

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 696H 9. API Well No. 30-039-31496
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 / 801 FNL / 1980 FEL / LAT 36.919056 / LONG -107.383522 At proposed prod. zone NENE / 350 FNL / 198 FWL / LAT 36.920263 / LONG -107.340048		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) 198 feet 16. No of acres in lease 17. Spacing Unit dedicated to this well 2384.64
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20 feet		19. Proposed Depth 6992 feet / 19542 feet 20. BLM/BIA Bond No. in file FED:
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6347 feet		22. Approximate date work will start* 04/01/2024 23. Estimated duration 45 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 Name (Printed/Typed) DAVE J MANKIEWICZ / Ph: (505) 564-7761 Office Farmington Field Office	Date 11/21/2023 Date 06/05/2025
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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)



Approval Date: 06/05/2025

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: NENE / 801 FNL / 1980 FEL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 36.919056 / LONG: -107.383522 (TVD: 0 feet, MD: 0 feet)
PPP: NWNW / 0 FNL / 0 FEL / TWSP: 31N / RANGE: 5W / SECTION: 10 / LAT: 36.920386 / LONG: -107.376889 (TVD: 0 feet, MD: 0 feet)
PPP: NWNW / 0 FNL / 0 FEL / TWSP: 31N / RANGE: 5W / SECTION: 9 / LAT: 36.920386 / LONG: -107.376889 (TVD: 0 feet, MD: 0 feet)
PPP: NENE / 367 FNL / 598 FEL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 36.920241 / LONG: -107.378797 (TVD: 0 feet, MD: 0 feet)
PPP: NENE / 532 FNL / 1439 FEL / TWSP: 31N / RANGE: 5W / SECTION: 8 / LAT: 36.919792 / LONG: -107.381675 (TVD: 6989 feet, MD: 7355 feet)
BHL: NENE / 350 FNL / 198 FWL / TWSP: 31N / RANGE: 5W / SECTION: 11 / LAT: 36.920263 / LONG: -107.340048 (TVD: 6992 feet, MD: 19542 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://eplanningui.blm.gov).
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
#696H ROSA UNIT
Lease: NMSF078763 / Agreement: NMNM78407E

SH: NW¼NE¼ Section 8, T. 31N., R. 5W.
Rio Arriba County, New Mexico
BH: NW¼NW¼ Section 11, T. 31N., R. 5W.
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 30-039-31496	Pool Code 97232	Pool Name BASIN MANCOS
Property Code 320608	Property Name ROSA UNIT	Well Number 696H
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 801' NORTH	Feet from E/W Line 1980' EAST	Latitude 36.919056 °N	Longitude -107.383522 °W	County RIO ARRIBA
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Bottom Hole Location

UL D	Section 11	Township 31N	Range 5W	Lot	Feet from N/S Line 350' NORTH	Feet from E/W Line 198' WEST	Latitude 36.920263 °N	Longitude -107.340048 °W	County RIO ARRIBA
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Dedicated Acres 2384.64	Penetrated Spacing Unit: Entire Sections 3, 4 & 5, T31N, R5W N/2 - Sections 8, 9, 10 & 11, 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 B	Section 8	Township 31N	Range 5W	Lot	Feet from N/S Line 654' NORTH	Feet from E/W Line 2064' EAST	Latitude 36.919459 °N	Longitude -107.383812 °W	County RIO ARRIBA
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First Take Point (FTP)

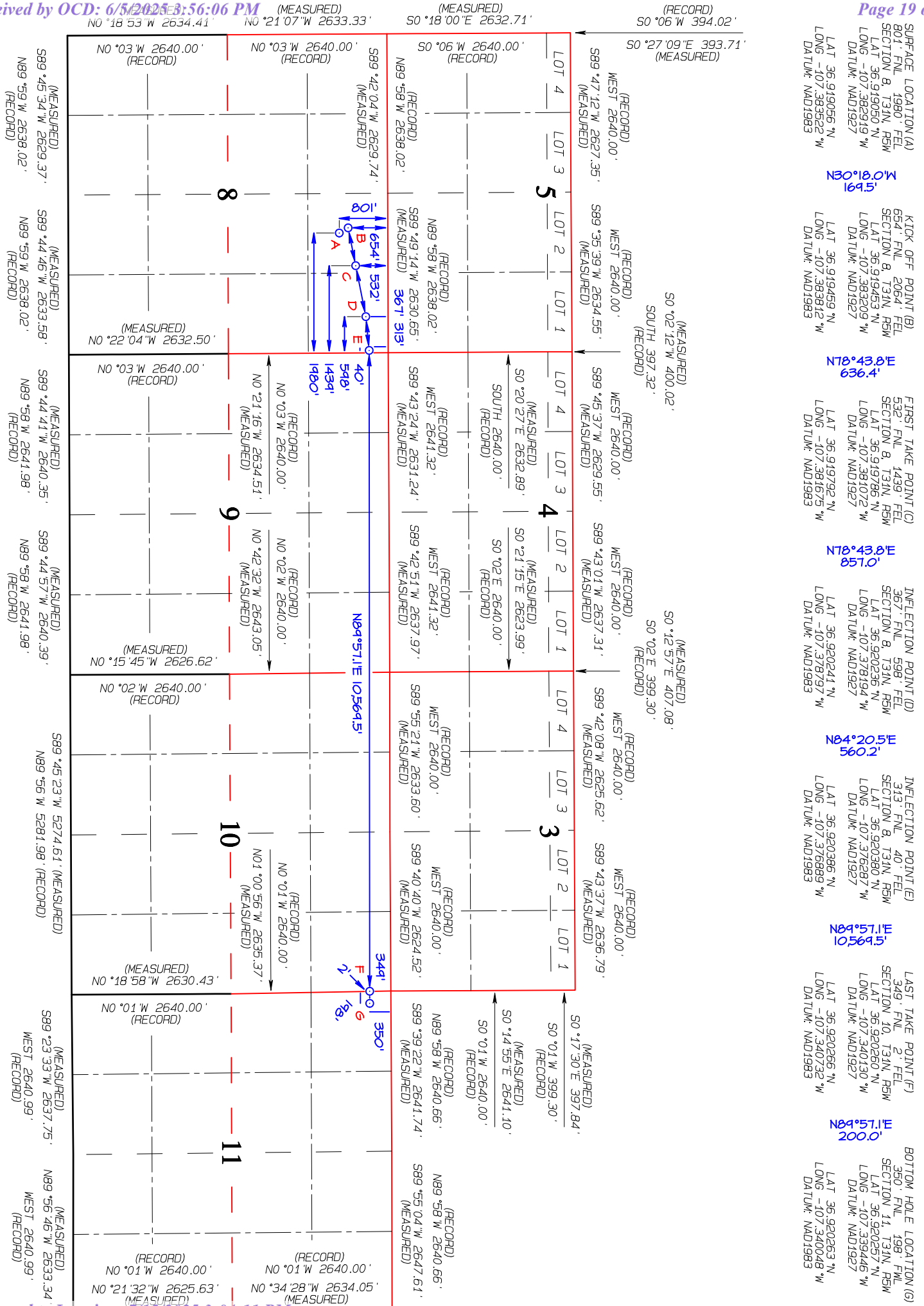
UL B	Section 8	Township 31N	Range 5W	Lot	Feet from N/S Line 532' NORTH	Feet from E/W Line 1439' EAST	Latitude 36.919792 °N	Longitude -107.381675 °W	County RIO ARRIBA
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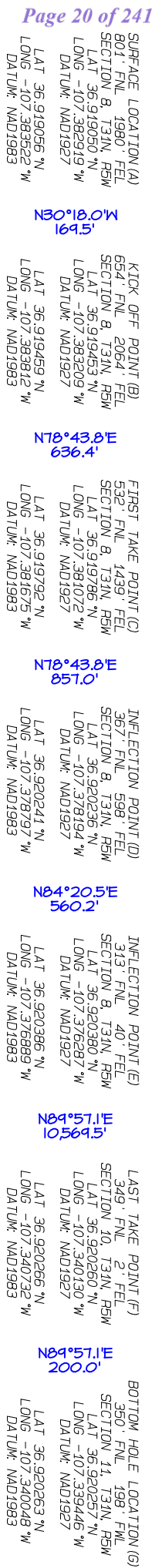
Last Take Point (LTP)

UL A	Section 10	Township 31N	Range 5W	Lot	Feet from N/S Line 349' NORTH	Feet from E/W Line 2' EAST	Latitude 36.920266 °N	Longitude -107.340732 °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. <i>Etta Trujillo</i> Signature Etta Trujillo Printed Name etrujillo@logosresourcesllc.com E-mail Address 12/30/2024 Date	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.  JASON C. EDWARDS Signature and Seal of Professional Surveyor Certificate Number 15269 Date of Survey DECEMBER 20, 2022
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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

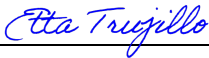
1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(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:	January 14, 2025	Pool:	Basin Mancos
Well Name:	Rosa Unit 696H	GL Elevation:	6347
Surface Location:	Sec 8, T31N, R5W 801' FNL, 1980' FEL (36.919056° N, -107.383522° W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 11, T31N, R5W 350' FNL, 198' FWL (36.920263° N, -107.340048° W – NAD83)	Measured Depth:	19,542' (KB)
Lease Serial CA Serial	# NMSF078763 # 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	2,440'	2,439'	*POINT LOOKOUT	5,638'	5,635'
KIRTLAND	2,560'	2,559'	*MANCOS	6,241'	6,238'
*FRUITLAND	2,859'	2,858'	KICKOFF POINT	6,355'	6,352'
*PICTURED CLIFFS	3,370'	3,368'	LANDING POINT	7,355'	6,989'
LEWIS	3,473'	3,471'	TD	19,542'	6,992'
CHACRA	4,651'	4,649'			
*CLIFF HOUSE	5,429'	5,426'			
MENEFEE	5,464'	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:** $6992' \text{ TVD} \times 0.43 = 3,007 \text{ psi}$
- 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"	3,420'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,316'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	19,542'	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	2,820	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	350	2,470	0.6947	1.3	2,231	397	1.90	1174	12.4
Stage 2 Lead - Cased	-	350	1.019	1	357	64	1.90	188	12.4
					3,163	563		1885	
Set Depth	3420								

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	5,816	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,726	1,090	0.3132	1.3	444	79	1.90	234	12.4
					664	118		434	
Stage 2 Tail	4,126	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,320	806	0.3132	1.3	328	58	1.90	173	12.4
Stage 2 Lead - Cased	3,220	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					609	108		346	
Int 2 Totals					1,273	227		780	
Contingency									
Stage 3 Tail	3,420	75	0.3132	1.3	31	5	1.58	19	13.2
Stage 3 Tail - Cased	2,920	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,920	0.3490	1	1,019	182	1.90	536	12.4
Contingency Stage 3 Totals					1,224	218		666	
Set Depth	6316								

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	6,216	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Lead	6,316	13,226	0.2291	1.15	3,490	622	1.59	2,195	13.2
					3,515	626		2,211	

Set depth 19542

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 * 6992' TVD = 1538 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. **STIMULATION**

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

E. **PRODUCTION TUBING**

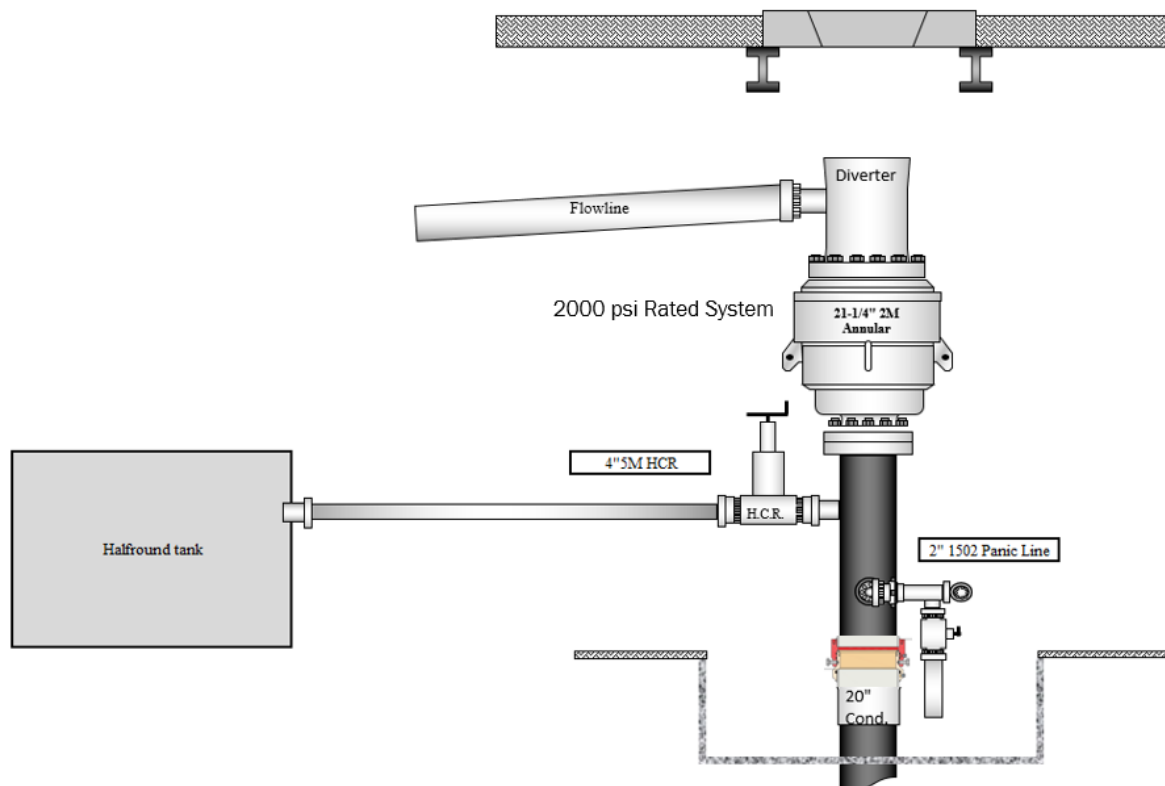
2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-36 months after completion.

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



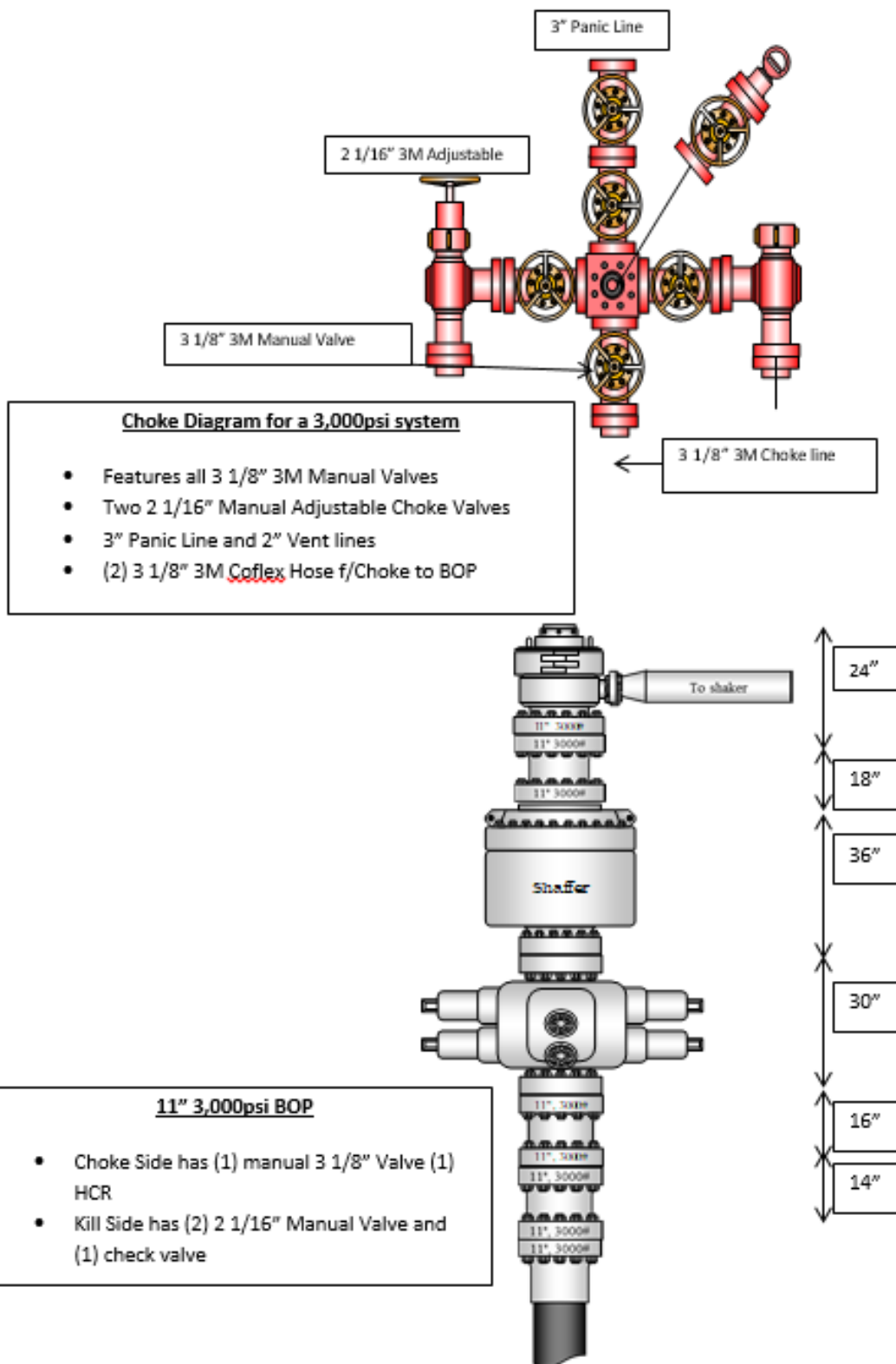
BOP Equipment

Surface Hole Diverter





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



Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 34

Rosa Unit #696H

OH

Prelim 5

Anticollision Report

22 November, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	11/22/2024		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	19,542.28	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 24						
Rosa Unit 700H - OH - Plan #8	6,358.56	6,450.00	4,377.59	4,329.17	90.413	CC, ES
Rosa Unit 700H - OH - Plan #8	6,600.00	6,500.00	4,428.77	4,379.42	89.740	SF
Rosa Unit 704H - OH - Plan #6	6,804.95	11,101.13	1,380.41	1,287.64	14.881	CC
Rosa Unit 704H - OH - Plan #6	6,850.00	11,130.99	1,381.22	1,287.59	14.752	ES
Rosa Unit 704H - OH - Plan #6	16,800.00	20,942.50	1,686.40	1,298.76	4.350	SF
Rosa Unit 34						
(O) Carson #1 - OH - OH-INC	15,407.94	7,134.28	278.09	-24.98	0.918	Level 3, CC, ES, SF
(O) Rosa Unit #041B - OH - OH-SVY	5,698.35	6,063.86	3,112.56	3,055.41	54.466	CC
(O) Rosa Unit #041B - OH - OH-SVY	6,356.93	6,745.22	3,114.43	3,049.62	48.059	ES
(O) Rosa Unit #041B - OH - OH-SVY	6,650.00	7,038.52	3,172.07	3,103.10	45.993	SF
(O) Rosa Unit #041C - OH - OH-SVY	809.07	784.47	25.98	21.66	6.017	CC, ES, SF
(O) Rosa Unit #053 - OH - OH-INC	562.54	551.54	334.18	322.42	28.425	CC
(O) Rosa Unit #053 - OH - OH-INC	6,400.00	6,387.09	455.80	298.30	2.894	ES
(O) Rosa Unit #053 - OH - OH-INC	6,500.00	6,485.87	460.51	300.49	2.878	SF
(O) Rosa Unit #072C - OH - OH-SVY	6,365.19	6,600.82	6,230.55	6,189.49	151.764	CC, ES
(O) Rosa Unit #072C - OH - OH-SVY	6,800.00	6,992.23	6,360.16	6,317.00	147.338	SF
(O) Rosa Unit #080A - OH - OH-INC	3,200.00	3,104.50	1,931.78	1,851.85	24.169	CC
(O) Rosa Unit #080A - OH - OH-INC	4,900.00	4,786.00	1,933.22	1,811.72	15.912	ES, SF
(O) Rosa Unit #107 - OH - OH-INC	10,676.99	6,805.22	2,452.75	2,249.81	12.086	CC
(O) Rosa Unit #107 - OH - OH-INC	10,700.00	6,805.23	2,452.85	2,249.52	12.063	ES
(O) Rosa Unit #107 - OH - OH-INC	11,100.00	6,805.33	2,488.96	2,279.55	11.886	SF
(O) Rosa Unit #108 - OH - OH-SVY	5,781.19	5,674.04	5,059.77	4,955.43	48.492	CC
(O) Rosa Unit #108 - OH - OH-SVY	6,400.00	6,295.51	5,061.58	4,932.19	39.118	ES
(O) Rosa Unit #108 - OH - OH-SVY	7,050.00	6,815.44	5,402.78	5,243.31	33.879	SF
(O) Rosa Unit #149 - OH - OH-INC	6,010.00	5,920.80	7,879.87	7,675.83	38.618	CC
(O) Rosa Unit #149 - OH - OH-INC	6,100.00	5,949.00	7,880.12	7,674.43	38.309	ES
(O) Rosa Unit #149 - OH - OH-INC	6,400.00	5,949.00	7,889.81	7,683.25	38.196	SF
(O) Rosa Unit #149A - OH - OH-INC	5,792.32	5,693.66	9,292.39	9,159.28	69.809	CC
(O) Rosa Unit #149A - OH - OH-INC	6,100.00	6,000.00	9,292.44	9,151.21	65.797	ES
(O) Rosa Unit #149A - OH - OH-INC	6,450.00	6,000.00	9,306.26	9,163.89	65.368	SF
(O) Rosa Unit #149B - OH - OH-INC	6,354.91	6,397.57	11,174.89	10,996.32	62.580	CC, ES
(O) Rosa Unit #149B - OH - OH-INC	7,050.00	6,962.56	11,515.43	11,318.38	58.438	SF
(O) Rosa Unit #149C - OH - OH-SVY	5,548.00	5,582.41	8,531.21	8,269.71	32.624	CC
(O) Rosa Unit #149C - OH - OH-SVY	6,450.00	6,462.62	8,547.07	8,169.58	22.642	ES
(O) Rosa Unit #149C - OH - OH-SVY	7,100.00	6,937.30	8,931.69	8,491.86	20.307	SF
(O) Rosa Unit #164 - OH - OH-SVY	510.00	448.00	8,711.71	8,695.80	547.569	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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output 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 #164 - OH - OH-SVY	904.45	625.01	8,712.44	8,693.52	460.427	ES
(O) Rosa Unit #164 - OH - OH-SVY	6,400.00	1,752.80	10,005.90	9,969.69	276.364	SF
(O) Rosa Unit #164A - OH - OH-INC	6,100.00	6,034.16	8,493.34	8,316.07	47.911	CC
(O) Rosa Unit #164A - OH - OH-INC	6,200.00	6,060.00	8,493.68	8,315.15	47.577	ES
(O) Rosa Unit #164A - OH - OH-INC	6,400.00	6,060.00	8,499.25	8,320.10	47.441	SF
(O) Rosa Unit #164B - OH - OH-SVY	100.00	38.09	8,646.87	8,645.95	9,335.546	CC
(O) Rosa Unit #164B - OH - OH-SVY	929.27	654.00	8,647.26	8,633.80	642.517	ES
(O) Rosa Unit #164B - OH - OH-SVY	6,750.00	1,992.90	10,109.77	10,073.79	281.021	SF
(O) Rosa Unit #164C - OH - OH-SVY	5,539.88	5,797.38	7,962.60	7,913.48	162.110	CC
(O) Rosa Unit #164C - OH - OH-SVY	5,600.00	5,858.44	7,962.69	7,913.27	161.139	ES
(O) Rosa Unit #164C - OH - OH-SVY	6,750.00	6,999.63	8,088.93	8,034.06	147.426	SF
(O) Rosa Unit #171 - OH - OH-INC	6,110.00	5,995.47	4,835.85	4,694.84	34.295	CC
(O) Rosa Unit #171 - OH - OH-INC	6,200.00	6,028.00	4,836.19	4,694.16	34.051	ES
(O) Rosa Unit #171 - OH - OH-INC	6,354.91	6,028.00	4,840.52	4,698.06	33.977	SF
(O) Rosa Unit #171A - OH - OH-SVY	111.00	0.00	4,959.05	4,958.76	10,000.000	CC, ES
(O) Rosa Unit #171A - OH - OH-SVY	5,300.00	3,337.00	6,356.98	6,298.72	109.111	SF
(O) Rosa Unit #171B - OH - OH-SVY	0.00	37.10	4,751.85			
(O) Rosa Unit #171B - OH - OH-SVY	400.00	413.19	4,752.84	4,747.76	935.169	ES
(O) Rosa Unit #171B - OH - OH-SVY	6,550.00	6,365.72	5,489.32	5,432.13	95.977	SF
(O) Rosa Unit #171C - OH - OH-SVY	210.00	249.00	4,778.09	4,772.40	840.045	CC
(O) Rosa Unit #171C - OH - OH-SVY	300.00	311.37	4,778.24	4,771.42	701.150	ES
(O) Rosa Unit #171C - OH - OH-SVY	7,050.00	6,972.25	7,399.79	7,311.53	83.846	SF
(O) Rosa Unit #226 - OH - OH-INC	3,382.67	3,135.00	8,813.40	8,738.84	118.207	CC
(O) Rosa Unit #226 - OH - OH-INC	3,400.00	3,135.00	8,813.42	8,738.80	118.112	ES
(O) Rosa Unit #226 - OH - OH-INC	5,200.00	3,135.00	8,998.82	8,919.47	113.411	SF
(O) Rosa Unit #226A - OH - OH-SVY	3,276.59	5,392.00	8,309.87	8,266.83	193.072	CC
(O) Rosa Unit #226A - OH - OH-SVY	3,300.00	5,392.00	8,309.90	8,266.79	192.722	ES
(O) Rosa Unit #226A - OH - OH-SVY	6,354.91	5,392.00	8,875.15	8,823.80	172.835	SF
(O) Rosa Unit #228A - OH - OH-SVY	497.00	383.00	5,276.59	5,270.72	899.625	CC
(O) Rosa Unit #228A - OH - OH-SVY	500.00	383.00	5,276.59	5,270.71	897.978	ES
(O) Rosa Unit #228A - OH - OH-SVY	5,300.00	3,253.00	6,295.32	6,257.12	164.825	SF
(O) Rosa Unit #336 - OH - OH-INC	641.12	613.11	99.53	85.87	7.286	CC
(O) Rosa Unit #336 - OH - OH-INC	2,600.00	2,570.93	150.36	83.64	2.254	ES
(O) Rosa Unit #336 - OH - OH-INC	3,000.00	2,971.45	165.45	85.05	2.058	SF
(O) Rosa Unit #336A - OH - OH-INC	2,900.00	2,809.00	2,484.37	2,415.79	36.225	CC
(O) Rosa Unit #336A - OH - OH-INC	2,904.45	2,809.00	2,484.37	2,415.77	36.217	ES
(O) Rosa Unit #336A - OH - OH-INC	3,100.00	2,809.00	2,492.27	2,423.20	36.086	SF
(O) Rosa Unit #350A - OH - OH-SVY	14,830.20	3,645.00	3,778.92	3,707.49	52.904	CC, ES
(O) Rosa Unit #350A - OH - OH-SVY	15,600.00	3,645.00	3,856.52	3,781.87	51.661	SF
(O) Rosa Unit #46 - OH - OH-INC	539.74	503.72	141.29	130.05	12.567	CC
(O) Rosa Unit #46 - OH - OH-INC	800.00	764.02	143.16	125.84	8.265	ES
(O) Rosa Unit #46 - OH - OH-INC	5,500.00	5,461.94	299.90	168.70	2.286	SF
(O) Rosa Unit #80B - OH - OH-SVY	5,755.39	5,843.46	2,450.23	2,258.15	12.756	CC
(O) Rosa Unit #80B - OH - OH-SVY	6,400.00	6,490.31	2,452.76	2,209.75	10.093	ES
(O) Rosa Unit #80B - OH - OH-SVY	6,700.00	6,773.51	2,541.16	2,281.88	9.801	SF
(O) Rosa Unit #95 - OH - OH-INC	13,012.29	5,990.00	1,654.75	1,515.15	11.853	CC, ES
(O) Rosa Unit #95 - OH - OH-INC	13,500.00	5,990.00	1,725.13	1,576.65	11.619	SF
(O) Rosa Unit 072B - OH - OH-SVY	0.00	0.00	4,945.02			
(O) Rosa Unit 072B - OH - OH-SVY	400.00	375.83	4,943.82	4,942.07	2,819.688	CC
(O) Rosa Unit 072B - OH - OH-SVY	417.99	389.00	4,943.83	4,941.98	2,677.790	ES
(O) Rosa Unit 148 COM - OH - OH-INC	5,814.49	5,810.31	13,995.23	13,826.65	83.017	CC
(O) Rosa Unit 148 COM - OH - OH-INC	6,356.93	6,327.00	13,995.33	13,805.08	73.561	ES
(O) Rosa Unit 148 COM - OH - OH-INC	7,150.00	6,930.73	14,414.83	14,201.08	67.435	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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output 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 #672H - OH - Prelim 5	500.00	500.00	100.09	96.72	29.703	CC, ES
Rosa Unit #672H - OH - Prelim 5	1,000.00	980.43	135.45	128.60	19.792	SF
Rosa Unit #674H - OH - Prelim 5	510.00	510.00	80.13	76.69	23.284	CC
Rosa Unit #674H - OH - Prelim 5	600.00	598.83	80.49	76.41	19.717	ES
Rosa Unit #674H - OH - Prelim 5	1,000.00	987.13	105.47	98.59	15.335	SF
Rosa Unit #690H - OH - Prelim 5	600.00	600.00	60.03	55.94	14.688	CC, ES
Rosa Unit #690H - OH - Prelim 5	19,500.00	20,176.02	2,681.78	2,276.20	6.612	SF
Rosa Unit #692H - OH - Prelim 5	700.00	700.00	40.06	35.26	8.341	CC
Rosa Unit #692H - OH - Prelim 5	800.00	798.87	40.58	35.06	7.359	ES
Rosa Unit #692H - OH - Prelim 5	19,300.00	19,468.80	1,283.97	883.61	3.207	SF
Rosa Unit #694H - OH - Prelim 5	700.00	700.00	20.10	15.30	4.185	CC
Rosa Unit #694H - OH - Prelim 5	800.00	799.47	20.55	15.03	3.725	ES
Rosa Unit #694H - OH - Prelim 5	6,527.32	6,523.09	122.09	75.49	2.620	SF

