	1,136.38	-28.10	5,982.68	5,925.52	57.16	104.674		
13,100.00	6,987.00	6,550.00	6,443.29	100.56	26.95	48.43	1,136.38	-28.10	6,081.75	6,024.54	57.21	106.298		
13,200.00	6,987.00	6,550.00	6,443.29	102.07	26.95	48.43	1,136.38	-28.10	6,180.86	6,123.58	57.27	107.920		
13,300.00	6,987.00	6,550.00	6,443.29	103.58	26.95	48.43	1,136.38	-28.10	6,279.99	6,222.66	57.33	109.538		
13,400.00	6,987.00	6,550.00	6,443.29	105.09	26.95	48.43	1,136.38	-28.10	6,379.15	6,321.75	57.39	111.153		
13,500.00	6,987.00	6,550.00	6,443.29	106.61	26.95	48.43	1,136.38	-28.10	6,478.33	6,420.88	57.45	112.765		
13,600.00	6,987.00	6,550.00	6,443.29	108.13	26.95	48.43	1,136.38	-28.10	6,577.54	6,520.03	57.51	114.373		
13,700.00	6,987.00	6,550.00	6,443.29	109.65	26.95	48.43	1,136.38	-28.10	6,676.77	6,619.20	57.57	115.977		
13,800.00	6,987.00	6,550.00	6,443.29	111.18	26.95	48.43	1,136.38	-28.10	6,776.03	6,718.40	57.63	117.578		

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 #692H
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 #692H	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	
13,900.00	6,987.00	6,550.00	6,443.29	112.71	26.95	48.43	1,136.38	-28.10	6,875.30	6,817.61	57.69	119.175		
14,000.00	6,987.00	6,550.00	6,443.29	114.23	26.95	48.43	1,136.38	-28.10	6,974.60	6,916.85	57.75	120.768		
14,100.00	6,987.00	6,550.00	6,443.29	115.77	26.95	48.43	1,136.38	-28.10	7,073.92	7,016.10	57.81	122.358		
14,200.00	6,987.00	6,550.00	6,443.29	117.30	26.95	48.43	1,136.38	-28.10	7,173.25	7,115.38	57.88	123.944		
14,300.00	6,987.00	6,550.00	6,443.29	118.83	26.95	48.43	1,136.38	-28.10	7,272.61	7,214.67	57.94	125.525		
14,400.00	6,987.00	6,550.00	6,443.29	120.37	26.95	48.43	1,136.38	-28.10	7,371.98	7,313.98	58.00	127.103		
14,500.00	6,987.00	6,550.00	6,443.29	121.91	26.95	48.43	1,136.38	-28.10	7,471.37	7,413.31	58.06	128.677		
14,600.00	6,987.00	6,550.00	6,443.29	123.45	26.95	48.43	1,136.38	-28.10	7,570.77	7,512.65	58.13	130.246		
14,700.00	6,987.00	6,550.00	6,443.29	124.99	26.95	48.43	1,136.38	-28.10	7,670.19	7,612.00	58.19	131.812		
14,800.00	6,987.00	6,550.00	6,443.29	126.53	26.95	48.43	1,136.38	-28.10	7,769.63	7,711.37	58.25	133.373		
14,900.00	6,987.00	6,550.00	6,443.29	128.08	26.95	48.43	1,136.38	-28.10	7,869.08	7,810.76	58.32	134.930		
15,000.00	6,987.00	6,550.00	6,443.29	129.63	26.95	48.43	1,136.38	-28.10	7,968.54	7,910.16	58.38	136.483		
15,100.00	6,987.00	6,550.00	6,443.29	131.17	26.95	48.43	1,136.38	-28.10	8,068.02	8,009.57	58.45	138.031		
15,200.00	6,987.00	6,550.00	6,443.29	132.72	26.95	48.43	1,136.38	-28.10	8,167.51	8,108.99	58.52	139.575		
15,300.00	6,987.00	6,550.00	6,443.29	134.27	26.95	48.43	1,136.38	-28.10	8,267.01	8,208.43	58.58	141.115		
15,400.00	6,987.00	6,550.00	6,443.29	135.83	26.95	48.43	1,136.38	-28.10	8,366.52	8,307.87	58.65	142.650		
15,500.00	6,987.00	6,550.00	6,443.29	137.38	26.95	48.43	1,136.38	-28.10	8,466.05	8,407.33	58.72	144.181		
15,600.00	6,987.00	6,550.00	6,443.29	138.93	26.95	48.43	1,136.38	-28.10	8,565.58	8,506.80	58.79	145.707		
15,700.00	6,987.00	6,550.00	6,443.29	140.49	26.95	48.43	1,136.38	-28.10	8,665.13	8,606.27	58.86	147.228		
15,800.00	6,987.00	6,550.00	6,443.29	142.04	26.95	48.43	1,136.38	-28.10	8,764.69	8,705.76	58.92	148.745		
15,900.00	6,987.00	6,550.00	6,443.29	143.60	26.95	48.43	1,136.38	-28.10	8,864.25	8,805.26	58.99	150.258		
16,000.00	6,987.00	6,550.00	6,443.29	145.16	26.95	48.43	1,136.38	-28.10	8,963.83	8,904.77	59.06	151.765		
16,100.00	6,987.00	6,550.00	6,443.29	146.72	26.95	48.43	1,136.38	-28.10	9,063.42	9,004.28	59.13	153.268		
16,200.00	6,987.00	6,550.00	6,443.29	148.28	26.95	48.43	1,136.38	-28.10	9,163.01	9,103.81	59.21	154.767		
16,300.00	6,987.00	6,550.00	6,443.29	149.84	26.95	48.43	1,136.38	-28.10	9,262.61	9,203.34	59.28	156.260		
16,400.00	6,987.00	6,550.00	6,443.29	151.40	26.95	48.43	1,136.38	-28.10	9,362.23	9,302.88	59.35	157.749		
16,500.00	6,987.00	6,550.00	6,443.29	152.97	26.95	48.43	1,136.38	-28.10	9,461.85	9,402.43	59.42	159.233		
16,600.00	6,987.00	6,550.00	6,443.29	154.53	26.95	48.43	1,136.38	-28.10	9,561.48	9,501.98	59.49	160.712		
16,700.00	6,987.00	6,550.00	6,443.29	156.10	26.95	48.43	1,136.38	-28.10	9,661.11	9,601.54	59.57	162.187		
16,800.00	6,987.00	6,550.00	6,443.29	157.66	26.95	48.43	1,136.38	-28.10	9,760.75	9,701.11	59.64	163.656		
16,900.00	6,987.00	6,550.00	6,443.29	159.23	26.95	48.43	1,136.38	-28.10	9,860.41	9,800.69	59.72	165.121		
17,000.00	6,987.00	6,550.00	6,443.29	160.80	26.95	48.43	1,136.38	-28.10	9,960.06	9,900.27	59.79	166.581		
17,100.00	6,987.00	6,550.00	6,443.29	162.36	26.95	48.43	1,136.38	-28.10	10,059.73	9,999.86	59.87	168.036		
17,200.00	6,987.00	6,550.00	6,443.29	163.93	26.95	48.43	1,136.38	-28.10	10,159.40	10,099.46	59.94	169.486		
17,300.00	6,987.00	6,550.00	6,443.29	165.50	26.95	48.43	1,136.38	-28.10	10,259.08	10,199.06	60.02	170.930		
17,400.00	6,987.00	6,550.00	6,443.29	167.07	26.95	48.43	1,136.38	-28.10	10,358.76	10,298.66	60.10	172.370		
17,500.00	6,987.00	6,550.00	6,443.29	168.64	26.95	48.43	1,136.38	-28.10	10,458.45	10,398.28	60.17	173.806		
17,600.00	6,987.00	6,550.00	6,443.29	170.21	26.95	48.43	1,136.38	-28.10	10,558.14	10,497.89	60.25	175.236		
17,700.00	6,987.00	6,550.00	6,443.29	171.78	26.95	48.43	1,136.38	-28.10	10,657.85	10,597.52	60.33	176.661		
17,800.00	6,987.00	6,550.00	6,443.29	173.36	26.95	48.43	1,136.38	-28.10	10,757.55	10,697.14	60.41	178.081		
17,900.00	6,987.00	6,550.00	6,443.29	174.93	26.95	48.43	1,136.38	-28.10	10,857.26	10,796.78	60.49	179.496		
18,000.00	6,987.00	6,550.00	6,443.29	176.50	26.95	48.43	1,136.38	-28.10	10,956.98	10,896.41	60.57	180.905		
18,100.00	6,987.00	6,550.00	6,443.29	178.08	26.95	48.43	1,136.38	-28.10	11,056.70	10,996.06	60.65	182.310		
18,200.00	6,987.00	6,550.00	6,443.29	179.65	26.95	48.43	1,136.38	-28.10	11,156.43	11,095.70	60.73	183.710		
18,300.00	6,987.00	6,550.00	6,443.29	181.23	26.95	48.43	1,136.38	-28.10	11,256.16	11,195.35	60.81	185.105		
18,400.00	6,987.00	6,550.00	6,443.29	182.80	26.95	48.43	1,136.38	-28.10	11,355.90	11,295.01	60.89	186.494		
18,500.00	6,987.00	6,550.00	6,443.29	184.38	26.95	48.43	1,136.38	-28.10	11,455.64	11,394.67	60.97	187.879		
18,600.00	6,987.00	6,550.00	6,443.29	185.96	26.95	48.43	1,136.38	-28.10	11,555.39	11,494.33	61.06	189.259		
18,700.00	6,987.00	6,550.00	6,443.29	187.53	26.95	48.43	1,136.38	-28.10	11,655.14	11,594.00	61.14	190.633		
18,800.00	6,987.00	6,550.00	6,443.29	189.11	26.95	48.43	1,136.38	-28.10	11,754.89	11,693.67	61.22	192.002		
18,900.00	6,987.00	6,550.00	6,443.29	190.69	26.95	48.43	1,136.38	-28.10	11,854.65	11,793.35	61.31	193.366		
19,000.00	6,987.00	6,550.00	6,443.29	192.27	26.95	48.43	1,136.38	-28.10	11,954.42	11,893.02	61.39	194.725		

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 #692H
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 #692H	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:		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	
19,100.00	6,987.00	6,550.00	6,443.29	193.85	26.95	48.43	1,136.38	-28.10	12,054.18	11,992.71	61.48	196.079	
19,200.00	6,987.00	6,550.00	6,443.29	195.43	26.95	48.43	1,136.38	-28.10	12,153.95	12,092.39	61.56	197.428	
19,255.69	6,987.00	6,550.00	6,443.29	196.31	26.95	48.43	1,136.38	-28.10	12,209.52	12,147.91	61.61	198.177	
19,300.00	6,987.00	6,550.00	6,443.29	197.01	26.95	48.43	1,136.38	-28.10	12,253.73	12,192.08	61.65	198.772	
19,400.00	6,987.00	6,550.00	6,443.29	198.59	26.95	48.43	1,136.38	-28.10	12,353.51	12,291.77	61.73	200.110	
19,468.80	6,987.00	6,550.00	6,443.29	199.49	26.95	48.43	1,136.38	-28.10	12,422.16	12,355.96	66.20	187.651	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	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 CC, ES	
700.00	700.00	699.42	699.40	2.40	2.40	25.99	19.17	9.35	21.34	16.54	4.80	4.445	
800.00	799.98	798.70	798.54	2.76	2.76	27.35	24.26	8.45	24.17	18.66	5.51	4.386	
900.00	899.84	897.87	897.33	3.12	3.12	23.00	32.71	6.96	27.03	20.81	6.22	4.349	
1,000.00	999.45	996.91	995.64	3.48	3.48	19.14	44.51	4.88	29.91	22.99	6.91	4.326	
1,100.00	1,098.70	1,095.84	1,093.37	3.85	3.84	15.64	59.63	2.21	32.80	25.19	7.61	4.311	
1,153.80	1,151.90	1,149.01	1,145.66	4.04	4.05	13.86	69.12	0.54	34.36	26.38	7.98	4.306	
1,200.00	1,197.53	1,194.64	1,190.37	4.21	4.22	12.28	78.03	-1.03	36.06	27.77	8.30	4.347	
1,300.00	1,296.27	1,293.11	1,286.36	4.59	4.62	8.56	99.64	-4.84	42.29	33.32	8.98	4.711	
1,400.00	1,395.02	1,391.01	1,381.00	4.97	5.03	5.22	124.34	-9.20	52.03	42.38	9.65	5.391	
1,500.00	1,493.77	1,488.13	1,473.97	5.36	5.45	2.61	151.97	-14.07	65.26	54.94	10.32	6.323	
1,600.00	1,592.52	1,586.22	1,567.14	5.74	5.90	0.72	182.18	-19.40	81.04	70.00	11.04	7.340	
1,700.00	1,691.27	1,684.92	1,660.84	6.14	6.37	-0.57	212.70	-24.78	97.01	85.22	11.79	8.229	
1,800.00	1,790.01	1,783.61	1,754.55	6.53	6.84	-1.49	243.22	-30.16	113.01	100.47	12.54	9.011	
1,900.00	1,888.76	1,882.31	1,848.26	6.92	7.32	-2.18	273.74	-35.54	129.04	115.74	13.30	9.702	
2,000.00	1,987.51	1,981.01	1,941.96	7.32	7.81	-2.72	304.26	-40.92	145.08	131.02	14.06	10.317	
2,100.00	2,086.26	2,079.70	2,035.67	7.72	8.30	-3.16	334.78	-46.30	161.13	146.30	14.83	10.868	
2,200.00	2,185.01	2,178.40	2,129.37	8.11	8.79	-3.51	365.30	-51.68	177.18	161.59	15.59	11.363	
2,300.00	2,283.75	2,277.10	2,223.08	8.51	9.29	-3.81	395.82	-57.07	193.25	176.88	16.36	11.811	
2,400.00	2,382.50	2,375.80	2,316.78	8.91	9.79	-4.06	426.34	-62.45	209.31	192.18	17.13	12.218	
2,500.00	2,481.25	2,474.49	2,410.49	9.31	10.30	-4.27	456.86	-67.83	225.38	207.48	17.90	12.588	
2,600.00	2,580.00	2,573.19	2,504.19	9.71	10.80	-4.46	487.38	-73.21	241.45	222.78	18.68	12.927	
2,700.00	2,678.75	2,671.89	2,597.90	10.11	11.31	-4.62	517.89	-78.59	257.53	238.08	19.45	13.239	
2,800.00	2,777.49	2,770.58	2,691.61	10.52	11.82	-4.76	548.41	-83.97	273.61	253.38	20.23	13.525	
2,900.00	2,876.24	2,869.28	2,785.31	10.92	12.33	-4.89	578.93	-89.35	289.68	268.68	21.01	13.791	
3,000.00	2,974.99	2,967.98	2,879.02	11.32	12.84	-5.00	609.45	-94.74	305.76	283.98	21.78	14.036	
3,100.00	3,073.74	3,066.67	2,972.72	11.72	13.36	-5.11	639.97	-100.12	321.84	299.28	22.56	14.265	
3,200.00	3,172.49	3,165.37	3,066.43	12.13	13.87	-5.20	670.49	-105.50	337.92	314.58	23.34	14.477	
3,300.00	3,271.23	3,264.07	3,160.13	12.53	14.38	-5.28	701.01	-110.88	354.01	329.88	24.12	14.676	
3,400.00	3,369.98	3,362.77	3,253.84	12.93	14.90	-5.36	731.53	-116.26	370.09	345.19	24.90	14.862	
3,500.00	3,468.73	3,461.46	3,347.54	13.34	15.42	-5.43	762.05	-121.64	386.17	360.49	25.68	15.036	
3,600.00	3,567.48	3,560.16	3,441.25	13.74	15.93	-5.50	792.57	-127.02	402.26	375.79	26.46	15.200	
3,700.00	3,666.23	3,658.86	3,534.96	14.14	16.45	-5.56	823.09	-132.40	418.34	391.09	27.25	15.354	
3,800.00	3,764.97	3,757.55	3,628.66	14.55	16.97	-5.61	853.61	-137.79	434.43	406.40	28.03	15.499	
3,900.00	3,863.72	3,856.25	3,722.37	14.95	17.49	-5.66	884.13	-143.17	450.51	421.70	28.81	15.637	
4,000.00	3,962.47	3,954.95	3,816.07	15.36	18.01	-5.71	914.65	-148.55	466.60	437.00	29.59	15.767	
4,100.00	4,061.22	4,053.65	3,909.78	15.76	18.53	-5.76	945.17	-153.93	482.68	452.30	30.38	15.890	
4,200.00	4,159.97	4,152.34	4,003.48	16.17	19.05	-5.80	975.68	-159.31	498.77	467.61	31.16	16.006	
4,300.00	4,258.71	4,251.04	4,097.19	16.57	19.57	-5.84	1,006.20	-164.69	514.85	482.91	31.94	16.117	
4,400.00	4,357.46	4,349.74	4,190.89	16.98	20.09	-5.87	1,036.72	-170.07	530.94	498.21	32.73	16.222	
4,500.00	4,456.21	4,448.43	4,284.60	17.38	20.61	-5.91	1,067.24	-175.46	547.03	513.51	33.51	16.323	
4,600.00	4,554.96	4,547.13	4,378.30	17.79	21.13	-5.94	1,097.76	-180.84	563.11	528.82	34.30	16.418	
4,700.00	4,653.71	4,645.83	4,472.01	18.19	21.65	-5.97	1,128.28	-186.22	579.20	544.12	35.08	16.510	
4,800.00	4,752.45	4,744.53	4,565.72	18.60	22.17	-6.00	1,158.80	-191.60	595.29	559.42	35.87	16.597	
4,900.00	4,851.20	4,843.22	4,659.42	19.00	22.69	-6.03	1,189.32	-196.98	611.37	574.72	36.65	16.680	
5,000.00	4,949.95	4,941.92	4,753.13	19.41	23.21	-6.06	1,219.84	-202.36	627.46	590.02	37.44	16.760	