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Plan #8													Offset Site Error: 0.00 usft
Survey Program: 67-Standard Keeper 104, 300-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning
+N/-S (usft)	+E/-W (usft)												
0.00	0.00	0.00	0.00	0.00	0.00	-111.40	-1,813.78	-4,628.94	4,971.88				
100.00	100.00	76.29	76.29	0.25	0.02	-111.40	-1,813.74	-4,628.73	4,971.47	4,971.20	0.28	N/A	
200.00	200.00	172.31	172.30	0.61	0.16	-111.40	-1,813.73	-4,628.23	4,970.98	4,970.22	0.76	6,505.944	
300.00	300.00	273.19	273.18	0.97	0.29	-111.40	-1,813.89	-4,627.63	4,970.49	4,969.25	1.24	4,011.103	
400.00	400.00	373.65	373.65	1.33	0.40	-111.41	-1,814.29	-4,626.92	4,969.98	4,968.28	1.69	2,936.411	
500.00	500.00	473.65	473.64	1.68	0.60	-111.42	-1,814.69	-4,626.20	4,969.46	4,967.20	2.26	2,203.229	
600.00	600.00	1,116.35	1,111.55	2.04	2.85	-110.79	-1,750.09	-4,610.21	4,963.31	4,958.44	4.87	1,019.103	
700.00	700.00	1,214.17	1,207.23	2.40	3.26	-110.59	-1,730.19	-4,606.07	4,951.99	4,946.37	5.62	881.519	
800.00	799.98	1,312.24	1,303.15	2.76	3.67	-80.64	-1,710.23	-4,601.92	4,940.44	4,934.07	6.37	775.578	
900.00	899.92	1,410.53	1,399.30	3.12	4.09	-80.47	-1,690.23	-4,597.76	4,928.65	4,921.52	7.13	691.464	
1,000.00	999.86	1,508.83	1,495.45	3.47	4.51	-80.31	-1,670.22	-4,593.60	4,916.90	4,909.01	7.89	623.262	
1,100.00	1,099.80	1,607.13	1,591.60	3.83	4.93	-80.14	-1,650.22	-4,589.44	4,905.19	4,896.54	8.65	566.867	
1,200.00	1,199.74	1,705.43	1,687.75	4.19	5.35	-79.98	-1,630.21	-4,585.28	4,893.53	4,884.11	9.42	519.496	
1,300.00	1,299.68	1,803.72	1,783.90	4.55	5.78	-79.81	-1,610.21	-4,581.12	4,881.90	4,871.71	10.19	479.169	
1,400.00	1,399.61	1,902.02	1,880.06	4.91	6.20	-79.65	-1,590.21	-4,576.96	4,870.32	4,859.36	10.96	444.437	
1,500.00	1,499.55	2,000.32	1,976.21	5.27	6.63	-79.48	-1,570.20	-4,572.80	4,858.78	4,847.05	11.73	414.223	
1,600.00	1,599.49	2,098.62	2,072.36	5.63	7.06	-79.31	-1,550.20	-4,568.64	4,847.28	4,834.78	12.50	387.706	
1,700.00	1,699.43	2,196.92	2,168.51	5.99	7.49	-79.14	-1,530.19	-4,564.48	4,835.82	4,822.55	13.28	364.250	
1,800.00	1,799.37	2,295.21	2,264.66	6.35	7.92	-78.97	-1,510.19	-4,560.33	4,824.41	4,810.36	14.05	343.359	
1,900.00	1,899.31	2,393.51	2,360.81	6.71	8.34	-78.80	-1,490.19	-4,556.17	4,813.04	4,798.21	14.83	324.637	
2,000.00	1,999.25	2,491.81	2,456.96	7.07	8.77	-78.63	-1,470.18	-4,552.01	4,801.71	4,786.11	15.60	307.763	
2,100.00	2,099.19	2,590.11	2,553.11	7.42	9.20	-78.45	-1,450.18	-4,547.85	4,790.43	4,774.05	16.38	292.480	
2,200.00	2,199.13	2,688.40	2,649.26	7.78	9.63	-78.28	-1,430.17	-4,543.69	4,779.19	4,762.03	17.16	278.573	
2,300.00	2,299.07	2,786.70	2,745.41	8.14	10.07	-78.11	-1,410.17	-4,539.53	4,767.99	4,750.06	17.93	265.865	
2,400.00	2,399.01	2,885.00	2,841.56	8.50	10.50	-77.93	-1,390.17	-4,535.37	4,756.84	4,738.13	18.71	254.209	
2,500.00	2,498.94	2,983.30	2,937.71	8.86	10.93	-77.76	-1,370.16	-4,531.21	4,745.73	4,726.24	19.49	243.480	
2,600.00	2,598.88	3,081.59	3,033.86	9.22	11.36	-77.58	-1,350.16	-4,527.05	4,734.67	4,714.40	20.27	233.572	
2,700.00	2,698.82	3,179.89	3,130.01	9.58	11.79	-77.40	-1,330.15	-4,522.89	4,723.66	4,702.61	21.05	224.395	
2,800.00	2,798.76	3,278.19	3,226.16	9.94	12.22	-77.22	-1,310.15	-4,518.73	4,712.69	4,690.86	21.83	215.871	
2,900.00	2,898.70	3,376.49	3,322.31	10.30	12.65	-77.05	-1,290.15	-4,514.57	4,701.76	4,679.15	22.61	207.934	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Plan #8												Offset Site Error:	0.00 usft
Survey Program: 67-Standard Keeper 104, 300-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)			
3,000.00	2,998.64	3,474.78	3,418.47	10.66	13.08	-76.87	-1,270.14	-4,510.41	4,690.89	4,667.49	23.39	200.525	
3,100.00	3,098.58	3,573.08	3,514.62	11.02	13.51	-76.69	-1,250.14	-4,506.25	4,680.06	4,655.88	24.17	193.593	
3,200.00	3,198.52	3,671.38	3,610.77	11.38	13.95	-76.50	-1,230.13	-4,502.09	4,669.27	4,644.32	24.96	187.095	
3,300.00	3,298.46	3,769.68	3,706.92	11.75	14.38	-76.32	-1,210.13	-4,497.93	4,658.54	4,632.80	25.74	180.990	
3,400.00	3,398.40	3,867.97	3,803.07	12.11	14.81	-76.14	-1,190.13	-4,493.77	4,647.85	4,621.33	26.52	175.245	
3,500.00	3,498.34	3,966.27	3,899.22	12.47	15.24	-75.96	-1,170.12	-4,489.61	4,637.21	4,609.91	27.31	169.829	
3,600.00	3,598.27	4,064.57	3,995.37	12.83	15.67	-75.77	-1,150.12	-4,485.45	4,626.62	4,598.53	28.09	164.714	
3,700.00	3,698.21	4,162.87	4,091.52	13.19	16.10	-75.59	-1,130.11	-4,481.29	4,616.08	4,587.21	28.87	159.877	
3,800.00	3,798.15	4,261.16	4,187.67	13.55	16.54	-75.40	-1,110.11	-4,477.13	4,605.59	4,575.93	29.66	155.295	
3,900.00	3,898.09	4,359.46	4,283.82	13.91	16.97	-75.21	-1,090.11	-4,472.97	4,595.15	4,564.70	30.44	150.949	
4,000.00	3,998.03	4,457.76	4,379.97	14.27	17.40	-75.02	-1,070.10	-4,468.81	4,584.75	4,553.53	31.23	146.822	
4,100.00	4,097.97	4,556.06	4,476.12	14.63	17.83	-74.84	-1,050.10	-4,464.65	4,574.41	4,542.40	32.01	142.897	
4,200.00	4,197.91	4,654.35	4,572.27	14.99	18.27	-74.65	-1,030.09	-4,460.50	4,564.12	4,531.32	32.80	139.160	
4,300.00	4,297.85	4,752.65	4,668.42	15.35	18.70	-74.46	-1,010.09	-4,456.34	4,553.87	4,520.29	33.58	135.598	
4,400.00	4,397.79	4,850.95	4,764.57	15.71	19.13	-74.26	-990.09	-4,452.18	4,543.68	4,509.31	34.37	132.199	
4,500.00	4,497.73	4,949.25	4,860.73	16.07	19.56	-74.07	-970.08	-4,448.02	4,533.55	4,498.39	35.16	128.952	
4,600.00	4,597.66	5,047.54	4,956.88	16.43	19.99	-73.88	-950.08	-4,443.86	4,523.46	4,487.51	35.94	125.848	
4,700.00	4,697.60	5,145.84	5,053.03	16.79	20.43	-73.69	-930.07	-4,439.70	4,513.42	4,476.69	36.73	122.877	
4,800.00	4,797.54	5,244.14	5,149.18	17.15	20.86	-73.49	-910.07	-4,435.54	4,503.44	4,465.92	37.52	120.031	
4,900.00	4,897.48	5,342.44	5,245.33	17.51	21.29	-73.29	-890.07	-4,431.38	4,493.51	4,455.21	38.31	117.303	
5,000.00	4,997.42	5,440.73	5,341.48	17.87	21.72	-73.10	-870.06	-4,427.22	4,483.64	4,444.54	39.10	114.685	
5,100.00	5,097.36	5,539.03	5,437.63	18.23	22.16	-72.90	-850.06	-4,423.06	4,473.81	4,433.93	39.88	112.171	
5,200.00	5,197.30	5,637.33	5,533.78	18.59	22.59	-72.70	-830.06	-4,418.90	4,464.05	4,423.37	40.67	109.755	
5,300.00	5,297.24	5,735.63	5,629.93	18.95	23.02	-72.50	-810.05	-4,414.74	4,454.33	4,412.87	41.46	107.432	
5,402.82	5,400.00	5,836.70	5,728.80	19.32	23.47	-72.30	-789.48	-4,410.46	4,444.40	4,402.13	42.27	105.134	
5,500.00	5,497.13	5,932.17	5,822.18	19.67	23.89	-72.06	-770.05	-4,406.42	4,435.20	4,392.15	43.04	103.046	
5,600.00	5,597.11	6,030.31	5,918.17	20.03	24.32	-71.80	-750.08	-4,402.27	4,426.05	4,382.22	43.83	100.983	
5,700.00	5,697.10	6,128.32	6,014.05	20.39	24.75	-71.53	-730.14	-4,398.12	4,417.24	4,372.62	44.62	99.002	
5,802.82	5,799.92	6,228.97	6,112.50	20.75	25.19	-101.24	-709.65	-4,393.86	4,408.54	4,363.12	45.43	97.047	
5,900.00	5,897.09	6,324.02	6,205.47	21.10	25.61	-101.00	-690.31	-4,389.84	4,400.55	4,354.36	46.19	95.269	
6,000.00	5,997.09	6,401.86	6,281.61	21.45	25.95	-100.81	-674.47	-4,386.55	4,392.44	4,345.55	46.90	93.660	
6,100.00	6,097.09	6,401.86	6,281.61	21.81	25.95	-100.81	-674.47	-4,386.55	4,385.92	4,338.63	47.28	92.755	
6,200.00	6,197.09	6,450.00	6,328.74	22.16	26.16	-100.68	-664.73	-4,386.33	4,381.35	4,333.49	47.86	91.543	
6,300.00	6,297.09	6,450.00	6,328.74	22.52	26.16	-100.68	-664.73	-4,386.33	4,378.30	4,330.08	48.22	90.801	
6,354.91	6,352.00	6,450.00	6,328.74	22.72	26.16	-100.68	-664.73	-4,386.33	4,377.60	4,329.19	48.41	90.435	
6,358.56	6,355.65	6,450.00	6,328.74	22.73	26.16	-179.68	-664.73	-4,386.33	4,377.59	4,329.17	48.42	90.413 CC, ES	
6,400.00	6,397.06	6,450.00	6,328.74	22.87	26.16	-179.68	-664.73	-4,386.33	4,379.13	4,330.58	48.55	90.197	
6,450.00	6,446.74	6,450.00	6,328.74	23.04	26.16	-179.68	-664.73	-4,386.33	4,385.09	4,336.39	48.70	90.042	
6,500.00	6,495.84	6,450.00	6,328.74	23.20	26.16	-179.67	-664.73	-4,386.33	4,395.47	4,346.63	48.84	89.991	
6,550.00	6,544.06	6,472.94	6,351.18	23.36	26.26	-179.60	-660.13	-4,387.50	4,409.72	4,360.63	49.09	89.829	
6,600.00	6,591.08	6,500.00	6,377.59	23.51	26.37	-179.51	-654.76	-4,389.95	4,428.77	4,379.42	49.35	89.740 SF	
6,650.00	6,636.64	6,500.00	6,377.59	23.66	26.37	-179.49	-654.76	-4,389.95	4,451.22	4,401.75	49.47	89.983	
6,700.00	6,680.44	6,500.00	6,377.59	23.82	26.37	-179.46	-654.76	-4,389.95	4,477.52	4,427.95	49.57	90.324	
6,750.00	6,722.22	6,500.00	6,377.59	23.99	26.37	-179.43	-654.76	-4,389.95	4,507.45	4,457.78	49.66	90.759	
6,800.00	6,761.71	6,500.00	6,377.59	24.16	26.37	-179.39	-654.76	-4,389.95	4,540.74	4,491.00	49.74	91.281	
6,850.00	6,798.68	6,500.00	6,377.59	24.33	26.37	-179.33	-654.76	-4,389.95	4,577.13	4,527.32	49.81	91.886	
6,900.00	6,832.89	6,500.00	6,377.59	24.50	26.37	-179.26	-654.76	-4,389.95	4,616.32	4,566.45	49.87	92.566	
6,950.00	6,864.14	6,500.00	6,377.59	24.69	26.37	-179.17	-654.76	-4,389.95	4,658.00	4,608.08	49.92	93.313	
7,000.00	6,892.23	6,500.00	6,377.59	24.88	26.37	-179.04	-654.76	-4,389.95	4,701.85	4,651.89	49.96	94.120	
7,050.00	6,916.99	6,500.00	6,377.59	25.08	26.37	-178.86	-654.76	-4,389.95	4,747.54	4,697.56	49.99	94.979	
7,100.00	6,938.27	6,500.00	6,377.59	25.29	26.37	-178.57	-654.76	-4,389.95	4,794.75	4,744.74	50.01	95.881	
7,150.00	6,955.93	6,500.00	6,377.59	25.51	26.37	-178.05	-654.76	-4,389.95	4,843.13	4,793.11	50.02	96.817	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Plan #8												Offset Site Error:	0.00 usft
Survey Program: 67-Standard Keeper 104, 300-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)			
7,200.00	6,969.87	6,500.00	6,377.59	25.75	26.37	-176.92	-654.76	-4,389.95	4,892.38	4,842.34	50.04	97.778	
7,250.00	6,980.00	6,500.00	6,377.59	25.99	26.37	-172.46	-654.76	-4,389.95	4,942.15	4,892.10	50.04	98.754	
7,300.00	6,986.25	6,500.00	6,377.59	26.25	26.37	-15.28	-654.76	-4,389.95	4,992.13	4,942.07	50.05	99.736	
7,354.68	6,988.62	6,500.00	6,377.59	26.53	26.37	-3.57	-654.76	-4,389.95	5,046.67	4,996.60	50.06	100.805	
7,400.00	6,988.64	6,500.00	6,377.59	26.78	26.37	-3.57	-654.76	-4,389.95	5,091.71	5,041.63	50.07	101.684	
7,500.00	6,988.67	6,500.00	6,377.59	27.40	26.37	-3.57	-654.76	-4,389.95	5,191.11	5,141.02	50.10	103.621	
7,600.00	6,988.71	6,500.00	6,377.59	28.08	26.37	-3.57	-654.76	-4,389.95	5,290.55	5,240.42	50.12	105.554	
7,700.00	6,988.74	6,500.00	6,377.59	28.84	26.37	-3.57	-654.76	-4,389.95	5,390.00	5,339.85	50.15	107.486	
7,800.00	6,988.78	6,500.00	6,377.59	29.67	26.37	-3.57	-654.76	-4,389.95	5,489.47	5,439.30	50.17	109.415	
7,900.00	6,988.81	6,500.00	6,377.59	30.55	26.37	-3.57	-654.76	-4,389.95	5,588.96	5,538.76	50.20	111.341	
8,000.00	6,988.85	6,500.00	6,377.59	31.49	26.37	-3.57	-654.76	-4,389.95	5,688.47	5,638.25	50.22	113.265	
8,100.00	6,988.88	6,500.00	6,377.59	32.48	26.37	-3.57	-654.76	-4,389.95	5,787.99	5,737.74	50.25	115.186	
8,200.00	6,988.91	6,500.00	6,377.59	33.51	26.37	-3.57	-654.76	-4,389.95	5,887.54	5,837.26	50.28	117.103	
8,211.68	6,988.92	6,500.00	6,377.59	33.63	26.37	-3.57	-654.76	-4,389.95	5,899.17	5,848.89	50.28	117.327	
8,300.00	6,988.95	6,500.00	6,377.59	34.58	26.37	14.83	-654.76	-4,389.95	5,987.09	5,936.78	50.30	119.019	
8,400.00	6,988.98	6,500.00	6,377.59	35.70	26.37	32.65	-654.76	-4,389.95	6,086.57	6,036.24	50.33	120.933	
8,500.00	6,989.01	6,500.00	6,377.59	36.84	26.37	45.63	-654.76	-4,389.95	6,185.86	6,135.51	50.36	122.843	
8,600.00	6,989.04	6,500.00	6,377.59	38.02	26.37	54.63	-654.76	-4,389.95	6,284.86	6,234.48	50.38	124.746	
8,700.00	6,989.07	6,500.00	6,377.59	39.22	26.37	60.93	-654.76	-4,389.95	6,383.47	6,333.06	50.41	126.639	
8,772.79	6,989.09	6,500.00	6,377.59	40.11	26.37	64.39	-654.76	-4,389.95	6,454.93	6,404.50	50.43	128.008	
8,800.00	6,989.10	6,500.00	6,377.59	40.44	26.37	64.39	-654.76	-4,389.95	6,481.59	6,431.16	50.43	128.519	
8,900.00	6,989.13	6,500.00	6,377.59	41.68	26.37	64.39	-654.76	-4,389.95	6,579.62	6,529.16	50.46	130.385	
9,000.00	6,989.15	6,500.00	6,377.59	42.95	26.37	64.39	-654.76	-4,389.95	6,677.71	6,627.21	50.49	132.245	
9,100.00	6,989.18	6,500.00	6,377.59	44.24	26.37	64.39	-654.76	-4,389.95	6,775.85	6,725.32	50.53	134.099	
9,200.00	6,989.21	6,500.00	6,377.59	45.55	26.37	64.39	-654.76	-4,389.95	6,874.05	6,823.48	50.56	135.945	
9,300.00	6,989.24	6,500.00	6,377.59	46.88	26.37	64.39	-654.76	-4,389.95	6,972.30	6,921.69	50.60	137.786	
9,400.00	6,989.26	6,500.00	6,377.59	48.23	26.37	64.39	-654.76	-4,389.95	7,070.59	7,019.95	50.64	139.619	
9,500.00	6,989.29	6,500.00	6,377.59	49.59	26.37	64.39	-654.76	-4,389.95	7,168.94	7,118.25	50.68	141.446	
9,600.00	6,989.32	6,500.00	6,377.59	50.96	26.37	64.39	-654.76	-4,389.95	7,267.33	7,216.60	50.73	143.267	
9,700.00	6,989.34	6,500.00	6,377.59	52.35	26.37	64.39	-654.76	-4,389.95	7,365.76	7,314.99	50.77	145.081	
9,800.00	6,989.37	6,500.00	6,377.59	53.75	26.37	64.39	-654.76	-4,389.95	7,464.23	7,413.42	50.82	146.889	
9,900.00	6,989.40	6,500.00	6,377.59	55.16	26.37	64.39	-654.76	-4,389.95	7,562.75	7,511.89	50.86	148.691	
10,000.00	6,989.42	6,500.00	6,377.59	56.58	26.37	64.39	-654.76	-4,389.95	7,661.30	7,610.39	50.91	150.486	
10,100.00	6,989.45	6,500.00	6,377.59	58.01	26.37	64.39	-654.76	-4,389.95	7,759.89	7,708.93	50.96	152.274	
10,200.00	6,989.48	6,500.00	6,377.59	59.45	26.37	64.39	-654.76	-4,389.95	7,858.52	7,807.50	51.01	154.057	
10,300.00	6,989.51	6,500.00	6,377.59	60.90	26.37	64.39	-654.76	-4,389.95	7,957.18	7,906.11	51.06	155.833	
10,400.00	6,989.53	6,500.00	6,377.59	62.35	26.37	64.39	-654.76	-4,389.95	8,055.87	8,004.75	51.12	157.602	
10,500.00	6,989.56	6,500.00	6,377.59	63.81	26.37	64.39	-654.76	-4,389.95	8,154.59	8,103.42	51.17	159.366	
10,600.00	6,989.59	6,500.00	6,377.59	65.28	26.37	64.39	-654.76	-4,389.95	8,253.35	8,202.12	51.22	161.123	
10,700.00	6,989.61	6,500.00	6,377.59	66.76	26.37	64.39	-654.76	-4,389.95	8,352.13	8,300.85	51.28	162.874	
10,800.00	6,989.64	6,500.00	6,377.59	68.24	26.37	64.39	-654.76	-4,389.95	8,450.95	8,399.61	51.34	164.618	
10,900.00	6,989.67	6,500.00	6,377.59	69.73	26.37	64.39	-654.76	-4,389.95	8,549.79	8,498.39	51.39	166.356	
11,000.00	6,989.70	6,500.00	6,377.59	71.22	26.37	64.39	-654.76	-4,389.95	8,648.66	8,597.20	51.45	168.088	
11,100.00	6,989.72	6,500.00	6,377.59	72.71	26.37	64.39	-654.76	-4,389.95	8,747.55	8,696.04	51.51	169.813	
11,200.00	6,989.75	6,500.00	6,377.59	74.22	26.37	64.39	-654.76	-4,389.95	8,846.47	8,794.89	51.57	171.533	
11,300.00	6,989.78	6,500.00	6,377.59	75.72	26.37	64.39	-654.76	-4,389.95	8,945.41	8,893.78	51.63	173.245	
11,400.00	6,989.80	6,500.00	6,377.59	77.23	26.37	64.39	-654.76	-4,389.95	9,044.38	8,992.68	51.70	174.952	
11,500.00	6,989.83	6,500.00	6,377.59	78.74	26.37	64.39	-654.76	-4,389.95	9,143.36	9,091.60	51.76	176.652	
11,600.00	6,989.86	6,500.00	6,377.59	80.26	26.37	64.39	-654.76	-4,389.95	9,242.37	9,190.55	51.82	178.346	
11,700.00	6,989.88	6,500.00	6,377.59	81.78	26.37	64.39	-654.76	-4,389.95	9,341.41	9,289.52	51.89	180.033	
11,800.00	6,989.91	6,500.00	6,377.59	83.30	26.37	64.39	-654.76	-4,389.95	9,440.46	9,388.50	51.95	181.715	
11,900.00	6,989.94	6,500.00	6,377.59	84.83	26.37	64.39	-654.76	-4,389.95	9,539.53	9,487.51	52.02	183.389	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Plan #8													Offset Site Error:	0.00 usft
Survey Program:		67-Standard Keeper 104, 300-MWD+HRGM+MS						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
12,000.00	6,989.97	6,500.00	6,377.59	86.36	26.37	64.39	-654.76	-4,389.95	9,638.62	9,586.53	52.08	185.058		
12,100.00	6,989.99	6,500.00	6,377.59	87.89	26.37	64.39	-654.76	-4,389.95	9,737.73	9,685.58	52.15	186.720		
12,200.00	6,990.02	6,500.00	6,377.59	89.42	26.37	64.39	-654.76	-4,389.95	9,836.85	9,784.64	52.22	188.376		
12,300.00	6,990.05	6,500.00	6,377.59	90.96	26.37	64.39	-654.76	-4,389.95	9,936.00	9,883.71	52.29	190.025		
12,400.00	6,990.07	6,500.00	6,377.59	92.50	26.37	64.39	-654.76	-4,389.95	10,035.16	9,982.80	52.36	191.668		
12,500.00	6,990.10	6,500.00	6,377.59	94.04	26.37	64.39	-654.76	-4,389.95	10,134.34	10,081.91	52.43	193.304		
12,600.00	6,990.13	6,500.00	6,377.59	95.58	26.37	64.39	-654.76	-4,389.95	10,233.53	10,181.04	52.50	194.935		
12,700.00	6,990.15	6,500.00	6,377.59	97.13	26.37	64.39	-654.76	-4,389.95	10,332.74	10,280.17	52.57	196.558		
12,800.00	6,990.18	6,500.00	6,377.59	98.68	26.37	64.39	-654.76	-4,389.95	10,431.97	10,379.33	52.64	198.176		