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 #692H
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 #692H	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		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	5,048.70	5,040.62	4,846.83	19.81	23.74	-6.08	1,250.36	-207.74	643.55	605.33	38.22	16.837	
5,200.00	5,147.45	5,139.31	4,940.54	20.22	24.26	-6.11	1,280.88	-213.13	659.64	620.63	39.01	16.910	
5,300.00	5,246.19	5,238.01	5,034.24	20.62	24.78	-6.13	1,311.40	-218.51	675.72	635.93	39.79	16.980	
5,400.00	5,344.94	5,336.71	5,127.95	21.03	25.30	-6.15	1,341.92	-223.89	691.81	651.23	40.58	17.048	
5,455.76	5,400.00	5,391.74	5,180.20	21.25	25.59	-6.16	1,358.93	-226.89	700.78	659.76	41.02	17.084	
5,500.00	5,443.72	5,435.38	5,221.63	21.43	25.82	-6.18	1,372.43	-229.27	708.07	666.70	41.37	17.117	
5,600.00	5,542.71	5,533.80	5,315.07	21.83	26.35	-6.20	1,402.86	-234.63	725.77	683.62	42.15	17.219	
5,700.00	5,641.93	5,633.19	5,409.44	22.22	26.87	-6.21	1,433.59	-240.05	745.16	702.23	42.94	17.355	
5,800.00	5,741.36	5,746.03	5,516.97	22.60	27.46	-6.21	1,467.25	-245.99	765.14	721.29	43.84	17.452	
5,900.00	5,840.96	5,859.38	5,625.65	22.97	28.03	-6.21	1,498.97	-251.58	784.88	740.15	44.73	17.548	
6,000.00	5,940.70	5,973.23	5,735.43	23.33	28.58	-6.19	1,528.68	-256.82	804.38	758.79	45.59	17.644	
6,100.00	6,040.55	6,087.59	5,846.28	23.68	29.12	-6.17	1,556.37	-261.70	823.63	777.20	46.43	17.739	
6,200.00	6,140.48	6,202.45	5,958.16	24.02	29.65	-6.14	1,581.97	-266.22	842.62	795.37	47.25	17.834	
6,300.00	6,240.45	6,317.82	6,071.03	24.35	30.15	-6.10	1,605.46	-270.36	861.35	813.31	48.04	17.930	
6,408.05	6,348.50	6,443.04	6,194.06	24.69	30.67	173.94	1,628.41	-274.41	881.27	832.42	48.85	18.041	
6,450.00	6,390.43	6,491.91	6,242.21	24.82	30.87	-78.41	1,636.65	-275.86	888.35	839.20	49.16	18.072	
6,500.00	6,440.15	6,550.28	6,299.81	24.99	31.10	-74.57	1,645.96	-277.50	895.24	845.71	49.53	18.075	
6,550.00	6,489.32	6,608.40	6,357.25	25.16	31.33	-73.72	1,654.66	-279.03	900.44	850.54	49.90	18.043	
6,600.00	6,537.64	6,659.67	6,408.00	25.34	31.53	-73.69	1,661.85	-280.30	904.08	853.80	50.28	17.982	
6,650.00	6,584.80	6,690.51	6,438.47	25.52	31.65	-73.71	1,666.57	-280.51	907.15	856.52	50.63	17.917	
6,700.00	6,630.52	6,718.30	6,465.78	25.71	31.76	-73.82	1,671.70	-279.79	910.34	859.36	50.98	17.857	
6,750.00	6,674.51	6,750.00	6,496.66	25.89	31.90	-74.13	1,678.56	-277.91	913.70	862.36	51.34	17.796	
6,800.00	6,716.50	6,773.83	6,519.65	26.08	32.01	-74.32	1,684.42	-275.77	917.22	865.53	51.69	17.745	
6,850.00	6,756.24	6,800.00	6,544.65	26.28	32.13	-74.61	1,691.54	-272.69	920.99	868.93	52.06	17.691	
6,900.00	6,793.47	6,829.31	6,572.26	26.48	32.27	-75.04	1,700.34	-268.35	925.02	872.54	52.48	17.627	
6,950.00	6,827.97	6,850.00	6,591.49	26.69	32.37	-75.24	1,707.07	-264.72	929.42	876.54	52.88	17.578	
7,000.00	6,859.53	6,884.85	6,623.30	26.91	32.55	-75.90	1,719.36	-257.57	934.09	880.68	53.41	17.490	
7,050.00	6,887.94	6,912.69	6,648.15	27.14	32.69	-76.35	1,730.01	-250.93	939.21	885.27	53.94	17.413	
7,100.00	6,913.05	6,940.59	6,672.49	27.38	32.84	-76.82	1,741.41	-243.46	944.79	890.27	54.52	17.329	
7,150.00	6,934.68	6,968.60	6,696.32	27.64	32.99	-77.29	1,753.56	-235.17	950.87	895.72	55.15	17.241	
7,200.00	6,952.71	7,000.00	6,722.26	27.92	33.17	-77.88	1,767.99	-224.92	957.50	901.65	55.85	17.145	
7,250.00	6,967.02	7,025.03	6,742.30	28.21	33.31	-78.21	1,780.08	-216.07	964.70	908.15	56.55	17.059	
7,300.00	6,977.54	7,050.00	6,761.71	28.52	33.45	-78.51	1,792.65	-206.64	972.53	915.24	57.29	16.976	
7,350.00	6,984.18	7,082.31	6,785.89	28.83	33.65	-79.08	1,809.63	-193.56	981.00	922.92	58.08	16.890	
7,400.00	6,986.92	7,111.42	6,806.74	29.16	33.82	-79.49	1,825.58	-180.98	990.16	931.30	58.87	16.821	
7,409.89	6,987.00	7,117.23	6,810.78	29.23	33.86	-79.57	1,828.83	-178.38	992.06	933.03	59.02	16.808	
7,500.00	6,987.00	7,175.02	6,848.96	29.85	34.21	-81.92	1,862.43	-150.96	1,011.58	951.14	60.44	16.738	
7,600.00	6,987.00	7,251.76	6,893.35	30.61	34.71	-84.62	1,910.09	-110.48	1,037.24	975.26	61.98	16.735	
7,700.00	6,987.00	7,343.23	6,936.07	31.41	35.32	-87.14	1,970.57	-56.90	1,065.33	1,001.83	63.50	16.777	
7,800.00	6,987.00	7,449.25	6,970.64	32.27	36.07	-89.11	2,044.09	11.02	1,093.97	1,028.94	65.03	16.823	
7,900.00	6,987.00	7,566.45	6,989.11	33.17	36.93	-90.11	2,127.29	91.23	1,121.53	1,054.87	66.66	16.825	
8,000.00	6,987.00	7,671.91	6,990.51	34.12	37.74	-90.18	2,201.96	165.66	1,147.55	1,079.12	68.43	16.769	
8,100.00	6,987.00	7,768.50	6,990.44	35.10	38.52	-90.17	2,270.26	233.96	1,173.43	1,103.15	70.29	16.695	
8,200.00	6,987.00	7,865.10	6,990.37	36.12	39.34	-90.17	2,338.56	302.26	1,199.31	1,127.11	72.20	16.610	
8,300.00	6,987.00	7,961.69	6,990.30	37.17	40.18	-90.16	2,406.86	370.56	1,225.20	1,151.01	74.18	16.515	
8,314.89	6,987.00	7,976.07	6,990.29	37.33	40.31	-90.16	2,417.03	380.73	1,229.05	1,154.57	74.48	16.501	
8,400.00	6,987.00	8,057.58	6,990.24	38.25	41.06	-90.16	2,474.66	438.37	1,253.51	1,177.30	76.21	16.448	
8,500.00	6,987.00	8,151.28	6,990.17	39.35	41.94	-90.15	2,540.93	504.63	1,288.36	1,210.12	78.25	16.466	
8,600.00	6,987.00	8,242.33	6,990.11	40.45	42.82	-90.15	2,605.31	569.01	1,329.67	1,249.39	80.28	16.563	
8,700.00	6,987.00	8,900.00	6,989.63	41.56	49.11	-90.11	2,972.69	1,107.88	1,372.27	1,291.70	80.57	17.032	
8,800.00	6,987.00	9,471.34	6,989.21	42.66	53.73	-90.09	3,071.66	1,667.10	1,356.68	1,280.56	76.12	17.822	
8,900.00	6,987.00	9,570.56	6,989.14	43.75	54.49	-90.09	3,074.26	1,766.28	1,344.33	1,265.97	78.36	17.156	

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 #692H
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 #692H	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		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)						
9,000.00	6,987.00	9,670.39	6,989.07	44.83	55.30	-90.09	3,076.87	1,866.08	1,338.93	1,258.26	80.68	16.597				
9,027.40	6,987.00	9,697.80	6,989.05	45.12	55.53	-90.09	3,077.59	1,893.47	1,338.67	1,257.35	81.32	16.462				
9,071.74	6,987.00	9,742.12	6,989.02	45.59	55.90	-90.09	3,078.75	1,937.79	1,339.36	1,256.98	82.38	16.259				
9,100.00	6,987.00	9,770.37	6,989.00	45.89	56.14	-90.09	3,079.49	1,966.02	1,340.23	1,257.18	83.05	16.137				
9,200.00	6,987.00	9,870.32	6,988.93	46.97	57.02	-90.08	3,082.10	2,065.94	1,343.33	1,257.84	85.49	15.714				
9,300.00	6,987.00	9,970.27	6,988.86	48.07	57.92	-90.08	3,084.72	2,165.86	1,346.42	1,258.46	87.97	15.306				
9,400.00	6,987.00	10,070.23	6,988.79	49.20	58.86	-90.08	3,087.34	2,265.78	1,349.52	1,259.02	90.50	14.913				
9,500.00	6,987.00	10,170.18	6,988.72	50.36	59.82	-90.07	3,089.95	2,365.69	1,352.61	1,259.55	93.06	14.534				
9,600.00	6,987.00	10,270.13	6,988.65	51.54	60.81	-90.07	3,092.57	2,465.61	1,355.71	1,260.04	95.67	14.170				
9,700.00	6,987.00	10,370.08	6,988.58	52.74	61.83	-90.07	3,095.19	2,565.53	1,358.81	1,260.49	98.32	13.821				
9,800.00	6,987.00	10,470.03	6,988.51	53.96	62.87	-90.06	3,097.80	2,665.45	1,361.90	1,260.91	100.99	13.485				
9,900.00	6,987.00	10,569.99	6,988.44	55.21	63.94	-90.06	3,100.42	2,765.36	1,365.00	1,261.30	103.70	13.163				
10,000.00	6,987.00	10,669.94	6,988.38	56.47	65.03	-90.06	3,103.04	2,865.28	1,368.09	1,261.66	106.43	12.854				
10,100.00	6,987.00	10,769.89	6,988.31	57.75	66.14	-90.05	3,105.65	2,965.20	1,371.19	1,262.00	109.19	12.558				
10,200.00	6,987.00	10,869.84	6,988.24	59.04	67.27	-90.05	3,108.27	3,065.12	1,374.28	1,262.31	111.97	12.273				
10,300.00	6,987.00	10,969.79	6,988.17	60.35	68.42	-90.05	3,110.89	3,165.04	1,377.38	1,262.60	114.78	12.000				
10,400.00	6,987.00	11,069.75	6,988.10	61.67	69.59	-90.05	3,113.50	3,264.95	1,380.47	1,262.87	117.60	11.738				
10,500.00	6,987.00	11,169.70	6,988.03	63.01	70.77	-90.04	3,116.12	3,364.87	1,383.57	1,263.12	120.45	11.487				
10,600.00	6,987.00	11,269.65	6,987.96	64.36	71.98	-90.04	3,118.74	3,464.79	1,386.67	1,263.35	123.31	11.245				
10,700.00	6,987.00	11,369.60	6,987.89	65.72	73.20	-90.04	3,121.35	3,564.71	1,389.76	1,263.57	126.19	11.013				
10,800.00	6,987.00	11,469.55	6,987.82	67.09	74.43	-90.03	3,123.97	3,664.62	1,392.86	1,263.77	129.08	10.790				
10,900.00	6,987.00	11,569.51	6,987.75	68.47	75.68	-90.03	3,126.58	3,764.54	1,395.95	1,263.96	131.99	10.576				
11,000.00	6,987.00	11,693.88	6,987.66	69.86	77.25	-90.03	3,129.40	3,888.88	1,398.82	1,264.46	134.37	10.411				
11,100.00	6,987.00	11,815.07	6,987.58	71.26	78.78	-90.02	3,128.95	4,010.07	1,398.83	1,262.03	136.80	10.225				
11,200.00	6,987.00	11,915.07	6,987.51	72.67	80.05	-90.02	3,128.31	4,110.06	1,398.66	1,258.92	139.74	10.009				
11,300.00	6,987.00	12,015.07	6,987.45	74.09	81.33	-90.02	3,127.67	4,210.06	1,398.50	1,255.80	142.70	9.800				
11,400.00	6,987.00	12,115.07	6,987.38	75.51	82.63	-90.02	3,127.03	4,310.06	1,398.34	1,252.67	145.67	9.599				
11,500.00	6,987.00	12,215.07	6,987.31	76.94	83.93	-90.01	3,126.39	4,410.06	1,398.17	1,249.52	148.65	9.406				
11,600.00	6,987.00	12,315.07	6,987.25	78.38	85.25	-90.01	3,125.74	4,510.06	1,398.01	1,246.37	151.63	9.220				
11,700.00	6,987.00	12,415.07	6,987.18	79.82	86.58	-90.01	3,125.10	4,610.05	1,397.84	1,243.21	154.63	9.040				
11,800.00	6,987.00	12,515.07	6,987.11	81.27	87.91	-90.00	3,124.46	4,710.05	1,397.68	1,240.04	157.64	8.867				
11,900.00	6,987.00	12,615.07	6,987.05	82.73	89.26	-90.00	3,123.82	4,810.05	1,397.51	1,236.87	160.65	8.699				
12,000.00	6,987.00	12,715.07	6,986.98	84.19	90.61	-90.00	3,123.17	4,910.05	1,397.35	1,233.68	163.67	8.538				
12,100.00	6,987.00	12,815.07	6,986.91	85.66	91.98	-90.00	3,122.53	5,010.04	1,397.19	1,230.49	166.69	8.382				
12,200.00	6,987.00	12,915.07	6,986.85	87.13	93.35	-89.99	3,121.89	5,110.04	1,397.02	1,227.29	169.73	8.231				
12,300.00	6,987.00	13,015.07	6,986.78	88.61	94.73	-89.99	3,121.25	5,210.04	1,396.86	1,224.09	172.77	8.085				
12,400.00	6,987.00	13,115.07	6,986.71	90.09	96.11	-89.99	3,120.60	5,310.04	1,396.69	1,220.88	175.81	7.944				
12,500.00	6,987.00	13,215.07	6,986.65	91.57	97.51	-89.99	3,119.96	5,410.04	1,396.53	1,217.66	178.87	7.808				
12,600.00	6,987.00	13,315.06	6,986.58	93.06	98.91	-89.98	3,119.32	5,510.03	1,396.37	1,214.44	181.92	7.676				
12,700.00	6,987.00	13,415.06	6,986.51	94.55	100.31	-89.98	3,118.68	5,610.03	1,396.20	1,211.21	184.99	7.548				
12,800.00	6,987.00	13,515.06	6,986.45	96.05	101.72	-89.98	3,118.04	5,710.03	1,396.04	1,207.98	188.05	7.424				
12,900.00	6,987.00	13,615.06	6,986.38	97.55	103.14	-89.97	3,117.39	5,810.03	1,395.87	1,204.75	191.13	7.303				
13,000.00	6,987.00	13,715.06	6,986.31	99.05	104.57	-89.97	3,116.75	5,910.02	1,395.71	1,201.51	194.20	7.187				
13,100.00	6,987.00	13,815.06	6,986.24	100.56	106.00	-89.97	3,116.11	6,010.02	1,395.54	1,198.26	197.28	7.074				
13,200.00	6,987.00	13,915.06	6,986.18	102.07	107.43	-89.97	3,115.47	6,110.02	1,395.38	1,195.01	200.37	6.964				
13,300.00	6,987.00	14,015.06	6,986.11	103.58	108.87	-89.96	3,114.82	6,210.02	1,395.22	1,191.76	203.46	6.858				
13,400.00	6,987.00	14,115.06	6,986.04	105.09	110.31	-89.96	3,114.18	6,310.02	1,395.05	1,188.50	206.55	6.754				
13,500.00	6,987.00	14,215.06	6,985.98	106.61	111.76	-89.96	3,113.54	6,410.01	1,394.89	1,185.24	209.64	6.654				
13,600.00	6,987.00	14,315.06	6,985.91	108.13	113.21	-89.96	3,112.90	6,510.01	1,394.72	1,181.98	212.74	6.556				
13,700.00	6,987.00	14,415.06	6,985.84	109.65	114.67	-89.95	3,112.25	6,610.01	1,394.56	1,178.71	215.85	6.461				
13,800.00	6,987.00	14,515.06	6,985.78	111.18	116.13	-89.95	3,111.61	6,710.01	1,394.40	1,175.44	218.95	6.369				
13,900.00	6,987.00	14,615.06	6,985.71	112.71	117.60	-89.95	3,110.97	6,810.00	1,394.23	1,172.17	222.06	6.279				

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 #692H
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 #692H	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)			
14,000.00	6,987.00	14,715.06	6,985.64	114.23	119.07	-89.94	3,110.33	6,910.00	1,394.07	1,168.90	225.17	6.191	
14,100.00	6,987.00	14,815.06	6,985.58	115.77	120.54	-89.94	3,109.69	7,010.00	1,393.90	1,165.62	228.29	6.106	
14,200.00	6,987.00	14,915.06	6,985.51	117.30	122.01	-89.94	3,109.04	7,110.00	1,393.74	1,162.34	231.40	6.023	
14,300.00	6,987.00	15,015.06	6,985.44	118.83	123.49	-89.94	3,108.40	7,209.99	1,393.57	1,159.05	234.52	5.942	
14,400.00	6,987.00	15,115.06	6,985.38	120.37	124.97	-89.93	3,107.76	7,309.99	1,393.41	1,155.77	237.64	5.863	
14,500.00	6,987.00	15,215.06	6,985.31	121.91	126.46	-89.93	3,107.12	7,409.99	1,393.25	1,152.48	240.77	5.787	
14,600.00	6,987.00	15,315.06	6,985.24	123.45	127.95	-89.93	3,106.47	7,509.99	1,393.08	1,149.19	243.89	5.712	
14,700.00	6,987.00	15,415.06	6,985.18	124.99	129.44	-89.93	3,105.83	7,609.99	1,392.92	1,145.90	247.02	5.639	
14,800.00	6,987.00	15,515.06	6,985.11	126.53	130.93	-89.92	3,105.19	7,709.98	1,392.75	1,142.60	250.15	5.568	
14,900.00	6,987.00	15,615.06	6,985.04	128.08	132.43	-89.92	3,104.55	7,809.98	1,392.59	1,139.31	253.28	5.498	
15,000.00	6,987.00	15,715.06	6,984.98	129.63	133.93	-89.92	3,103.90	7,909.98	1,392.43	1,136.01	256.42	5.430	
15,100.00	6,987.00	15,815.06	6,984.91	131.17	135.43	-89.91	3,103.26	8,009.98	1,392.26	1,132.71	259.55	5.364	
15,200.00	6,987.00	15,915.06	6,984.84	132.72	136.93	-89.91	3,102.62	8,109.97	1,392.10	1,129.41	262.69	5.299	
15,300.00	6,987.00	16,015.06	6,984.78	134.27	138.44	-89.91	3,101.98	8,209.97	1,391.93	1,126.10	265.83	5.236	
15,400.00	6,987.00	16,115.06	6,984.71	135.83	139.95	-89.91	3,101.34	8,309.97	1,391.77	1,122.80	268.97	5.174	
15,500.00	6,987.00	16,215.06	6,984.64	137.38	141.46	-89.90	3,100.69	8,409.97	1,391.61	1,119.49	272.12	5.114	
15,600.00	6,987.00	16,315.06	6,984.58	138.93	142.97	-89.90	3,100.05	8,509.97	1,391.44	1,116.18	275.26	5.055	
15,700.00	6,987.00	16,415.06	6,984.51	140.49	144.49	-89.90	3,099.41	8,609.96	1,391.28	1,112.87	278.41	4.997	
15,800.00	6,987.00	16,515.06	6,984.44	142.04	146.00	-89.89	3,098.77	8,709.96	1,391.11	1,109.56	281.55	4.941	
15,900.00	6,987.00	16,615.06	6,984.38	143.60	147.52	-89.89	3,098.12	8,809.96	1,390.95	1,106.25	284.70	4.886	
16,000.00	6,987.00	16,715.06	6,984.31	145.16	149.04	-89.89	3,097.48	8,909.96	1,390.78	1,102.93	287.85	4.832	
16,100.00	6,987.00	16,815.06	6,984.24	146.72	150.57	-89.89	3,096.84	9,009.95	1,390.62	1,099.62	291.00	4.779	
16,200.00	6,987.00	16,915.06	6,984.18	148.28	152.09	-89.88	3,096.20	9,109.95	1,390.46	1,096.30	294.16	4.727	
16,300.00	6,987.00	17,015.06	6,984.11	149.84	153.62	-89.88	3,095.56	9,209.95	1,390.29	1,092.98	297.31	4.676	
16,400.00	6,987.00	17,115.06	6,984.04	151.40	155.14	-89.88	3,094.91	9,309.95	1,390.13	1,089.66	300.46	4.627	
16,500.00	6,987.00	17,215.06	6,983.98	152.97	156.67	-89.88	3,094.27	9,409.95	1,389.96	1,086.34	303.62	4.578	
16,600.00	6,987.00	17,315.06	6,983.91	154.53	158.20	-89.87	3,093.63	9,509.94	1,389.80	1,083.02	306.78	4.530	
16,700.00	6,987.00	17,415.06	6,983.84	156.10	159.74	-89.87	3,092.99	9,609.94	1,389.64	1,079.70	309.94	4.484	
16,800.00	6,987.00	17,515.06	6,983.78	157.66	161.27	-89.87	3,092.34	9,709.94	1,389.47	1,076.38	313.10	4.438	
16,900.00	6,987.00	17,615.06	6,983.71	159.23	162.80	-89.86	3,091.70	9,809.94	1,389.31	1,073.05	316.26	4.393	
17,000.00	6,987.00	17,715.06	6,983.64	160.80	164.34	-89.86	3,091.06	9,909.93	1,389.14	1,069.73	319.42	4.349	
17,100.00	6,987.00	17,815.06	6,983.58	162.36	165.88	-89.86	3,090.42	10,009.93	1,388.98	1,066.40	322.58	4.306	
17,200.00	6,987.00	17,915.06	6,983.51	163.93	167.42	-89.86	3,089.77	10,109.93	1,388.82	1,063.07	325.74	4.264	
17,300.00	6,987.00	18,015.06	6,983.44	165.50	168.96	-89.85	3,089.13	10,209.93	1,388.65	1,059.74	328.91	4.222	
17,400.00	6,987.00	18,115.06	6,983.38	167.07	170.50	-89.85	3,088.49	10,309.93	1,388.49	1,056.42	332.07	4.181	
17,500.00	6,987.00	18,215.06	6,983.31	168.64	172.04	-89.85	3,087.85	10,409.92	1,388.32	1,053.09	335.24	4.141	
17,600.00	6,987.00	18,315.06	6,983.24	170.21	173.58	-89.84	3,087.21	10,509.92	1,388.16	1,049.75	338.41	4.102	
17,700.00	6,987.00	18,415.06	6,983.18	171.78	175.13	-89.84	3,086.56	10,609.92	1,388.00	1,046.42	341.57	4.064	
17,800.00	6,987.00	18,515.06	6,983.11	173.36	176.67	-89.84	3,085.92	10,709.92	1,387.83	1,043.09	344.74	4.026	
17,900.00	6,987.00	18,615.06	6,983.04	174.93	178.22	-89.84	3,085.28	10,809.91	1,387.67	1,039.76	347.91	3.989	
18,000.00	6,987.00	18,715.06	6,982.98	176.50	179.77	-89.83	3,084.64	10,909.91	1,387.50	1,036.42	351.08	3.952	
18,100.00	6,987.00	18,815.06	6,982.91	178.08	181.32	-89.83	3,083.99	11,009.91	1,387.34	1,033.09	354.25	3.916	
18,200.00	6,987.00	18,915.06	6,982.84	179.65	182.87	-89.83	3,083.35	11,109.91	1,387.18	1,029.75	357.42	3.881	
18,300.00	6,987.00	19,015.06	6,982.77	181.23	184.42	-89.83	3,082.71	11,209.91	1,387.01	1,026.42	360.59	3.846	
18,400.00	6,987.00	19,115.06	6,982.71	182.80	185.97	-89.82	3,082.07	11,309.90	1,386.85	1,023.08	363.77	3.812	
18,500.00	6,987.00	19,215.06	6,982.64	184.38	187.52	-89.82	3,081.42	11,409.90	1,386.68	1,019.74	366.94	3.779	
18,600.00	6,987.00	19,315.06	6,982.57	185.96	189.08	-89.82	3,080.78	11,509.90	1,386.52	1,016.41	370.11	3.746	
18,700.00	6,987.00	19,415.06	6,982.51	187.53	190.63	-89.81	3,080.14	11,609.90	1,386.36	1,013.07	373.29	3.714	
18,800.00	6,987.00	19,515.06	6,982.44	189.11	192.19	-89.81	3,079.50	11,709.89	1,386.19	1,009.73	376.46	3.682	
18,900.00	6,987.00	19,615.06	6,982.37	190.69	193.74	-89.81	3,078.86	11,809.89	1,386.03	1,006.39	379.64	3.651	
19,000.00	6,987.00	19,715.06	6,982.31	192.27	195.30	-89.81	3,078.21	11,909.89	1,385.86	1,003.05	382.81	3.620	
19,100.00	6,987.00	19,815.05	6,982.24	193.85	196.86	-89.80	3,077.57	12,009.89	1,385.70	999.71	385.99	3.590	

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 #692H
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 #692H	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		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)				
19,200.00	6,987.00	19,915.05	6,982.17	195.43	198.42	-89.80	3,076.93	12,109.89	1,385.54	996.37	389.17	3.560		
19,255.69	6,987.00	19,970.75	6,982.14	196.31	199.28	-89.80	3,076.57	12,165.58	1,385.44	994.51	390.94	3.544		
19,300.00	6,987.00	20,015.05	6,982.11	197.01	199.98	-89.80	3,076.29	12,209.88	1,385.37	993.03	392.35	3.531		
19,400.00	6,987.00	20,115.05	6,982.04	198.59	201.51	-89.79	3,075.64	12,309.88	1,385.21	989.73	395.48	3.503		
19,466.12	6,987.00	20,176.02	6,982.00	199.46	202.36	-89.79	3,075.25	12,370.84	1,385.11	987.81	397.30	3.486		
19,468.80	6,987.00	20,176.02	6,982.00	199.49	202.36	-89.79	3,075.25	12,370.84	1,385.12	987.67	397.45	3.485 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 #692H
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 #692H	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 #694H - 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	-151.10	-17.48	-9.65	19.96				
100.00	100.00	100.00	100.00	0.25	0.25	-151.10	-17.48	-9.65	19.96	19.46	0.50	39.774	
200.00	200.00	200.00	200.00	0.61	0.61	-151.10	-17.48	-9.65	19.96	18.74	1.22	16.378	
300.00	300.00	300.00	300.00	0.97	0.97	-151.10	-17.48	-9.65	19.96	18.03	1.94	10.312	
400.00	400.00	400.00	400.00	1.33	1.33	-151.10	-17.48	-9.65	19.96	17.31	2.65	7.525	
500.00	500.00	500.00	500.00	1.68	1.68	-151.10	-17.48	-9.65	19.96	16.59	3.37	5.924	
600.00	600.00	600.00	600.00	2.04	2.04	-151.10	-17.48	-9.65	19.96	15.87	4.09	4.885	
700.00	700.00	700.00	700.00	2.40	2.40	-151.10	-17.48	-9.65	19.96	15.16	4.80	4.156	CC
800.00	799.98	800.54	800.52	2.76	2.76	-144.39	-15.74	-9.98	20.04	14.51	5.52	3.629	
900.00	899.84	900.80	900.66	3.12	3.12	-144.27	-11.01	-10.88	20.61	14.37	6.24	3.304	ES, SF
1,000.00	999.45	1,000.73	1,000.46	3.48	3.48	-148.40	-5.87	-11.85	23.75	16.79	6.96	3.414	
1,100.00	1,098.70	1,100.48	1,100.07	3.85	3.84	-154.69	-0.75	-12.82	30.10	22.42	7.68	3.921	
1,153.80	1,151.90	1,154.03	1,153.54	4.04	4.03	-157.98	2.00	-13.35	34.96	26.89	8.07	4.334	
1,200.00	1,197.53	1,199.97	1,199.42	4.21	4.20	-160.39	4.36	-13.79	39.60	31.21	8.40	4.715	
1,300.00	1,296.27	1,299.40	1,298.72	4.59	4.55	-164.05	9.47	-14.77	49.83	40.71	9.12	5.465	
1,400.00	1,395.02	1,398.84	1,398.02	4.97	4.91	-166.46	14.58	-15.74	60.19	50.35	9.84	6.117	
1,500.00	1,493.77	1,498.27	1,497.32	5.36	5.27	-168.16	19.69	-16.71	70.63	60.07	10.56	6.687	
1,600.00	1,592.52	1,597.71	1,596.62	5.74	5.63	-169.42	24.80	-17.68	81.11	69.82	11.29	7.187	
1,700.00	1,691.27	1,697.15	1,695.92	6.14	5.99	-170.40	29.91	-18.65	91.62	79.61	12.01	7.628	
1,800.00	1,790.01	1,796.58	1,795.22	6.53	6.35	-171.17	35.02	-19.62	102.15	89.41	12.74	8.020	
1,900.00	1,888.76	1,896.02	1,894.52	6.92	6.71	-171.80	40.13	-20.59	112.70	99.24	13.46	8.371	
2,000.00	1,987.51	1,995.45	1,993.82	7.32	7.07	-172.32	45.23	-21.56	123.26	109.07	14.19	8.686	
2,100.00	2,086.26	2,094.89	2,093.11	7.72	7.43	-172.75	50.34	-22.53	133.82	118.90	14.92	8.971	
2,200.00	2,185.01	2,194.32	2,192.41	8.11	7.79	-173.13	55.45	-23.50	144.39	128.75	15.64	9.230	
2,300.00	2,283.75	2,293.76	2,291.71	8.51	8.15	-173.45	60.56	-24.47	154.97	138.60	16.37	9.465	
2,400.00	2,382.50	2,393.19	2,391.01	8.91	8.51	-173.73	65.67	-25.44	165.55	148.45	17.10	9.681	
2,500.00	2,481.25	2,492.63	2,490.31	9.31	8.87	-173.98	70.78	-26.41	176.14	158.31	17.83	9.878	
2,600.00	2,580.00	2,592.06	2,589.61	9.71	9.23	-174.20	75.89	-27.38	186.73	168.17	18.56	10.061	
2,700.00	2,678.75	2,691.50	2,688.91	10.11	9.59	-174.40	81.00	-28.35	197.32	178.03	19.29	10.229	
2,800.00	2,777.49	2,790.93	2,788.21	10.52	9.95	-174.57	86.11	-29.32	207.91	187.89	20.02	10.386	
2,900.00	2,876.24	2,890.37	2,887.51	10.92	10.31	-174.73	91.22	-30.29	218.51	197.76	20.75	10.531	
3,000.00	2,974.99	2,989.81	2,986.81	11.32	10.67	-174.88	96.32	-31.26	229.10	207.62	21.48	10.666	
3,100.00	3,073.74	3,089.24	3,086.11	11.72	11.03	-175.01	101.43	-32.23	239.70	217.49	22.21	10.793	
3,200.00	3,172.49	3,188.68	3,185.41	12.13	11.39	-175.13	106.54	-33.20	250.30	227.36	22.94	10.911	
3,300.00	3,271.23	3,288.11	3,284.71	12.53	11.75	-175.24	111.65	-34.17	260.90	237.23	23.67	11.023	
3,400.00	3,369.98	3,387.55	3,384.01	12.93	12.11	-175.34	116.76	-35.14	271.50	247.10	24.40	11.127	
3,500.00	3,468.73	3,486.98	3,483.31	13.34	12.47	-175.43	121.87	-36.11	282.10	256.97	25.13	11.225	
3,600.00	3,567.48	3,586.42	3,582.61	13.74	12.84	-175.52	126.98	-37.08	292.70	266.84	25.86	11.318	
3,700.00	3,666.23	3,685.85	3,681.90	14.14	13.20	-175.60	132.09	-38.05	303.30	276.71	26.59	11.406	
3,800.00	3,764.97	3,785.29	3,781.20	14.55	13.56	-175.68	137.20	-39.03	313.91	286.58	27.32	11.489	
3,900.00	3,863.72	3,884.72	3,880.50	14.95	13.92	-175.75	142.30	-40.00	324.51	296.46	28.05	11.567	
4,000.00	3,962.47	3,984.16	3,979.80	15.36	14.28	-175.82	147.41	-40.97	335.11	306.33	28.79	11.642	
4,100.00	4,061.22	4,083.60	4,079.10	15.76	14.64	-175.88	152.52	-41.94	345.72	316.20	29.52	11.713	
4,200.00	4,159.97	4,183.03	4,178.40	16.17	15.00	-175.94	157.63	-42.91	356.32	326.08	30.25	11.780	
4,300.00	4,258.71	4,282.47	4,277.70	16.57	15.36	-175.99	162.74	-43.88	366.93	335.95	30.98	11.844	
4,400.00	4,357.46	4,381.90	4,377.00	16.98	15.72	-176.05	167.85	-44.85	377.53	345.82	31.71	11.906	
4,500.00	4,456.21	4,481.34	4,476.30	17.38	16.08	-176.10	172.96	-45.82	388.14	355.70	32.44	11.964	
4,600.00	4,554.96	4,580.77	4,575.60	17.79	16.44	-176.14	178.07	-46.79	398.75	365.57	33.17	12.020	
4,700.00	4,653.71	4,680.21	4,674.90	18.19	16.80	-176.19	183.18	-47.76	409.35	375.45	33.90	12.074	
4,800.00	4,752.45	4,779.64	4,774.20	18.60	17.16	-176.23	188.29	-48.73	419.96	385.32	34.64	12.125	
4,900.00	4,851.20	4,879.08	4,873.50	19.00	17.52	-176.27	193.39	-49.70	430.57	395.20	35.37	12.174	
5,000.00	4,949.95	4,978.51	4,972.80	19.41	17.88	-176.31	198.50	-50.67	441.17	405.07	36.10	12.221	