12,900.00	6,990.21	6,500.00	6,377.59	100.22	26.37	64.39	-654.76	-4,389.95	10,531.21	10,478.49	52.71	199.787		
13,000.00	6,990.24	6,500.00	6,377.59	101.78	26.37	64.39	-654.76	-4,389.95	10,630.46	10,577.68	52.79	201.391		
13,100.00	6,990.26	6,476.39	6,354.56	103.33	26.27	63.56	-659.44	-4,387.75	10,729.27	10,676.50	52.77	203.338		
13,200.00	6,990.29	6,475.97	6,354.15	104.88	26.27	63.55	-659.53	-4,387.72	10,828.53	10,775.69	52.84	204.936		
13,300.00	6,990.32	6,475.56	6,353.75	106.44	26.27	63.53	-659.61	-4,387.69	10,927.81	10,874.90	52.91	206.528		
13,400.00	6,990.34	6,475.16	6,353.35	107.99	26.26	63.52	-659.69	-4,387.66	11,027.10	10,974.11	52.99	208.113		
13,500.00	6,990.37	6,474.76	6,352.97	109.55	26.26	63.51	-659.77	-4,387.63	11,126.40	11,073.34	53.06	209.692		
13,600.00	6,990.40	6,474.37	6,352.58	111.11	26.26	63.49	-659.85	-4,387.60	11,225.72	11,172.58	53.14	211.264		
13,700.00	6,990.42	6,473.99	6,352.21	112.67	26.26	63.48	-659.92	-4,387.58	11,325.04	11,271.83	53.21	212.830		
13,800.00	6,990.45	6,450.00	6,328.74	114.23	26.16	62.66	-664.73	-4,386.33	11,424.84	11,371.65	53.20	214.761		
13,900.00	6,990.48	6,450.00	6,328.74	115.80	26.16	62.66	-664.73	-4,386.33	11,524.18	11,470.90	53.28	216.308		
14,000.00	6,990.51	6,450.00	6,328.74	117.36	26.16	62.66	-664.73	-4,386.33	11,623.52	11,570.17	53.36	217.849		
14,100.00	6,990.53	6,450.00	6,328.74	118.93	26.16	62.66	-664.73	-4,386.33	11,722.88	11,669.45	53.44	219.383		
14,200.00	6,990.56	6,450.00	6,328.74	120.49	26.16	62.66	-664.73	-4,386.33	11,822.25	11,768.73	53.52	220.911		
14,300.00	6,990.59	6,450.00	6,328.74	122.06	26.16	62.66	-664.73	-4,386.33	11,921.63	11,868.03	53.60	222.432		
14,400.00	6,990.61	6,450.00	6,328.74	123.63	26.16	62.66	-664.73	-4,386.33	12,021.02	11,967.34	53.68	223.947		
14,500.00	6,990.64	6,450.00	6,328.74	125.20	26.16	62.66	-664.73	-4,386.33	12,120.42	12,066.66	53.76	225.456		
14,600.00	6,990.67	6,450.00	6,328.74	126.77	26.16	62.66	-664.73	-4,386.33	12,219.83	12,165.99	53.84	226.958		
14,700.00	6,990.70	6,450.00	6,328.74	128.34	26.16	62.66	-664.73	-4,386.33	12,319.25	12,265.32	53.92	228.453		
14,800.00	6,990.72	6,450.00	6,328.74	129.91	26.16	62.66	-664.73	-4,386.33	12,418.67	12,364.67	54.01	229.942		
14,900.00	6,990.75	6,450.00	6,328.74	131.48	26.16	62.66	-664.73	-4,386.33	12,518.11	12,464.02	54.09	231.425		
15,000.00	6,990.78	6,450.00	6,328.74	133.06	26.16	62.66	-664.73	-4,386.33	12,617.56	12,563.38	54.18	232.901		
15,100.00	6,990.80	6,450.00	6,328.74	134.63	26.16	62.66	-664.73	-4,386.33	12,717.01	12,662.75	54.26	234.370		
15,200.00	6,990.83	6,450.00	6,328.74	136.20	26.16	62.66	-664.73	-4,386.33	12,816.48	12,762.13	54.35	235.833		
15,300.00	6,990.86	6,450.00	6,328.74	137.78	26.16	62.66	-664.73	-4,386.33	12,915.95	12,861.52	54.43	237.290		
15,400.00	6,990.88	6,450.00	6,328.74	139.36	26.16	62.66	-664.73	-4,386.33	13,015.43	12,960.91	54.52	238.740		
15,500.00	6,990.91	6,450.00	6,328.74	140.93	26.16	62.66	-664.73	-4,386.33	13,114.91	13,060.31	54.60	240.184		
15,600.00	6,990.94	6,450.00	6,328.74	142.51	26.16	62.66	-664.73	-4,386.33	13,214.41	13,159.72	54.69	241.622		
15,700.00	6,990.97	6,450.00	6,328.74	144.09	26.16	62.66	-664.73	-4,386.33	13,313.91	13,259.13	54.78	243.052		
15,800.00	6,990.99	6,450.00	6,328.74	145.67	26.16	62.66	-664.73	-4,386.33	13,413.42	13,358.56	54.87	244.477		
15,900.00	6,991.02	6,450.00	6,328.74	147.24	26.16	62.66	-664.73	-4,386.33	13,512.94	13,457.99	54.95	245.895		
16,000.00	6,991.05	6,450.00	6,328.74	148.82	26.16	62.66	-664.73	-4,386.33	13,612.46	13,557.42	55.04	247.307		
16,100.00	6,991.07	6,450.00	6,328.74	150.40	26.16	62.66	-664.73	-4,386.33	13,712.00	13,656.86	55.13	248.712		
16,200.00	6,991.10	6,450.00	6,328.74	151.99	26.16	62.66	-664.73	-4,386.33	13,811.53	13,756.31	55.22	250.111		
16,300.00	6,991.13	6,450.00	6,328.74	153.57	26.16	62.66	-664.73	-4,386.33	13,911.08	13,855.77	55.31	251.503		
16,400.00	6,991.15	6,450.00	6,328.74	155.15	26.16	62.66	-664.73	-4,386.33	14,010.63	13,955.23	55.40	252.889		
16,500.00	6,991.18	6,450.00	6,328.74	156.73	26.16	62.66	-664.73	-4,386.33	14,110.19	14,054.69	55.49	254.269		
16,600.00	6,991.21	6,450.00	6,328.74	158.31	26.16	62.66	-664.73	-4,386.33	14,209.75	14,154.17	55.58	255.643		
16,700.00	6,991.24	6,450.00	6,328.74	159.90	26.16	62.66	-664.73	-4,386.33	14,309.32	14,253.65	55.68	257.010		
16,800.00	6,991.26	6,450.00	6,328.74	161.48	26.16	62.66	-664.73	-4,386.33	14,408.90	14,353.13	55.77	258.370		
16,900.00	6,991.29	6,450.00	6,328.74	163.06	26.16	62.66	-664.73	-4,386.33	14,508.48	14,452.62	55.86	259.725		
17,000.00	6,991.32	6,450.00	6,328.74	164.65	26.16	62.66	-664.73	-4,386.33	14,608.07	14,552.11	55.95	261.073		
17,100.00	6,991.34	6,450.00	6,328.74	166.23	26.16	62.66	-664.73	-4,386.33	14,707.66	14,651.61	56.05	262.415		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Plan #8													Offset Site Error:	0.00 usft
Survey Program:		67-Standard Keeper 104, 300-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)				
17,200.00	6,991.37	6,450.00	6,328.74	167.82	26.16	62.66	-664.73	-4,386.33	14,807.26	14,751.12	56.14	263.750		
17,300.00	6,991.40	6,450.00	6,328.74	169.40	26.16	62.66	-664.73	-4,386.33	14,906.86	14,850.63	56.24	265.079		
17,400.00	6,991.42	6,450.00	6,328.74	170.99	26.16	62.66	-664.73	-4,386.33	15,006.47	14,950.14	56.33	266.402		
17,500.00	6,991.45	6,450.00	6,328.74	172.57	26.16	62.66	-664.73	-4,386.33	15,106.09	15,049.66	56.43	267.719		
17,600.00	6,991.48	6,450.00	6,328.74	174.16	26.16	62.66	-664.73	-4,386.33	15,205.71	15,149.18	56.52	269.030		
17,700.00	6,991.51	6,450.00	6,328.74	175.75	26.16	62.66	-664.73	-4,386.33	15,305.33	15,248.71	56.62	270.334		
17,800.00	6,991.53	6,450.00	6,328.74	177.33	26.16	62.66	-664.73	-4,386.33	15,404.96	15,348.25	56.71	271.632		
17,900.00	6,991.56	6,450.00	6,328.74	178.92	26.16	62.66	-664.73	-4,386.33	15,504.59	15,447.78	56.81	272.924		
18,000.00	6,991.59	6,450.00	6,328.74	180.51	26.16	62.66	-664.73	-4,386.33	15,604.23	15,547.33	56.91	274.210		
18,100.00	6,991.61	6,450.00	6,328.74	182.10	26.16	62.66	-664.73	-4,386.33	15,703.88	15,646.87	57.00	275.490		
18,200.00	6,991.64	6,450.00	6,328.74	183.68	26.16	62.66	-664.73	-4,386.33	15,803.52	15,746.42	57.10	276.763		
18,300.00	6,991.67	6,450.00	6,328.74	185.27	26.16	62.66	-664.73	-4,386.33	15,903.18	15,845.98	57.20	278.030		
18,400.00	6,991.69	6,450.00	6,328.74	186.86	26.16	62.66	-664.73	-4,386.33	16,002.83	15,945.53	57.30	279.292		
18,500.00	6,991.72	6,450.00	6,328.74	188.45	26.16	62.66	-664.73	-4,386.33	16,102.49	16,045.10	57.40	280.547		
18,600.00	6,991.75	6,450.00	6,328.74	190.04	26.16	62.66	-664.73	-4,386.33	16,202.16	16,144.66	57.50	281.796		
18,700.00	6,991.78	6,450.00	6,328.74	191.63	26.16	62.66	-664.73	-4,386.33	16,301.83	16,244.23	57.60	283.039		
18,800.00	6,991.80	6,450.00	6,328.74	193.22	26.16	62.66	-664.73	-4,386.33	16,401.50	16,343.80	57.70	284.277		
18,900.00	6,991.83	6,450.00	6,328.74	194.81	26.16	62.66	-664.73	-4,386.33	16,501.18	16,443.38	57.80	285.508		
19,000.00	6,991.86	6,450.00	6,328.74	196.40	26.16	62.66	-664.73	-4,386.33	16,600.86	16,542.96	57.90	286.733		
19,100.00	6,991.88	6,450.00	6,328.74	197.99	26.16	62.66	-664.73	-4,386.33	16,700.54	16,642.55	58.00	287.952		
19,200.00	6,991.91	6,450.00	6,328.74	199.58	26.16	62.66	-664.73	-4,386.33	16,800.23	16,742.13	58.10	289.165		
19,300.00	6,991.94	6,450.00	6,328.74	201.17	26.16	62.66	-664.73	-4,386.33	16,899.92	16,841.72	58.20	290.373		
19,342.28	6,991.95	6,450.00	6,328.74	201.84	26.16	62.66	-664.73	-4,386.33	16,942.07	16,883.83	58.24	290.881		
19,400.00	6,991.97	6,450.00	6,328.74	202.76	26.16	62.66	-664.73	-4,386.33	16,999.62	16,941.32	58.30	291.574		
19,500.00	6,991.99	6,450.00	6,328.74	204.35	26.16	62.66	-664.73	-4,386.33	17,099.32	17,040.91	58.41	292.770		
19,542.28	6,992.00	6,450.00	6,328.74	205.03	26.16	62.66	-664.73	-4,386.33	17,141.47	17,083.02	58.45	293.274		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6													Offset Site Error: 0.00 usft
Survey Program: 6255-MWD+HRGM+MS													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	11,035.38	6,940.81	0.00	68.39	-179.66	-1,185.45	-7.11	7,092.59				
100.00	100.00	11,035.41	6,940.81	0.25	68.39	-179.66	-1,185.45	-7.09	6,994.01	6,955.74	38.28	182.723	
200.00	200.00	11,035.43	6,940.81	0.61	68.39	-179.66	-1,185.45	-7.07	6,895.48	6,857.15	38.33	179.910	
300.00	300.00	11,035.45	6,940.81	0.97	68.39	-179.66	-1,185.45	-7.04	6,796.99	6,758.61	38.39	177.065	
400.00	400.00	11,035.47	6,940.81	1.33	68.39	-179.66	-1,185.45	-7.02	6,698.55	6,660.09	38.46	174.189	
500.00	500.00	11,035.50	6,940.81	1.68	68.39	-179.66	-1,185.45	-7.00	6,600.15	6,561.62	38.53	171.285	
600.00	600.00	11,035.52	6,940.81	2.04	68.39	-179.66	-1,185.45	-6.98	6,501.80	6,463.18	38.62	168.355	
700.00	700.00	11,035.54	6,940.81	2.40	68.39	-179.66	-1,185.45	-6.95	6,403.50	6,364.79	38.72	165.399	
800.00	799.98	11,034.68	6,940.81	2.76	68.37	-154.20	-1,185.45	-7.81	6,305.56	6,266.75	38.81	162.465	
900.00	899.92	11,032.94	6,940.81	3.12	68.35	-154.13	-1,185.44	-9.55	6,208.01	6,169.10	38.92	159.521	
1,000.00	999.86	11,031.21	6,940.81	3.47	68.32	-154.05	-1,185.43	-11.29	6,110.55	6,071.51	39.04	156.527	
1,100.00	1,099.80	11,029.47	6,940.81	3.83	68.29	-153.98	-1,185.42	-13.02	6,013.16	5,973.99	39.17	153.514	
1,200.00	1,199.74	11,027.73	6,940.81	4.19	68.26	-153.91	-1,185.42	-14.76	5,915.86	5,876.55	39.31	150.483	
1,300.00	1,299.68	11,026.00	6,940.81	4.55	68.24	-153.84	-1,185.41	-16.50	5,818.65	5,779.19	39.46	147.438	
1,400.00	1,399.61	11,024.26	6,940.81	4.91	68.21	-153.77	-1,185.40	-18.23	5,721.54	5,681.91	39.63	144.381	
1,500.00	1,499.55	11,022.52	6,940.81	5.27	68.18	-153.69	-1,185.39	-19.97	5,624.53	5,584.73	39.80	141.314	
1,600.00	1,599.49	11,020.78	6,940.81	5.63	68.15	-153.62	-1,185.38	-21.71	5,527.62	5,487.64	39.99	138.240	
1,700.00	1,699.43	11,019.05	6,940.81	5.99	68.12	-153.55	-1,185.38	-23.45	5,430.83	5,390.65	40.18	135.159	
1,800.00	1,799.37	11,017.31	6,940.81	6.35	68.10	-153.48	-1,185.37	-25.18	5,334.15	5,293.77	40.39	132.075	
1,900.00	1,899.31	11,015.57	6,940.81	6.71	68.07	-153.40	-1,185.36	-26.92	5,237.60	5,197.00	40.61	128.989	
2,000.00	1,999.25	11,013.84	6,940.81	7.07	68.04	-153.33	-1,185.35	-28.66	5,141.18	5,100.35	40.83	125.902	
2,100.00	2,099.19	11,012.10	6,940.81	7.42	68.01	-153.26	-1,185.34	-30.39	5,044.90	5,003.82	41.08	122.817	
2,200.00	2,199.13	11,010.36	6,940.81	7.78	67.99	-153.19	-1,185.33	-32.13	4,948.76	4,907.43	41.33	119.736	
2,300.00	2,299.07	11,008.63	6,940.81	8.14	67.96	-153.12	-1,185.33	-33.87	4,852.78	4,811.19	41.60	116.658	
2,400.00	2,399.01	11,006.89	6,940.81	8.50	67.93	-153.04	-1,185.32	-35.61	4,756.97	4,715.09	41.88	113.587	
2,500.00	2,498.94	11,005.15	6,940.81	8.86	67.90	-152.97	-1,185.31	-37.34	4,661.33	4,619.15	42.18	110.523	
2,600.00	2,598.88	11,003.41	6,940.81	9.22	67.87	-152.90	-1,185.30	-39.08	4,565.88	4,523.39	42.49	107.467	
2,700.00	2,698.82	11,001.68	6,940.81	9.58	67.85	-152.83	-1,185.29	-40.82	4,470.62	4,427.81	42.81	104.422	
2,800.00	2,798.76	10,999.94	6,940.81	9.94	67.82	-152.75	-1,185.29	-42.55	4,375.58	4,332.42	43.16	101.388	
2,900.00	2,898.70	10,998.20	6,940.81	10.30	67.79	-152.68	-1,185.28	-44.29	4,280.76	4,237.24	43.52	98.366	
3,000.00	2,998.64	10,996.47	6,940.81	10.66	67.76	-152.61	-1,185.27	-46.03	4,186.18	4,142.28	43.90	95.358	
3,100.00	3,098.58	10,994.73	6,940.80	11.02	67.74	-152.54	-1,185.26	-47.77	4,091.86	4,047.56	44.30	92.366	
3,200.00	3,198.52	10,992.99	6,940.80	11.38	67.71	-152.47	-1,185.25	-49.50	3,997.81	3,953.09	44.72	89.391	
3,300.00	3,298.46	10,991.25	6,940.80	11.75	67.68	-152.39	-1,185.24	-51.24	3,904.06	3,858.89	45.17	86.433	
3,400.00	3,398.40	10,989.52	6,940.80	12.11	67.65	-152.32	-1,185.24	-52.98	3,810.63	3,764.99	45.64	83.496	
3,500.00	3,498.34	10,987.78	6,940.80	12.47	67.62	-152.25	-1,185.23	-54.71	3,717.53	3,671.40	46.14	80.579	
3,600.00	3,598.27	10,986.04	6,940.80	12.83	67.60	-152.18	-1,185.22	-56.45	3,624.81	3,578.15	46.66	77.686	
3,700.00	3,698.21	10,984.31	6,940.80	13.19	67.57	-152.10	-1,185.21	-58.19	3,532.48	3,485.26	47.22	74.817	
3,800.00	3,798.15	10,982.57	6,940.80	13.55	67.54	-152.03	-1,185.20	-59.92	3,440.57	3,392.77	47.80	71.974	
3,900.00	3,898.09	10,980.83	6,940.80	13.91	67.51	-151.96	-1,185.20	-61.66	3,349.13	3,300.71	48.43	69.159	
4,000.00	3,998.03	10,979.09	6,940.80	14.27	67.49	-151.89	-1,185.19	-63.40	3,258.20	3,209.11	49.09	66.375	
4,100.00	4,097.97	10,977.36	6,940.80	14.63	67.46	-151.81	-1,185.18	-65.14	3,167.81	3,118.02	49.79	63.624	
4,200.00	4,197.91	10,975.62	6,940.80	14.99	67.43	-151.74	-1,185.17	-66.87	3,078.01	3,027.47	50.54	60.908	
4,300.00	4,297.85	10,973.88	6,940.80	15.35	67.40	-151.67	-1,185.16	-68.61	2,988.86	2,937.53	51.33	58.229	
4,400.00	4,397.79	10,972.15	6,940.80	15.71	67.37	-151.60	-1,185.16	-70.35	2,900.41	2,848.24	52.17	55.591	
4,500.00	4,497.73	10,970.41	6,940.80	16.07	67.35	-151.52	-1,185.15	-72.08	2,812.74	2,759.67	53.07	52.996	
4,600.00	4,597.66	10,968.67	6,940.80	16.43	67.32	-151.45	-1,185.14	-73.82	2,725.92	2,671.88	54.03	50.448	
4,700.00	4,697.60	10,966.94	6,940.80	16.79	67.29	-151.38	-1,185.13	-75.56	2,640.02	2,584.97	55.06	47.950	
4,800.00	4,797.54	10,965.20	6,940.80	17.15	67.26	-151.31	-1,185.12	-77.30	2,555.16	2,499.01	56.15	45.506	
4,900.00	4,897.48	10,963.46	6,940.80	17.51	67.24	-151.23	-1,185.11	-79.03	2,471.42	2,414.10	57.32	43.119	
5,000.00	4,997.42	10,961.72	6,940.80	17.87	67.21	-151.16	-1,185.11	-80.77	2,388.93	2,330.37	58.56	40.794	
5,100.00	5,097.36	10,959.99	6,940.80	18.23	67.18	-151.09	-1,185.10	-82.51	2,307.83	2,247.94	59.89	38.536	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6												Offset Site Error:	0.00 usft
Survey Program: 6255-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,197.30	10,958.25	6,940.80	18.59	67.15	-151.02	-1,185.09	-84.24	2,228.26	2,166.96	61.30	36.348	
5,300.00	5,297.24	10,956.51	6,940.80	18.95	67.12	-150.95	-1,185.08	-85.98	2,150.40	2,087.59	62.81	34.237	
5,402.82	5,400.00	10,954.73	6,940.80	19.32	67.10	-150.87	-1,185.07	-87.77	2,072.32	2,007.86	64.46	32.150	
5,500.00	5,497.13	10,953.25	6,940.80	19.67	67.07	-150.55	-1,185.07	-89.25	2,000.34	1,934.24	66.11	30.260	
5,600.00	5,597.11	10,952.16	6,940.80	20.03	67.06	-150.24	-1,185.06	-90.34	1,928.05	1,860.16	67.89	28.401	
5,700.00	5,697.10	10,951.51	6,940.80	20.39	67.04	-149.97	-1,185.06	-90.99	1,857.77	1,788.02	69.76	26.632	
5,802.82	5,799.92	10,951.30	6,940.80	20.75	67.04	-179.72	-1,185.06	-91.20	1,787.88	1,716.11	71.76	24.914	
5,900.00	5,897.09	10,951.32	6,940.80	21.10	67.04	-179.72	-1,185.06	-91.18	1,724.56	1,650.83	73.73	23.390	
6,000.00	5,997.09	10,951.34	6,940.80	21.45	67.04	-179.72	-1,185.06	-91.15	1,662.82	1,587.00	75.82	21.931	
6,100.00	6,097.09	10,951.36	6,940.80	21.81	67.04	-179.72	-1,185.06	-91.13	1,604.94	1,526.98	77.96	20.588	
6,200.00	6,197.09	10,951.38	6,940.80	22.16	67.04	-179.72	-1,185.06	-91.11	1,551.35	1,471.24	80.11	19.366	
6,300.00	6,297.09	10,951.41	6,940.80	22.52	67.04	-179.72	-1,185.06	-91.09	1,502.51	1,420.28	82.24	18.271	
6,354.91	6,352.00	10,951.42	6,940.80	22.72	67.04	-179.72	-1,185.06	-91.08	1,477.89	1,394.51	83.38	17.725	
6,400.00	6,397.06	10,952.99	6,940.80	22.87	67.07	103.01	-1,185.07	-89.50	1,459.21	1,374.89	84.32	17.306	
6,450.00	6,446.74	10,958.39	6,940.80	23.04	67.15	104.54	-1,185.09	-84.10	1,440.63	1,355.25	85.38	16.874	
6,500.00	6,495.84	10,967.60	6,940.80	23.20	67.30	105.64	-1,185.13	-74.90	1,424.46	1,338.01	86.45	16.477	
6,550.00	6,544.06	10,980.55	6,940.80	23.36	67.51	106.34	-1,185.19	-61.94	1,410.81	1,323.29	87.53	16.119	
6,600.00	6,591.08	10,997.17	6,940.81	23.51	67.77	106.67	-1,185.27	-45.32	1,399.74	1,311.14	88.59	15.800	
6,650.00	6,636.64	11,017.36	6,940.81	23.66	68.10	106.65	-1,185.37	-25.13	1,391.24	1,301.59	89.65	15.519	
6,700.00	6,680.44	11,041.00	6,940.81	23.82	68.48	106.30	-1,185.48	-1.50	1,385.26	1,294.58	90.68	15.277	
6,750.00	6,722.22	11,067.93	6,940.82	23.99	68.91	105.67	-1,185.60	25.43	1,381.70	1,290.02	91.68	15.070	
6,800.00	6,761.71	11,097.99	6,940.83	24.16	69.39	104.79	-1,185.75	55.49	1,380.42	1,287.75	92.67	14.896	
6,804.95	6,765.49	11,101.13	6,940.83	24.17	69.44	104.69	-1,185.76	58.63	1,380.41	1,287.64	92.77	14.881 CC	