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 #692H
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 #692H	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 #694H - 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			Offset Wellbore Centre		Distance			Separation Factor	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)		
5,100.00	5,048.70	5,077.95	5,072.10	19.81	18.25	-176.34	203.61	-51.64	451.78	414.95	36.83	12.266	
5,200.00	5,147.45	5,177.39	5,171.40	20.22	18.61	-176.38	208.72	-52.61	462.39	424.83	37.56	12.310	
5,300.00	5,246.19	5,276.82	5,270.69	20.62	18.97	-176.41	213.83	-53.58	473.00	434.70	38.29	12.351	
5,400.00	5,344.94	5,374.68	5,368.42	21.03	19.32	-176.44	218.80	-54.52	483.67	444.65	39.02	12.396	
5,455.76	5,400.00	5,427.85	5,421.53	21.25	19.51	-176.46	221.24	-54.99	489.89	450.48	39.41	12.431	
5,500.00	5,443.72	5,470.02	5,463.67	21.43	19.67	-176.48	223.00	-55.32	494.84	455.12	39.72	12.458	
5,600.00	5,542.71	5,565.34	5,558.92	21.83	20.01	-176.53	226.42	-55.97	505.37	464.95	40.42	12.503	
5,700.00	5,641.93	5,660.67	5,654.21	22.22	20.35	-176.58	229.06	-56.47	514.99	473.88	41.11	12.527	
5,800.00	5,741.36	5,756.01	5,749.53	22.60	20.69	-176.62	230.93	-56.83	523.69	481.89	41.80	12.529	
5,900.00	5,840.96	5,851.35	5,844.87	22.97	21.03	-176.66	232.01	-57.04	531.48	489.00	42.48	12.512	
6,000.00	5,940.70	5,947.18	5,940.70	23.33	21.37	-176.70	232.32	-57.09	538.35	495.19	43.15	12.475	
6,100.00	6,040.55	6,047.03	6,040.55	23.68	21.72	-176.74	232.32	-57.09	543.80	499.94	43.87	12.397	
6,200.00	6,140.48	6,146.96	6,140.48	24.02	22.08	-176.77	232.32	-57.09	547.52	502.95	44.57	12.283	
6,300.00	6,240.45	6,246.94	6,240.45	24.35	22.43	-176.78	232.32	-57.09	549.49	504.22	45.28	12.136	
6,408.05	6,348.50	6,354.98	6,348.50	24.69	22.82	3.22	232.32	-57.09	549.67	503.65	46.02	11.945	
6,450.00	6,390.43	6,411.23	6,404.69	24.82	23.01	110.74	232.90	-59.20	549.47	503.04	46.42	11.836	
6,475.20	6,415.54	6,445.07	6,438.33	24.91	23.13	113.88	233.89	-62.76	549.42	502.75	46.66	11.774	
6,500.00	6,440.15	6,477.38	6,470.21	24.99	23.25	115.85	235.26	-67.77	549.49	502.61	46.88	11.720	
6,550.00	6,489.32	6,538.34	6,529.48	25.16	23.47	119.19	239.03	-81.43	550.44	503.13	47.30	11.636	
6,600.00	6,537.64	6,592.40	6,580.69	25.34	23.67	122.34	243.61	-98.06	553.27	505.57	47.70	11.599	
6,650.00	6,584.80	6,638.76	6,623.31	25.52	23.84	125.20	248.45	-115.62	559.04	510.97	48.07	11.629	
6,700.00	6,630.52	6,677.45	6,657.78	25.71	23.98	127.55	253.10	-132.53	568.69	520.28	48.41	11.747	
6,750.00	6,674.51	6,708.92	6,685.01	25.89	24.10	129.21	257.30	-147.76	582.88	534.20	48.68	11.973	
6,800.00	6,716.50	6,733.91	6,706.04	26.08	24.20	130.09	260.88	-160.76	601.93	553.06	48.87	12.317	
6,850.00	6,756.24	6,753.19	6,721.90	26.28	24.27	130.12	263.79	-171.33	625.82	576.86	48.96	12.782	
6,900.00	6,793.47	6,767.52	6,733.47	26.48	24.33	129.23	266.04	-179.48	654.30	605.33	48.97	13.362	
6,950.00	6,827.97	6,777.58	6,741.48	26.69	24.37	127.33	267.65	-185.36	686.88	637.98	48.90	14.048	
7,000.00	6,859.53	6,783.97	6,746.51	26.91	24.40	124.30	268.70	-189.15	723.00	674.22	48.78	14.822	
7,050.00	6,887.94	6,787.16	6,749.01	27.14	24.41	119.97	269.23	-191.06	762.04	713.41	48.63	15.670	
7,100.00	6,913.05	6,787.60	6,749.35	27.38	24.41	114.16	269.30	-191.33	803.42	754.94	48.47	16.574	
7,150.00	6,934.68	6,785.62	6,747.80	27.64	24.40	106.74	268.97	-190.14	846.54	798.22	48.32	17.519	
7,200.00	6,952.71	6,781.51	6,744.58	27.92	24.39	97.75	268.29	-187.68	890.90	842.72	48.18	18.490	
7,250.00	6,967.02	6,775.51	6,739.84	28.21	24.36	87.57	267.32	-184.14	936.01	887.95	48.06	19.475	
7,300.00	6,977.54	6,767.82	6,733.71	28.52	24.33	76.97	266.08	-179.66	981.47	933.51	47.96	20.463	
7,350.00	6,984.18	6,750.00	6,719.30	28.83	24.26	66.13	263.30	-169.55	1,026.95	979.20	47.75	21.508	
7,400.00	6,986.92	6,750.00	6,719.30	29.16	24.26	57.91	263.30	-169.55	1,071.95	1,024.09	47.86	22.396	
7,409.89	6,987.00	6,750.00	6,719.30	29.23	24.26	56.40	263.30	-169.55	1,080.81	1,032.92	47.89	22.570	
7,500.00	6,987.00	6,725.98	6,699.42	29.85	24.17	55.12	259.72	-156.55	1,161.63	1,113.86	47.77	24.317	
7,600.00	6,987.00	6,700.00	6,677.37	30.61	24.07	53.75	256.07	-143.31	1,252.25	1,204.60	47.65	26.279	
7,700.00	6,987.00	6,700.00	6,677.37	31.41	24.07	53.75	256.07	-143.31	1,343.74	1,295.86	47.88	28.066	
7,800.00	6,987.00	6,671.50	6,652.56	32.27	23.96	52.27	252.35	-129.80	1,435.77	1,388.04	47.72	30.086	
7,900.00	6,987.00	6,650.00	6,633.44	33.17	23.88	51.17	249.74	-120.33	1,528.58	1,480.92	47.66	32.075	
8,000.00	6,987.00	6,650.00	6,633.44	34.12	23.88	51.17	249.74	-120.33	1,621.95	1,574.11	47.83	33.909	
8,100.00	6,987.00	6,630.20	6,615.54	35.10	23.81	50.16	247.49	-112.15	1,715.79	1,668.01	47.78	35.912	
8,200.00	6,987.00	6,618.62	6,604.96	36.12	23.76	49.58	246.24	-107.63	1,810.13	1,762.32	47.81	37.863	
8,300.00	6,987.00	6,600.00	6,587.77	37.17	23.69	48.65	244.34	-100.73	1,904.92	1,857.16	47.76	39.883	
8,314.89	6,987.00	6,600.00	6,587.77	37.33	23.69	48.65	244.34	-100.73	1,919.05	1,871.27	47.78	40.162	
8,400.00	6,987.00	6,600.00	6,587.77	38.25	23.69	54.69	244.34	-100.73	1,999.39	1,951.50	47.89	41.747	
8,500.00	6,987.00	6,600.00	6,587.77	39.35	23.69	60.18	244.34	-100.73	2,092.50	2,044.50	48.01	43.586	
8,600.00	6,987.00	6,578.20	6,567.38	40.45	23.61	63.39	242.29	-93.29	2,183.68	2,135.76	47.93	45.564	
8,700.00	6,987.00	6,568.87	6,558.58	41.56	23.58	66.35	241.47	-90.31	2,273.00	2,225.05	47.95	47.402	
8,800.00	6,987.00	6,550.00	6,540.64	42.66	23.51	68.30	239.92	-84.66	2,360.24	2,312.35	47.90	49.276	

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 #692H
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 #692H	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 #694H - OH - Prelim 5													Offset Site Error:	0.00 usft		
Survey Program:		0-MWD+HRGM+MS					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			
8,900.00	6,987.00	6,550.00	6,540.64	43.75	23.51	70.55	239.92	-84.66	2,445.04	2,397.04	48.00	50.940				
9,000.00	6,987.00	6,550.00	6,540.64	44.83	23.51	72.40	239.92	-84.66	2,527.45	2,479.36	48.09	52.555				
9,071.74	6,987.00	6,550.00	6,540.64	45.59	23.51	73.53	239.92	-84.66	2,585.03	2,536.87	48.16	53.681				
9,100.00	6,987.00	6,550.00	6,540.64	45.89	23.51	73.53	239.92	-84.66	2,607.50	2,559.32	48.18	54.120				
9,200.00	6,987.00	6,528.76	6,520.26	46.97	23.43	72.84	238.34	-78.92	2,687.57	2,639.45	48.12	55.847				
9,300.00	6,987.00	6,522.26	6,513.97	48.07	23.41	72.63	237.89	-77.29	2,769.02	2,720.84	48.17	57.478				
9,400.00	6,987.00	6,500.00	6,492.36	49.20	23.33	71.90	236.48	-72.20	2,851.77	2,803.65	48.12	59.263				
9,500.00	6,987.00	6,500.00	6,492.36	50.36	23.33	71.90	236.48	-72.20	2,935.27	2,887.06	48.22	60.875				
9,600.00	6,987.00	6,500.00	6,492.36	51.54	23.33	71.90	236.48	-72.20	3,019.78	2,971.46	48.31	62.506				
9,700.00	6,987.00	6,500.00	6,492.36	52.74	23.33	71.90	236.48	-72.20	3,105.20	3,056.80	48.40	64.154				
9,800.00	6,987.00	6,500.00	6,492.36	53.96	23.33	71.90	236.48	-72.20	3,191.47	3,142.98	48.49	65.816				
9,900.00	6,987.00	6,500.00	6,492.36	55.21	23.33	71.90	236.48	-72.20	3,278.52	3,229.94	48.58	67.492				
10,000.00	6,987.00	6,500.00	6,492.36	56.47	23.33	71.90	236.48	-72.20	3,366.29	3,317.63	48.66	69.179				
10,100.00	6,987.00	6,500.00	6,492.36	57.75	23.33	71.90	236.48	-72.20	3,454.73	3,405.99	48.74	70.878				
10,200.00	6,987.00	6,500.00	6,492.36	59.04	23.33	71.90	236.48	-72.20	3,543.78	3,494.96	48.82	72.586				
10,300.00	6,987.00	6,476.74	6,469.58	60.35	23.25	71.14	235.23	-67.65	3,633.00	3,584.22	48.78	74.479				
10,400.00	6,987.00	6,473.53	6,466.42	61.67	23.24	71.03	235.08	-67.09	3,723.02	3,674.18	48.84	76.227				
10,500.00	6,987.00	6,450.00	6,443.20	63.01	23.15	70.26	234.07	-63.43	3,813.85	3,765.05	48.80	78.149				
10,600.00	6,987.00	6,450.00	6,443.20	64.36	23.15	70.26	234.07	-63.43	3,904.73	3,855.85	48.88	79.882				
10,700.00	6,987.00	6,450.00	6,443.20	65.72	23.15	70.26	234.07	-63.43	3,996.04	3,947.08	48.96	81.621				
10,800.00	6,987.00	6,450.00	6,443.20	67.09	23.15	70.26	234.07	-63.43	4,087.77	4,038.73	49.03	83.365				
10,900.00	6,987.00	6,450.00	6,443.20	68.47	23.15	70.26	234.07	-63.43	4,179.87	4,130.76	49.11	85.114				
11,000.00	6,987.00	6,450.00	6,443.20	69.86	23.15	70.26	234.07	-63.43	4,272.32	4,223.14	49.18	86.867				
11,100.00	6,987.00	6,450.00	6,443.20	71.26	23.15	70.26	234.07	-63.43	4,365.11	4,315.86	49.25	88.623				
11,200.00	6,987.00	6,450.00	6,443.20	72.67	23.15	70.26	234.07	-63.43	4,458.21	4,408.89	49.33	90.382				
11,300.00	6,987.00	6,450.00	6,443.20	74.09	23.15	70.26	234.07	-63.43	4,551.61	4,502.21	49.40	92.143				
11,400.00	6,987.00	6,450.00	6,443.20	75.51	23.15	70.26	234.07	-63.43	4,645.28	4,595.81	49.47	93.906				
11,500.00	6,987.00	6,450.00	6,443.20	76.94	23.15	70.26	234.07	-63.43	4,739.20	4,689.67	49.54	95.671				
11,600.00	6,987.00	6,450.00	6,443.20	78.38	23.15	70.26	234.07	-63.43	4,833.38	4,783.77	49.61	97.436				
11,700.00	6,987.00	6,450.00	6,443.20	79.82	23.15	70.26	234.07	-63.43	4,927.78	4,878.10	49.67	99.202				
11,800.00	6,987.00	6,450.00	6,443.20	81.27	23.15	70.26	234.07	-63.43	5,022.39	4,972.65	49.74	100.968				
11,900.00	6,987.00	6,450.00	6,443.20	82.73	23.15	70.26	234.07	-63.43	5,117.22	5,067.41	49.81	102.735				
12,000.00	6,987.00	6,450.00	6,443.20	84.19	23.15	70.26	234.07	-63.43	5,212.23	5,162.35	49.88	104.501				
12,100.00	6,987.00	6,450.00	6,443.20	85.66	23.15	70.26	234.07	-63.43	5,307.43	5,257.49	49.94	106.266				
12,200.00	6,987.00	6,450.00	6,443.20	87.13	23.15	70.26	234.07	-63.43	5,402.80	5,352.79	50.01	108.030				
12,300.00	6,987.00	6,450.00	6,443.20	88.61	23.15	70.26	234.07	-63.43	5,498.34	5,448.26	50.08	109.794				
12,400.00	6,987.00	6,450.00	6,443.20	90.09	23.15	70.26	234.07	-63.43	5,594.03	5,543.89	50.15	111.555				
12,500.00	6,987.00	6,450.00	6,443.20	91.57	23.15	70.26	234.07	-63.43	5,689.87	5,639.66	50.21	113.315				
12,600.00	6,987.00	6,450.00	6,443.20	93.06	23.15	70.26	234.07	-63.43	5,785.86	5,735.58	50.28	115.073				
12,700.00	6,987.00	6,450.00	6,443.20	94.55	23.15	70.26	234.07	-63.43	5,881.97	5,831.63	50.35	116.829				
12,800.00	6,987.00	6,450.00	6,443.20	96.05	23.15	70.26	234.07	-63.43	5,978.21	5,927.80	50.41	118.583				
12,900.00	6,987.00	6,426.86	6,420.25	97.55	23.07	69.51	233.30	-60.63	6,074.17	6,023.77	50.40	120.514				
13,000.00	6,987.00	6,425.77	6,419.16	99.05	23.07	69.47	233.27	-60.52	6,170.61	6,120.14	50.47	122.272				
13,100.00	6,987.00	6,424.71	6,418.11	100.56	23.06	69.43	233.24	-60.41	6,267.16	6,216.63	50.53	124.026				
13,200.00	6,987.00	6,423.68	6,417.09	102.07	23.06	69.40	233.21	-60.31	6,363.82	6,313.22	50.60	125.777				
13,300.00	6,987.00	6,422.69	6,416.09	103.58	23.05	69.37	233.18	-60.21	6,460.57	6,409.91	50.66	127.524				
13,400.00	6,987.00	6,400.00	6,393.49	105.09	22.97	68.63	232.68	-58.40	6,557.78	6,507.13	50.66	129.455				
13,500.00	6,987.00	6,400.00	6,393.49	106.61	22.97	68.63	232.68	-58.40	6,654.70	6,603.97	50.73	131.188				
13,600.00	6,987.00	6,400.00	6,393.49	108.13	22.97	68.63	232.68	-58.40	6,751.70	6,700.90	50.80	132.917				
13,700.00	6,987.00	6,400.00	6,393.49	109.65	22.97	68.63	232.68	-58.40	6,848.79	6,797.92	50.87	134.642				
13,800.00	6,987.00	6,400.00	6,393.49	111.18	22.97	68.63	232.68	-58.40	6,945.96	6,895.02	50.94	136.364				
13,900.00	6,987.00	6,400.00	6,393.49	112.71	22.97	68.63	232.68	-58.40	7,043.21	6,992.20	51.01	138.082				

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 #692H
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 #692H	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 #694H - 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
14,000.00	6,987.00	6,400.00	6,393.49	114.23	22.97	68.63	232.68	-58.40	7,140.54	7,089.46	51.08	139.795	
14,100.00	6,987.00	6,400.00	6,393.49	115.77	22.97	68.63	232.68	-58.40	7,237.94	7,186.79	51.15	141.505	
14,200.00	6,987.00	6,400.00	6,393.49	117.30	22.97	68.63	232.68	-58.40	7,335.40	7,284.18	51.22	143.210	
14,300.00	6,987.00	6,400.00	6,393.49	118.83	22.97	68.63	232.68	-58.40	7,432.94	7,381.65	51.29	144.911	
14,400.00	6,987.00	6,400.00	6,393.49	120.37	22.97	68.63	232.68	-58.40	7,530.54	7,479.18	51.37	146.607	
14,500.00	6,987.00	6,400.00	6,393.49	121.91	22.97	68.63	232.68	-58.40	7,628.21	7,576.77	51.44	148.299	
14,600.00	6,987.00	6,400.00	6,393.49	123.45	22.97	68.63	232.68	-58.40	7,725.93	7,674.42	51.51	149.986	
14,700.00	6,987.00	6,400.00	6,393.49	124.99	22.97	68.63	232.68	-58.40	7,823.71	7,772.13	51.58	151.668	
14,800.00	6,987.00	6,400.00	6,393.49	126.53	22.97	68.63	232.68	-58.40	7,921.55	7,869.89	51.66	153.346	
14,900.00	6,987.00	6,400.00	6,393.49	128.08	22.97	68.63	232.68	-58.40	8,019.44	7,967.70	51.73	155.018	
15,000.00	6,987.00	6,400.00	6,393.49	129.63	22.97	68.63	232.68	-58.40	8,117.38	8,065.57	51.81	156.686	
15,100.00	6,987.00	6,400.00	6,393.49	131.17	22.97	68.63	232.68	-58.40	8,215.37	8,163.49	51.88	158.348	
15,200.00	6,987.00	6,400.00	6,393.49	132.72	22.97	68.63	232.68	-58.40	8,313.41	8,261.45	51.96	160.006	
15,300.00	6,987.00	6,400.00	6,393.49	134.27	22.97	68.63	232.68	-58.40	8,411.49	8,359.46	52.03	161.658	
15,400.00	6,987.00	6,400.00	6,393.49	135.83	22.97	68.63	232.68	-58.40	8,509.62	8,457.51	52.11	163.305	
15,500.00	6,987.00	6,400.00	6,393.49	137.38	22.97	68.63	232.68	-58.40	8,607.79	8,555.61	52.19	164.946	
15,600.00	6,987.00	6,400.00	6,393.49	138.93	22.97	68.63	232.68	-58.40	8,706.01	8,653.74	52.26	166.583	
15,700.00	6,987.00	6,400.00	6,393.49	140.49	22.97	68.63	232.68	-58.40	8,804.26	8,751.92	52.34	168.213	
15,800.00	6,987.00	6,400.00	6,393.49	142.04	22.97	68.63	232.68	-58.40	8,902.55	8,850.14	52.42	169.839	
15,900.00	6,987.00	6,400.00	6,393.49	143.60	22.97	68.63	232.68	-58.40	9,000.88	8,948.39	52.50	171.458	
16,000.00	6,987.00	6,400.00	6,393.49	145.16	22.97	68.63	232.68	-58.40	9,099.25	9,046.68	52.57	173.073	
16,100.00	6,987.00	6,400.00	6,393.49	146.72	22.97	68.63	232.68	-58.40	9,197.65	9,145.00	52.65	174.681	
16,200.00	6,987.00	6,400.00	6,393.49	148.28	22.97	68.63	232.68	-58.40	9,296.09	9,243.36	52.73	176.284	
16,300.00	6,987.00	6,400.00	6,393.49	149.84	22.97	68.63	232.68	-58.40	9,394.56	9,341.74	52.81	177.881	
16,400.00	6,987.00	6,400.00	6,393.49	151.40	22.97	68.63	232.68	-58.40	9,493.06	9,440.17	52.89	179.473	
16,500.00	6,987.00	6,400.00	6,393.49	152.97	22.97	68.63	232.68	-58.40	9,591.59	9,538.62	52.98	181.059	
16,600.00	6,987.00	6,400.00	6,393.49	154.53	22.97	68.63	232.68	-58.40	9,690.15	9,637.10	53.06	182.638	
16,700.00	6,987.00	6,400.00	6,393.49	156.10	22.97	68.63	232.68	-58.40	9,788.75	9,735.61	53.14	184.212	
16,800.00	6,987.00	6,400.00	6,393.49	157.66	22.97	68.63	232.68	-58.40	9,887.37	9,834.14	53.22	185.781	
16,900.00	6,987.00	6,400.00	6,393.49	159.23	22.97	68.63	232.68	-58.40	9,986.01	9,932.71	53.30	187.343	
17,000.00	6,987.00	6,400.00	6,393.49	160.80	22.97	68.63	232.68	-58.40	10,084.69	10,031.30	53.39	188.899	
17,100.00	6,987.00	6,400.00	6,393.49	162.36	22.97	68.63	232.68	-58.40	10,183.39	10,129.92	53.47	190.450	
17,200.00	6,987.00	6,400.00	6,393.49	163.93	22.97	68.63	232.68	-58.40	10,282.11	10,228.56	53.55	191.994	
17,300.00	6,987.00	6,400.00	6,393.49	165.50	22.97	68.63	232.68	-58.40	10,380.86	10,327.22	53.64	193.532	
17,400.00	6,987.00	6,400.00	6,393.49	167.07	22.97	68.63	232.68	-58.40	10,479.63	10,425.91	53.72	195.065	
17,500.00	6,987.00	6,400.00	6,393.49	168.64	22.97	68.63	232.68	-58.40	10,578.43	10,524.62	53.81	196.591	
17,600.00	6,987.00	6,400.00	6,393.49	170.21	22.97	68.63	232.68	-58.40	10,677.25	10,623.35	53.90	198.111	
17,700.00	6,987.00	6,400.00	6,393.49	171.78	22.97	68.63	232.68	-58.40	10,776.09	10,722.11	53.98	199.626	
17,800.00	6,987.00	6,400.00	6,393.49	173.36	22.97	68.63	232.68	-58.40	10,874.95	10,820.88	54.07	201.134	
17,900.00	6,987.00	6,400.00	6,393.49	174.93	22.97	68.63	232.68	-58.40	10,973.83	10,919.68	54.16	202.636	
18,000.00	6,987.00	6,400.00	6,393.49	176.50	22.97	68.63	232.68	-58.40	11,072.73	11,018.49	54.24	204.131	
18,100.00	6,987.00	6,400.00	6,393.49	178.08	22.97	68.63	232.68	-58.40	11,171.66	11,117.33	54.33	205.621	
18,200.00	6,987.00	6,400.00	6,393.49	179.65	22.97	68.63	232.68	-58.40	11,270.60	11,216.18	54.42	207.105	
18,300.00	6,987.00	6,400.00	6,393.49	181.23	22.97	68.63	232.68	-58.40	11,369.56	11,315.05	54.51	208.582	
18,400.00	6,987.00	6,400.00	6,393.49	182.80	22.97	68.63	232.68	-58.40	11,468.53	11,413.94	54.60	210.053	
18,500.00	6,987.00	6,400.00	6,393.49	184.38	22.97	68.63	232.68	-58.40	11,567.53	11,512.84	54.69	211.518	
18,600.00	6,987.00	6,400.00	6,393.49	185.96	22.97	68.63	232.68	-58.40	11,666.54	11,611.76	54.78	212.977	
18,700.00	6,987.00	6,400.00	6,393.49	187.53	22.97	68.63	232.68	-58.40	11,765.57	11,710.70	54.87	214.430	
18,800.00	6,987.00	6,400.00	6,393.49	189.11	22.97	68.63	232.68	-58.40	11,864.62	11,809.66	54.96	215.877	
18,900.00	6,987.00	6,400.00	6,393.49	190.69	22.97	68.63	232.68	-58.40	11,963.68	11,908.62	55.05	217.317	
19,000.00	6,987.00	6,400.00	6,393.49	192.27	22.97	68.63	232.68	-58.40	12,062.75	12,007.61	55.14	218.751	
19,100.00	6,987.00	6,400.00	6,393.49	193.85	22.97	68.63	232.68	-58.40	12,161.84	12,106.61	55.24	220.179	

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 #692H
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 #692H	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 #694H - 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:		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		
19,200.00	6,987.00	6,400.00	6,393.49	195.43	22.97	68.63	232.68	-58.40	12,260.95	12,205.62	55.33	221.601		
19,255.69	6,987.00	6,400.00	6,393.49	196.31	22.97	68.63	232.68	-58.40	12,316.15	12,260.77	55.38	222.390		
19,300.00	6,987.00	6,400.00	6,393.49	197.01	22.97	68.63	232.68	-58.40	12,360.07	12,304.65	55.42	223.017		
19,400.00	6,987.00	6,400.00	6,393.49	198.59	22.97	68.63	232.68	-58.40	12,459.21	12,403.69	55.52	224.426		
19,468.80	6,987.00	6,400.00	6,393.49	199.49	22.97	68.63	232.68	-58.40	12,527.42	12,467.34	60.09	208.489		

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 #692H
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 #692H	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		Offset		Semi Major Axis			Offset Wellbore Centre		Distance			Separation Factor	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)		
0.00	0.00	0.00	0.00	0.00	0.00	-150.73	-34.95	-19.59	40.06				
100.00	100.00	100.00	100.00	0.25	0.25	-150.73	-34.95	-19.59	40.06	39.56	0.50	79.832	
200.00	200.00	200.00	200.00	0.61	0.61	-150.73	-34.95	-19.59	40.06	38.85	1.22	32.872	
300.00	300.00	300.00	300.00	0.97	0.97	-150.73	-34.95	-19.59	40.06	38.13	1.94	20.697	
400.00	400.00	400.00	400.00	1.33	1.33	-150.73	-34.95	-19.59	40.06	37.41	2.65	15.103	
500.00	500.00	500.00	500.00	1.68	1.68	-150.73	-34.95	-19.59	40.06	36.69	3.37	11.890	
600.00	600.00	600.00	600.00	2.04	2.04	-150.73	-34.95	-19.59	40.06	35.98	4.09	9.804	
700.00	700.00	700.00	700.00	2.40	2.40	-150.73	-34.95	-19.59	40.06	35.26	4.80	8.341 CC	
800.00	799.98	800.71	800.69	2.76	2.76	-143.64	-33.42	-20.47	40.59	35.07	5.52	7.351 ES	
900.00	899.84	900.67	900.59	3.12	3.12	-143.72	-30.40	-22.21	43.06	36.82	6.24	6.903	
1,000.00	999.45	1,000.51	1,000.36	3.48	3.48	-146.20	-27.38	-23.96	48.38	41.43	6.96	6.956	
1,100.00	1,098.70	1,100.09	1,099.88	3.85	3.83	-150.00	-24.37	-25.69	56.78	49.10	7.68	7.397	
1,153.80	1,151.90	1,153.51	1,153.28	4.04	4.02	-152.22	-22.75	-26.63	62.65	54.58	8.06	7.768	
1,200.00	1,197.53	1,199.34	1,199.07	4.21	4.19	-154.02	-21.37	-27.43	68.14	59.74	8.40	8.115	
1,300.00	1,296.27	1,298.53	1,298.21	4.59	4.54	-157.07	-18.37	-29.16	80.21	71.09	9.12	8.799	
1,400.00	1,395.02	1,397.72	1,397.34	4.97	4.90	-159.31	-15.37	-30.89	92.44	82.61	9.84	9.399	
1,500.00	1,493.77	1,496.91	1,496.47	5.36	5.26	-161.03	-12.38	-32.62	104.78	94.23	10.56	9.926	
1,600.00	1,592.52	1,596.11	1,595.60	5.74	5.61	-162.39	-9.38	-34.35	117.20	105.92	11.28	10.391	
1,700.00	1,691.27	1,695.30	1,694.73	6.14	5.97	-163.49	-6.38	-36.08	129.66	117.66	12.00	10.803	
1,800.00	1,790.01	1,794.49	1,793.87	6.53	6.33	-164.39	-3.38	-37.81	142.17	129.44	12.73	11.171	
1,900.00	1,888.76	1,893.68	1,893.00	6.92	6.68	-165.15	-0.38	-39.54	154.70	141.25	13.45	11.501	
2,000.00	1,987.51	1,992.88	1,992.13	7.32	7.04	-165.79	2.61	-41.27	167.26	153.08	14.18	11.798	
2,100.00	2,086.26	2,092.07	2,091.26	7.72	7.40	-166.35	5.61	-43.00	179.83	164.93	14.90	12.068	
2,200.00	2,185.01	2,191.26	2,190.39	8.11	7.75	-166.83	8.61	-44.74	192.42	176.79	15.63	12.312	
2,300.00	2,283.75	2,290.45	2,289.52	8.51	8.11	-167.25	11.61	-46.47	205.02	188.67	16.35	12.536	
2,400.00	2,382.50	2,389.65	2,388.66	8.91	8.47	-167.62	14.61	-48.20	217.63	200.55	17.08	12.741	
2,500.00	2,481.25	2,488.84	2,487.79	9.31	8.82	-167.96	17.60	-49.93	230.25	212.44	17.81	12.929	
2,600.00	2,580.00	2,588.03	2,586.92	9.71	9.18	-168.25	20.60	-51.66	242.88	224.34	18.54	13.103	
2,700.00	2,678.75	2,687.22	2,686.05	10.11	9.54	-168.52	23.60	-53.39	255.51	236.25	19.26	13.264	
2,800.00	2,777.49	2,786.41	2,785.18	10.52	9.90	-168.77	26.60	-55.12	268.15	248.15	19.99	13.413	
2,900.00	2,876.24	2,885.61	2,884.32	10.92	10.25	-168.99	29.60	-56.85	280.79	260.07	20.72	13.552	
3,000.00	2,974.99	2,984.80	2,983.45	11.32	10.61	-169.19	32.59	-58.58	293.43	271.98	21.45	13.681	
3,100.00	3,073.74	3,083.99	3,082.58	11.72	10.97	-169.38	35.59	-60.31	306.08	283.90	22.18	13.802	
3,200.00	3,172.49	3,183.18	3,181.71	12.13	11.32	-169.55	38.59	-62.04	318.73	295.82	22.91	13.915	
3,300.00	3,271.23	3,282.38	3,280.84	12.53	11.68	-169.70	41.59	-63.78	331.38	307.75	23.63	14.022	
3,400.00	3,369.98	3,381.57	3,379.98	12.93	12.04	-169.85	44.59	-65.51	344.04	319.68	24.36	14.122	
3,500.00	3,468.73	3,480.76	3,479.11	13.34	12.40	-169.99	47.58	-67.24	356.70	331.60	25.09	14.216	
3,600.00	3,567.48	3,579.95	3,578.24	13.74	12.75	-170.11	50.58	-68.97	369.35	343.53	25.82	14.305	
3,700.00	3,666.23	3,679.15	3,677.37	14.14	13.11	-170.23	53.58	-70.70	382.02	355.47	26.55	14.389	
3,800.00	3,764.97	3,778.34	3,776.50	14.55	13.47	-170.34	56.58	-72.43	394.68	367.40	27.28	14.468	
3,900.00	3,863.72	3,877.53	3,875.63	14.95	13.83	-170.45	59.58	-74.16	407.34	379.33	28.01	14.544	
4,000.00	3,962.47	3,976.72	3,974.77	15.36	14.18	-170.54	62.57	-75.89	420.01	391.27	28.74	14.615	
4,100.00	4,061.22	4,075.91	4,073.90	15.76	14.54	-170.63	65.57	-77.62	432.67	403.21	29.47	14.684	
4,200.00	4,159.97	4,175.11	4,173.03	16.17	14.90	-170.72	68.57	-79.35	445.34	415.14	30.20	14.748	
4,300.00	4,258.71	4,274.30	4,272.16	16.57	15.25	-170.80	71.57	-81.08	458.01	427.08	30.93	14.810	
4,400.00	4,357.46	4,373.49	4,371.29	16.98	15.61	-170.88	74.57	-82.81	470.68	439.02	31.66	14.869	
4,500.00	4,456.21	4,472.68	4,470.43	17.38	15.97	-170.95	77.56	-84.55	483.35	450.96	32.38	14.925	
4,600.00	4,554.96	4,571.88	4,569.56	17.79	16.33	-171.02	80.56	-86.28	496.02	462.90	33.11	14.979	
4,700.00	4,653.71	4,671.07	4,668.69	18.19	16.68	-171.09	83.56	-88.01	508.69	474.85	33.84	15.030	
4,800.00	4,752.45	4,770.26	4,767.82	18.60	17.04	-171.15	86.56	-89.74	521.36	486.79	34.57	15.080	
4,900.00	4,851.20	4,869.45	4,866.95	19.00	17.40	-171.21	89.56	-91.47	534.03	498.73	35.30	15.127	
5,000.00	4,949.95	4,968.64	4,966.08	19.41	17.76	-171.27	92.55	-93.20	546.71	510.67	36.03	15.172	

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 #692H
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 #692H	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	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	5,048.70	5,067.84	5,065.22	19.81	18.11	-171.32	95.55	-94.93	559.38	522.62	36.76	15.215	
5,200.00	5,147.45	5,167.03	5,164.35	20.22	18.47	-171.38	98.55	-96.66	572.05	534.56	37.49	15.257	
5,300.00	5,246.19	5,266.22	5,263.48	20.62	18.83	-171.43	101.55	-98.39	584.73	546.51	38.22	15.297	
5,400.00	5,344.94	5,365.41	5,362.61	21.03	19.19	-171.47	104.54	-100.12	597.40	558.45	38.95	15.336	
5,455.76	5,400.00	5,419.95	5,417.12	21.25	19.38	-171.50	106.18	-101.07	604.48	565.13	39.36	15.359	
5,500.00	5,443.72	5,461.96	5,459.10	21.43	19.53	-171.53	107.33	-101.73	610.05	570.38	39.67	15.379	
5,600.00	5,542.71	5,556.92	5,554.03	21.83	19.87	-171.61	109.44	-102.95	621.89	581.53	40.36	15.407	
5,700.00	5,641.93	5,651.91	5,649.01	22.22	20.21	-171.71	110.86	-103.77	632.72	591.66	41.06	15.411	
5,800.00	5,741.36	5,746.93	5,744.03	22.60	20.55	-171.81	111.60	-104.20	642.53	600.79	41.74	15.393	
5,900.00	5,840.96	5,843.86	5,840.96	22.97	20.90	-171.93	111.72	-104.27	651.27	608.83	42.44	15.347	
6,000.00	5,940.70	5,943.60	5,940.70	23.33	21.25	-172.02	111.72	-104.27	658.41	615.26	43.15	15.259	
6,100.00	6,040.55	6,043.45	6,040.55	23.68	21.61	-172.10	111.72	-104.27	663.82	619.96	43.86	15.136	
6,200.00	6,140.48	6,143.38	6,140.48	24.02	21.96	-172.15	111.72	-104.27	667.51	622.94	44.57	14.978	
6,300.00	6,240.45	6,243.36	6,240.45	24.35	22.32	-172.17	111.72	-104.27	669.47	624.20	45.27	14.788	
6,408.05	6,348.50	6,351.41	6,348.50	24.69	22.70	7.83	111.72	-104.27	669.64	623.64	46.01	14.555	
6,424.28	6,364.73	6,371.37	6,368.46	24.74	22.77	103.73	111.76	-104.06	669.59	623.45	46.14	14.511	
6,450.00	6,390.43	6,404.61	6,401.66	24.82	22.89	114.90	112.09	-102.36	669.72	623.35	46.37	14.443	
6,500.00	6,440.15	6,469.09	6,465.57	24.99	23.10	118.23	113.67	-94.24	670.69	623.90	46.79	14.335	
6,550.00	6,489.32	6,533.15	6,527.92	25.16	23.30	118.75	116.45	-79.93	672.63	625.45	47.18	14.255	
6,600.00	6,537.64	6,596.54	6,587.88	25.34	23.50	118.49	120.37	-59.79	675.56	627.99	47.56	14.203	
6,650.00	6,584.80	6,659.07	6,644.73	25.52	23.69	117.80	125.32	-34.28	679.50	631.57	47.93	14.176	
6,700.00	6,630.52	6,720.56	6,697.88	25.71	23.89	116.81	131.21	-3.99	684.48	636.18	48.30	14.172	
6,750.00	6,674.51	6,780.87	6,746.88	25.89	24.09	115.59	137.91	30.48	690.52	641.85	48.67	14.189	
6,800.00	6,716.50	6,839.90	6,791.43	26.08	24.29	114.16	145.30	68.48	697.63	648.58	49.05	14.224	
6,850.00	6,756.24	6,897.62	6,831.33	26.28	24.49	112.57	153.25	109.39	705.82	656.38	49.44	14.276	
6,900.00	6,793.47	6,954.00	6,866.50	26.48	24.70	110.83	161.65	152.62	715.08	665.23	49.85	14.344	
6,950.00	6,827.97	7,009.05	6,896.96	26.69	24.91	108.97	170.40	197.61	725.38	675.10	50.28	14.427	
7,000.00	6,859.53	7,062.82	6,922.78	26.91	25.13	107.01	179.40	243.89	736.68	685.96	50.72	14.525	
7,050.00	6,887.94	7,115.36	6,944.08	27.14	25.36	104.97	188.56	291.02	748.93	697.76	51.17	14.637	
7,100.00	6,913.05	7,166.75	6,961.02	27.38	25.59	102.87	197.81	338.64	762.05	710.42	51.62	14.762	
7,150.00	6,934.68	7,217.07	6,973.76	27.64	25.83	100.72	207.10	386.41	775.95	723.87	52.08	14.898	
7,200.00	6,952.71	7,266.42	6,982.48	27.92	26.07	98.55	216.36	434.07	790.55	738.00	52.55	15.045	
7,250.00	6,967.02	7,314.88	6,987.36	28.21	26.32	96.36	225.56	481.39	805.73	752.72	53.01	15.200	
7,300.00	6,977.54	7,362.41	6,988.62	28.52	26.58	94.17	234.63	528.02	821.39	767.92	53.47	15.362	
7,350.00	6,984.18	7,409.27	6,988.64	28.83	26.84	92.17	243.57	574.03	837.41	783.46	53.95	15.523	
7,400.00	6,986.92	7,456.47	6,988.66	29.16	27.13	90.43	252.57	620.36	853.63	799.16	54.47	15.672	
7,409.89	6,987.00	7,465.83	6,988.66	29.23	27.19	90.12	254.36	629.54	856.85	802.28	54.57	15.701	
7,500.00	6,987.00	7,551.03	6,988.69	29.85	27.75	90.12	270.61	713.17	886.19	830.58	55.61	15.937	
7,600.00	6,987.00	7,645.58	6,988.72	30.61	28.43	90.11	288.66	805.99	918.74	861.87	56.88	16.154	
7,700.00	6,987.00	7,740.13	6,988.75	31.41	29.17	90.11	306.70	898.80	951.30	893.04	58.26	16.328	
7,800.00	6,987.00	7,834.68	6,988.79	32.27	29.97	90.11	324.74	991.62	983.86	924.09	59.76	16.463	
7,900.00	6,987.00	7,929.23	6,988.82	33.17	30.82	90.11	342.78	1,084.43	1,016.41	955.05	61.37	16.563	
8,000.00	6,987.00	8,023.78	6,988.85	34.12	31.72	90.11	360.82	1,177.25	1,048.97	985.91	63.06	16.633	
8,100.00	6,987.00	8,118.34	6,988.89	35.10	32.67	90.11	378.86	1,270.06	1,081.53	1,016.68	64.85	16.677	
8,200.00	6,987.00	8,211.68	6,988.92	36.12	33.63	90.10	396.67	1,361.69	1,114.09	1,047.39	66.69	16.705	
8,300.00	6,987.00	8,280.06	6,988.94	37.17	34.37	90.10	408.92	1,428.96	1,147.78	1,079.69	68.10	16.855	
8,314.89	6,987.00	8,300.00	6,988.95	37.33	34.58	90.10	412.19	1,448.63	1,153.05	1,084.54	68.51	16.831	
8,400.00	6,987.00	8,347.03	6,988.97	38.25	35.11	90.10	419.35	1,495.11	1,181.31	1,111.81	69.50	16.998	
8,500.00	6,987.00	8,400.00	6,988.98	39.35	35.70	90.10	426.51	1,547.60	1,210.63	1,140.04	70.58	17.151	
8,600.00	6,987.00	8,482.38	6,989.01	40.45	36.64	90.10	435.70	1,629.46	1,235.25	1,162.87	72.38	17.066	
8,700.00	6,987.00	8,550.62	6,989.03	41.56	37.44	90.09	441.54	1,697.45	1,255.51	1,181.65	73.87	16.997	
8,800.00	6,987.00	8,619.14	6,989.05	42.66	38.25	90.09	445.76	1,765.84	1,271.26	1,195.89	75.37	16.868	