6,850.00	6,798.68	11,130.99	6,940.83	24.33	69.91	103.69	-1,185.90	88.50	1,381.22	1,287.59	93.63	14.752 ES	
6,900.00	6,832.89	11,166.74	6,940.84	24.50	70.49	102.42	-1,186.07	124.25	1,383.90	1,289.32	94.58	14.632	
6,950.00	6,864.14	11,205.01	6,940.85	24.69	71.10	101.02	-1,186.25	162.52	1,388.23	1,292.72	95.52	14.534	
7,000.00	6,892.23	11,245.57	6,940.86	24.88	71.75	99.54	-1,186.44	203.07	1,393.97	1,297.52	96.45	14.453	
7,050.00	6,916.99	11,288.16	6,940.87	25.08	72.43	98.02	-1,186.64	245.67	1,400.88	1,303.49	97.38	14.385	
7,100.00	6,938.27	11,332.53	6,940.88	25.29	73.14	96.51	-1,186.85	290.03	1,408.72	1,310.39	98.33	14.326	
7,150.00	6,955.93	11,378.39	6,940.89	25.51	73.87	95.04	-1,187.06	335.90	1,417.28	1,317.99	99.29	14.274	
7,200.00	6,969.87	11,425.48	6,940.90	25.75	74.62	93.66	-1,187.28	382.98	1,426.36	1,326.10	100.26	14.226	
7,250.00	6,980.00	11,473.48	6,940.91	25.99	75.39	92.39	-1,187.51	430.99	1,435.80	1,334.54	101.26	14.179	
7,300.00	6,986.25	11,522.12	6,940.92	26.25	76.17	91.25	-1,187.74	479.62	1,445.45	1,343.18	102.27	14.134	
7,354.68	6,988.62	11,575.69	6,940.93	26.53	77.03	90.18	-1,187.99	533.19	1,456.11	1,352.72	103.39	14.083	
7,400.00	6,988.64	11,620.13	6,940.94	26.78	77.74	90.18	-1,188.20	577.63	1,464.97	1,360.63	104.34	14.041	
7,500.00	6,988.67	11,718.20	6,940.96	27.40	79.30	90.17	-1,188.66	675.70	1,484.51	1,378.03	106.48	13.941	
7,600.00	6,988.71	11,816.27	6,940.99	28.08	80.87	90.17	-1,189.12	773.77	1,504.05	1,395.35	108.70	13.837	
7,700.00	6,988.74	11,914.35	6,941.01	28.84	82.44	90.17	-1,189.58	871.84	1,523.59	1,412.60	110.99	13.727	
7,800.00	6,988.78	12,012.42	6,941.03	29.67	84.01	90.17	-1,190.04	969.91	1,543.13	1,429.79	113.34	13.615	
7,900.00	6,988.81	12,110.49	6,941.05	30.55	85.58	90.16	-1,190.50	1,067.98	1,562.68	1,446.92	115.76	13.500	
8,000.00	6,988.85	12,208.56	6,941.07	31.49	87.15	90.16	-1,190.96	1,166.05	1,582.22	1,463.99	118.22	13.383	
8,100.00	6,988.88	12,306.63	6,941.09	32.48	88.72	90.16	-1,191.42	1,264.13	1,601.76	1,481.02	120.74	13.266	
8,200.00	6,988.91	12,404.71	6,941.12	33.51	90.28	90.16	-1,191.88	1,362.20	1,621.30	1,498.00	123.31	13.149	
8,211.68	6,988.92	12,416.16	6,941.12	33.63	90.47	90.16	-1,191.94	1,373.65	1,623.58	1,499.98	123.61	13.135	
8,300.00	6,988.95	12,503.03	6,941.14	34.58	91.86	90.15	-1,192.34	1,460.52	1,639.50	1,513.59	125.92	13.020	
8,400.00	6,988.98	12,601.93	6,941.16	35.70	93.44	90.15	-1,192.81	1,559.41	1,654.29	1,525.70	128.59	12.865	
8,500.00	6,989.01	12,701.28	6,941.18	36.84	95.03	90.15	-1,193.27	1,658.77	1,665.61	1,534.31	131.31	12.685	
8,600.00	6,989.04	12,800.96	6,941.20	38.02	96.62	90.14	-1,193.74	1,758.45	1,673.46	1,539.39	134.07	12.482	
8,700.00	6,989.07	12,900.86	6,941.23	39.22	98.22	90.14	-1,194.21	1,858.35	1,677.83	1,540.96	136.87	12.258	
8,772.79	6,989.09	12,973.64	6,941.24	40.11	99.39	90.14	-1,194.55	1,931.13	1,678.81	1,539.88	138.93	12.084	
8,800.00	6,989.10	13,000.86	6,941.25	40.44	99.82	90.14	-1,194.68	1,958.34	1,678.84	1,539.13	139.71	12.017	
8,900.00	6,989.13	13,100.86	6,941.27	41.68	101.42	90.14	-1,195.15	2,058.34	1,678.92	1,536.35	142.57	11.776	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6												Offset Site Error:	0.00 usft
Survey Program: 6255-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)			
9,000.00	6,989.15	13,200.86	6,941.29	42.95	103.02	90.14	-1,195.62	2,158.34	1,679.00	1,533.55	145.45	11.544	
9,100.00	6,989.18	13,300.86	6,941.31	44.24	104.62	90.14	-1,196.09	2,258.34	1,679.08	1,530.73	148.35	11.318	
9,200.00	6,989.21	13,400.86	6,941.34	45.55	106.22	90.14	-1,196.56	2,358.33	1,679.16	1,527.89	151.28	11.100	
9,300.00	6,989.24	13,500.86	6,941.36	46.88	107.82	90.14	-1,197.03	2,458.33	1,679.25	1,525.03	154.22	10.889	
9,400.00	6,989.26	13,600.86	6,941.38	48.23	109.42	90.14	-1,197.50	2,558.33	1,679.33	1,522.15	157.18	10.684	
9,500.00	6,989.29	13,700.85	6,941.40	49.59	111.02	90.14	-1,197.97	2,658.33	1,679.41	1,519.26	160.15	10.486	
9,600.00	6,989.32	13,800.85	6,941.42	50.96	112.62	90.14	-1,198.44	2,758.33	1,679.49	1,516.36	163.14	10.295	
9,700.00	6,989.34	13,900.85	6,941.45	52.35	114.22	90.14	-1,198.91	2,858.33	1,679.57	1,513.44	166.14	10.110	
9,800.00	6,989.37	14,000.85	6,941.47	53.75	115.82	90.14	-1,199.38	2,958.33	1,679.66	1,510.51	169.15	9.930	
9,900.00	6,989.40	14,100.85	6,941.49	55.16	117.42	90.14	-1,199.84	3,058.33	1,679.74	1,507.57	172.17	9.756	
10,000.00	6,989.42	14,200.85	6,941.51	56.58	119.02	90.14	-1,200.31	3,158.33	1,679.82	1,504.62	175.20	9.588	
10,100.00	6,989.45	14,300.85	6,941.53	58.01	120.62	90.14	-1,200.78	3,258.32	1,679.90	1,501.66	178.24	9.425	
10,200.00	6,989.48	14,400.85	6,941.56	59.45	122.22	90.14	-1,201.25	3,358.32	1,679.98	1,498.70	181.29	9.267	
10,300.00	6,989.51	14,500.85	6,941.58	60.90	123.82	90.14	-1,201.72	3,458.32	1,680.07	1,495.72	184.34	9.114	
10,400.00	6,989.53	14,600.85	6,941.60	62.35	125.42	90.14	-1,202.19	3,558.32	1,680.15	1,492.74	187.41	8.965	
10,500.00	6,989.56	14,700.85	6,941.62	63.81	127.02	90.14	-1,202.66	3,658.32	1,680.23	1,489.75	190.48	8.821	
10,600.00	6,989.59	14,800.85	6,941.64	65.28	128.62	90.14	-1,203.13	3,758.32	1,680.31	1,486.76	193.56	8.681	
10,700.00	6,989.61	14,900.85	6,941.67	66.76	130.22	90.14	-1,203.60	3,858.32	1,680.39	1,483.75	196.64	8.546	
10,800.00	6,989.64	15,000.85	6,941.69	68.24	131.82	90.14	-1,204.07	3,958.32	1,680.48	1,480.75	199.73	8.414	
10,900.00	6,989.67	15,100.85	6,941.71	69.73	133.42	90.14	-1,204.54	4,058.32	1,680.56	1,477.74	202.82	8.286	
11,000.00	6,989.70	15,200.85	6,941.73	71.22	135.02	90.14	-1,205.01	4,158.31	1,680.64	1,474.72	205.92	8.162	
11,100.00	6,989.72	15,300.85	6,941.76	72.71	136.62	90.14	-1,205.48	4,258.31	1,680.72	1,471.70	209.02	8.041	
11,200.00	6,989.75	15,400.85	6,941.78	74.22	138.22	90.14	-1,205.95	4,358.31	1,680.80	1,468.67	212.13	7.923	
11,300.00	6,989.78	15,500.85	6,941.80	75.72	139.82	90.14	-1,206.42	4,458.31	1,680.89	1,465.64	215.24	7.809	
11,400.00	6,989.80	15,600.85	6,941.82	77.23	141.42	90.14	-1,206.89	4,558.31	1,680.97	1,462.61	218.36	7.698	
11,500.00	6,989.83	15,700.85	6,941.84	78.74	143.02	90.14	-1,207.36	4,658.31	1,681.05	1,459.57	221.48	7.590	
11,600.00	6,989.86	15,800.85	6,941.87	80.26	144.62	90.14	-1,207.83	4,758.31	1,681.13	1,456.53	224.60	7.485	
11,700.00	6,989.88	15,900.85	6,941.89	81.78	146.22	90.14	-1,208.30	4,858.31	1,681.21	1,453.49	227.72	7.383	
11,800.00	6,989.91	16,000.85	6,941.91	83.30	147.82	90.14	-1,208.77	4,958.31	1,681.30	1,450.44	230.85	7.283	
11,900.00	6,989.94	16,100.85	6,941.93	84.83	149.42	90.14	-1,209.24	5,058.30	1,681.38	1,447.39	233.98	7.186	
12,000.00	6,989.97	16,200.85	6,941.95	86.36	151.02	90.14	-1,209.70	5,158.30	1,681.46	1,444.34	237.12	7.091	
12,100.00	6,989.99	16,300.85	6,941.98	87.89	152.62	90.14	-1,210.17	5,258.30	1,681.54	1,441.29	240.25	6.999	
12,200.00	6,990.02	16,400.85	6,942.00	89.42	154.22	90.14	-1,210.64	5,358.30	1,681.62	1,438.23	243.39	6.909	
12,300.00	6,990.05	16,500.85	6,942.02	90.96	155.82	90.14	-1,211.11	5,458.30	1,681.70	1,435.17	246.53	6.821	
12,400.00	6,990.07	16,600.85	6,942.04	92.50	157.42	90.14	-1,211.58	5,558.30	1,681.79	1,432.11	249.68	6.736	
12,500.00	6,990.10	16,700.85	6,942.06	94.04	159.02	90.14	-1,212.05	5,658.30	1,681.87	1,429.05	252.82	6.652	
12,600.00	6,990.13	16,800.85	6,942.09	95.58	160.62	90.13	-1,212.52	5,758.30	1,681.95	1,425.98	255.97	6.571	
12,700.00	6,990.15	16,900.85	6,942.11	97.13	162.22	90.13	-1,212.99	5,858.30	1,682.03	1,422.91	259.12	6.491	
12,800.00	6,990.18	17,000.85	6,942.13	98.68	163.82	90.13	-1,213.46	5,958.29	1,682.11	1,419.84	262.27	6.414	
12,900.00	6,990.21	17,100.85	6,942.15	100.22	165.42	90.13	-1,213.93	6,058.29	1,682.20	1,416.77	265.42	6.338	
13,000.00	6,990.24	17,200.85	6,942.17	101.78	167.02	90.13	-1,214.40	6,158.29	1,682.28	1,413.70	268.58	6.264	
13,100.00	6,990.26	17,300.85	6,942.20	103.33	168.62	90.13	-1,214.87	6,258.29	1,682.36	1,410.63	271.73	6.191	
13,200.00	6,990.29	17,400.85	6,942.22	104.88	170.22	90.13	-1,215.34	6,358.29	1,682.44	1,407.55	274.89	6.120	
13,300.00	6,990.32	17,500.85	6,942.24	106.44	171.82	90.13	-1,215.81	6,458.29	1,682.52	1,404.48	278.05	6.051	
13,400.00	6,990.34	17,600.85	6,942.26	107.99	173.42	90.13	-1,216.28	6,558.29	1,682.61	1,401.40	281.21	5.983	
13,500.00	6,990.37	17,700.85	6,942.28	109.55	175.02	90.13	-1,216.75	6,658.29	1,682.69	1,398.32	284.37	5.917	
13,600.00	6,990.40	17,800.85	6,942.31	111.11	176.62	90.13	-1,217.22	6,758.28	1,682.77	1,395.24	287.53	5.852	
13,700.00	6,990.42	17,900.85	6,942.33	112.67	178.22	90.13	-1,217.69	6,858.28	1,682.85	1,392.16	290.70	5.789	
13,800.00	6,990.45	18,000.85	6,942.35	114.23	179.82	90.13	-1,218.16	6,958.28	1,682.93	1,389.07	293.86	5.727	
13,900.00	6,990.48	18,100.85	6,942.37	115.80	181.42	90.13	-1,218.63	7,058.28	1,683.02	1,385.99	297.03	5.666	
14,000.00	6,990.51	18,200.85	6,942.40	117.36	183.03	90.13	-1,219.10	7,158.28	1,683.10	1,382.90	300.19	5.607	
14,100.00	6,990.53	18,300.85	6,942.42	118.93	184.63	90.13	-1,219.56	7,258.28	1,683.18	1,379.82	303.36	5.548	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6												Offset Site Error:	0.00 usft
Survey Program: 6255-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
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,200.00	6,990.56	18,400.85	6,942.44	120.49	186.23	90.13	-1,220.03	7,358.28	1,683.26	1,376.73	306.53	5.491	
14,300.00	6,990.59	18,500.85	6,942.46	122.06	187.83	90.13	-1,220.50	7,458.28	1,683.34	1,373.64	309.70	5.435	
14,400.00	6,990.61	18,600.85	6,942.48	123.63	189.43	90.13	-1,220.97	7,558.28	1,683.43	1,370.55	312.87	5.381	
14,500.00	6,990.64	18,700.85	6,942.51	125.20	191.03	90.13	-1,221.44	7,658.27	1,683.51	1,367.46	316.04	5.327	
14,600.00	6,990.67	18,800.85	6,942.53	126.77	192.63	90.13	-1,221.91	7,758.27	1,683.59	1,364.37	319.22	5.274	
14,700.00	6,990.70	18,900.85	6,942.55	128.34	194.23	90.13	-1,222.38	7,858.27	1,683.67	1,361.28	322.39	5.222	
14,800.00	6,990.72	19,000.85	6,942.57	129.91	195.83	90.13	-1,222.85	7,958.27	1,683.75	1,358.19	325.56	5.172	
14,900.00	6,990.75	19,100.85	6,942.59	131.48	197.43	90.13	-1,223.32	8,058.27	1,683.84	1,355.10	328.74	5.122	
15,000.00	6,990.78	19,200.85	6,942.62	133.06	199.03	90.13	-1,223.79	8,158.27	1,683.92	1,352.00	331.91	5.073	
15,100.00	6,990.80	19,300.85	6,942.64	134.63	200.63	90.13	-1,224.26	8,258.27	1,684.00	1,348.91	335.09	5.025	
15,200.00	6,990.83	19,400.85	6,942.66	136.20	202.23	90.13	-1,224.73	8,358.27	1,684.08	1,345.81	338.27	4.979	
15,300.00	6,990.86	19,500.85	6,942.68	137.78	203.83	90.13	-1,225.20	8,458.27	1,684.16	1,342.72	341.45	4.932	
15,400.00	6,990.88	19,600.85	6,942.70	139.36	205.43	90.13	-1,225.67	8,558.26	1,684.25	1,339.62	344.62	4.887	
15,500.00	6,990.91	19,700.85	6,942.73	140.93	207.03	90.13	-1,226.14	8,658.26	1,684.33	1,336.52	347.80	4.843	
15,600.00	6,990.94	19,800.85	6,942.75	142.51	208.63	90.13	-1,226.61	8,758.26	1,684.41	1,333.43	350.98	4.799	
15,700.00	6,990.97	19,900.85	6,942.77	144.09	210.23	90.13	-1,227.08	8,858.26	1,684.49	1,330.33	354.16	4.756	
15,800.00	6,990.99	20,000.85	6,942.79	145.67	211.83	90.13	-1,227.55	8,958.26	1,684.57	1,327.23	357.34	4.714	
15,900.00	6,991.02	20,100.85	6,942.81	147.24	213.43	90.13	-1,228.02	9,058.26	1,684.66	1,324.13	360.52	4.673	
16,000.00	6,991.05	20,200.85	6,942.84	148.82	215.03	90.13	-1,228.49	9,158.26	1,684.74	1,321.03	363.71	4.632	
16,100.00	6,991.07	20,300.85	6,942.86	150.40	216.63	90.13	-1,228.95	9,258.26	1,684.82	1,317.93	366.89	4.592	
16,200.00	6,991.10	20,400.85	6,942.88	151.99	218.23	90.13	-1,229.42	9,358.26	1,684.90	1,314.83	370.07	4.553	
16,300.00	6,991.13	20,500.85	6,942.90	153.57	219.83	90.13	-1,229.89	9,458.25	1,684.98	1,311.73	373.25	4.514	
16,400.00	6,991.15	20,600.85	6,942.92	155.15	221.43	90.13	-1,230.36	9,558.25	1,685.06	1,308.63	376.44	4.476	
16,500.00	6,991.18	20,700.85	6,942.95	156.73	223.03	90.13	-1,230.83	9,658.25	1,685.15	1,305.53	379.62	4.439	
16,600.00	6,991.21	20,800.85	6,942.97	158.31	224.63	90.13	-1,231.30	9,758.25	1,685.23	1,302.42	382.80	4.402	
16,700.00	6,991.24	20,900.85	6,942.99	159.90	226.23	90.13	-1,231.77	9,858.25	1,685.31	1,299.32	385.99	4.366	
16,800.00	6,991.26	20,942.50	6,943.00	161.48	226.76	90.13	-1,231.97	9,899.90	1,686.40	1,298.76	387.64	4.350 SF	
16,900.00	6,991.29	20,942.50	6,943.00	163.06	226.76	90.13	-1,231.97	9,899.90	1,692.90	1,305.51	387.38	4.370	
17,000.00	6,991.32	20,942.50	6,943.00	164.65	226.76	90.13	-1,231.97	9,899.90	1,705.24	1,319.41	385.83	4.420	
17,100.00	6,991.34	20,942.50	6,943.00	166.23	226.76	90.13	-1,231.97	9,899.90	1,723.31	1,340.25	383.06	4.499	
17,200.00	6,991.37	20,942.50	6,943.00	167.82	226.76	90.13	-1,231.97	9,899.90	1,746.92	1,367.76	379.16	4.607	
17,300.00	6,991.40	20,942.50	6,943.00	169.40	226.76	90.13	-1,231.97	9,899.90	1,775.86	1,401.58	374.28	4.745	
17,400.00	6,991.42	20,942.50	6,943.00	170.99	226.76	90.13	-1,231.97	9,899.90	1,809.87	1,441.33	368.54	4.911	
17,500.00	6,991.45	20,942.50	6,943.00	172.57	226.76	90.13	-1,231.97	9,899.90	1,848.67	1,486.56	362.11	5.105	
17,600.00	6,991.48	20,942.50	6,943.00	174.16	226.76	90.13	-1,231.97	9,899.90	1,891.96	1,536.84	355.12	5.328	
17,700.00	6,991.51	20,942.50	6,943.00	175.75	226.76	90.13	-1,231.97	9,899.90	1,939.45	1,591.73	347.72	5.578	
17,800.00	6,991.53	20,942.50	6,943.00	177.33	226.76	90.13	-1,231.97	9,899.90	1,990.83	1,650.80	340.03	5.855	
17,900.00	6,991.56	20,942.50	6,943.00	178.92	226.76	90.13	-1,231.97	9,899.90	2,045.82	1,713.65	332.17	6.159	
18,000.00	6,991.59	20,942.50	6,943.00	180.51	226.76	90.13	-1,231.97	9,899.90	2,104.12	1,779.88	324.23	6.490	
18,100.00	6,991.61	20,942.50	6,943.00	182.10	226.76	90.13	-1,231.97	9,899.90	2,165.47	1,849.17	316.30	6.846	
18,200.00	6,991.64	20,942.50	6,943.00	183.68	226.76	90.13	-1,231.97	9,899.90	2,229.62	1,921.18	308.45	7.229	
18,300.00	6,991.67	20,942.50	6,943.00	185.27	226.76	90.13	-1,231.97	9,899.90	2,296.34	1,995.62	300.71	7.636	
18,400.00	6,991.69	20,942.50	6,943.00	186.86	226.76	90.13	-1,231.97	9,899.90	2,365.40	2,072.25	293.15	8.069	
18,500.00	6,991.72	20,942.50	6,943.00	188.45	226.76	90.13	-1,231.97	9,899.90	2,436.61	2,150.83	285.78	8.526	
18,600.00	6,991.75	20,942.50	6,943.00	190.04	226.76	90.13	-1,231.97	9,899.90	2,509.78	2,231.15	278.63	9.007	
18,700.00	6,991.78	20,942.50	6,943.00	191.63	226.76	90.13	-1,231.97	9,899.90	2,584.75	2,313.03	271.72	9.512	
18,800.00	6,991.80	20,942.50	6,943.00	193.22	226.76	90.13	-1,231.97	9,899.90	2,661.37	2,396.31	265.06	10.041	
18,900.00	6,991.83	20,942.50	6,943.00	194.81	226.76	90.13	-1,231.97	9,899.90	2,739.50	2,480.86	258.64	10.592	
19,000.00	6,991.86	20,942.50	6,943.00	196.40	226.76	90.13	-1,231.97	9,899.90	2,819.00	2,566.53	252.47	11.166	
19,100.00	6,991.88	20,942.50	6,943.00	197.99	226.76	90.13	-1,231.97	9,899.90	2,899.78	2,653.23	246.55	11.761	
19,200.00	6,991.91	20,942.50	6,943.00	199.58	226.76	90.13	-1,231.97	9,899.90	2,981.72	2,740.85	240.88	12.379	
19,300.00	6,991.94	20,942.50	6,943.00	201.17	226.76	90.13	-1,231.97	9,899.90	3,064.74	2,829.30	235.44	13.017	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6													Offset Site Error:	0.00 usft
Survey Program: 6255-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)				
19,342.28	6,991.95	20,942.50	6,943.00	201.84	226.76	90.13	-1,231.97	9,899.90	3,100.14	2,866.93	233.21	13.293		
19,400.00	6,991.97	20,942.50	6,943.00	202.76	226.76	90.13	-1,231.97	9,899.90	3,148.74	2,918.51	230.23	13.676		
19,500.00	6,991.99	20,942.50	6,943.00	204.35	226.76	90.13	-1,231.97	9,899.90	3,233.65	3,008.41	225.25	14.356		
19,542.28	6,992.00	20,942.50	6,943.00	205.03	226.76	90.13	-1,231.97	9,899.90	3,269.81	3,046.61	223.20	14.649		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
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												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)			
0.00	0.00	141.00	141.00	0.00	2.50	88.79	180.44	8,573.03	8,574.93				
100.00	100.00	241.00	241.00	0.25	4.27	88.79	180.44	8,573.03	8,574.93	8,570.41	4.52	1,896.770	
200.00	200.00	341.00	341.00	0.61	6.04	88.79	180.44	8,573.03	8,574.93	8,568.28	6.65	1,289.283	
300.00	300.00	441.00	441.00	0.97	7.81	88.79	180.44	8,573.03	8,574.93	8,566.15	8.78	976.524	
400.00	400.00	541.00	541.00	1.33	9.58	88.79	180.44	8,573.03	8,574.93	8,564.02	10.91	785.880	