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 #692H
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 #692H	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		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)			
8,900.00	6,987.00	8,700.00	6,989.07	43.75	39.22	90.09	448.64	1,846.64	1,282.54	1,205.33	77.21	16.610	
9,000.00	6,987.00	8,756.72	6,989.09	44.83	39.91	90.09	449.30	1,903.36	1,289.10	1,210.70	78.40	16.443	
9,071.74	6,987.00	8,821.20	6,989.11	45.59	40.70	90.09	449.10	1,967.84	1,290.77	1,210.83	79.94	16.148	
9,100.00	6,987.00	8,849.46	6,989.11	45.89	41.06	90.09	448.99	1,996.10	1,290.74	1,210.11	80.63	16.008	
9,200.00	6,987.00	8,949.46	6,989.14	46.97	42.31	90.10	448.60	2,096.10	1,290.65	1,207.52	83.13	15.525	
9,300.00	6,987.00	9,049.46	6,989.17	48.07	43.59	90.10	448.21	2,196.10	1,290.56	1,204.88	85.68	15.062	
9,400.00	6,987.00	9,149.46	6,989.20	49.20	44.89	90.10	447.83	2,296.10	1,290.47	1,202.20	88.27	14.619	
9,500.00	6,987.00	9,249.46	6,989.22	50.36	46.21	90.10	447.44	2,396.10	1,290.38	1,199.48	90.90	14.195	
9,600.00	6,987.00	9,349.46	6,989.25	51.54	47.55	90.10	447.05	2,496.10	1,290.29	1,196.72	93.57	13.790	
9,700.00	6,987.00	9,449.46	6,989.28	52.74	48.90	90.10	446.66	2,596.10	1,290.20	1,193.93	96.27	13.402	
9,800.00	6,987.00	9,549.46	6,989.30	53.96	50.26	90.10	446.28	2,696.10	1,290.11	1,191.11	99.00	13.032	
9,900.00	6,987.00	9,649.46	6,989.33	55.21	51.65	90.10	445.89	2,796.09	1,290.02	1,188.26	101.76	12.678	
10,000.00	6,987.00	9,749.46	6,989.36	56.47	53.04	90.10	445.50	2,896.09	1,289.93	1,185.39	104.54	12.339	
10,100.00	6,987.00	9,849.46	6,989.38	57.75	54.44	90.11	445.11	2,996.09	1,289.84	1,182.49	107.35	12.016	
10,200.00	6,987.00	9,949.46	6,989.41	59.04	55.86	90.11	444.72	3,096.09	1,289.74	1,179.57	110.18	11.706	
10,300.00	6,987.00	10,049.46	6,989.44	60.35	57.29	90.11	444.34	3,196.09	1,289.65	1,176.63	113.03	11.410	
10,400.00	6,987.00	10,149.46	6,989.47	61.67	58.72	90.11	443.95	3,296.09	1,289.56	1,173.67	115.89	11.127	
10,500.00	6,987.00	10,249.46	6,989.49	63.01	60.16	90.11	443.56	3,396.09	1,289.47	1,170.69	118.78	10.856	
10,600.00	6,987.00	10,349.46	6,989.52	64.36	61.62	90.11	443.17	3,496.09	1,289.38	1,167.70	121.68	10.596	
10,700.00	6,987.00	10,449.46	6,989.55	65.72	63.07	90.11	442.79	3,596.09	1,289.29	1,164.69	124.60	10.348	
10,800.00	6,987.00	10,549.46	6,989.57	67.09	64.54	90.11	442.40	3,696.09	1,289.20	1,161.67	127.53	10.109	
10,900.00	6,987.00	10,649.46	6,989.60	68.47	66.01	90.12	442.01	3,796.09	1,289.11	1,158.64	130.47	9.880	
11,000.00	6,987.00	10,749.46	6,989.63	69.86	67.49	90.12	441.62	3,896.09	1,289.02	1,155.59	133.43	9.661	
11,100.00	6,987.00	10,849.46	6,989.65	71.26	68.97	90.12	441.24	3,996.08	1,288.93	1,152.53	136.40	9.450	
11,200.00	6,987.00	10,949.46	6,989.68	72.67	70.46	90.12	440.85	4,096.08	1,288.84	1,149.46	139.38	9.247	
11,300.00	6,987.00	11,049.46	6,989.71	74.09	71.96	90.12	440.46	4,196.08	1,288.75	1,146.38	142.37	9.052	
11,400.00	6,987.00	11,149.46	6,989.74	75.51	73.46	90.12	440.07	4,296.08	1,288.66	1,143.30	145.36	8.865	
11,500.00	6,987.00	11,249.46	6,989.76	76.94	74.96	90.12	439.69	4,396.08	1,288.57	1,140.20	148.37	8.685	
11,600.00	6,987.00	11,349.46	6,989.79	78.38	76.47	90.12	439.30	4,496.08	1,288.48	1,137.09	151.39	8.511	
11,700.00	6,987.00	11,449.46	6,989.82	79.82	77.98	90.13	438.91	4,596.08	1,288.39	1,133.98	154.41	8.344	
11,800.00	6,987.00	11,549.46	6,989.84	81.27	79.49	90.13	438.52	4,696.08	1,288.30	1,130.86	157.44	8.183	
11,900.00	6,987.00	11,649.46	6,989.87	82.73	81.01	90.13	438.14	4,796.08	1,288.21	1,127.73	160.48	8.027	
12,000.00	6,987.00	11,749.46	6,989.90	84.19	82.53	90.13	437.75	4,896.08	1,288.12	1,124.60	163.52	7.877	
12,100.00	6,987.00	11,849.46	6,989.92	85.66	84.06	90.13	437.36	4,996.08	1,288.03	1,121.46	166.57	7.733	
12,200.00	6,987.00	11,949.46	6,989.95	87.13	85.58	90.13	436.97	5,096.08	1,287.94	1,118.31	169.63	7.593	
12,300.00	6,987.00	12,049.46	6,989.98	88.61	87.12	90.13	436.58	5,196.08	1,287.85	1,115.16	172.69	7.458	
12,400.00	6,987.00	12,149.46	6,990.01	90.09	88.65	90.13	436.20	5,296.07	1,287.76	1,112.00	175.75	7.327	
12,500.00	6,987.00	12,249.46	6,990.03	91.57	90.18	90.13	435.81	5,396.07	1,287.67	1,108.84	178.83	7.201	
12,600.00	6,987.00	12,349.46	6,990.06	93.06	91.72	90.14	435.42	5,496.07	1,287.58	1,105.67	181.90	7.078	
12,700.00	6,987.00	12,449.46	6,990.09	94.55	93.26	90.14	435.03	5,596.07	1,287.48	1,102.50	184.98	6.960	
12,800.00	6,987.00	12,549.46	6,990.11	96.05	94.80	90.14	434.65	5,696.07	1,287.39	1,099.32	188.07	6.845	
12,900.00	6,987.00	12,649.46	6,990.14	97.55	96.35	90.14	434.26	5,796.07	1,287.30	1,096.15	191.16	6.734	
13,000.00	6,987.00	12,749.46	6,990.17	99.05	97.89	90.14	433.87	5,896.07	1,287.21	1,092.96	194.25	6.627	
13,100.00	6,987.00	12,849.46	6,990.20	100.56	99.44	90.14	433.48	5,996.07	1,287.12	1,089.77	197.35	6.522	
13,200.00	6,987.00	12,949.46	6,990.22	102.07	100.99	90.14	433.10	6,096.07	1,287.03	1,086.58	200.45	6.421	
13,300.00	6,987.00	13,049.46	6,990.25	103.58	102.54	90.14	432.71	6,196.07	1,286.94	1,083.39	203.55	6.322	
13,400.00	6,987.00	13,149.46	6,990.28	105.09	104.10	90.15	432.32	6,296.07	1,286.85	1,080.19	206.66	6.227	
13,500.00	6,987.00	13,249.46	6,990.30	106.61	105.65	90.15	431.93	6,396.07	1,286.76	1,076.99	209.77	6.134	
13,600.00	6,987.00	13,349.46	6,990.33	108.13	107.21	90.15	431.55	6,496.06	1,286.67	1,073.79	212.88	6.044	
13,700.00	6,987.00	13,449.46	6,990.36	109.65	108.76	90.15	431.16	6,596.06	1,286.58	1,070.58	216.00	5.956	
13,800.00	6,987.00	13,549.46	6,990.38	111.18	110.32	90.15	430.77	6,696.06	1,286.49	1,067.37	219.12	5.871	
13,900.00	6,987.00	13,649.46	6,990.41	112.71	111.88	90.15	430.38	6,796.06	1,286.40	1,064.16	222.24	5.788	

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 #692H
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 #692H	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
Rule Assigned:												Warning	
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	
				(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,000.00	6,987.00	13,749.46	6,990.44	114.23	113.44	90.15	430.00	6,896.06	1,286.31	1,060.95	225.36	5.708	
14,100.00	6,987.00	13,849.46	6,990.47	115.77	115.01	90.15	429.61	6,996.06	1,286.22	1,057.73	228.49	5.629	
14,200.00	6,987.00	13,949.46	6,990.49	117.30	116.57	90.16	429.22	7,096.06	1,286.13	1,054.51	231.62	5.553	
14,300.00	6,987.00	14,049.46	6,990.52	118.83	118.13	90.16	428.83	7,196.06	1,286.04	1,051.29	234.75	5.478	
14,400.00	6,987.00	14,149.46	6,990.55	120.37	119.70	90.16	428.44	7,296.06	1,285.95	1,048.07	237.88	5.406	
14,500.00	6,987.00	14,249.46	6,990.57	121.91	121.27	90.16	428.06	7,396.06	1,285.86	1,044.84	241.01	5.335	
14,600.00	6,987.00	14,349.46	6,990.60	123.45	122.84	90.16	427.67	7,496.06	1,285.77	1,041.62	244.15	5.266	
14,700.00	6,987.00	14,449.46	6,990.63	124.99	124.40	90.16	427.28	7,596.06	1,285.68	1,038.39	247.29	5.199	
14,800.00	6,987.00	14,549.46	6,990.65	126.53	125.97	90.16	426.89	7,696.06	1,285.59	1,035.16	250.43	5.134	
14,900.00	6,987.00	14,649.46	6,990.68	128.08	127.54	90.16	426.51	7,796.05	1,285.50	1,031.92	253.57	5.070	
15,000.00	6,987.00	14,749.46	6,990.71	129.63	129.12	90.17	426.12	7,896.05	1,285.41	1,028.69	256.72	5.007	
15,100.00	6,987.00	14,849.46	6,990.74	131.17	130.69	90.17	425.73	7,996.05	1,285.32	1,025.45	259.86	4.946	
15,200.00	6,987.00	14,949.46	6,990.76	132.72	132.26	90.17	425.34	8,096.05	1,285.22	1,022.22	263.01	4.887	
15,300.00	6,987.00	15,049.46	6,990.79	134.27	133.83	90.17	424.96	8,196.05	1,285.13	1,018.98	266.16	4.829	
15,400.00	6,987.00	15,149.46	6,990.82	135.83	135.41	90.17	424.57	8,296.05	1,285.04	1,015.74	269.30	4.772	
15,500.00	6,987.00	15,249.46	6,990.84	137.38	136.98	90.17	424.18	8,396.05	1,284.95	1,012.50	272.46	4.716	
15,600.00	6,987.00	15,349.46	6,990.87	138.93	138.56	90.17	423.79	8,496.05	1,284.86	1,009.26	275.61	4.662	
15,700.00	6,987.00	15,449.46	6,990.90	140.49	140.14	90.17	423.41	8,596.05	1,284.77	1,006.01	278.76	4.609	
15,800.00	6,987.00	15,549.46	6,990.92	142.04	141.71	90.18	423.02	8,696.05	1,284.68	1,002.77	281.92	4.557	
15,900.00	6,987.00	15,649.46	6,990.95	143.60	143.29	90.18	422.63	8,796.05	1,284.59	999.52	285.07	4.506	
16,000.00	6,987.00	15,749.46	6,990.98	145.16	144.87	90.18	422.24	8,896.05	1,284.50	996.27	288.23	4.457	
16,100.00	6,987.00	15,849.46	6,991.01	146.72	146.45	90.18	421.86	8,996.04	1,284.41	993.02	291.39	4.408	
16,200.00	6,987.00	15,949.46	6,991.03	148.28	148.03	90.18	421.47	9,096.04	1,284.32	989.77	294.55	4.360	
16,300.00	6,987.00	16,049.46	6,991.06	149.84	149.61	90.18	421.08	9,196.04	1,284.23	986.52	297.71	4.314	
16,400.00	6,987.00	16,149.46	6,991.09	151.40	151.19	90.18	420.69	9,296.04	1,284.14	983.27	300.87	4.268	
16,500.00	6,987.00	16,249.46	6,991.11	152.97	152.77	90.18	420.30	9,396.04	1,284.05	980.02	304.03	4.223	
16,600.00	6,987.00	16,349.46	6,991.14	154.53	154.35	90.18	419.92	9,496.04	1,283.96	976.76	307.20	4.180	
16,700.00	6,987.00	16,449.46	6,991.17	156.10	155.93	90.19	419.53	9,596.04	1,283.87	973.51	310.36	4.137	
16,800.00	6,987.00	16,549.46	6,991.19	157.66	157.51	90.19	419.14	9,696.04	1,283.78	970.25	313.53	4.095	
16,900.00	6,987.00	16,649.46	6,991.22	159.23	159.10	90.19	418.75	9,796.04	1,283.69	967.00	316.69	4.053	
17,000.00	6,987.00	16,749.46	6,991.25	160.80	160.68	90.19	418.37	9,896.04	1,283.60	963.74	319.86	4.013	
17,100.00	6,987.00	16,849.46	6,991.28	162.36	162.26	90.19	417.98	9,996.04	1,283.51	960.48	323.03	3.973	
17,200.00	6,987.00	16,949.46	6,991.30	163.93	163.85	90.19	417.59	10,096.04	1,283.42	957.22	326.20	3.934	
17,300.00	6,987.00	17,049.46	6,991.33	165.50	165.43	90.19	417.20	10,196.04	1,283.33	953.96	329.37	3.896	
17,400.00	6,987.00	17,149.46	6,991.36	167.07	167.02	90.19	416.82	10,296.03	1,283.24	950.70	332.54	3.859	
17,500.00	6,987.00	17,249.46	6,991.38	168.64	168.60	90.20	416.43	10,396.03	1,283.15	947.44	335.71	3.822	
17,600.00	6,987.00	17,349.46	6,991.41	170.21	170.19	90.20	416.04	10,496.03	1,283.06	944.18	338.88	3.786	
17,700.00	6,987.00	17,449.46	6,991.44	171.78	171.77	90.20	415.65	10,596.03	1,282.97	940.91	342.05	3.751	
17,800.00	6,987.00	17,549.46	6,991.47	173.36	173.36	90.20	415.27	10,696.03	1,282.87	937.65	345.22	3.716	
17,900.00	6,987.00	17,649.46	6,991.49	174.93	174.94	90.20	414.88	10,796.03	1,282.78	934.39	348.40	3.682	
18,000.00	6,987.00	17,749.46	6,991.52	176.50	176.53	90.20	414.49	10,896.03	1,282.69	931.12	351.57	3.648	
18,100.00	6,987.00	17,849.46	6,991.55	178.08	178.12	90.20	414.10	10,996.03	1,282.60	927.86	354.75	3.616	
18,200.00	6,987.00	17,949.46	6,991.57	179.65	179.71	90.20	413.71	11,096.03	1,282.51	924.59	357.92	3.583	
18,300.00	6,987.00	18,049.46	6,991.60	181.23	181.29	90.21	413.33	11,196.03	1,282.42	921.32	361.10	3.551	
18,400.00	6,987.00	18,149.46	6,991.63	182.80	182.88	90.21	412.94	11,296.03	1,282.33	918.06	364.28	3.520	
18,500.00	6,987.00	18,249.46	6,991.65	184.38	184.47	90.21	412.55	11,396.03	1,282.24	914.79	367.45	3.490	
18,600.00	6,987.00	18,349.46	6,991.68	185.96	186.06	90.21	412.16	11,496.02	1,282.15	911.52	370.63	3.459	
18,700.00	6,987.00	18,449.46	6,991.71	187.53	187.65	90.21	411.77	11,596.02	1,282.06	908.25	373.81	3.430	
18,800.00	6,987.00	18,549.46	6,991.74	189.11	189.24	90.21	411.39	11,696.02	1,281.97	904.98	376.99	3.401	
18,900.00	6,987.00	18,649.46	6,991.76	190.69	190.83	90.21	411.00	11,796.02	1,281.88	901.71	380.17	3.372	
19,000.00	6,987.00	18,749.46	6,991.79	192.27	192.42	90.21	410.61	11,896.02	1,281.79	898.44	383.35	3.344	
19,100.00	6,987.00	18,849.46	6,991.82	193.85	194.01	90.22	410.23	11,996.02	1,281.70	895.17	386.53	3.316	

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 #692H
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 #692H	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		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	Offset		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
19,200.00	6,987.00	18,949.46	6,991.84	195.43	195.60	90.22	409.84	12,096.02	1,281.61	891.90	389.71	3.289		
19,255.69	6,987.00	19,005.15	6,991.86	196.31	196.48	90.22	409.62	12,151.71	1,281.56	890.08	391.48	3.274		
19,300.00	6,987.00	19,049.46	6,991.87	197.01	197.19	90.22	409.45	12,196.02	1,281.52	888.63	392.89	3.262		
19,400.00	6,987.00	19,149.46	6,991.90	198.59	198.78	90.22	409.06	12,296.02	1,281.43	885.36	396.07	3.235		
19,468.80	6,987.00	19,218.26	6,991.92	199.49	199.87	90.22	408.80	12,364.82	1,281.37	883.32	398.04	3.219 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 #692H
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 #692H	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 #692H