500.00	500.00	641.00	641.00	1.68	11.36	88.79	180.44	8,573.03	8,574.93	8,561.89	13.04	657.516	
600.00	600.00	741.15	741.15	2.04	13.13	88.79	180.64	8,573.03	8,574.94	8,559.76	15.17	565.097	
700.00	700.00	841.33	841.33	2.40	14.91	88.79	180.51	8,573.03	8,574.93	8,557.63	17.31	495.443	
704.45	704.45	845.79	845.79	2.42	14.98	118.79	180.50	8,573.03	8,574.94	8,557.53	17.40	492.743	
800.00	799.98	940.99	940.98	2.76	16.67	118.79	180.44	8,573.03	8,575.77	8,556.34	19.43	441.365	
900.00	899.92	1,040.92	1,040.92	3.12	18.44	118.81	180.44	8,573.03	8,577.46	8,555.90	21.56	397.898	
1,000.00	999.86	1,140.96	1,140.96	3.47	20.21	118.83	180.65	8,573.03	8,579.14	8,555.46	23.69	362.203	
1,100.00	1,099.80	1,241.07	1,241.07	3.83	21.99	118.85	180.54	8,573.03	8,580.83	8,555.01	25.82	332.372	
1,200.00	1,199.74	1,340.75	1,340.74	4.19	23.77	118.87	180.44	8,573.03	8,582.51	8,554.56	27.95	307.035	
1,300.00	1,299.68	1,440.68	1,440.68	4.55	25.56	118.89	180.44	8,573.03	8,584.19	8,554.09	30.11	285.104	
1,400.00	1,399.61	1,540.71	1,540.70	4.91	27.36	118.91	180.64	8,573.03	8,585.89	8,553.62	32.27	266.088	
1,500.00	1,499.55	1,640.83	1,640.82	5.27	29.17	118.93	180.52	8,573.03	8,587.57	8,553.15	34.43	249.444	
1,600.00	1,599.49	1,740.51	1,740.49	5.63	30.96	118.95	180.44	8,573.03	8,589.26	8,552.68	36.58	234.808	
1,700.00	1,699.43	1,840.51	1,840.49	5.99	32.76	118.97	180.75	8,573.03	8,590.96	8,552.22	38.74	221.761	
1,800.00	1,799.37	1,940.90	1,940.88	6.35	34.57	118.99	180.55	8,573.03	8,592.65	8,551.74	40.91	210.056	
1,900.00	1,899.31	2,040.33	2,040.31	6.71	36.38	119.01	180.44	8,573.03	8,594.34	8,551.26	43.08	199.498	
2,000.00	1,999.25	2,140.27	2,140.25	7.07	38.22	119.03	180.44	8,573.03	8,596.03	8,550.76	45.27	189.873	
2,100.00	2,099.19	2,240.32	2,240.30	7.42	40.05	119.05	180.62	8,573.03	8,597.73	8,550.26	47.47	181.130	
2,200.00	2,199.13	2,340.41	2,340.38	7.78	41.89	119.07	180.49	8,573.03	8,599.42	8,549.76	49.66	173.157	
2,300.00	2,299.07	2,440.11	2,440.07	8.14	43.78	119.10	180.44	8,573.03	8,601.12	8,549.21	51.91	165.692	
2,400.00	2,399.01	2,540.05	2,540.01	8.50	45.69	119.11	181.01	8,573.03	8,602.83	8,548.64	54.18	158.775	
2,500.00	2,498.94	2,640.47	2,640.43	8.86	47.61	119.13	180.81	8,573.03	8,604.52	8,548.06	56.46	152.391	
2,600.00	2,598.88	2,739.95	2,739.88	9.22	49.53	119.16	180.44	8,573.03	8,606.22	8,547.48	58.74	146.510	
2,700.00	2,698.82	2,839.89	2,839.82	9.58	51.50	119.18	180.44	8,573.03	8,607.92	8,546.85	61.07	140.954	
2,800.00	2,798.76	2,940.36	2,940.28	9.94	53.48	119.20	180.68	8,573.03	8,609.62	8,546.22	63.41	135.785	
2,900.00	2,898.70	3,039.80	3,039.70	10.30	55.47	119.22	180.44	8,573.03	8,611.33	8,545.57	65.76	130.952	
3,000.00	2,998.64	3,139.74	3,139.64	10.66	57.50	119.24	180.44	8,573.03	8,613.03	8,544.88	68.15	126.384	
3,100.00	3,098.58	3,240.21	3,240.09	11.02	59.54	119.25	180.95	8,573.03	8,614.74	8,544.19	70.55	122.107	
3,200.00	3,198.52	3,339.67	3,339.52	11.38	61.56	119.28	180.44	8,573.03	8,616.44	8,543.52	72.92	118.156	
3,300.00	3,298.46	3,439.61	3,439.46	11.75	63.56	119.30	180.44	8,573.03	8,618.15	8,542.87	75.28	114.477	
3,400.00	3,398.40	3,539.67	3,539.51	12.11	65.56	119.31	181.28	8,573.03	8,619.87	8,542.23	77.64	111.018	
3,500.00	3,498.34	3,640.05	3,639.88	12.47	67.57	119.34	180.94	8,573.03	8,621.58	8,541.56	80.01	107.755	
3,600.00	3,598.27	3,739.47	3,739.27	12.83	69.56	119.36	180.44	8,573.03	8,623.28	8,540.92	82.36	104.699	
3,700.00	3,698.21	3,839.41	3,839.21	13.19	71.57	119.38	180.44	8,573.03	8,624.99	8,540.26	84.73	101.793	
3,800.00	3,798.15	3,939.35	3,939.15	13.55	73.58	119.40	180.44	8,573.03	8,626.71	8,539.61	87.10	99.044	
3,900.00	3,898.09	4,039.48	4,039.28	13.91	75.59	119.41	181.15	8,573.03	8,628.43	8,538.96	89.47	96.437	
4,000.00	3,998.03	4,139.64	4,139.43	14.27	77.60	119.44	180.79	8,573.03	8,630.14	8,538.30	91.85	93.964	
4,100.00	4,097.97	4,239.23	4,238.97	14.63	79.65	119.46	180.44	8,573.03	8,631.85	8,537.60	94.26	91.579	
4,200.00	4,197.91	4,339.17	4,338.91	14.99	81.79	119.48	180.44	8,573.03	8,633.57	8,536.82	96.75	89.235	
4,300.00	4,297.85	4,439.10	4,438.85	15.35	83.93	119.50	180.44	8,573.03	8,635.29	8,536.04	99.25	87.008	
4,400.00	4,397.79	4,539.30	4,539.03	15.71	86.07	119.51	181.31	8,573.03	8,637.02	8,535.27	101.75	84.886	
4,500.00	4,497.73	4,639.49	4,639.22	16.07	88.21	119.54	180.78	8,573.03	8,638.73	8,534.48	104.25	82.866	
4,600.00	4,597.66	4,739.01	4,738.66	16.43	90.49	119.56	180.44	8,573.03	8,640.45	8,533.56	106.89	80.834	
4,700.00	4,697.60	4,838.96	4,838.60	16.79	92.90	119.57	181.29	8,573.03	8,642.18	8,532.52	109.66	78.809	
4,800.00	4,797.54	4,939.32	4,938.96	17.15	95.32	119.60	180.92	8,573.03	8,643.90	8,531.47	112.44	76.877	
4,900.00	4,897.48	5,038.96	5,038.48	17.51	97.84	119.62	180.44	8,573.03	8,645.63	8,530.31	115.32	74.972	
5,000.00	4,997.42	5,138.90	5,138.42	17.87	100.51	119.64	180.44	8,573.03	8,647.35	8,529.00	118.35	73.068	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		434-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
5,100.00	5,097.36	5,238.88	5,238.36	18.23	103.18	119.65	182.49	8,573.03	8,649.09	8,527.71	121.38	71.258	
5,200.00	5,197.30	5,339.22	5,338.69	18.59	105.86	119.67	182.05	8,573.03	8,650.82	8,526.40	124.42	69.531	
5,300.00	5,297.24	5,439.55	5,438.99	18.95	108.54	119.70	180.86	8,573.03	8,652.54	8,525.08	127.46	67.887	
5,402.82	5,400.00	5,541.76	5,541.00	19.32	111.39	119.72	180.44	8,573.03	8,654.32	8,523.65	130.67	66.230	
5,500.00	5,497.13	5,638.89	5,638.13	19.67	114.13	119.74	180.44	8,573.03	8,655.79	8,522.03	133.76	64.711	
5,600.00	5,597.11	5,739.03	5,738.22	20.03	116.95	119.75	182.31	8,573.03	8,656.90	8,519.95	136.94	63.215	
5,700.00	5,697.10	5,839.36	5,838.53	20.39	119.78	119.77	181.55	8,573.03	8,657.56	8,517.42	140.13	61.781	
5,802.82	5,799.92	5,941.99	5,940.92	20.75	122.78	89.78	180.44	8,573.03	8,657.78	8,514.28	143.50	60.334	
5,900.00	5,897.09	6,039.17	6,038.09	21.10	125.91	89.78	180.44	8,573.03	8,657.78	8,510.81	146.97	58.908	
6,000.00	5,997.09	6,139.38	6,138.26	21.45	129.14	89.77	182.03	8,573.03	8,657.79	8,507.23	150.55	57.507	
6,100.00	6,097.09	6,239.87	6,238.72	21.81	132.37	89.77	180.93	8,573.03	8,657.78	8,503.64	154.14	56.167	
6,166.28	6,163.37	6,305.82	6,304.37	22.04	134.63	89.78	180.44	8,573.03	8,657.78	8,501.14	156.64	55.271	
6,200.00	6,197.09	6,339.54	6,338.09	22.16	135.84	89.78	180.44	8,573.03	8,657.78	8,499.81	157.97	54.807	
6,300.00	6,297.09	6,439.54	6,438.09	22.52	139.42	89.78	180.44	8,573.03	8,657.78	8,495.88	161.90	53.475	
6,354.91	6,352.00	6,494.46	6,492.93	22.72	141.39	89.76	183.39	8,573.03	8,657.79	8,493.73	164.06	52.771	
6,400.00	6,397.06	6,539.75	6,538.21	22.87	143.01	10.79	183.26	8,573.03	8,656.22	8,490.38	165.84	52.196	
6,450.00	6,446.74	6,589.70	6,588.13	23.04	144.79	10.89	182.85	8,573.03	8,650.83	8,483.03	167.79	51.556	
6,500.00	6,495.84	6,639.06	6,637.47	23.20	146.56	11.07	182.15	8,573.03	8,641.61	8,471.89	169.73	50.915	
6,550.00	6,544.06	6,687.50	6,685.88	23.36	148.29	11.32	181.20	8,573.03	8,628.65	8,457.03	171.62	50.277	
6,600.00	6,591.08	6,734.15	6,732.08	23.51	149.95	11.67	180.44	8,573.03	8,612.01	8,438.58	173.43	49.657	
6,650.00	6,636.64	6,779.71	6,777.64	23.66	151.52	12.11	180.44	8,573.03	8,591.80	8,416.64	175.16	49.051	
6,700.00	6,680.44	6,823.51	6,821.44	23.82	153.04	12.66	180.44	8,573.03	8,568.14	8,391.32	176.82	48.457	
6,750.00	6,722.22	6,865.29	6,863.18	23.99	154.49	13.33	182.30	8,573.03	8,541.19	8,362.79	178.40	47.876	
6,800.00	6,761.71	6,904.87	6,902.74	24.16	155.86	14.19	182.13	8,573.03	8,511.10	8,331.21	179.90	47.311	
6,850.00	6,798.68	6,941.84	6,939.69	24.33	157.14	15.26	181.71	8,573.03	8,478.07	8,296.78	181.29	46.765	
6,900.00	6,832.89	6,975.98	6,973.80	24.50	158.33	16.60	181.10	8,573.03	8,442.30	8,259.72	182.58	46.239	
6,950.00	6,864.14	7,007.53	7,005.14	24.69	159.42	18.29	180.44	8,573.03	8,404.01	8,220.25	183.77	45.732	
7,000.00	6,892.23	7,035.62	7,033.23	24.88	160.38	20.45	180.44	8,573.03	8,363.44	8,178.63	184.81	45.255	
7,050.00	6,916.99	7,060.38	7,057.99	25.08	161.22	23.29	180.44	8,573.03	8,320.84	8,135.12	185.73	44.802	
7,100.00	6,938.27	7,081.66	7,079.27	25.29	161.95	27.10	180.44	8,573.03	8,276.48	8,089.96	186.52	44.374	
7,150.00	6,955.93	7,099.32	7,096.93	25.51	162.55	32.38	180.44	8,573.03	8,230.63	8,043.45	187.17	43.973	
7,200.00	6,969.87	7,113.26	7,110.87	25.75	163.03	39.95	180.44	8,573.03	8,183.56	7,995.87	187.70	43.600	
7,250.00	6,980.00	7,123.39	7,121.00	25.99	163.37	51.06	180.44	8,573.03	8,135.59	7,947.51	188.08	43.256	
7,300.00	6,986.25	7,129.65	7,127.25	26.25	163.59	67.14	180.44	8,573.03	8,086.99	7,898.66	188.33	42.941	
7,354.68	6,988.62	7,132.01	7,129.62	26.53	163.67	89.90	180.44	8,573.03	8,033.49	7,845.05	188.44	42.632	
7,400.00	6,988.64	7,132.03	7,129.64	26.78	163.67	89.90	180.44	8,573.03	7,989.11	7,800.64	188.46	42.391	
7,500.00	6,988.67	7,132.07	7,129.67	27.40	163.67	89.90	180.44	8,573.03	7,891.21	7,702.69	188.52	41.858	
7,600.00	6,988.71	7,132.10	7,129.71	28.08	163.67	89.91	180.44	8,573.03	7,793.36	7,604.77	188.59	41.325	
7,700.00	6,988.74	7,132.14	7,129.74	28.84	163.67	89.91	180.44	8,573.03	7,695.57	7,506.91	188.66	40.791	
7,800.00	6,988.78	7,132.17	7,129.78	29.67	163.67	89.91	180.44	8,573.03	7,597.84	7,409.09	188.74	40.255	
7,900.00	6,988.81	7,132.21	7,129.81	30.55	163.68	89.91	180.44	8,573.03	7,500.16	7,311.33	188.83	39.719	
8,000.00	6,988.85	7,132.24	7,129.85	31.49	163.68	89.91	180.44	8,573.03	7,402.55	7,213.62	188.93	39.182	
8,100.00	6,988.88	7,132.27	7,129.88	32.48	163.68	89.91	180.44	8,573.03	7,305.00	7,115.97	189.04	38.643	
8,200.00	6,988.91	7,132.31	7,129.91	33.51	163.68	89.91	180.44	8,573.03	7,207.53	7,018.37	189.15	38.104	
8,211.68	6,988.92	7,132.31	7,129.92	33.63	163.68	89.91	180.44	8,573.03	7,196.14	7,006.97	189.17	38.041	
8,300.00	6,988.95	7,132.34	7,129.95	34.58	163.68	89.90	180.44	8,573.03	7,109.82	6,920.54	189.27	37.563	
8,400.00	6,988.98	7,132.38	7,129.98	35.70	163.68	89.89	180.44	8,573.03	7,011.49	6,822.10	189.39	37.022	
8,500.00	6,989.01	7,132.41	7,130.01	36.84	163.68	89.87	180.44	8,573.03	6,912.61	6,723.12	189.49	36.480	
8,600.00	6,989.04	7,132.44	7,130.04	38.02	163.68	89.83	180.44	8,573.03	6,813.30	6,623.72	189.58	35.939	
8,700.00	6,989.07	7,132.47	7,130.07	39.22	163.68	89.76	180.44	8,573.03	6,713.65	6,524.01	189.65	35.401	
8,772.79	6,989.09	7,132.49	7,130.09	40.11	163.68	89.63	180.44	8,573.03	6,640.98	6,451.29	189.69	35.010	
8,800.00	6,989.10	7,132.50	7,130.10	40.44	163.69	89.63	180.44	8,573.03	6,613.79	6,424.09	189.70	34.864	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC											Offset Site Error: 0.00 usft	
Survey Program: 434-A027Ua_INC-ONLY				Rule Assigned:							Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
8,900.00	6,989.13	7,132.52	7,130.13	41.68	163.69	89.64	180.44	8,573.03	6,513.88	6,324.13	189.75	34.329
9,000.00	6,989.15	7,132.55	7,130.15	42.95	163.69	89.64	180.44	8,573.03	6,413.97	6,224.17	189.80	33.794
9,100.00	6,989.18	7,132.58	7,130.18	44.24	163.69	89.65	180.44	8,573.03	6,314.07	6,124.22	189.85	33.258
9,200.00	6,989.21	7,132.60	7,130.21	45.55	163.69	89.65	180.44	8,573.03	6,214.16	6,024.26	189.90	32.723
9,300.00	6,989.24	7,132.63	7,130.24	46.88	163.69	89.66	180.44	8,573.03	6,114.27	5,924.31	189.96	32.187
9,400.00	6,989.26	7,132.66	7,130.26	48.23	163.69	89.67	180.44	8,573.03	6,014.37	5,824.35	190.02	31.652
9,500.00	6,989.29	7,132.68	7,130.29	49.59	163.69	89.67	180.44	8,573.03	5,914.48	5,724.40	190.08	31.116
9,600.00	6,989.32	7,132.71	7,130.32	50.96	163.69	89.68	180.44	8,573.03	5,814.59	5,624.45	190.14	30.580
9,700.00	6,989.34	7,132.74	7,130.34	52.35	163.69	89.68	180.44	8,573.03	5,714.71	5,524.50	190.21	30.045
9,800.00	6,989.37	7,132.77	7,130.37	53.75	163.69	89.69	180.44	8,573.03	5,614.83	5,424.55	190.28	29.509
9,900.00	6,989.40	7,132.79	7,130.40	55.16	163.70	89.69	180.44	8,573.03	5,514.95	5,324.61	190.35	28.973
10,000.00	6,989.42	7,132.82	7,130.42	56.58	163.70	89.70	180.44	8,573.03	5,415.08	5,224.66	190.42	28.437
10,100.00	6,989.45	7,132.85	7,130.45	58.01	163.70	89.70	180.44	8,573.03	5,315.22	5,124.72	190.50	27.902
10,200.00	6,989.48	7,132.87	7,130.48	59.45	163.70	89.71	180.44	8,573.03	5,215.36	5,024.78	190.58	27.366
10,300.00	6,989.51	7,132.90	7,130.51	60.90	163.70	89.72	180.44	8,573.03	5,115.50	4,924.84	190.66	26.830
10,400.00	6,989.53	7,132.93	7,130.53	62.35	163.70	89.72	180.44	8,573.03	5,015.65	4,824.91	190.75	26.295
10,500.00	6,989.56	7,132.95	7,130.56	63.81	163.70	89.73	180.44	8,573.03	4,915.81	4,724.97	190.84	25.759
10,600.00	6,989.59	7,132.98	7,130.59	65.28	163.70	89.73	180.44	8,573.03	4,815.97	4,625.04	190.93	25.224
10,700.00	6,989.61	7,133.01	7,130.61	66.76	163.70	89.74	180.44	8,573.03	4,716.14	4,525.12	191.03	24.688
10,800.00	6,989.64	7,133.04	7,130.64	68.24	163.70	89.74	180.44	8,573.03	4,616.32	4,425.19	191.13	24.153
10,900.00	6,989.67	7,133.06	7,130.67	69.73	163.70	89.75	180.44	8,573.03	4,516.51	4,325.27	191.24	23.617
11,000.00	6,989.70	7,133.09	7,130.70	71.22	163.71	89.75	180.44	8,573.03	4,416.70	4,225.35	191.35	23.082
11,100.00	6,989.72	7,133.12	7,130.72	72.71	163.71	89.76	180.44	8,573.03	4,316.91	4,125.44	191.47	22.546
11,200.00	6,989.75	7,133.14	7,130.75	74.22	163.71	89.77	180.44	8,573.03	4,217.12	4,025.53	191.59	22.011
11,300.00	6,989.78	7,133.17	7,130.78	75.72	163.71	89.77	180.44	8,573.03	4,117.34	3,925.62	191.72	21.476
11,400.00	6,989.80	7,133.20	7,130.80	77.23	163.71	89.78	180.44	8,573.03	4,017.57	3,825.72	191.85	20.941
11,500.00	6,989.83	7,133.23	7,130.83	78.74	163.71	89.78	180.44	8,573.03	3,917.82	3,725.83	191.99	20.406
11,600.00	6,989.86	7,133.25	7,130.86	80.26	163.71	89.79	180.44	8,573.03	3,818.08	3,625.94	192.14	19.871
11,700.00	6,989.88	7,133.28	7,130.88	81.78	163.71	89.79	180.44	8,573.03	3,718.35	3,526.05	192.30	19.336
11,800.00	6,989.91	7,133.31	7,130.91	83.30	163.71	89.80	180.44	8,573.03	3,618.64	3,426.17	192.47	18.801
11,900.00	6,989.94	7,133.33	7,130.94	84.83	163.71	89.80	180.44	8,573.03	3,518.94	3,326.30	192.64	18.267
12,000.00	6,989.97	7,133.36	7,130.97	86.36	163.71	89.81	180.44	8,573.03	3,419.27	3,226.43	192.83	17.732
12,100.00	6,989.99	7,133.39	7,130.99	87.89	163.72	89.82	180.44	8,573.03	3,319.61	3,126.58	193.03	17.197
12,200.00	6,990.02	7,133.41	7,131.02	89.42	163.72	89.82	180.44	8,573.03	3,219.97	3,026.73	193.24	16.663
12,300.00	6,990.05	7,133.44	7,131.05	90.96	163.72	89.83	180.44	8,573.03	3,120.36	2,926.89	193.47	16.129
12,400.00	6,990.07	7,133.47	7,131.07	92.50	163.72	89.83	180.44	8,573.03	3,020.77	2,827.06	193.71	15.594
12,500.00	6,990.10	7,133.50	7,131.10	94.04	163.72	89.84	180.44	8,573.03	2,921.21	2,727.24	193.97	15.060
12,600.00	6,990.13	7,133.52	7,131.13	95.58	163.72	89.84	180.44	8,573.03	2,821.68	2,627.43	194.25	14.526
12,700.00	6,990.15	7,133.55	7,131.15	97.13	163.72	89.85	180.44	8,573.03	2,722.18	2,527.63	194.55	13.992
12,800.00	6,990.18	7,133.58	7,131.18	98.68	163.72	89.85	180.44	8,573.03	2,622.72	2,427.84	194.88	13.458
12,900.00	6,990.21	7,133.60	7,131.21	100.22	163.72	89.86	180.44	8,573.03	2,523.31	2,328.07	195.24	12.924
13,000.00	6,990.24	7,133.63	7,131.24	101.78	163.72	89.87	180.44	8,573.03	2,423.94	2,228.32	195.63	12.391
13,100.00	6,990.26	7,133.66	7,131.26	103.33	163.72	89.87	180.44	8,573.03	2,324.63	2,128.58	196.05	11.857
13,200.00	6,990.29	7,133.68	7,131.29	104.88	163.73	89.88	180.44	8,573.03	2,225.38	2,028.86	196.52	11.324
13,300.00	6,990.32	7,133.71	7,131.32	106.44	163.73	89.88	180.44	8,573.03	2,126.20	1,929.16	197.04	10.790
13,400.00	6,990.34	7,133.74	7,131.34	107.99	163.73	89.89	180.44	8,573.03	2,027.10	1,829.48	197.62	10.257
13,500.00	6,990.37	7,133.77	7,131.37	109.55	163.73	89.89	180.44	8,573.03	1,928.10	1,729.82	198.27	9.724
13,600.00	6,990.40	7,133.79	7,131.40	111.11	163.73	89.90	180.44	8,573.03	1,829.20	1,630.20	199.00	9.192
13,700.00	6,990.42	7,133.82	7,131.42	112.67	163.73	89.90	180.44	8,573.03	1,730.43	1,530.60	199.83	8.659
13,800.00	6,990.45	7,133.85	7,131.45	114.23	163.73	89.91	180.44	8,573.03	1,631.81	1,431.03	200.78	8.128
13,900.00	6,990.48	7,133.87	7,131.48	115.80	163.73	89.92	180.44	8,573.03	1,533.37	1,331.51	201.86	7.596
14,000.00	6,990.51	7,133.90	7,131.51	117.36	163.73	89.92	180.44	8,573.03	1,435.14	1,232.02	203.12	7.066