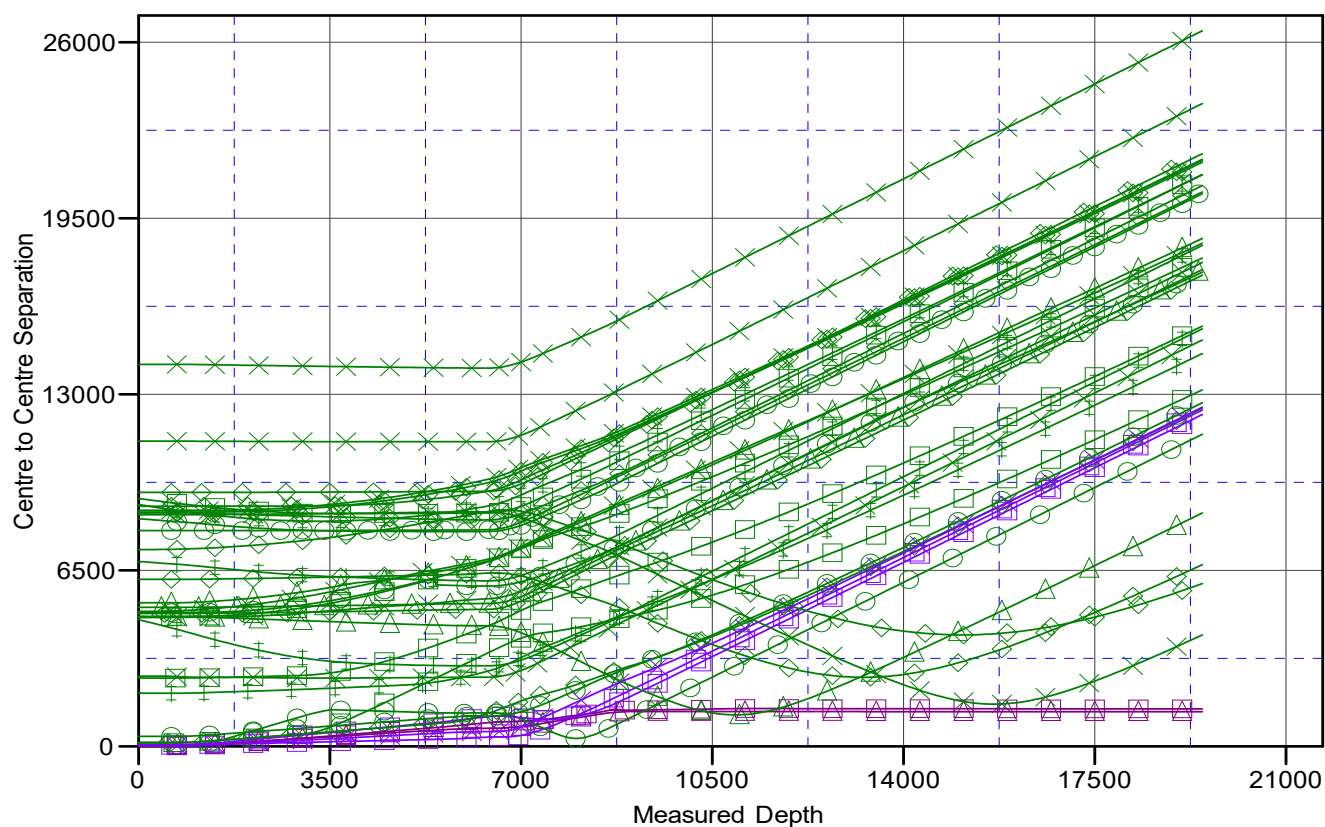
Offset Depths are relative to Offset Datum

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-SVYY V0	(C) Rosa Unit #228A, OH, OH-SVYY 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 #694H, OH, Prelim 5 V0
(C) Rosa Unit #108, OH, OH-SVYY V0	(C) Rosa Unit #041C, OH, OH-SVYY V0	(C) Rosa Unit #149A, OH, OH-INC V0
(C) Rosa Unit #160C, OH, OH-SVYY V0	(C) Rosa Unit #164B, OH, OH-SVYY V0	(C) Rosa Unit #171A, OH, OH-SVYY V0
(C) Rosa Unit #149C, OH, OH-SVYY V0	(C) Rosa Unit #164, OH, OH-SVYY 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-SVYY V0	(C) Rosa Unit #171C, OH, OH-SVYY 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-SVYY V0	(C) Rosa Unit #072B, OH, OH-SVYY V0	(C) Rosa Unit #80B, OH, OH-SVYY V0
(C) Rosa Unit #228A, OH, OH-SVYY V0	(C) Rosa Unit #650A, OH, OH-SVYY 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 #692H
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 #692H	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 #692H

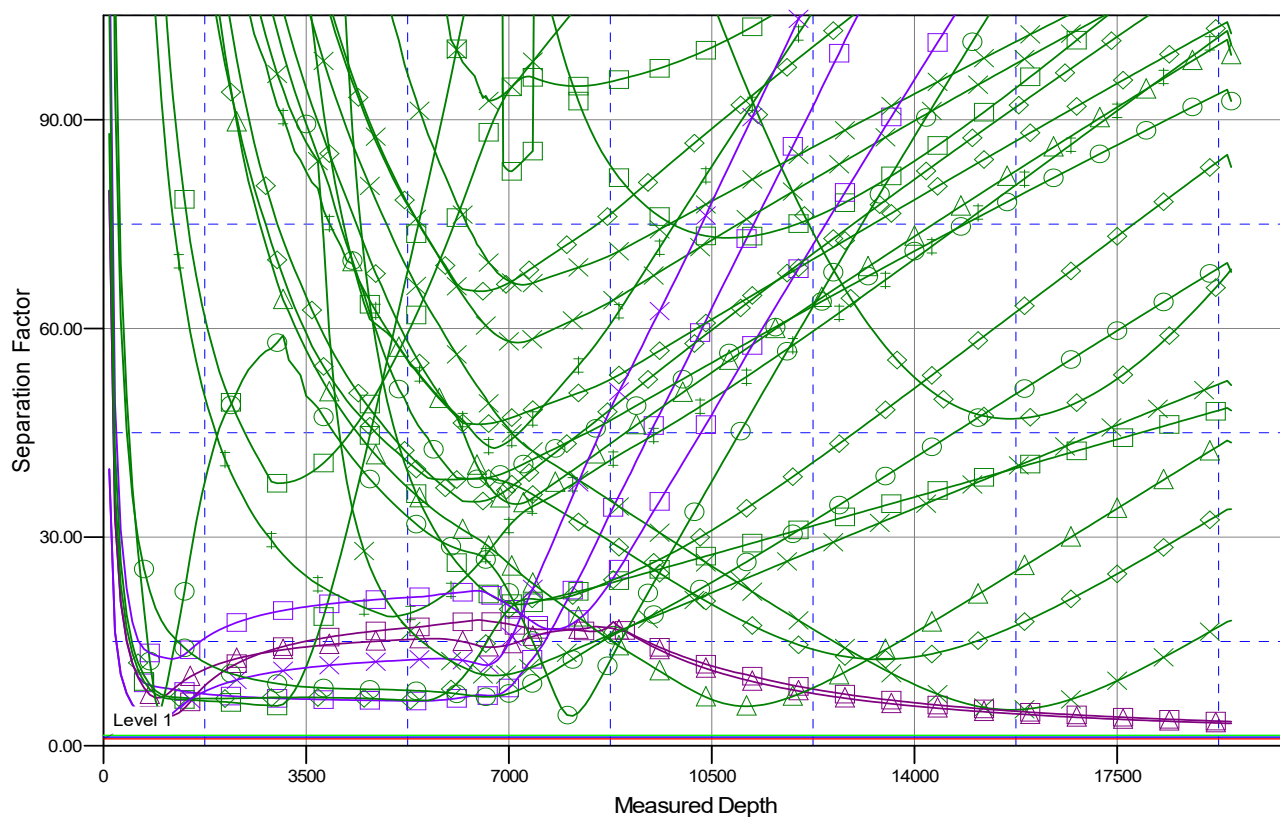
Offset Depths are relative to Offset Datum

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

Central Meridian is -107.833334

Grid Convergence at Surface is: 0.27°

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 #694H, OH, Prelim 5 V0
(C) Rosa Unit #108, OH, OH-SVY V0	(C) Rosa Unit #41C, 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 #68B, 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 #692H

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 #692H
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 #692H	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 #692H					
Well Position	+N/-S	0.00 usft	Northing:	2,154,208.97 usft	Latitude:	36.919152
	+E/-W	0.00 usft	Easting:	2,854,599.13 usft	Longitude:	-107.383455
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	49,423.17349037

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	90.27	

Plan Survey Tool Program	Date	11/22/2024			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	19,468.02 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 #692H
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 #692H	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	
1,153.80	9.08	353.61	1,151.90	35.64	-3.99	2.00	2.00	0.00	353.61	
5,455.76	9.08	353.61	5,400.00	710.04	-79.52	0.00	0.00	0.00	0.00	
6,408.05	0.45	173.61	6,348.50	781.15	-87.48	1.00	-0.91	18.90	-180.00	
7,409.89	90.00	60.00	6,987.00	1,095.46	466.05	9.00	8.94	-11.34	-113.61	
8,314.89	90.00	60.00	6,987.00	1,547.96	1,249.80	0.00	0.00	0.00	0.00	
9,071.74	90.00	90.27	6,987.00	1,739.85	1,972.84	4.00	0.00	4.00	90.00	
19,255.69	90.00	90.27	6,987.00	1,691.16	12,156.68	0.00	0.00	0.00	0.00	RU #692 FPP
19,468.80	90.00	90.27	6,987.00	1,690.14	12,369.79	0.00	0.00	0.00	0.00	RU #692 PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	353.61	799.98	1.73	-0.19	-0.20	2.00	2.00	0.00
900.00	4.00	353.61	899.84	6.94	-0.78	-0.81	2.00	2.00	0.00
1,000.00	6.00	353.61	999.45	15.60	-1.75	-1.82	2.00	2.00	0.00
1,100.00	8.00	353.61	1,098.70	27.71	-3.10	-3.23	2.00	2.00	0.00
1,153.80	9.08	353.61	1,151.90	35.64	-3.99	-4.16	2.00	2.00	0.00
Start 4301.96 hold at 1153.80 MD									
1,200.00	9.08	353.61	1,197.53	42.89	-4.80	-5.01	0.00	0.00	0.00
1,300.00	9.08	353.61	1,296.27	58.56	-6.56	-6.83	0.00	0.00	0.00
1,400.00	9.08	353.61	1,395.02	74.24	-8.31	-8.66	0.00	0.00	0.00
1,500.00	9.08	353.61	1,493.77	89.92	-10.07	-10.49	0.00	0.00	0.00
1,600.00	9.08	353.61	1,592.52	105.59	-11.83	-12.32	0.00	0.00	0.00
1,700.00	9.08	353.61	1,691.27	121.27	-13.58	-14.15	0.00	0.00	0.00
1,800.00	9.08	353.61	1,790.01	136.95	-15.34	-15.98	0.00	0.00	0.00
1,900.00	9.08	353.61	1,888.76	152.62	-17.09	-17.81	0.00	0.00	0.00
2,000.00	9.08	353.61	1,987.51	168.30	-18.85	-19.64	0.00	0.00	0.00
2,100.00	9.08	353.61	2,086.26	183.97	-20.60	-21.47	0.00	0.00	0.00
2,200.00	9.08	353.61	2,185.01	199.65	-22.36	-23.30	0.00	0.00	0.00
2,300.00	9.08	353.61	2,283.75	215.33	-24.11	-25.13	0.00	0.00	0.00
2,400.00	9.08	353.61	2,382.50	231.00	-25.87	-26.96	0.00	0.00	0.00
2,457.21	9.08	353.61	2,439.00	239.97	-26.87	-28.01	0.00	0.00	0.00
Ojo Alamo									
2,500.00	9.08	353.61	2,481.25	246.68	-27.63	-28.79	0.00	0.00	0.00
2,578.74	9.08	353.61	2,559.00	259.02	-29.01	-30.23	0.00	0.00	0.00
Kirtland									
2,600.00	9.08	353.61	2,580.00	262.36	-29.38	-30.62	0.00	0.00	0.00
2,700.00	9.08	353.61	2,678.75	278.03	-31.14	-32.45	0.00	0.00	0.00
2,800.00	9.08	353.61	2,777.49	293.71	-32.89	-34.28	0.00	0.00	0.00
2,881.53	9.08	353.61	2,858.00	306.49	-34.32	-35.77	0.00	0.00	0.00
Fruitland									
2,900.00	9.08	353.61	2,876.24	309.39	-34.65	-36.11	0.00	0.00	0.00
3,000.00	9.08	353.61	2,974.99	325.06	-36.40	-37.94	0.00	0.00	0.00
3,026.34	9.08	353.61	3,001.00	329.19	-36.87	-38.42	0.00	0.00	0.00
Top of Coals									
3,100.00	9.08	353.61	3,073.74	340.74	-38.16	-39.77	0.00	0.00	0.00
3,194.44	9.08	353.61	3,167.00	355.54	-39.82	-41.49	0.00	0.00	0.00
Base of Coals									
3,200.00	9.08	353.61	3,172.49	356.42	-39.92	-41.59	0.00	0.00	0.00
3,300.00	9.08	353.61	3,271.23	372.09	-41.67	-43.42	0.00	0.00	0.00
3,397.99	9.08	353.61	3,368.00	387.45	-43.39	-45.22	0.00	0.00	0.00
Pictured Cliffs									
3,400.00	9.08	353.61	3,369.98	387.77	-43.43	-45.25	0.00	0.00	0.00
3,500.00	9.08	353.61	3,468.73	403.45	-45.18	-47.08	0.00	0.00	0.00
3,502.30	9.08	353.61	3,471.00	403.81	-45.22	-47.13	0.00	0.00	0.00
Lewis									

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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	9.08	353.61	3,567.48	419.12	-46.94	-48.91	0.00	0.00	0.00
3,700.00	9.08	353.61	3,666.23	434.80	-48.69	-50.74	0.00	0.00	0.00
3,800.00	9.08	353.61	3,764.97	450.47	-50.45	-52.57	0.00	0.00	0.00
3,900.00	9.08	353.61	3,863.72	466.15	-52.20	-54.40	0.00	0.00	0.00
4,000.00	9.08	353.61	3,962.47	481.83	-53.96	-56.23	0.00	0.00	0.00
4,100.00	9.08	353.61	4,061.22	497.50	-55.72	-58.06	0.00	0.00	0.00
4,200.00	9.08	353.61	4,159.97	513.18	-57.47	-59.89	0.00	0.00	0.00
4,300.00	9.08	353.61	4,258.71	528.86	-59.23	-61.72	0.00	0.00	0.00
4,400.00	9.08	353.61	4,357.46	544.53	-60.98	-63.55	0.00	0.00	0.00
4,500.00	9.08	353.61	4,456.21	560.21	-62.74	-65.38	0.00	0.00	0.00
4,600.00	9.08	353.61	4,554.96	575.89	-64.49	-67.21	0.00	0.00	0.00
4,695.23	9.08	353.61	4,649.00	590.82	-66.17	-68.95	0.00	0.00	0.00
Chacra									
4,700.00	9.08	353.61	4,653.71	591.56	-66.25	-69.04	0.00	0.00	0.00
4,800.00	9.08	353.61	4,752.45	607.24	-68.01	-70.87	0.00	0.00	0.00
4,900.00	9.08	353.61	4,851.20	622.92	-69.76	-72.70	0.00	0.00	0.00
5,000.00	9.08	353.61	4,949.95	638.59	-71.52	-74.53	0.00	0.00	0.00
5,100.00	9.08	353.61	5,048.70	654.27	-73.27	-76.35	0.00	0.00	0.00
5,163.09	9.08	353.61	5,111.00	664.16	-74.38	-77.51	0.00	0.00	0.00
Upper Cliff House									
5,200.00	9.08	353.61	5,147.45	669.94	-75.03	-78.18	0.00	0.00	0.00
5,300.00	9.08	353.61	5,246.19	685.62	-76.78	-80.01	0.00	0.00	0.00
5,400.00	9.08	353.61	5,344.94	701.30	-78.54	-81.84	0.00	0.00	0.00
5,455.76	9.08	353.61	5,400.00	710.04	-79.52	-82.86	0.00	0.00	0.00
Start DLS 1.00 TFO -180.00									
5,482.08	8.81	353.61	5,426.00	714.10	-79.97	-83.34	1.00	-1.00	0.00
Cliff House									
5,500.00	8.63	353.61	5,443.72	716.81	-80.28	-83.65	1.00	-1.00	0.00
5,517.48	8.46	353.61	5,461.00	719.39	-80.57	-83.95	1.00	-1.00	0.00
Menefee									
5,600.00	7.63	353.61	5,542.71	730.87	-81.85	-85.29	1.00	-1.00	0.00
5,693.02	6.70	353.61	5,635.00	742.40	-83.14	-86.64	1.00	-1.00	0.00
Point Lookout									
5,700.00	6.63	353.61	5,641.93	743.21	-83.23	-86.73	1.00	-1.00	0.00
5,800.00	5.63	353.61	5,741.36	753.83	-84.42	-87.97	1.00	-1.00	0.00
5,900.00	4.63	353.61	5,840.96	762.72	-85.42	-89.01	1.00	-1.00	0.00
6,000.00	3.63	353.61	5,940.70	769.88	-86.22	-89.85	1.00	-1.00	0.00
6,100.00	2.63	353.61	6,040.55	775.31	-86.83	-90.48	1.00	-1.00	0.00
6,200.00	1.63	353.61	6,140.48	779.01	-87.24	-90.91	1.00	-1.00	0.00
6,297.55	0.66	353.61	6,238.00	780.95	-87.46	-91.14	1.00	-1.00	0.00
Mancos									
6,300.00	0.63	353.61	6,240.45	780.98	-87.46	-91.14	1.00	-1.00	0.00
6,408.05	0.45	173.61	6,348.50	781.15	-87.48	-91.16	1.00	-0.17	166.59
Start DLS 9.00 TFO -113.61									
6,450.00	3.62	66.49	6,390.43	781.52	-86.25	-89.93	9.00	7.56	-255.35
6,500.00	8.11	62.88	6,440.15	783.76	-81.66	-85.35	9.00	8.98	-7.22
6,550.00	12.61	61.83	6,489.32	787.94	-73.71	-77.42	9.00	8.99	-2.09
6,600.00	17.10	61.33	6,537.64	794.05	-62.44	-66.18	9.00	9.00	-1.00
6,650.00	21.60	61.03	6,584.80	802.04	-47.93	-51.71	9.00	9.00	-0.59
6,700.00	26.10	60.84	6,630.52	811.86	-30.26	-34.09	9.00	9.00	-0.40
6,750.00	30.60	60.69	6,674.51	823.46	-9.55	-13.43	9.00	9.00	-0.29
6,800.00	35.10	60.58	6,716.50	836.76	14.09	10.14	9.00	9.00	-0.22
6,850.00	39.60	60.49	6,756.24	851.67	40.49	36.48	9.00	9.00	-0.18