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
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)			
14,100.00	6,990.53	7,133.93	7,131.53	118.93	163.73	89.93	180.44	8,573.03	1,337.17	1,132.59	204.59	6.536	
14,200.00	6,990.56	7,133.95	7,131.56	120.49	163.73	89.93	180.44	8,573.03	1,239.54	1,033.21	206.33	6.008	
14,300.00	6,990.59	7,133.98	7,131.59	122.06	163.74	89.94	180.44	8,573.03	1,142.31	933.91	208.40	5.481	
14,400.00	6,990.61	7,134.01	7,131.61	123.63	163.74	89.94	180.44	8,573.03	1,045.60	834.70	210.90	4.958	
14,500.00	6,990.64	7,134.04	7,131.64	125.20	163.74	89.95	180.44	8,573.03	949.57	735.61	213.96	4.438	
14,600.00	6,990.67	7,134.06	7,131.67	126.77	163.74	89.96	180.44	8,573.03	854.46	636.69	217.76	3.924	
14,700.00	6,990.70	7,134.09	7,131.70	128.34	163.74	89.96	180.44	8,573.03	760.60	538.04	222.56	3.418	
14,800.00	6,990.72	7,134.12	7,131.72	129.91	163.74	89.97	180.44	8,573.03	668.52	439.82	228.70	2.923	
14,900.00	6,990.75	7,134.14	7,131.75	131.48	163.74	89.97	180.44	8,573.03	579.08	342.39	236.69	2.447	
15,000.00	6,990.78	7,134.17	7,131.78	133.06	163.74	89.98	180.44	8,573.03	493.71	246.50	247.21	1.997	
15,100.00	6,990.80	7,134.20	7,131.80	134.63	163.74	89.98	180.44	8,573.03	414.92	153.98	260.94	1.590	
15,200.00	6,990.83	7,134.22	7,131.83	136.20	163.74	89.99	180.44	8,573.03	347.23	69.39	277.84	1.250	Level 3
15,300.00	6,990.86	7,134.25	7,131.86	137.78	163.74	89.99	180.44	8,573.03	298.30	3.50	294.80	1.012	Level 3
15,400.00	6,990.88	7,134.28	7,131.88	139.36	163.75	90.00	180.44	8,573.03	278.20	-24.87	303.07	0.918	Level 3
15,407.94	6,990.89	7,134.28	7,131.89	139.48	163.75	90.00	180.44	8,573.03	278.09	-24.98	303.07	0.918	Level 3, CC, ES, SF
15,500.00	6,990.91	7,134.31	7,131.91	140.93	163.75	90.01	180.44	8,573.03	292.93	-2.69	295.62	0.991	Level 3
15,600.00	6,990.94	7,134.33	7,131.94	142.51	163.75	90.01	180.44	8,573.03	337.96	59.69	278.28	1.214	Level 3
15,700.00	6,990.97	7,134.36	7,131.97	144.09	163.75	90.02	180.44	8,573.03	403.28	142.84	260.44	1.548	
15,800.00	6,990.99	7,134.39	7,131.99	145.67	163.75	90.02	180.44	8,573.03	480.67	234.78	245.89	1.955	
15,900.00	6,991.02	7,134.41	7,132.02	147.24	163.75	90.03	180.44	8,573.03	565.20	330.36	234.84	2.407	
16,000.00	6,991.05	7,134.44	7,132.05	148.82	163.75	90.03	180.44	8,573.03	654.12	427.57	226.55	2.887	
16,100.00	6,991.07	7,134.47	7,132.07	150.40	163.75	90.04	180.44	8,573.03	745.84	525.57	220.27	3.386	
16,200.00	6,991.10	7,134.50	7,132.10	151.99	163.75	90.04	180.44	8,573.03	839.46	623.99	215.47	3.896	
16,300.00	6,991.13	7,134.52	7,132.13	153.57	163.75	90.05	180.44	8,573.03	934.40	722.66	211.74	4.413	
16,400.00	6,991.15	7,134.55	7,132.15	155.15	163.76	90.06	180.44	8,573.03	1,030.30	821.50	208.80	4.934	
16,500.00	6,991.18	7,134.58	7,132.18	156.73	163.76	90.06	180.44	8,573.03	1,126.91	920.45	206.47	5.458	
16,600.00	6,991.21	7,134.60	7,132.21	158.31	163.76	90.07	180.44	8,573.03	1,224.07	1,019.48	204.59	5.983	
16,700.00	6,991.24	7,134.63	7,132.24	159.90	163.76	90.07	180.44	8,573.03	1,321.65	1,118.59	203.06	6.509	
16,800.00	6,991.26	7,134.66	7,132.26	161.48	163.76	90.08	180.44	8,573.03	1,419.57	1,217.75	201.81	7.034	
16,900.00	6,991.29	7,134.68	7,132.29	163.06	163.76	90.08	180.44	8,573.03	1,517.75	1,316.97	200.78	7.559	
17,000.00	6,991.32	7,134.71	7,132.32	164.65	163.76	90.09	180.44	8,573.03	1,616.17	1,416.23	199.93	8.084	
17,100.00	6,991.34	7,134.74	7,132.34	166.23	163.76	90.09	180.44	8,573.03	1,714.76	1,515.54	199.22	8.607	
17,200.00	6,991.37	7,134.77	7,132.37	167.82	163.76	90.10	180.44	8,573.03	1,813.51	1,614.88	198.63	9.130	
17,300.00	6,991.40	7,134.79	7,132.40	169.40	163.76	90.11	180.44	8,573.03	1,912.39	1,714.25	198.14	9.652	
17,400.00	6,991.42	7,134.82	7,132.42	170.99	163.76	90.11	180.44	8,573.03	2,011.38	1,813.66	197.72	10.173	
17,500.00	6,991.45	7,134.85	7,132.45	172.57	163.77	90.12	180.44	8,573.03	2,110.46	1,913.09	197.37	10.693	
17,600.00	6,991.48	7,134.87	7,132.48	174.16	163.77	90.12	180.44	8,573.03	2,209.63	2,012.55	197.08	11.212	
17,700.00	6,991.51	7,134.90	7,132.51	175.75	163.77	90.13	180.44	8,573.03	2,308.87	2,112.03	196.84	11.730	
17,800.00	6,991.53	7,134.93	7,132.53	177.33	163.77	90.13	180.44	8,573.03	2,408.17	2,211.54	196.63	12.247	
17,900.00	6,991.56	7,134.95	7,132.56	178.92	163.77	90.14	180.44	8,573.03	2,507.53	2,311.07	196.46	12.763	
18,000.00	6,991.59	7,134.98	7,132.59	180.51	163.77	90.14	180.44	8,573.03	2,606.94	2,410.61	196.32	13.279	
18,100.00	6,991.61	7,135.01	7,132.61	182.10	163.77	90.15	180.44	8,573.03	2,706.39	2,510.18	196.21	13.793	
18,200.00	6,991.64	7,135.04	7,132.64	183.68	163.77	90.16	180.44	8,573.03	2,805.88	2,609.76	196.12	14.307	
18,300.00	6,991.67	7,135.06	7,132.67	185.27	163.77	90.16	180.44	8,573.03	2,905.40	2,709.36	196.04	14.820	
18,400.00	6,991.69	7,135.09	7,132.70	186.86	163.77	90.17	180.44	8,573.03	3,004.96	2,808.97	195.99	15.332	
18,500.00	6,991.72	7,135.12	7,132.72	188.45	163.77	90.17	180.44	8,573.03	3,104.54	2,908.59	195.95	15.844	
18,600.00	6,991.75	7,135.14	7,132.75	190.04	163.78	90.18	180.44	8,573.03	3,204.15	3,008.23	195.92	16.354	
18,700.00	6,991.78	7,135.17	7,132.78	191.63	163.78	90.18	180.44	8,573.03	3,303.79	3,107.88	195.91	16.864	
18,800.00	6,991.80	7,135.20	7,132.80	193.22	163.78	90.19	180.44	8,573.03	3,403.44	3,207.54	195.90	17.373	
18,900.00	6,991.83	7,135.22	7,132.83	194.81	163.78	90.19	180.44	8,573.03	3,503.12	3,307.21	195.91	17.881	
19,000.00	6,991.86	7,135.25	7,132.86	196.40	163.78	90.20	180.44	8,573.03	3,602.81	3,406.89	195.92	18.389	
19,100.00	6,991.88	7,135.28	7,132.88	197.99	163.78	90.21	180.44	8,573.03	3,702.52	3,506.58	195.94	18.896	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Carson #1 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program: 434-A027Ua_INC-ONLY													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Rule Assigned:		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
19,200.00	6,991.91	7,135.31	7,132.91	199.58	163.78	90.21	180.44	8,573.03	3,802.24	3,606.27	195.97	19.402		
19,300.00	6,991.94	7,135.33	7,132.94	201.17	163.78	90.22	180.44	8,573.03	3,901.98	3,705.98	196.00	19.908		
19,342.28	6,991.95	7,135.34	7,132.95	201.84	163.78	90.22	180.44	8,573.03	3,944.15	3,748.13	196.02	20.121		
19,400.00	6,991.97	7,135.36	7,132.97	202.76	163.78	90.22	180.44	8,573.03	4,001.73	3,805.69	196.04	20.413		
19,500.00	6,991.99	7,135.39	7,132.99	204.35	163.78	90.23	180.44	8,573.03	4,101.50	3,905.41	196.09	20.917		
19,542.28	6,992.00	7,135.40	7,133.00	205.03	163.78	90.23	180.44	8,573.03	4,143.68	3,947.57	196.11	21.130		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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												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)			
0.00	0.00	2,503.98	2,356.29	0.00	14.81	-70.37	1,365.24	-3,826.70	4,677.32				
100.00	100.00	2,545.00	2,391.90	0.25	15.19	-70.32	1,361.64	-3,806.67	4,628.21	4,612.13	16.08	287.751	
200.00	200.00	2,644.17	2,478.22	0.61	16.12	-70.21	1,352.60	-3,758.68	4,579.45	4,562.73	16.72	273.934	
300.00	300.00	2,814.49	2,625.76	0.97	17.71	-70.02	1,336.02	-3,675.22	4,530.06	4,512.30	17.77	254.986	
400.00	400.00	2,931.27	2,726.12	1.33	18.84	-69.91	1,322.97	-3,616.97	4,479.25	4,460.65	18.60	240.882	
500.00	500.00	3,140.50	2,904.23	1.68	20.96	-69.70	1,298.51	-3,509.98	4,427.24	4,407.29	19.95	221.899	
600.00	600.00	3,236.88	2,985.31	2.04	21.97	-69.57	1,288.37	-3,458.86	4,373.65	4,352.89	20.75	210.757	
700.00	700.00	3,317.11	3,052.81	2.40	22.81	-69.47	1,279.34	-3,416.45	4,320.02	4,298.54	21.48	201.138	
800.00	799.98	3,389.00	3,113.39	2.76	23.56	-40.23	1,271.09	-3,378.63	4,265.45	4,243.26	22.18	192.279	
900.00	899.92	3,456.66	3,170.55	3.12	24.27	-40.18	1,262.99	-3,343.34	4,210.03	4,187.16	22.87	184.058	
1,000.00	999.86	3,483.00	3,192.85	3.47	24.54	-40.17	1,259.66	-3,329.73	4,155.18	4,131.82	23.36	177.887	
1,100.00	1,099.80	3,537.16	3,239.01	3.83	25.08	-40.14	1,252.77	-3,302.25	4,101.04	4,077.03	24.00	170.844	
1,200.00	1,199.74	3,574.00	3,270.73	4.19	25.45	-40.12	1,248.19	-3,284.08	4,048.06	4,023.50	24.57	164.770	
1,300.00	1,299.68	3,574.00	3,270.73	4.55	25.45	-40.12	1,248.19	-3,284.08	3,996.47	3,971.52	24.95	160.197	
1,400.00	1,399.61	3,634.76	3,323.63	4.91	26.01	-40.09	1,240.88	-3,255.11	3,945.47	3,919.78	25.69	153.558	
1,500.00	1,499.55	3,667.00	3,352.02	5.27	26.31	-40.07	1,237.18	-3,240.28	3,895.96	3,869.68	26.27	148.283	
1,600.00	1,599.49	3,667.00	3,352.02	5.63	26.31	-40.07	1,237.18	-3,240.28	3,848.04	3,821.38	26.66	144.323	
1,700.00	1,699.43	3,720.54	3,399.72	5.99	26.76	-40.04	1,231.48	-3,216.65	3,800.92	3,773.51	27.41	138.668	
1,800.00	1,799.37	3,760.00	3,435.35	6.35	27.09	-40.02	1,227.75	-3,200.11	3,755.60	3,727.53	28.07	133.816	
1,900.00	1,899.31	3,784.83	3,457.92	6.71	27.28	-40.01	1,225.55	-3,190.01	3,711.57	3,682.96	28.60	129.754	
2,000.00	1,999.25	3,829.00	3,498.26	7.07	27.61	-39.98	1,221.78	-3,172.41	3,668.75	3,639.49	29.26	125.383	
2,100.00	2,099.19	3,853.00	3,520.27	7.42	27.79	-39.96	1,219.79	-3,163.05	3,627.20	3,597.41	29.79	121.746	
2,200.00	2,199.13	3,902.23	3,565.73	7.78	28.13	-39.94	1,215.69	-3,144.59	3,586.88	3,556.43	30.46	117.772	
2,300.00	2,299.07	3,944.00	3,604.64	8.14	28.42	-39.92	1,212.08	-3,129.86	3,548.15	3,517.08	31.08	114.177	
2,400.00	2,399.01	3,944.00	3,604.64	8.50	28.42	-39.92	1,212.08	-3,129.86	3,511.18	3,479.73	31.45	111.649	
2,500.00	2,498.94	3,993.32	3,651.06	8.86	28.70	-39.92	1,207.84	-3,113.76	3,475.51	3,443.34	32.17	108.031	
2,600.00	2,598.88	4,038.00	3,693.58	9.22	28.96	-39.91	1,204.17	-3,100.54	3,441.98	3,409.12	32.86	104.751	
2,700.00	2,698.82	4,038.00	3,693.58	9.58	28.96	-39.91	1,204.17	-3,100.54	3,410.07	3,376.86	33.21	102.693	
2,800.00	2,798.76	4,072.53	3,726.75	9.94	29.12	-39.91	1,201.66	-3,091.26	3,380.12	3,346.28	33.84	99.874	
2,900.00	2,898.70	4,130.00	3,782.51	10.30	29.38	-39.90	1,198.65	-3,077.73	3,352.88	3,318.20	34.68	96.680	
3,000.00	2,998.64	4,130.00	3,782.51	10.66	29.38	-39.90	1,198.65	-3,077.73	3,326.48	3,291.49	34.99	95.063	
3,100.00	3,098.58	4,130.00	3,782.51	11.02	29.38	-39.90	1,198.65	-3,077.73	3,302.90	3,267.62	35.28	93.614	
3,200.00	3,198.52	4,176.01	3,827.59	11.38	29.54	-39.89	1,197.04	-3,068.64	3,281.05	3,245.07	35.98	91.188	
3,300.00	3,298.46	4,222.00	3,872.94	11.75	29.69	-39.88	1,195.88	-3,061.12	3,261.67	3,225.00	36.67	88.938	
3,400.00	3,398.40	4,222.00	3,872.94	12.11	29.69	-39.88	1,195.88	-3,061.12	3,244.10	3,207.19	36.91	87.885	
3,500.00	3,498.34	4,270.58	3,921.08	12.47	29.79	-39.88	1,194.95	-3,054.65	3,228.54	3,191.07	37.47	86.165	
3,600.00	3,598.27	4,295.00	3,945.34	12.83	29.85	-39.88	1,194.52	-3,051.88	3,215.01	3,177.17	37.84	84.956	
3,700.00	3,698.21	4,378.29	4,028.21	13.19	30.08	-39.89	1,192.97	-3,043.72	3,202.59	3,163.75	38.84	82.451	
3,800.00	3,798.15	4,441.05	4,090.74	13.55	30.26	-39.90	1,191.64	-3,038.51	3,191.40	3,151.77	39.63	80.523	
3,900.00	3,898.09	4,503.95	4,153.47	13.91	30.45	-39.92	1,190.17	-3,034.11	3,181.36	3,140.94	40.42	78.713	
4,000.00	3,998.03	4,566.96	4,216.36	14.27	30.64	-39.95	1,188.55	-3,030.53	3,172.46	3,131.27	41.19	77.013	
4,100.00	4,097.97	4,696.00	4,345.25	14.63	31.03	-40.04	1,184.80	-3,025.75	3,165.80	3,123.20	42.60	74.318	
4,200.00	4,197.91	4,696.00	4,345.25	14.99	31.03	-40.04	1,184.80	-3,025.75	3,158.12	3,115.37	42.75	73.873	
4,300.00	4,297.85	4,779.38	4,428.57	15.35	31.55	-40.11	1,182.35	-3,023.89	3,152.34	3,108.69	43.65	72.220	
4,400.00	4,397.79	4,866.59	4,515.73	15.71	32.09	-40.17	1,180.17	-3,022.17	3,146.97	3,102.38	44.58	70.586	
4,500.00	4,497.73	4,953.86	4,602.97	16.07	32.63	-40.23	1,178.36	-3,020.68	3,141.99	3,096.47	45.52	69.026	
4,600.00	4,597.66	5,041.18	4,690.27	16.43	33.17	-40.28	1,176.92	-3,019.42	3,137.42	3,090.96	46.46	67.534	
4,700.00	4,697.60	5,128.55	4,777.63	16.79	33.71	-40.33	1,175.87	-3,018.40	3,133.25	3,085.85	47.40	66.108	
4,800.00	4,797.54	5,215.96	4,865.03	17.15	34.25	-40.37	1,175.19	-3,017.62	3,129.48	3,081.14	48.34	64.745	
4,900.00	4,897.48	5,303.41	4,952.48	17.51	34.79	-40.41	1,174.89	-3,017.06	3,126.11	3,076.83	49.28	63.440	
5,000.00	4,997.42	5,390.90	5,039.97	17.87	35.33	-40.44	1,174.97	-3,016.74	3,123.14	3,072.92	50.22	62.191	
5,100.00	5,097.36	5,478.41	5,127.48	18.23	35.88	-40.47	1,175.42	-3,016.66	3,120.57	3,069.41	51.16	60.995	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
5,200.00	5,197.30	5,565.95	5,215.02	18.59	36.42	-40.49	1,176.26	-3,016.81	3,118.40	3,066.29	52.10	59.849		
5,300.00	5,297.24	5,660.00	5,309.05	18.95	37.00	-40.51	1,177.59	-3,017.24	3,116.63	3,063.52	53.11	58.685		
5,402.82	5,400.00	5,758.57	5,407.61	19.32	37.63	-40.53	1,179.03	-3,017.84	3,114.99	3,060.88	54.10	57.576		
5,500.00	5,497.13	5,858.96	5,507.99	19.67	38.28	-40.55	1,180.13	-3,018.46	3,113.65	3,058.55	55.10	56.504		
5,600.00	5,597.11	5,962.26	5,611.29	20.03	38.94	-40.56	1,180.89	-3,019.13	3,112.82	3,056.69	56.13	55.452		
5,698.35	5,695.44	6,063.86	5,712.89	20.38	39.59	-40.58	1,181.26	-3,019.80	3,112.56	3,055.41	57.15	54.466	CC	
5,700.00	5,697.10	6,065.57	5,714.60	20.39	39.60	-40.58	1,181.26	-3,019.81	3,112.56	3,055.39	57.16	54.450		
5,802.82	5,799.92	6,171.79	5,820.82	20.75	40.29	-70.59	1,181.24	-3,020.53	3,112.86	3,054.64	58.22	53.467		
5,900.00	5,897.09	6,272.18	5,921.20	21.10	40.93	-70.60	1,180.85	-3,021.24	3,113.37	3,054.16	59.22	52.576		
6,000.00	5,997.09	6,375.48	6,024.49	21.45	41.59	-70.62	1,180.06	-3,021.98	3,113.80	3,053.56	60.24	51.689		
6,100.00	6,097.09	6,478.77	6,127.78	21.81	42.26	-70.64	1,178.89	-3,022.74	3,114.12	3,052.85	61.27	50.830		
6,200.00	6,197.09	6,582.24	6,231.23	22.16	43.05	-70.67	1,177.36	-3,023.51	3,114.33	3,051.88	62.45	49.871		
6,300.00	6,297.09	6,686.09	6,335.07	22.52	44.12	-70.71	1,175.77	-3,024.17	3,114.43	3,050.48	63.95	48.700		
6,354.91	6,352.00	6,743.11	6,392.08	22.72	44.70	-70.72	1,174.92	-3,024.47	3,114.43	3,049.65	64.77	48.082		
6,356.93	6,354.03	6,745.22	6,394.19	22.72	44.73	-149.72	1,174.89	-3,024.48	3,114.43	3,049.62	64.80	48.059	ES	
6,400.00	6,397.06	6,789.89	6,438.86	22.87	45.19	-149.69	1,174.24	-3,024.68	3,115.78	3,050.33	65.44	47.610		
6,450.00	6,446.74	6,841.46	6,490.42	23.04	45.72	-149.54	1,173.50	-3,024.87	3,120.46	3,054.29	66.18	47.153		
6,500.00	6,495.84	6,892.41	6,541.36	23.20	46.25	-149.27	1,172.78	-3,025.02	3,128.48	3,061.58	66.90	46.763		
6,550.00	6,544.06	6,942.44	6,591.38	23.36	46.76	-148.88	1,172.09	-3,025.13	3,139.80	3,072.19	67.61	46.440		
6,600.00	6,591.08	6,991.24	6,640.18	23.51	47.27	-148.34	1,171.43	-3,025.21	3,154.35	3,086.05	68.30	46.183		
6,650.00	6,636.64	7,038.52	6,687.46	23.66	47.76	-147.64	1,170.80	-3,025.25	3,172.07	3,103.10	68.97	45.993	SF	
6,700.00	6,680.44	7,084.17	6,733.11	23.82	48.03	-146.78	1,170.21	-3,025.25	3,192.86	3,123.45	69.41	46.001		
6,750.00	6,722.22	7,127.94	6,776.88	23.99	48.10	-145.70	1,169.74	-3,025.20	3,216.62	3,146.98	69.64	46.190		
6,800.00	6,761.71	7,169.43	6,818.36	24.16	48.16	-144.40	1,169.37	-3,025.09	3,243.22	3,173.36	69.86	46.426		
6,850.00	6,798.68	7,208.37	6,857.30	24.33	48.22	-142.80	1,169.11	-3,024.94	3,272.52	3,202.46	70.07	46.707		
6,900.00	6,832.89	7,244.54	6,893.47	24.50	48.27	-140.88	1,168.93	-3,024.76	3,304.36	3,234.10	70.26	47.031		
6,950.00	6,864.14	7,277.71	6,926.64	24.69	48.33	-138.54	1,168.82	-3,024.56	3,338.57	3,268.13	70.44	47.396		
7,000.00	6,892.23	7,307.67	6,956.60	24.88	48.37	-135.71	1,168.77	-3,024.35	3,374.94	3,304.34	70.61	47.800		
7,050.00	6,916.99	7,334.23	6,983.15	25.08	48.41	-132.28	1,168.76	-3,024.14	3,413.29	3,342.53	70.76	48.239		
7,100.00	6,938.27	7,357.20	7,006.13	25.29	48.45	-128.10	1,168.78	-3,023.94	3,453.38	3,382.48	70.89	48.711		
7,150.00	6,955.93	7,376.44	7,025.36	25.51	48.48	-123.04	1,168.82	-3,023.76	3,494.98	3,423.96	71.02	49.213		
7,200.00	6,969.87	7,391.80	7,040.72	25.75	48.50	-116.95	1,168.86	-3,023.60	3,537.85	3,466.72	71.13	49.741		
7,250.00	6,980.00	7,403.17	7,052.09	25.99	48.52	-109.74	1,168.90	-3,023.48	3,581.73	3,510.51	71.22	50.292		
7,300.00	6,986.25	7,410.45	7,059.37	26.25	48.53	-101.41	1,168.93	-3,023.41	3,626.34	3,555.05	71.30	50.862		
7,354.68	6,988.62	7,413.65	7,062.58	26.53	48.53	-91.32	1,168.94	-3,023.37	3,675.67	3,604.30	71.37	51.502		
7,400.00	6,988.64	7,414.23	7,063.15	26.78	48.54	-91.34	1,168.95	-3,023.37	3,716.72	3,645.30	71.42	52.038		
7,500.00	6,988.67	7,415.51	7,064.43	27.40	48.54	-91.39	1,168.95	-3,023.35	3,807.66	3,736.12	71.55	53.218		
7,600.00	6,988.71	7,416.80	7,065.72	28.08	48.54	-91.44	1,168.96	-3,023.34	3,899.05	3,827.37	71.68	54.396		
7,700.00	6,988.74	7,418.10	7,067.03	28.84	48.54	-91.49	1,168.96	-3,023.32	3,990.84	3,919.03	71.82	55.571		
7,800.00	6,988.78	7,419.42	7,068.34	29.67	48.54	-91.53	1,168.97	-3,023.31	4,083.02	4,011.07	71.96	56.743		
7,900.00	6,988.81	7,420.74	7,069.66	30.55	48.55	-91.58	1,168.98	-3,023.29	4,175.56	4,103.46	72.10	57.913		
8,000.00	6,988.85	7,422.08	7,071.00	31.49	48.55	-91.63	1,168.98	-3,023.28	4,268.44	4,196.19	72.25	59.081		
8,100.00	6,988.88	7,423.43	7,072.35	32.48	48.55	-91.68	1,168.99	-3,023.26	4,361.63	4,289.24	72.40	60.248		
8,200.00	6,988.91	7,424.79	7,073.71	33.51	48.55	-91.73	1,168.99	-3,023.25	4,455.12	4,382.57	72.54	61.412		
8,211.68	6,988.92	7,424.95	7,073.87	33.63	48.55	-91.74	1,169.00	-3,023.25	4,466.06	4,393.50	72.56	61.548		
8,300.00	6,988.95	7,426.16	7,075.08	34.58	48.55	-91.94	1,169.00	-3,023.23	4,549.33	4,476.64	72.69	62.585		
8,400.00	6,988.98	7,427.53	7,076.45	35.70	48.56	-92.23	1,169.01	-3,023.22	4,644.86	4,572.04	72.82	63.781		
8,500.00	6,989.01	7,428.89	7,077.81	36.84	48.56	-92.62	1,169.01	-3,023.20	4,741.52	4,668.57	72.95	65.001		
8,600.00	6,989.04	7,430.25	7,079.17	38.02	48.56	-93.14	1,169.02	-3,023.19	4,839.12	4,766.06	73.05	66.242		
8,700.00	6,989.07	7,431.60	7,080.52	39.22	48.56	-93.89	1,169.03	-3,023.17	4,937.49	4,864.34	73.14	67.503		
8,772.79	6,989.09	7,432.57	7,081.49	40.11	48.56	-94.70	1,169.03	-3,023.16	5,009.48	4,936.28	73.20	68.433		
8,800.00	6,989.10	7,432.94	7,081.86	40.44	48.56	-94.73	1,169.03	-3,023.16	5,036.46	4,963.23	73.22	68.783		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	6,989.13	7,434.28	7,083.20	41.68	48.57	-94.85	1,169.04	-3,023.14	5,135.59	5,062.29	73.30	70.067	
9,000.00	6,989.15	7,435.63	7,084.55	42.95	48.57	-94.96	1,169.05	-3,023.13	5,234.76	5,161.39	73.37	71.350	
9,100.00	6,989.18	7,436.99	7,085.91	44.24	48.57	-95.08	1,169.06	-3,023.11	5,333.95	5,260.51	73.44	72.632	
9,200.00	6,989.21	7,438.37	7,087.29	45.55	48.57	-95.20	1,169.06	-3,023.09	5,433.18	5,359.67	73.51	73.911	
9,300.00	6,989.24	7,439.75	7,088.67	46.88	48.58	-95.31	1,169.07	-3,023.08	5,532.43	5,458.85	73.58	75.189	
9,400.00	6,989.26	7,441.14	7,090.06	48.23	48.58	-95.43	1,169.08	-3,023.06	5,631.71	5,558.06	73.65	76.466	
9,500.00	6,989.29	7,442.54	7,091.46	49.59	48.58	-95.55	1,169.09	-3,023.04	5,731.02	5,657.30	73.72	77.741	
9,600.00	6,989.32	7,443.95	7,092.87	50.96	48.58	-95.67	1,169.09	-3,023.03	5,830.35	5,756.56	73.79	79.014	
9,700.00	6,989.34	7,445.38	7,094.30	52.35	48.58	-95.79	1,169.10	-3,023.01	5,929.70	5,855.84	73.86	80.285	
9,800.00	6,989.37	7,446.81	7,095.73	53.75	48.59	-95.92	1,169.11	-3,022.99	6,029.07	5,955.14	73.93	81.555	
9,900.00	6,989.40	7,448.25	7,097.17	55.16	48.59	-96.04	1,169.12	-3,022.98	6,128.46	6,054.47	74.00	82.822	
10,000.00	6,989.42	7,449.71	7,098.63	56.58	48.59	-96.16	1,169.13	-3,022.96	6,227.87	6,153.81	74.06	84.088	
10,100.00	6,989.45	7,451.17	7,100.09	58.01	48.59	-96.29	1,169.14	-3,022.94	6,327.30	6,253.17	74.13	85.352	
10,200.00	6,989.48	7,452.65	7,101.57	59.45	48.59	-96.41	1,169.15	-3,022.92	6,426.75	6,352.55	74.20	86.614	
10,300.00	6,989.51	7,454.14	7,103.06	60.90	48.60	-96.54	1,169.16	-3,022.91	6,526.21	6,451.94	74.27	87.874	
10,400.00	6,989.53	7,455.64	7,104.55	62.35	48.60	-96.67	1,169.17	-3,022.89	6,625.69	6,551.36	74.34	89.132	
10,500.00	6,989.56	7,457.15	7,106.06	63.81	48.60	-96.79	1,169.17	-3,022.87	6,725.19	6,650.78	74.40	90.388	
10,600.00	6,989.59	7,458.67	7,107.59	65.28	48.60	-96.92	1,169.18	-3,022.85	6,824.70	6,750.22	74.47	91.642	
10,700.00	6,989.61	7,460.20	7,109.12	66.76	48.61	-97.05	1,169.19	-3,022.83	6,924.22	6,849.68	74.54	92.894	
10,800.00	6,989.64	7,461.74	7,110.66	68.24	48.61	-97.18	1,169.20	-3,022.81	7,023.75	6,949.15	74.61	94.144	
10,900.00	6,989.67	7,463.30	7,112.22	69.73	48.61	-97.32	1,169.21	-3,022.79	7,123.30	7,048.63	74.67	95.392	
11,000.00	6,989.70	7,464.87	7,113.79	71.22	48.61	-97.45	1,169.23	-3,022.77	7,222.86	7,148.12	74.74	96.637	
11,100.00	6,989.72	7,466.45	7,115.37	72.71	48.62	-97.58	1,169.24	-3,022.75	7,322.44	7,247.63	74.81	97.880	
11,200.00	6,989.75	7,468.04	7,116.96	74.22	48.62	-97.72	1,169.25	-3,022.73	7,422.02	7,347.14	74.88	99.121	
11,300.00	6,989.78	7,469.65	7,118.57	75.72	48.62	-97.85	1,169.26	-3,022.71	7,521.62	7,446.67	74.95	100.360	
11,400.00	6,989.80	7,471.27	7,120.18	77.23	48.62	-97.99	1,169.27	-3,022.69	7,621.22	7,546.21	75.01	101.596	
11,500.00	6,989.83	7,472.90	7,121.82	78.74	48.63	-98.13	1,169.28	-3,022.67	7,720.84	7,645.75	75.08	102.830	
11,600.00	6,989.86	7,474.54	7,123.46	80.26	48.63	-98.26	1,169.29	-3,022.65	7,820.46	7,745.31	75.15	104.062	
11,700.00	6,989.88	7,476.20	7,125.12	81.78	48.63	-98.40	1,169.31	-3,022.63	7,920.09	7,844.87	75.22	105.291	
11,800.00	6,989.91	7,477.87	7,126.79	83.30	48.63	-98.54	1,169.32	-3,022.61	8,019.74	7,944.45	75.29	106.518	
11,900.00	6,989.94	7,479.55	7,128.47	84.83	48.64	-98.69	1,169.33	-3,022.59	8,119.39	8,044.03	75.36	107.743	
12,000.00	6,989.97	7,481.25	7,130.16	86.36	48.64	-98.83	1,169.34	-3,022.56	8,219.05	8,143.62	75.43	108.964	
12,100.00	6,989.99	7,482.96	7,131.87	87.89	48.64	-98.97	1,169.36	-3,022.54	8,318.72	8,243.22	75.50	110.184	
12,200.00	6,990.02	7,484.68	7,133.60	89.42	48.64	-99.12	1,169.37	-3,022.52	8,418.39	8,342.82	75.57	111.401	
12,300.00	6,990.05	7,486.42	7,135.34	90.96	48.65	-99.26	1,169.38	-3,022.50	8,518.07	8,442.43	75.64	112.615	
12,400.00	6,990.07	7,488.17	7,137.09	92.50	48.65	-99.41	1,169.40	-3,022.47	8,617.76	8,542.05	75.71	113.827	
12,500.00	6,990.10	7,489.94	7,138.86	94.04	48.65	-99.56	1,169.41	-3,022.45	8,717.46	8,641.68	75.78	115.036	
12,600.00	6,990.13	7,491.72	7,140.64	95.58	48.66	-99.70	1,169.42	-3,022.43	8,817.16	8,741.31	75.85	116.242	
12,700.00	6,990.15	7,493.52	7,142.43	97.13	48.66	-99.85	1,169.44	-3,022.40	8,916.87	8,840.95	75.92	117.446	
12,800.00	6,990.18	7,495.33	7,144.24	98.68	48.66	-100.01	1,169.45	-3,022.38	9,016.58	8,940.59	75.99	118.647	
12,900.00	6,990.21	7,497.15	7,146.07	100.22	48.66	-100.16	1,169.47	-3,022.35	9,116.31	9,040.24	76.07	119.846	
13,000.00	6,990.24	7,499.00	7,147.91	101.78	48.67	-100.31	1,169.48	-3,022.33	9,216.03	9,139.89	76.14	121.042	
13,100.00	6,990.26	7,500.85	7,149.77	103.33	48.67	-100.46	1,169.50	-3,022.30	9,315.77	9,239.55	76.21	122.234	
13,200.00	6,990.29	7,502.72	7,151.64	104.88	48.67	-100.62	1,169.52	-3,022.28	9,415.50	9,339.22	76.29	123.425	
13,300.00	6,990.32	7,504.61	7,153.53	106.44	48.68	-100.78	1,169.53	-3,022.25	9,515.25	9,438.89	76.36	124.612	
13,400.00	6,990.34	7,506.52	7,155.43	107.99	48.68	-100.93	1,169.55	-3,022.23	9,615.00	9,538.56	76.43	125.797	
13,500.00	6,990.37	7,508.44	7,157.35	109.55	48.68	-101.09	1,169.57	-3,022.20	9,714.75	9,638.24	76.51	126.978	
13,600.00	6,990.40	7,510.37	7,159.29	111.11	48.68	-101.25	1,169.58	-3,022.17	9,814.51	9,737.92	76.58	128.157	
13,700.00	6,990.42	7,512.33	7,161.24	112.67	48.69	-101.41	1,169.60	-3,022.15	9,914.27	9,837.61	76.66	129.333	
13,800.00	6,990.45	7,514.30	7,163.21	114.23	48.69	-101.58	1,169.62	-3,022.12	10,014.04	9,937.30	76.73	130.506	
13,900.00	6,990.48	7,516.29	7,165.20	115.80	48.69	-101.74	1,169.64	-3,022.09	10,113.81	10,037.00	76.81	131.676	
14,000.00	6,990.51	7,518.29	7,167.20	117.36	48.70	-101.91	1,169.66	-3,022.06	10,213.58	10,136.70	76.88	132.843	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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												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)			
14,100.00	6,990.53	7,520.31	7,169.22	118.93	48.70	-102.07	1,169.68	-3,022.03	10,313.36	10,236.40	76.96	134.007	
14,200.00	6,990.56	7,522.35	7,171.26	120.49	48.70	-102.24	1,169.69	-3,022.00	10,413.15	10,336.11	77.04	135.169	
14,300.00	6,990.59	7,524.41	7,173.32	122.06	48.71	-102.41	1,169.71	-3,021.97	10,512.93	10,435.82	77.12	136.327	
14,400.00	6,990.61	7,526.49	7,175.40	123.63	48.71	-102.58	1,169.74	-3,021.94	10,612.72	10,535.53	77.19	137.482	
14,500.00	6,990.64	7,528.58	7,177.49	125.20	48.71	-102.75	1,169.76	-3,021.91	10,712.52	10,635.25	77.27	138.634	
14,600.00	6,990.67	7,530.70	7,179.61	126.77	48.72	-102.92	1,169.78	-3,021.88	10,812.32	10,734.97	77.35	139.783	
14,700.00	6,990.70	7,532.83	7,181.74	128.34	48.72	-103.09	1,169.80	-3,021.85	10,912.12	10,834.69	77.43	140.929	
14,800.00	6,990.72	7,534.98	7,183.89	129.91	48.72	-103.27	1,169.82	-3,021.82	11,011.92	10,934.41	77.51	142.072	
14,900.00	6,990.75	7,537.15	7,186.06	131.48	48.73	-103.45	1,169.84	-3,021.79	11,111.73	11,034.14	77.59	143.212	
15,000.00	6,990.78	7,539.34	7,188.25	133.06	48.73	-103.62	1,169.86	-3,021.76	11,211.54	11,133.87	77.67	144.348	
15,100.00	6,990.80	7,541.56	7,190.46	134.63	48.73	-103.80	1,169.89	-3,021.72	11,311.36	11,233.61	77.75	145.482	
15,200.00	6,990.83	7,543.79	7,192.70	136.20	48.74	-103.98	1,169.91	-3,021.69	11,411.18	11,333.34	77.83	146.612	
15,300.00	6,990.86	7,546.04	7,194.95	137.78	48.74	-104.16	1,169.94	-3,021.66	11,511.00	11,433.08	77.91	147.739	
15,400.00	6,990.88	7,548.31	7,197.22	139.36	48.74	-104.35	1,169.96	-3,021.62	11,610.82	11,532.82	78.00	148.863	
15,500.00	6,990.91	7,550.61	7,199.52	140.93	48.75	-104.53	1,169.99	-3,021.59	11,710.64	11,632.56	78.08	149.984	
15,600.00	6,990.94	7,552.92	7,201.83	142.51	48.75	-104.72	1,170.01	-3,021.55	11,810.47	11,732.31	78.16	151.102	
15,700.00	6,990.97	7,555.26	7,204.17	144.09	48.75	-104.90	1,170.04	-3,021.52	11,910.30	11,832.06	78.25	152.216	
15,800.00	6,990.99	7,557.62	7,206.53	145.67	48.76	-105.09	1,170.06	-3,021.48	12,010.14	11,931.81	78.33	153.327	
15,900.00	6,991.02	7,560.01	7,208.91	147.24	48.76	-105.28	1,170.09	-3,021.44	12,109.97	12,031.56	78.41	154.435	
16,000.00	6,991.05	7,562.41	7,211.32	148.82	48.76	-105.47	1,170.12	-3,021.41	12,209.81	12,131.31	78.50	155.540	
16,100.00	6,991.07	7,564.84	7,213.74	150.40	48.77	-105.67	1,170.15	-3,021.37	12,309.65	12,231.07	78.59	156.641	
16,200.00	6,991.10	7,567.29	7,216.19	151.99	48.77	-105.86	1,170.18	-3,021.33	12,409.49	12,330.82	78.67	157.739	
16,300.00	6,991.13	7,569.77	7,218.67	153.57	48.78	-106.06	1,170.20	-3,021.29	12,509.34	12,430.58	78.76	158.834	
16,400.00	6,991.15	7,572.27	7,221.17	155.15	48.78	-106.26	1,170.23	-3,021.25	12,609.19	12,530.34	78.84	159.925	
16,500.00	6,991.18	7,574.79	7,223.69	156.73	48.78	-106.45	1,170.26	-3,021.21	12,709.04	12,630.10	78.93	161.013	
16,600.00	6,991.21	7,577.34	7,226.24	158.31	48.79	-106.66	1,170.30	-3,021.17	12,808.89	12,729.87	79.02	162.098	
16,700.00	6,991.24	7,579.91	7,228.81	159.90	48.79	-106.86	1,170.33	-3,021.13	12,908.74	12,829.63	79.11	163.180	
16,800.00	6,991.26	7,582.51	7,231.41	161.48	48.80	-107.06	1,170.36	-3,021.09	13,008.59	12,929.40	79.20	164.258	
16,900.00	6,991.29	7,585.14	7,234.04	163.06	48.80	-107.27	1,170.39	-3,021.04	13,108.45	13,029.17	79.29	165.332	
17,000.00	6,991.32	7,587.79	7,236.69	164.65	48.80	-107.47	1,170.43	-3,021.00	13,208.31	13,128.94	79.38	166.404	
17,100.00	6,991.34	7,590.47	7,239.37	166.23	48.81	-107.68	1,170.46	-3,020.96	13,308.17	13,228.71	79.47	167.472	
17,200.00	6,991.37	7,593.18	7,242.07	167.82	48.81	-107.89	1,170.50	-3,020.91	13,408.03	13,328.48	79.56	168.536	
17,300.00	6,991.40	7,595.91	7,244.81	169.40	48.82	-108.10	1,170.53	-3,020.87	13,507.90	13,428.25	79.65	169.597	
17,400.00	6,991.42	7,598.67	7,247.57	170.99	48.82	-108.31	1,170.57	-3,020.82	13,607.76	13,528.03	79.74	170.655	
17,500.00	6,991.45	7,601.46	7,250.36	172.57	48.82	-108.53	1,170.61	-3,020.78	13,707.63	13,627.80	79.83	171.709	
17,600.00	6,991.48	7,604.28	7,253.18	174.16	48.83	-108.75	1,170.64	-3,020.73	13,807.50	13,727.58	79.92	172.760	
17,700.00	6,991.51	7,607.13	7,256.02	175.75	48.83	-108.96	1,170.68	-3,020.68	13,907.37	13,827.35	80.02	173.808	
17,800.00	6,991.53	7,610.01	7,258.90	177.33	48.84	-109.18	1,170.72	-3,020.63	14,007.24	13,927.13	80.11	174.852	
17,900.00	6,991.56	7,612.91	7,261.81	178.92	48.84	-109.40	1,170.76	-3,020.58	14,107.12	14,026.91	80.20	175.892	
18,000.00	6,991.59	7,615.85	7,264.75	180.51	48.85	-109.63	1,170.81	-3,020.53	14,206.99	14,126.69	80.30	176.930	
18,100.00	6,991.61	7,618.82	7,267.71	182.10	48.85	-109.85	1,170.85	-3,020.48	14,306.87	14,226.47	80.39	177.963	
18,200.00	6,991.64	7,621.82	7,270.72	183.68	48.86	-110.08	1,170.89	-3,020.43	14,406.74	14,326.26	80.49	178.993	
18,300.00	6,991.67	7,624.83	7,273.77	185.27	49.21	-109.99	1,170.66	-3,020.47	14,506.63	14,425.64	81.00	179.102	
18,400.00	6,991.69	7,623.47	7,272.37	186.86	49.23	-110.21	1,170.69	-3,020.42	14,606.51	14,525.41	81.11	180.094	
18,500.00	6,991.72	7,626.35	7,275.24	188.45	49.24	-110.43	1,170.72	-3,020.37	14,706.39	14,625.18	81.21	181.081	
18,600.00	6,991.75	7,629.24	7,278.14	190.04	49.26	-110.64	1,170.75	-3,020.32	14,806.28	14,724.95	81.32	182.065	
18,700.00	6,991.78	7,632.17	7,281.06	191.63	49.27	-110.86	1,170.77	-3,020.27	14,906.16	14,824.73	81.43	183.045	
18,800.00	6,991.80	7,635.12	7,284.01	193.22	49.29	-111.08	1,170.80	-3,020.22	15,006.05	14,924.50	81.55	184.022	
18,900.00	6,991.83	7,638.10	7,286.99	194.81	49.30	-111.30	1,170.83	-3,020.17	15,105.94	15,024.28	81.66	184.994	
19,000.00	6,991.86	7,641.11	7,290.00	196.40	49.32	-111.53	1,170.86	-3,020.11	15,205.82	15,124.06	81.77	185.962	
19,100.00	6,991.88	7,644.14	7,293.03	197.99	49.34	-111.75	1,170.89	-3,020.06	15,305.71	15,223.83	81.88	186.926	
19,200.00	6,991.91	7,647.20	7,296.09	199.58	49.35	-111.98	1,170.92	-3,020.01	15,405.60	15,323.61	81.99	187.887	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
19,300.00	6,991.94	7,650.29	7,299.18	201.17	49.37	-112.20	1,170.95	-3,019.95	15,505.49	15,423.39	82.11	188.843	
19,342.28	6,991.95	7,651.61	7,300.50	201.84	49.38	-112.30	1,170.97	-3,019.93	15,547.73	15,465.57	82.16	189.246	
19,400.00	6,991.97	7,653.41	7,302.30	202.76	49.39	-112.43	1,170.98	-3,019.90	15,605.39	15,523.16	82.22	189.795	
19,500.00	6,991.99	7,656.56	7,305.45	204.35	49.40	-112.66	1,171.01	-3,019.84	15,705.28	15,622.94	82.34	190.744	
19,542.28	6,992.00	7,657.90	7,306.79	205.03	49.41	-112.76	1,171.03	-3,019.81	15,747.51	15,665.13	82.39	191.144	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-180.00	-51.70	0.00	59.28				
100.00	100.00	71.05	71.05	0.25	0.08	179.97	-51.67	0.02	51.67	51.34	0.33	156.104	
200.00	200.00	171.11	171.11	0.61	0.19	179.85	-51.52	0.13	51.52	50.72	0.80	64.244	
300.00	300.00	271.17	271.17	0.97	0.30	179.63	-51.24	0.33	51.24	49.97	1.27	40.260	
400.00	400.00	371.23	371.23	1.33	0.42	179.30	-50.85	0.62	50.85	49.11	1.74	29.161	
500.00	500.00	472.45	472.43	1.68	0.63	178.53	-49.50	1.27	49.54	47.23	2.31	21.439	
600.00	600.00	574.23	574.04	2.04	0.87	175.03	-44.53	3.87	44.80	41.89	2.90	15.430	
700.00	700.00	676.20	675.27	2.40	1.15	164.33	-33.73	9.46	35.29	31.77	3.52	10.037	
800.00	799.98	775.62	772.33	2.76	1.49	159.01	-14.86	19.36	26.06	21.82	4.24	6.143	
809.07	809.04	784.47	780.86	2.79	1.53	154.17	-12.79	20.45	25.98	21.66	4.32	6.017 CC, ES, SF	
900.00	899.92	871.44	864.02	3.12	1.95	111.10	9.76	32.24	35.91	31.00	4.91	7.308	
1,000.00	999.86	962.65	949.26	3.47	2.51	88.19	38.54	47.03	63.78	58.39	5.38	11.849	
1,100.00	1,099.80	1,051.39	1,030.31	3.83	3.14	78.52	70.55	63.79	100.60	94.71	5.89	17.076	
1,200.00	1,199.74	1,134.67	1,104.60	4.19	3.81	73.95	103.53	81.89	143.23	136.84	6.39	22.417	
1,300.00	1,299.68	1,215.00	1,174.46	4.55	4.53	71.46	137.86	101.70	190.64	183.74	6.90	27.634	
1,400.00	1,399.61	1,287.68	1,235.78	4.91	5.24	69.77	171.77	120.97	242.55	235.19	7.35	32.989	
1,500.00	1,499.55	1,350.70	1,286.47	5.27	5.93	68.45	204.60	138.91	300.15	292.43	7.71	38.912	
1,600.00	1,599.49	1,412.70	1,333.89	5.63	6.67	67.15	240.13	157.10	362.66	354.55	8.11	44.714	
1,700.00	1,699.43	1,475.21	1,380.09	5.99	7.44	66.14	277.51	176.51	428.35	419.80	8.55	50.102	
1,800.00	1,799.37	1,544.44	1,430.29	6.35	8.31	65.29	319.74	198.60	495.64	486.54	9.10	54.455	
1,900.00	1,899.31	1,615.01	1,481.14	6.71	9.19	64.58	363.20	221.13	563.47	553.79	9.68	58.186	
2,000.00	1,999.25	1,686.60	1,532.51	7.07	10.06	63.94	407.73	243.54	631.57	621.29	10.28	61.408	
2,100.00	2,099.19	1,754.08	1,580.64	7.42	10.91	63.52	449.65	265.43	700.23	689.38	10.85	64.540	
2,200.00	2,199.13	1,825.69	1,631.47	7.78	11.82	63.18	494.19	289.12	769.31	757.84	11.47	67.060	
2,300.00	2,299.07	1,904.41	1,687.89	8.14	12.76	62.96	542.28	315.57	837.72	825.54	12.17	68.816	
2,400.00	2,399.01	1,992.78	1,752.25	8.50	13.83	62.82	594.98	345.41	904.87	891.89	12.98	69.717	
2,500.00	2,498.94	2,059.62	1,800.81	8.86	14.67	62.71	635.06	367.84	972.30	958.75	13.55	71.736	
2,600.00	2,598.88	2,127.00	1,849.44	9.22	15.54	62.60	675.82	390.50	1,040.22	1,026.08	14.14	73.556	
2,700.00	2,698.82	2,194.24	1,897.57	9.58	16.39	62.41	717.47	412.17	1,108.66	1,093.93	14.73	75.257	
2,800.00	2,798.76	2,277.22	1,957.19	9.94	17.41	62.18	768.84	438.47	1,176.80	1,161.31	15.49	75.986	
2,900.00	2,898.70	2,355.24	2,013.74	10.30	18.37	62.03	816.43	463.46	1,244.32	1,228.13	16.19	76.864	
3,000.00	2,998.64	2,434.98	2,071.46	10.66	19.35	61.88	865.25	488.83	1,311.95	1,295.04	16.91	77.588	
3,100.00	3,098.58	2,528.41	2,139.89	11.02	20.46	61.77	921.33	518.85	1,378.68	1,360.92	17.76	77.631	
3,200.00	3,198.52	2,602.23	2,194.33	11.38	21.35	61.70	965.17	542.61	1,444.90	1,426.49	18.41	78.467	
3,300.00	3,298.46	2,665.97	2,241.18	11.75	22.15	61.66	1,003.13	563.25	1,511.39	1,492.42	18.97	79.655	
3,400.00	3,398.40	2,936.20	2,450.01	12.11	25.20	61.67	1,151.97	647.69	1,573.44	1,552.07	21.37	73.640	
3,500.00	3,498.34	3,146.70	2,624.95	12.47	27.27	61.54	1,255.67	701.79	1,627.89	1,604.91	22.98	70.833	
3,600.00	3,598.27	3,963.80	3,387.36	12.83	32.21	61.71	1,496.65	827.80	1,671.13	1,645.46	25.67	65.096	
3,700.00	3,698.21	4,164.07	3,587.11	13.19	32.52	61.84	1,509.47	833.06	1,675.24	1,649.24	26.00	64.439	
3,800.00	3,798.15	4,264.03	3,686.93	13.55	32.66	61.88	1,514.72	833.89	1,678.49	1,651.97	26.53	63.271	
3,900.00	3,898.09	4,364.01	3,786.76	13.91	32.81	61.91	1,519.97	834.72	1,681.75	1,654.67	27.08	62.108	
4,000.00	3,998.03	4,463.98	3,886.59	14.27	32.96	61.94	1,525.22	835.55	1,685.00	1,657.38	27.63	60.993	
4,100.00	4,097.97	4,563.95	3,986.42	14.63	33.10	61.98	1,530.47	836.38	1,688.26	1,660.09	28.17	59.925	
4,200.00	4,197.91	4,663.92	4,086.26	14.99	33.25	62.01	1,535.72	837.21	1,691.51	1,662.79	28.72	58.899	
4,300.00	4,297.85	4,763.90	4,186.09	15.35	33.40	62.05	1,540.96	838.04	1,694.76	1,665.50	29.26	57.913	
4,400.00	4,397.79	4,863.87	4,285.92	15.71	33.54	62.08	1,546.20	838.86	1,698.01	1,668.20	29.81	56.965	
4,500.00	4,497.73	4,963.84	4,385.75	16.07	33.69	62.11	1,551.44	839.69	1,701.26	1,670.91	30.35	56.053	
4,600.00	4,597.66	5,063.81	4,485.58	16.43	33.84	62.15	1,556.68	840.52	1,704.51	1,673.61	30.89	55.175	
4,700.00	4,697.60	5,163.79	4,585.42	16.79	33.98	62.18	1,561.92	841.34	1,707.75	1,676.32	31.43	54.329	
4,800.00	4,797.54	5,263.76	4,685.25	17.15	34.13	62.21	1,567.15	842.17	1,711.00	1,679.02	31.97	53.512	
4,900.00	4,897.48	5,363.73	4,785.08	17.51	34.28	62.25	1,572.39	843.00	1,714.24	1,681.73	32.51	52.724	
5,000.00	4,997.42	5,463.71	4,884.91	17.87	34.43	62.28	1,577.62	843.82	1,717.48	1,684.43	33.05	51.963	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
5,100.00	5,097.36	5,563.68	4,984.75	18.23	34.57	62.31	1,582.85	844.65	1,720.72	1,687.13	33.59	51.227	
5,200.00	5,197.30	5,663.65	5,084.58	18.59	34.72	62.35	1,588.07	845.47	1,723.96	1,689.84	34.13	50.516	
5,300.00	5,297.24	5,763.63	5,184.41	18.95	34.87	62.38	1,593.30	846.30	1,727.20	1,692.54	34.66	49.828	
5,402.82	5,400.00	5,866.43	5,287.07	19.32	35.02	62.41	1,598.67	847.14	1,730.53	1,695.32	35.21	49.143	
5,500.00	5,497.13	5,963.57	5,384.08	19.67	35.17	62.45	1,603.74	847.95	1,733.87	1,698.13	35.73	48.523	
5,600.00	5,597.11	6,063.53	5,483.90	20.03	35.31	62.46	1,608.96	848.77	1,737.69	1,701.43	36.26	47.920	
5,700.00	5,697.10	6,163.47	5,583.69	20.39	35.46	62.45	1,614.18	849.59	1,741.92	1,705.14	36.79	47.351	
5,802.82	5,799.92	6,266.20	5,686.28	20.75	35.61	32.41	1,619.54	850.44	1,746.69	1,709.37	37.32	46.800	
5,900.00	5,897.09	6,363.27	5,783.22	21.10	35.76	32.34	1,624.60	851.24	1,751.40	1,713.58	37.83	46.302	
6,000.00	5,997.09	6,463.16	5,882.97	21.45	35.91	32.28	1,629.80	852.06	1,756.25	1,717.91	38.34	45.804	
6,100.00	6,097.09	6,563.05	5,982.72	21.81	36.05	32.21	1,635.01	852.88	1,761.10	1,722.24	38.86	45.319	
6,200.00	6,197.09	6,662.95	6,082.48	22.16	36.20	32.14	1,640.21	853.70	1,765.94	1,726.57	39.38	44.848	
6,300.00	6,297.09	6,762.84	6,182.23	22.52	36.35	32.07	1,645.41	854.52	1,770.79	1,730.90	39.89	44.390	
6,354.91	6,352.00	6,817.68	6,237.00	22.72	36.43	32.04	1,648.27	854.97	1,773.46	1,733.28	40.18	44.143	
6,400.00	6,397.06	6,862.72	6,281.98	22.87	36.50	-46.96	1,650.61	855.34	1,774.55	1,734.15	40.40	43.926	
6,450.00	6,446.74	6,912.45	6,331.64	23.04	36.57	-47.21	1,653.20	855.75	1,773.23	1,732.60	40.63	43.641	
6,500.00	6,495.84	6,961.67	6,380.79	23.20	36.65	-47.72	1,655.76	856.16	1,769.27	1,728.42	40.86	43.306	
6,550.00	6,544.06	7,010.07	6,429.12	23.36	36.72	-48.51	1,658.28	856.55	1,762.73	1,721.67	41.07	42.924	
6,600.00	6,591.08	7,057.35	6,476.34	23.51	36.79	-49.56	1,660.74	856.94	1,753.71	1,712.44	41.27	42.496	
6,650.00	6,636.64	7,103.23	6,522.15	23.66	36.86	-50.89	1,663.12	857.32	1,742.33	1,700.87	41.46	42.025	