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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)
6,900.00	44.10	60.42	6,793.47	868.12	69.51	65.42	9.00	9.00	-0.14
6,933.65	47.13	60.38	6,817.00	880.00	90.41	86.27	9.00	9.00	-0.13
Black Top									
6,950.00	48.61	60.36	6,827.97	885.99	100.96	96.78	9.00	9.00	-0.12
7,000.00	53.11	60.31	6,859.53	905.18	134.64	130.38	9.00	9.00	-0.11
7,050.00	57.61	60.26	6,887.94	925.57	170.36	166.00	9.00	9.00	-0.10
7,100.00	62.11	60.22	6,913.05	947.02	207.88	203.42	9.00	9.00	-0.09
7,150.00	66.61	60.18	6,934.68	969.42	246.99	242.42	9.00	9.00	-0.08
7,200.00	71.11	60.14	6,952.71	992.62	287.43	282.75	9.00	9.00	-0.07
7,250.00	75.61	60.11	6,967.02	1,016.48	328.96	324.16	9.00	9.00	-0.07
7,300.00	80.11	60.07	6,977.54	1,040.85	371.32	366.41	9.00	9.00	-0.07
7,350.00	84.61	60.04	6,984.18	1,065.58	414.24	409.22	9.00	9.00	-0.07
7,400.00	89.11	60.01	6,986.92	1,090.52	457.48	452.34	9.00	9.00	-0.06
7,409.89	90.00	60.00	6,987.00	1,095.46	466.05	460.88	9.00	9.00	-0.06
Start 905.00 hold at 7409.89 MD									
7,500.00	90.00	60.00	6,987.00	1,140.52	544.08	538.70	0.00	0.00	0.00
7,600.00	90.00	60.00	6,987.00	1,190.52	630.68	625.07	0.00	0.00	0.00
7,700.00	90.00	60.00	6,987.00	1,240.52	717.29	711.43	0.00	0.00	0.00
7,800.00	90.00	60.00	6,987.00	1,290.52	803.89	797.80	0.00	0.00	0.00
7,900.00	90.00	60.00	6,987.00	1,340.52	890.49	884.17	0.00	0.00	0.00
8,000.00	90.00	60.00	6,987.00	1,390.52	977.09	970.53	0.00	0.00	0.00
8,100.00	90.00	60.00	6,987.00	1,440.52	1,063.70	1,056.90	0.00	0.00	0.00
8,200.00	90.00	60.00	6,987.00	1,490.52	1,150.30	1,143.26	0.00	0.00	0.00
8,300.00	90.00	60.00	6,987.00	1,540.52	1,236.90	1,229.63	0.00	0.00	0.00
8,314.89	90.00	60.00	6,987.00	1,547.96	1,249.80	1,242.49	0.00	0.00	0.00
Start DLS 4.00 TFO 90.00									
8,400.00	90.00	63.40	6,987.00	1,588.30	1,324.73	1,317.23	4.00	0.00	4.00
8,500.00	90.00	67.40	6,987.00	1,629.92	1,415.63	1,407.94	4.00	0.00	4.00
8,600.00	90.00	71.40	6,987.00	1,665.09	1,509.22	1,501.36	4.00	0.00	4.00
8,700.00	90.00	75.40	6,987.00	1,693.64	1,605.04	1,597.04	4.00	0.00	4.00
8,800.00	90.00	79.40	6,987.00	1,715.45	1,702.61	1,694.51	4.00	0.00	4.00
8,900.00	90.00	83.40	6,987.00	1,730.39	1,801.47	1,793.29	4.00	0.00	4.00
9,000.00	90.00	87.40	6,987.00	1,738.40	1,901.13	1,892.91	4.00	0.00	4.00
9,071.74	90.00	90.27	6,987.00	1,739.85	1,972.84	1,964.62	4.00	0.00	4.00
Start 10183.95 hold at 9071.74 MD									
9,100.00	90.00	90.27	6,987.00	1,739.72	2,001.10	1,992.88	0.00	0.00	0.00
9,200.00	90.00	90.27	6,987.00	1,739.24	2,101.10	2,092.88	0.00	0.00	0.00
9,300.00	90.00	90.27	6,987.00	1,738.76	2,201.10	2,192.88	0.00	0.00	0.00
9,400.00	90.00	90.27	6,987.00	1,738.28	2,301.10	2,292.88	0.00	0.00	0.00
9,500.00	90.00	90.27	6,987.00	1,737.80	2,401.10	2,392.88	0.00	0.00	0.00
9,600.00	90.00	90.27	6,987.00	1,737.33	2,501.10	2,492.88	0.00	0.00	0.00
9,700.00	90.00	90.27	6,987.00	1,736.85	2,601.10	2,592.88	0.00	0.00	0.00
9,800.00	90.00	90.27	6,987.00	1,736.37	2,701.10	2,692.88	0.00	0.00	0.00
9,900.00	90.00	90.27	6,987.00	1,735.89	2,801.10	2,792.88	0.00	0.00	0.00
10,000.00	90.00	90.27	6,987.00	1,735.41	2,901.09	2,892.88	0.00	0.00	0.00
10,100.00	90.00	90.27	6,987.00	1,734.94	3,001.09	2,992.88	0.00	0.00	0.00
10,200.00	90.00	90.27	6,987.00	1,734.46	3,101.09	3,092.88	0.00	0.00	0.00
10,300.00	90.00	90.27	6,987.00	1,733.98	3,201.09	3,192.88	0.00	0.00	0.00
10,400.00	90.00	90.27	6,987.00	1,733.50	3,301.09	3,292.88	0.00	0.00	0.00
10,500.00	90.00	90.27	6,987.00	1,733.02	3,401.09	3,392.88	0.00	0.00	0.00
10,600.00	90.00	90.27	6,987.00	1,732.55	3,501.09	3,492.88	0.00	0.00	0.00
10,700.00	90.00	90.27	6,987.00	1,732.07	3,601.09	3,592.88	0.00	0.00	0.00
10,800.00	90.00	90.27	6,987.00	1,731.59	3,701.09	3,692.88	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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)	
10,900.00	90.00	90.27	6,987.00	1,731.11	3,801.08	3,792.88	0.00	0.00	0.00	
11,000.00	90.00	90.27	6,987.00	1,730.63	3,901.08	3,892.88	0.00	0.00	0.00	
11,100.00	90.00	90.27	6,987.00	1,730.16	4,001.08	3,992.88	0.00	0.00	0.00	
11,200.00	90.00	90.27	6,987.00	1,729.68	4,101.08	4,092.88	0.00	0.00	0.00	
11,300.00	90.00	90.27	6,987.00	1,729.20	4,201.08	4,192.88	0.00	0.00	0.00	
11,400.00	90.00	90.27	6,987.00	1,728.72	4,301.08	4,292.88	0.00	0.00	0.00	
11,500.00	90.00	90.27	6,987.00	1,728.24	4,401.08	4,392.88	0.00	0.00	0.00	
11,600.00	90.00	90.27	6,987.00	1,727.76	4,501.08	4,492.88	0.00	0.00	0.00	
11,700.00	90.00	90.27	6,987.00	1,727.29	4,601.07	4,592.88	0.00	0.00	0.00	
11,800.00	90.00	90.27	6,987.00	1,726.81	4,701.07	4,692.88	0.00	0.00	0.00	
11,900.00	90.00	90.27	6,987.00	1,726.33	4,801.07	4,792.88	0.00	0.00	0.00	
12,000.00	90.00	90.27	6,987.00	1,725.85	4,901.07	4,892.88	0.00	0.00	0.00	
12,100.00	90.00	90.27	6,987.00	1,725.37	5,001.07	4,992.88	0.00	0.00	0.00	
12,200.00	90.00	90.27	6,987.00	1,724.90	5,101.07	5,092.88	0.00	0.00	0.00	
12,300.00	90.00	90.27	6,987.00	1,724.42	5,201.07	5,192.88	0.00	0.00	0.00	
12,400.00	90.00	90.27	6,987.00	1,723.94	5,301.07	5,292.88	0.00	0.00	0.00	
12,500.00	90.00	90.27	6,987.00	1,723.46	5,401.07	5,392.88	0.00	0.00	0.00	
12,600.00	90.00	90.27	6,987.00	1,722.98	5,501.06	5,492.88	0.00	0.00	0.00	
12,700.00	90.00	90.27	6,987.00	1,722.51	5,601.06	5,592.88	0.00	0.00	0.00	
12,800.00	90.00	90.27	6,987.00	1,722.03	5,701.06	5,692.88	0.00	0.00	0.00	
12,900.00	90.00	90.27	6,987.00	1,721.55	5,801.06	5,792.88	0.00	0.00	0.00	
13,000.00	90.00	90.27	6,987.00	1,721.07	5,901.06	5,892.88	0.00	0.00	0.00	
13,100.00	90.00	90.27	6,987.00	1,720.59	6,001.06	5,992.88	0.00	0.00	0.00	
13,200.00	90.00	90.27	6,987.00	1,720.12	6,101.06	6,092.88	0.00	0.00	0.00	
13,300.00	90.00	90.27	6,987.00	1,719.64	6,201.06	6,192.88	0.00	0.00	0.00	
13,400.00	90.00	90.27	6,987.00	1,719.16	6,301.06	6,292.88	0.00	0.00	0.00	
13,500.00	90.00	90.27	6,987.00	1,718.68	6,401.05	6,392.88	0.00	0.00	0.00	
13,600.00	90.00	90.27	6,987.00	1,718.20	6,501.05	6,492.88	0.00	0.00	0.00	
13,700.00	90.00	90.27	6,987.00	1,717.72	6,601.05	6,592.88	0.00	0.00	0.00	
13,800.00	90.00	90.27	6,987.00	1,717.25	6,701.05	6,692.88	0.00	0.00	0.00	
13,900.00	90.00	90.27	6,987.00	1,716.77	6,801.05	6,792.88	0.00	0.00	0.00	
14,000.00	90.00	90.27	6,987.00	1,716.29	6,901.05	6,892.88	0.00	0.00	0.00	
14,100.00	90.00	90.27	6,987.00	1,715.81	7,001.05	6,992.88	0.00	0.00	0.00	
14,200.00	90.00	90.27	6,987.00	1,715.33	7,101.05	7,092.88	0.00	0.00	0.00	
14,300.00	90.00	90.27	6,987.00	1,714.86	7,201.05	7,192.88	0.00	0.00	0.00	
14,400.00	90.00	90.27	6,987.00	1,714.38	7,301.04	7,292.88	0.00	0.00	0.00	
14,500.00	90.00	90.27	6,987.00	1,713.90	7,401.04	7,392.88	0.00	0.00	0.00	
14,600.00	90.00	90.27	6,987.00	1,713.42	7,501.04	7,492.88	0.00	0.00	0.00	
14,700.00	90.00	90.27	6,987.00	1,712.94	7,601.04	7,592.88	0.00	0.00	0.00	
14,800.00	90.00	90.27	6,987.00	1,712.47	7,701.04	7,692.88	0.00	0.00	0.00	
14,900.00	90.00	90.27	6,987.00	1,711.99	7,801.04	7,792.88	0.00	0.00	0.00	
15,000.00	90.00	90.27	6,987.00	1,711.51	7,901.04	7,892.88	0.00	0.00	0.00	
15,100.00	90.00	90.27	6,987.00	1,711.03	8,001.04	7,992.88	0.00	0.00	0.00	
15,200.00	90.00	90.27	6,987.00	1,710.55	8,101.03	8,092.88	0.00	0.00	0.00	
15,300.00	90.00	90.27	6,987.00	1,710.08	8,201.03	8,192.88	0.00	0.00	0.00	
15,400.00	90.00	90.27	6,987.00	1,709.60	8,301.03	8,292.88	0.00	0.00	0.00	
15,500.00	90.00	90.27	6,987.00	1,709.12	8,401.03	8,392.88	0.00	0.00	0.00	
15,600.00	90.00	90.27	6,987.00	1,708.64	8,501.03	8,492.88	0.00	0.00	0.00	
15,700.00	90.00	90.27	6,987.00	1,708.16	8,601.03	8,592.88	0.00	0.00	0.00	
15,800.00	90.00	90.27	6,987.00	1,707.68	8,701.03	8,692.88	0.00	0.00	0.00	
15,900.00	90.00	90.27	6,987.00	1,707.21	8,801.03	8,792.88	0.00	0.00	0.00	
16,000.00	90.00	90.27	6,987.00	1,706.73	8,901.03	8,892.88	0.00	0.00	0.00	
16,100.00	90.00	90.27	6,987.00	1,706.25	9,001.02	8,992.88	0.00	0.00	0.00	
16,200.00	90.00	90.27	6,987.00	1,705.77	9,101.02	9,092.88	0.00	0.00	0.00	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	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)
16,300.00	90.00	90.27	6,987.00	1,705.29	9,201.02	9,192.88	0.00	0.00	0.00
16,400.00	90.00	90.27	6,987.00	1,704.82	9,301.02	9,292.88	0.00	0.00	0.00
16,500.00	90.00	90.27	6,987.00	1,704.34	9,401.02	9,392.88	0.00	0.00	0.00
16,600.00	90.00	90.27	6,987.00	1,703.86	9,501.02	9,492.88	0.00	0.00	0.00
16,700.00	90.00	90.27	6,987.00	1,703.38	9,601.02	9,592.88	0.00	0.00	0.00
16,800.00	90.00	90.27	6,987.00	1,702.90	9,701.02	9,692.88	0.00	0.00	0.00
16,900.00	90.00	90.27	6,987.00	1,702.43	9,801.02	9,792.88	0.00	0.00	0.00
17,000.00	90.00	90.27	6,987.00	1,701.95	9,901.01	9,892.88	0.00	0.00	0.00
17,100.00	90.00	90.27	6,987.00	1,701.47	10,001.01	9,992.88	0.00	0.00	0.00
17,200.00	90.00	90.27	6,987.00	1,700.99	10,101.01	10,092.88	0.00	0.00	0.00
17,300.00	90.00	90.27	6,987.00	1,700.51	10,201.01	10,192.88	0.00	0.00	0.00
17,400.00	90.00	90.27	6,987.00	1,700.04	10,301.01	10,292.88	0.00	0.00	0.00
17,500.00	90.00	90.27	6,987.00	1,699.56	10,401.01	10,392.88	0.00	0.00	0.00
17,600.00	90.00	90.27	6,987.00	1,699.08	10,501.01	10,492.88	0.00	0.00	0.00
17,700.00	90.00	90.27	6,987.00	1,698.60	10,601.01	10,592.88	0.00	0.00	0.00
17,800.00	90.00	90.27	6,987.00	1,698.12	10,701.01	10,692.88	0.00	0.00	0.00
17,900.00	90.00	90.27	6,987.00	1,697.64	10,801.00	10,792.88	0.00	0.00	0.00
18,000.00	90.00	90.27	6,987.00	1,697.17	10,901.00	10,892.88	0.00	0.00	0.00
18,100.00	90.00	90.27	6,987.00	1,696.69	11,001.00	10,992.88	0.00	0.00	0.00
18,200.00	90.00	90.27	6,987.00	1,696.21	11,101.00	11,092.88	0.00	0.00	0.00
18,300.00	90.00	90.27	6,987.00	1,695.73	11,201.00	11,192.88	0.00	0.00	0.00
18,400.00	90.00	90.27	6,987.00	1,695.25	11,301.00	11,292.88	0.00	0.00	0.00
18,500.00	90.00	90.27	6,987.00	1,694.78	11,401.00	11,392.88	0.00	0.00	0.00
18,600.00	90.00	90.27	6,987.00	1,694.30	11,501.00	11,492.88	0.00	0.00	0.00
18,700.00	90.00	90.27	6,987.00	1,693.82	11,600.99	11,592.88	0.00	0.00	0.00
18,800.00	90.00	90.27	6,987.00	1,693.34	11,700.99	11,692.88	0.00	0.00	0.00
18,900.00	90.00	90.27	6,987.00	1,692.86	11,800.99	11,792.88	0.00	0.00	0.00
19,000.00	90.00	90.27	6,987.00	1,692.39	11,900.99	11,892.88	0.00	0.00	0.00
19,100.00	90.00	90.27	6,987.00	1,691.91	12,000.99	11,992.88	0.00	0.00	0.00
19,200.00	90.00	90.27	6,987.00	1,691.43	12,100.99	12,092.88	0.00	0.00	0.00
19,255.69	90.00	90.27	6,987.00	1,691.16	12,156.68	12,148.58	0.00	0.00	0.00
Start 213.11 hold at 19255.69 MD									
19,300.00	90.00	90.27	6,987.00	1,690.95	12,200.99	12,192.88	0.00	0.00	0.00
19,400.00	90.00	90.27	6,987.00	1,690.47	12,300.99	12,292.88	0.00	0.00	0.00
19,468.80	90.00	90.27	6,987.00	1,690.14	12,369.79	12,361.69	0.00	0.00	0.00
TD at 19468.80									

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
RU #692 SHL	0.00	0.00	0.00	0.00	0.00	2,154,208.97	2,854,599.13	36.919152	-107.383455
- plan hits target center									
- Point									
RU #692 KOP	0.00	0.00	6,348.50	781.15	-87.48	2,154,989.70	2,854,507.97	36.921298	-107.383755
- plan hits target center									
- Point									
RU #692 IP1	0.00	0.00	6,987.00	1,547.96	1,249.80	2,155,762.81	2,855,841.62	36.923404	-107.379180
- plan hits target center									
- Point									
RU #692 FPP	0.00	0.00	6,987.00	1,691.16	12,156.68	2,155,957.45	2,866,747.70	36.923790	-107.341866
- plan hits target center									
- Point									
RU #692 POE	0.00	0.00	6,987.00	1,095.46	466.05	2,155,306.62	2,855,060.01	36.922161	-107.381861
- plan hits target center									
- Point									
RU #692 PBHL	0.00	0.00	6,987.00	1,690.14	12,369.79	2,155,957.44	2,866,960.82	36.923787	-107.341137
- plan hits target center									
- Point									
RU #692 IP2	0.00	0.00	6,987.00	1,739.85	1,972.84	2,155,958.11	2,856,563.75	36.923931	-107.376706
- plan hits target center									
- Point									

Formations						
	Measured Depth	Vertical Depth				
	(usft)	(usft)	Name	Lithology	Dip (°)	Dip Direction (°)
	2,457.21	2,439.00	Ojo Alamo			
	2,578.74	2,559.00	Kirtland			
	2,881.53	2,858.00	Fruitland			
	3,026.34	3,001.00	Top of Coals			
	3,194.44	3,167.00	Base of Coals			
	3,397.99	3,368.00	Pictured Cliffs			
	3,502.30	3,471.00	Lewis			
	4,695.23	4,649.00	Chacra			
	5,163.09	5,111.00	Upper Cliff House			
	5,482.08	5,426.00	Cliff House			
	5,517.48	5,461.00	Menefee			
	5,693.02	5,635.00	Point Lookout			
	6,297.55	6,238.00	Mancos			
	6,933.65	6,817.00	Black Top			

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #692H
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 #692H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim 5		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
700.00	700.00	0.00	0.00	Start Build 2.00
1,153.80	1,151.90	35.64	-3.99	Start 4301.96 hold at 1153.80 MD
5,455.76	5,400.00	710.04	-79.52	Start DLS 1.00 TFO -180.00
6,408.05	6,348.50	781.15	-87.48	Start DLS 9.00 TFO -113.61
7,409.89	6,987.00	1,095.46	466.05	Start 905.00 hold at 7409.89 MD
8,314.89	6,987.00	1,547.96	1,249.80	Start DLS 4.00 TFO 90.00
9,071.74	6,987.00	1,739.85	1,972.84	Start 10183.95 hold at 9071.74 MD
19,255.69	6,987.00	1,691.16	12,156.68	Start 213.11 hold at 19255.69 MD
19,468.80	6,987.00	1,690.14	12,369.79	TD at 19468.80

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

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/oed/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 471353

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 471353
	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.	6/5/2025
etta trujillo	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.	6/5/2025
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