6,700.00	6,680.44	7,147.42	6,566.27	23.82	36.92	-52.49	1,665.42	857.68	1,728.72	1,687.08	41.64	41.511	
6,750.00	6,722.22	7,189.64	6,608.44	23.99	36.99	-54.36	1,667.62	858.03	1,713.08	1,671.25	41.83	40.957	
6,800.00	6,761.71	7,229.64	6,648.39	24.16	37.05	-56.49	1,669.70	858.36	1,695.58	1,653.58	42.01	40.363	
6,850.00	6,798.68	7,267.17	6,685.87	24.33	37.10	-58.86	1,671.65	858.66	1,676.46	1,634.27	42.20	39.730	
6,900.00	6,832.89	7,302.01	6,720.65	24.50	37.15	-61.47	1,673.46	858.95	1,655.95	1,613.56	42.40	39.059	
6,950.00	6,864.14	7,333.92	6,752.52	24.69	37.20	-64.26	1,675.11	859.21	1,634.31	1,591.70	42.62	38.350	
7,000.00	6,892.23	7,362.73	6,781.29	24.88	37.24	-67.20	1,676.61	859.45	1,611.81	1,568.95	42.86	37.605	
7,050.00	6,916.99	7,388.24	6,806.76	25.08	37.28	-70.22	1,677.94	859.66	1,588.72	1,545.58	43.14	36.825	
7,100.00	6,938.27	7,410.30	6,828.80	25.29	37.31	-73.27	1,679.08	859.84	1,565.33	1,521.86	43.47	36.013	
7,150.00	6,955.93	7,428.79	6,847.26	25.51	37.34	-76.27	1,680.04	859.99	1,541.92	1,498.08	43.84	35.172	
7,200.00	6,969.87	7,443.57	6,862.02	25.75	37.36	-79.15	1,680.81	860.11	1,518.78	1,474.51	44.27	34.306	
7,250.00	6,980.00	7,454.57	6,873.00	25.99	37.38	-81.85	1,681.38	860.20	1,496.17	1,451.40	44.76	33.424	
7,300.00	6,986.25	7,461.71	6,880.14	26.25	37.39	-84.32	1,681.75	860.26	1,474.34	1,429.02	45.32	32.531	
7,354.68	6,988.62	7,465.06	6,883.48	26.53	37.40	-86.71	1,681.93	860.29	1,451.64	1,405.64	46.00	31.555	
7,400.00	6,988.64	7,465.89	6,884.30	26.78	37.40	-86.74	1,681.97	860.29	1,434.01	1,387.37	46.63	30.750	
7,500.00	6,988.67	7,467.72	6,886.13	27.40	37.40	-86.82	1,682.06	860.31	1,399.50	1,351.25	48.25	29.002	
7,600.00	6,988.71	7,469.55	6,887.96	28.08	37.40	-86.90	1,682.16	860.32	1,371.43	1,321.27	50.16	27.339	
7,700.00	6,988.74	7,471.38	6,889.79	28.84	37.41	-86.98	1,682.25	860.34	1,350.20	1,297.89	52.31	25.812	
7,800.00	6,988.78	7,473.21	6,891.62	29.67	37.41	-87.06	1,682.35	860.35	1,336.14	1,281.51	54.63	24.460	
7,900.00	6,988.81	7,475.04	6,893.45	30.55	37.41	-87.14	1,682.44	860.37	1,329.46	1,272.43	57.03	23.310	
7,939.00	6,988.82	7,475.75	6,894.16	30.92	37.41	-87.17	1,682.48	860.37	1,328.89	1,270.91	57.98	22.918	
8,000.00	6,988.85	7,476.87	6,895.27	31.49	37.41	-87.22	1,682.54	860.38	1,330.29	1,270.84	59.45	22.377	
8,100.00	6,988.88	7,478.70	6,897.10	32.48	37.42	-87.29	1,682.63	860.40	1,338.60	1,276.81	61.80	21.661	
8,200.00	6,988.91	7,480.53	6,898.93	33.51	37.42	-87.37	1,682.73	860.41	1,354.27	1,290.26	64.01	21.156	
8,211.68	6,988.92	7,480.75	6,899.14	33.63	37.42	-87.38	1,682.74	860.42	1,356.57	1,292.31	64.26	21.110	
8,300.00	6,988.95	7,482.29	6,900.69	34.58	37.42	-87.43	1,682.82	860.43	1,378.34	1,312.30	66.04	20.871	
8,400.00	6,988.98	7,483.88	6,902.28	35.70	37.42	-87.47	1,682.90	860.44	1,412.35	1,344.52	67.84	20.820	
8,500.00	6,989.01	7,485.29	6,903.68	36.84	37.43	-87.49	1,682.98	860.45	1,455.58	1,386.20	69.38	20.980	
8,600.00	6,989.04	7,486.52	6,904.91	38.02	37.43	-87.49	1,683.04	860.46	1,507.19	1,436.52	70.67	21.326	
8,700.00	6,989.07	7,487.57	6,905.96	39.22	37.43	-87.48	1,683.09	860.47	1,566.29	1,494.56	71.74	21.834	
8,772.79	6,989.09	7,488.22	6,906.61	40.11	37.43	-87.45	1,683.13	860.48	1,613.51	1,541.14	72.38	22.293	
8,800.00	6,989.10	7,488.45	6,906.84	40.44	37.43	-87.46	1,683.14	860.48	1,631.91	1,559.31	72.59	22.480	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
8,900.00	6,989.13	7,489.28	6,907.66	41.68	37.43	-87.50	1,683.18	860.49	1,701.53	1,628.24	73.29	23.216	
9,000.00	6,989.15	7,490.10	6,908.49	42.95	37.43	-87.54	1,683.23	860.49	1,774.06	1,700.20	73.86	24.019	
9,100.00	6,989.18	7,490.93	6,909.31	44.24	37.43	-87.58	1,683.27	860.50	1,849.15	1,774.83	74.32	24.880	
9,200.00	6,989.21	7,491.76	6,910.14	45.55	37.44	-87.62	1,683.31	860.51	1,926.51	1,851.81	74.69	25.792	
9,300.00	6,989.24	7,492.58	6,910.96	46.88	37.44	-87.66	1,683.35	860.51	2,005.87	1,930.88	74.99	26.748	
9,400.00	6,989.26	7,493.41	6,911.79	48.23	37.44	-87.70	1,683.40	860.52	2,087.00	2,011.78	75.22	27.744	
9,500.00	6,989.29	7,494.24	6,912.61	49.59	37.44	-87.74	1,683.44	860.53	2,169.71	2,094.31	75.41	28.774	
9,600.00	6,989.32	7,495.06	6,913.44	50.96	37.44	-87.78	1,683.48	860.53	2,253.82	2,178.28	75.55	29.834	
9,700.00	6,989.34	7,495.89	6,914.26	52.35	37.44	-87.82	1,683.53	860.54	2,339.18	2,263.53	75.65	30.920	
9,800.00	6,989.37	7,496.71	6,915.09	53.75	37.44	-87.86	1,683.57	860.55	2,425.67	2,349.94	75.73	32.031	
9,900.00	6,989.40	7,497.54	6,915.92	55.16	37.44	-87.90	1,683.61	860.55	2,513.15	2,437.37	75.78	33.163	
10,000.00	6,989.42	7,498.37	6,916.74	56.58	37.45	-87.94	1,683.66	860.56	2,601.53	2,525.72	75.82	34.313	
10,100.00	6,989.45	7,499.19	6,917.57	58.01	37.45	-87.98	1,683.70	860.57	2,690.73	2,614.90	75.84	35.480	
10,200.00	6,989.48	7,500.02	6,918.39	59.45	37.45	-88.02	1,683.74	860.57	2,780.67	2,704.82	75.84	36.663	
10,300.00	6,989.51	7,500.85	6,919.22	60.90	37.45	-88.06	1,683.78	860.58	2,871.27	2,795.42	75.84	37.859	
10,400.00	6,989.53	7,501.67	6,920.04	62.35	37.45	-88.10	1,683.83	860.59	2,962.47	2,886.64	75.83	39.067	
10,500.00	6,989.56	7,502.50	6,920.87	63.81	37.45	-88.13	1,683.87	860.59	3,054.22	2,978.41	75.81	40.286	
10,600.00	6,989.59	7,503.33	6,921.69	65.28	37.45	-88.17	1,683.91	860.60	3,146.48	3,070.69	75.79	41.514	
10,700.00	6,989.61	7,504.15	6,922.52	66.76	37.45	-88.21	1,683.96	860.61	3,239.20	3,163.43	75.77	42.752	
10,800.00	6,989.64	7,504.98	6,923.34	68.24	37.46	-88.25	1,684.00	860.61	3,332.33	3,256.59	75.74	43.998	
10,900.00	6,989.67	7,505.81	6,924.17	69.73	37.46	-88.29	1,684.04	860.62	3,425.86	3,350.15	75.71	45.250	
11,000.00	6,989.70	7,506.63	6,924.99	71.22	37.46	-88.33	1,684.08	860.63	3,519.74	3,444.06	75.68	46.510	
11,100.00	6,989.72	7,507.46	6,925.82	72.71	37.46	-88.37	1,684.13	860.63	3,613.94	3,538.30	75.65	47.775	
11,200.00	6,989.75	7,508.29	6,926.64	74.22	37.46	-88.41	1,684.17	860.64	3,708.45	3,632.84	75.61	49.045	
11,300.00	6,989.78	7,509.11	6,927.47	75.72	37.46	-88.45	1,684.21	860.65	3,803.25	3,727.67	75.58	50.320	
11,400.00	6,989.80	7,509.94	6,928.30	77.23	37.46	-88.49	1,684.26	860.65	3,898.30	3,822.75	75.55	51.599	
11,500.00	6,989.83	7,510.77	6,929.12	78.74	37.46	-88.53	1,684.30	860.66	3,993.59	3,918.07	75.52	52.882	
11,600.00	6,989.86	7,511.59	6,929.95	80.26	37.47	-88.57	1,684.34	860.67	4,089.11	4,013.62	75.49	54.169	
11,700.00	6,989.88	7,512.42	6,930.77	81.78	37.47	-88.61	1,684.38	860.67	4,184.84	4,109.38	75.46	55.458	
11,800.00	6,989.91	7,513.24	6,931.60	83.30	37.47	-88.65	1,684.43	860.68	4,280.76	4,205.33	75.43	56.750	
11,900.00	6,989.94	7,514.07	6,932.42	84.83	37.47	-88.69	1,684.47	860.69	4,376.86	4,301.46	75.40	58.045	
12,000.00	6,989.97	7,514.90	6,933.25	86.36	37.47	-88.73	1,684.51	860.70	4,473.14	4,397.76	75.38	59.341	
12,100.00	6,989.99	7,515.72	6,934.07	87.89	37.47	-88.77	1,684.56	860.70	4,569.57	4,494.22	75.36	60.640	
12,200.00	6,990.02	7,516.55	6,934.90	89.42	37.47	-88.81	1,684.60	860.71	4,666.16	4,590.82	75.33	61.940	
12,300.00	6,990.05	7,517.38	6,935.72	90.96	37.47	-88.85	1,684.64	860.72	4,762.88	4,687.57	75.31	63.241	
12,400.00	6,990.07	7,518.20	6,936.55	92.50	37.48	-88.89	1,684.68	860.72	4,859.74	4,784.45	75.29	64.543	
12,500.00	6,990.10	7,519.03	6,937.37	94.04	37.48	-88.93	1,684.73	860.73	4,956.73	4,881.45	75.28	65.846	
12,600.00	6,990.13	7,519.86	6,938.20	95.58	37.48	-88.97	1,684.77	860.74	5,053.83	4,978.56	75.26	67.150	
12,700.00	6,990.15	7,520.68	6,939.02	97.13	37.48	-89.01	1,684.81	860.74	5,151.04	5,075.79	75.25	68.454	
12,800.00	6,990.18	7,521.51	6,939.85	98.68	37.48	-89.04	1,684.86	860.75	5,248.35	5,173.12	75.24	69.759	
12,900.00	6,990.21	7,522.33	6,940.67	100.22	37.48	-89.08	1,684.90	860.76	5,345.77	5,270.54	75.22	71.064	
13,000.00	6,990.24	7,523.16	6,941.50	101.78	37.48	-89.12	1,684.94	860.76	5,443.28	5,368.06	75.22	72.369	
13,100.00	6,990.26	7,523.99	6,942.33	103.33	37.48	-89.16	1,684.99	860.77	5,540.87	5,465.67	75.21	73.674	
13,200.00	6,990.29	7,524.81	6,943.15	104.88	37.49	-89.20	1,685.03	860.78	5,638.55	5,563.35	75.20	74.978	
13,300.00	6,990.32	7,525.64	6,943.98	106.44	37.49	-89.24	1,685.07	860.78	5,736.32	5,661.12	75.20	76.283	
13,400.00	6,990.34	7,526.47	6,944.80	107.99	37.49	-89.28	1,685.11	860.79	5,834.15	5,758.96	75.20	77.586	
13,500.00	6,990.37	7,527.29	6,945.63	109.55	37.49	-89.32	1,685.16	860.80	5,932.06	5,856.87	75.19	78.890	
13,600.00	6,990.40	7,528.12	6,946.45	111.11	37.49	-89.36	1,685.20	860.80	6,030.04	5,954.84	75.19	80.192	
13,700.00	6,990.42	7,528.95	6,947.28	112.67	37.49	-89.40	1,685.24	860.81	6,128.08	6,052.88	75.20	81.494	
13,800.00	6,990.45	7,529.77	6,948.10	114.23	37.49	-89.44	1,685.29	860.82	6,226.19	6,150.99	75.20	82.795	
13,900.00	6,990.48	7,530.60	6,948.93	115.80	37.49	-89.48	1,685.33	860.82	6,324.35	6,249.14	75.21	84.094	
14,000.00	6,990.51	7,531.42	6,949.75	117.36	37.50	-89.52	1,685.37	860.83	6,422.57	6,347.36	75.21	85.393	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #041C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		388-APC_ISCWSA REV 2 MWD							Rule Assigned:			Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
14,100.00	6,990.53	7,532.25	6,950.58	118.93	37.50	-89.56	1,685.41	860.84	6,520.84	6,445.63	75.22	86.691	
14,200.00	6,990.56	7,533.08	6,951.40	120.49	37.50	-89.60	1,685.46	860.84	6,619.17	6,543.94	75.23	87.987	
14,300.00	6,990.59	7,533.90	6,952.23	122.06	37.50	-89.64	1,685.50	860.85	6,717.55	6,642.31	75.24	89.282	
14,400.00	6,990.61	7,534.73	6,953.05	123.63	37.50	-89.68	1,685.54	860.86	6,815.97	6,740.72	75.25	90.576	
14,500.00	6,990.64	7,535.56	6,953.88	125.20	37.50	-89.72	1,685.59	860.86	6,914.44	6,839.17	75.27	91.868	
14,600.00	6,990.67	7,536.38	6,954.70	126.77	37.50	-89.76	1,685.63	860.87	7,012.95	6,937.67	75.28	93.158	
14,700.00	6,990.70	7,537.21	6,955.53	128.34	37.50	-89.80	1,685.67	860.88	7,111.50	7,036.20	75.30	94.448	
14,800.00	6,990.72	7,538.04	6,956.35	129.91	37.51	-89.84	1,685.71	860.88	7,210.09	7,134.78	75.31	95.735	
14,900.00	6,990.75	7,538.86	6,957.18	131.48	37.51	-89.87	1,685.76	860.89	7,308.72	7,233.39	75.33	97.021	
15,000.00	6,990.78	7,539.69	6,958.00	133.06	37.51	-89.91	1,685.80	860.90	7,407.39	7,332.04	75.35	98.305	
15,100.00	6,990.80	7,540.51	6,958.83	134.63	37.51	-89.95	1,685.84	860.91	7,506.09	7,430.72	75.37	99.587	
15,200.00	6,990.83	7,541.34	6,959.65	136.20	37.51	-89.99	1,685.89	860.91	7,604.83	7,529.43	75.39	100.867	
15,300.00	6,990.86	7,542.17	6,960.48	137.78	37.51	-90.03	1,685.93	860.92	7,703.60	7,628.18	75.42	102.145	
15,400.00	6,990.88	7,542.99	6,961.30	139.36	37.51	-90.07	1,685.97	860.93	7,802.40	7,726.95	75.44	103.421	
15,500.00	6,990.91	7,543.82	6,962.13	140.93	37.51	-90.11	1,686.01	860.93	7,901.23	7,825.76	75.47	104.696	
15,600.00	6,990.94	7,544.65	6,962.95	142.51	37.52	-90.15	1,686.06	860.94	8,000.09	7,924.59	75.50	105.968	
15,700.00	6,990.97	7,545.47	6,963.78	144.09	37.52	-90.19	1,686.10	860.95	8,098.97	8,023.45	75.52	107.238	
15,800.00	6,990.99	7,546.30	6,964.60	145.67	37.52	-90.23	1,686.14	860.95	8,197.89	8,122.33	75.55	108.506	
15,900.00	6,991.02	7,547.12	6,965.43	147.24	37.52	-90.27	1,686.19	860.96	8,296.83	8,221.24	75.58	109.771	
16,000.00	6,991.05	7,547.95	6,966.25	148.82	37.52	-90.31	1,686.23	860.97	8,395.79	8,320.18	75.61	111.035	
16,100.00	6,991.07	7,548.78	6,967.08	150.40	37.52	-90.35	1,686.27	860.97	8,494.78	8,419.13	75.65	112.296	
16,200.00	6,991.10	7,549.60	6,967.90	151.99	37.52	-90.39	1,686.31	860.98	8,593.79	8,518.11	75.68	113.555	
16,300.00	6,991.13	7,550.43	6,968.73	153.57	37.52	-90.43	1,686.36	860.99	8,692.83	8,617.11	75.71	114.811	
16,400.00	6,991.15	7,551.26	6,969.55	155.15	37.52	-90.47	1,686.40	860.99	8,791.88	8,716.13	75.75	116.065	
16,500.00	6,991.18	7,552.08	6,970.38	156.73	37.53	-90.51	1,686.44	861.00	8,890.96	8,815.18	75.79	117.317	
16,600.00	6,991.21	7,552.91	6,971.21	158.31	37.53	-90.55	1,686.49	861.01	8,990.06	8,914.24	75.82	118.566	
16,700.00	6,991.24	7,553.73	6,972.03	159.90	37.53	-90.58	1,686.53	861.01	9,089.18	9,013.32	75.86	119.813	
16,800.00	6,991.26	7,554.56	6,972.86	161.48	37.53	-90.62	1,686.57	861.02	9,188.31	9,112.41	75.90	121.057	
16,900.00	6,991.29	7,555.39	6,973.68	163.06	37.53	-90.66	1,686.62	861.03	9,287.47	9,211.53	75.94	122.299	
17,000.00	6,991.32	7,556.21	6,974.51	164.65	37.53	-90.70	1,686.66	861.03	9,386.64	9,310.66	75.98	123.538	
17,100.00	6,991.34	7,557.04	6,975.33	166.23	37.53	-90.74	1,686.70	861.04	9,485.83	9,409.81	76.02	124.774	
17,200.00	6,991.37	7,557.86	6,976.16	167.82	37.53	-90.78	1,686.74	861.05	9,585.04	9,508.97	76.07	126.008	
17,300.00	6,991.40	7,558.69	6,976.98	169.40	37.54	-90.82	1,686.79	861.05	9,684.26	9,608.15	76.11	127.239	
17,400.00	6,991.42	7,559.52	6,977.81	170.99	37.54	-90.86	1,686.83	861.06	9,783.50	9,707.35	76.16	128.468	
17,500.00	6,991.45	7,560.34	6,978.63	172.57	37.54	-90.90	1,686.87	861.07	9,882.76	9,806.56	76.20	129.694	
17,600.00	6,991.48	7,561.17	6,979.46	174.16	37.54	-90.94	1,686.92	861.07	9,982.03	9,905.78	76.25	130.917	
17,700.00	6,991.51	7,562.00	6,980.28	175.75	37.54	-90.98	1,686.96	861.08	10,081.31	10,005.01	76.29	132.137	
17,800.00	6,991.53	7,562.82	6,981.11	177.33	37.54	-91.02	1,687.00	861.09	10,180.61	10,104.26	76.34	133.354	
17,900.00	6,991.56	7,563.65	6,981.93	178.92	37.54	-91.06	1,687.04	861.09	10,279.92	10,203.53	76.39	134.569	
18,000.00	6,991.59	7,564.47	6,982.76	180.51	37.54	-91.10	1,687.09	861.10	10,379.24	10,302.80	76.44	135.781	
18,100.00	6,991.61	7,565.30	6,983.58	182.10	37.55	-91.14	1,687.13	861.11	10,478.58	10,402.09	76.49	136.990	
18,200.00	6,991.64	7,566.13	6,984.41	183.68	37.55	-91.18	1,687.17	861.12	10,577.93	10,501.39	76.54	138.196	
18,300.00	6,991.67	7,566.95	6,985.23	185.27	37.55	-91.22	1,687.22	861.12	10,677.29	10,600.69	76.59	139.399	
18,400.00	6,991.69	7,567.78	6,986.06	186.86	37.55	-91.25	1,687.26	861.13	10,776.66	10,700.01	76.65	140.600	
18,500.00	6,991.72	7,568.60	6,986.88	188.45	37.55	-91.29	1,687.30	861.14	10,876.05	10,799.35	76.70	141.797	
18,600.00	6,991.75	7,569.43	6,987.71	190.04	37.55	-91.33	1,687.34	861.14	10,975.44	10,898.69	76.76	142.992	
18,700.00	6,991.78	7,570.26	6,988.53	191.63	37.55	-91.37	1,687.39	861.15	11,074.85	10,998.04	76.81	144.183	
18,800.00	6,991.80	7,571.08	6,989.36	193.22	37.55	-91.41	1,687.43	861.16	11,174.27	11,097.40	76.87	145.372	
18,900.00	6,991.83	7,571.91	6,990.18	194.81	37.56	-91.45	1,687.47	861.16	11,273.69	11,196.77	76.92	146.558	
19,000.00	6,991.86	7,572.73	6,991.01	196.40	37.56	-91.49	1,687.52	861.17	11,373.13	11,296.15	76.98	147.740	
19,100.00	6,991.88	7,573.56	6,991.83	197.99	37.56	-91.53	1,687.56	861.18	11,472.58	11,395.54	77.04	148.920	
19,200.00	6,991.91	7,574.39	6,992.65	199.58	37.56	-91.57	1,687.60	861.18	11,572.04	11,494.94	77.10	150.096	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:		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		
19,300.00	6,991.94	7,575.21	6,993.48	201.17	37.56	-91.61	1,687.64	861.19	11,671.50	11,594.34	77.16	151.270		
19,342.28	6,991.95	7,575.56	6,993.83	201.84	37.56	-91.63	1,687.66	861.19	11,713.55	11,636.37	77.18	151.765		
19,400.00	6,991.97	7,576.04	6,994.30	202.76	37.56	-91.65	1,687.69	861.20	11,770.98	11,693.76	77.22	152.440		
19,500.00	6,991.99	7,576.87	6,995.13	204.35	37.56	-91.69	1,687.73	861.20	11,870.46	11,793.18	77.28	153.608		
19,542.28	6,992.00	7,577.21	6,995.48	205.03	37.56	-91.70	1,687.75	861.21	11,912.52	11,835.22	77.30	154.101		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)			
0.00	0.00	0.00	0.00	0.00	0.00	-156.13	-305.82	-135.35	334.61				
100.00	100.00	89.00	89.00	0.25	1.58	-156.13	-305.82	-135.35	334.43	332.60	1.83	182.961	
200.00	200.00	189.00	189.00	0.61	3.35	-156.13	-305.82	-135.35	334.43	330.47	3.96	84.495	
300.00	300.00	289.00	289.00	0.97	5.12	-156.13	-305.82	-135.35	334.43	328.34	6.09	54.932	
400.00	400.00	389.00	389.00	1.33	6.92	-156.13	-305.82	-135.35	334.43	326.19	8.25	40.561	
500.00	500.00	489.00	489.00	1.68	8.72	-156.13	-305.82	-135.35	334.43	324.03	10.41	32.140	
562.54	562.54	551.54	551.54	1.91	9.85	-156.11	-305.54	-135.35	334.18	322.42	11.76	28.425 CC	
600.00	600.00	588.90	588.90	2.04	10.52	-156.11	-305.55	-135.35	334.19	321.62	12.56	26.599	
700.00	700.00	688.64	688.64	2.40	12.32	-156.11	-305.63	-135.35	334.26	319.54	14.72	22.709	
800.00	799.98	788.35	788.35	2.76	14.11	-126.35	-305.79	-135.35	335.44	318.56	16.87	19.879	
900.00	899.92	888.93	888.92	3.12	16.08	-126.83	-305.82	-135.35	337.54	318.35	19.19	17.586	
1,000.00	999.86	988.87	988.86	3.47	18.05	-127.30	-305.82	-135.35	339.65	318.12	21.53	15.777	
1,100.00	1,099.80	1,088.29	1,088.27	3.83	20.02	-127.74	-305.43	-135.35	341.42	317.57	23.85	14.313	
1,200.00	1,199.74	1,187.56	1,187.54	4.19	21.98	-128.21	-305.70	-135.35	343.82	317.64	26.17	13.135	
1,300.00	1,299.68	1,288.74	1,288.68	4.55	24.18	-128.68	-305.82	-135.35	346.10	317.36	28.73	12.046	
1,400.00	1,399.61	1,386.76	1,386.69	4.91	26.38	-129.09	-305.40	-135.35	347.90	316.61	31.29	11.118	
1,500.00	1,499.55	1,488.68	1,488.55	5.27	28.79	-129.57	-305.82	-135.35	350.50	316.45	34.05	10.292	
1,600.00	1,599.49	1,588.62	1,588.49	5.63	31.25	-130.00	-305.82	-135.35	352.74	315.86	36.88	9.566	
1,700.00	1,699.43	1,686.94	1,686.79	5.99	33.67	-130.37	-304.80	-135.35	354.03	314.38	39.66	8.928	
1,800.00	1,799.37	1,784.55	1,784.38	6.35	36.08	-130.84	-305.63	-135.35	357.10	314.69	42.42	8.419	
1,900.00	1,899.31	1,888.58	1,888.31	6.71	38.63	-131.28	-305.82	-135.35	359.56	314.22	45.34	7.931	
2,000.00	1,999.25	1,988.52	1,988.25	7.07	41.09	-131.70	-305.82	-135.35	361.87	313.72	48.15	7.515	
2,100.00	2,099.19	2,088.14	2,087.84	7.42	43.54	-132.01	-303.75	-135.35	362.24	311.28	50.96	7.108	
2,200.00	2,199.13	2,186.21	2,185.89	7.78	45.94	-132.42	-304.12	-135.35	364.94	311.21	53.73	6.792	
2,300.00	2,299.07	2,284.27	2,283.93	8.14	48.35	-132.86	-305.02	-135.35	368.18	311.69	56.49	6.517	
2,400.00	2,399.01	2,388.47	2,388.01	8.50	50.88	-133.31	-305.82	-135.35	371.31	311.92	59.39	6.252	
2,500.00	2,498.94	2,488.41	2,487.94	8.86	53.28	-133.69	-305.82	-135.35	373.71	311.57	62.14	6.014	
2,600.00	2,598.88	2,587.69	2,587.21	9.22	55.65	-134.03	-304.71	-135.35	375.06	310.19	64.88	5.781	
2,700.00	2,698.82	2,685.80	2,685.31	9.58	58.00	-134.42	-305.14	-135.35	377.92	310.34	67.58	5.592	
2,800.00	2,798.76	2,788.34	2,787.76	9.94	60.46	-134.83	-305.82	-135.35	381.02	310.62	70.40	5.412	
2,900.00	2,898.70	2,888.28	2,887.70	10.30	62.86	-135.20	-305.82	-135.35	383.49	310.33	73.16	5.242	
3,000.00	2,998.64	2,988.22	2,987.64	10.66	65.26	-135.57	-305.82	-135.35	385.97	310.05	75.92	5.084	
3,100.00	3,098.58	3,087.60	3,086.99	11.02	67.65	-135.86	-303.93	-135.35	386.65	307.98	78.67	4.915	
3,200.00	3,198.52	3,185.91	3,185.29	11.38	70.01	-136.22	-304.30	-135.35	389.52	308.13	81.39	4.786	
3,300.00	3,298.46	3,284.21	3,283.57	11.75	72.37	-136.60	-305.10	-135.35	392.84	308.73	84.11	4.671	
3,400.00	3,398.40	3,388.15	3,387.40	12.11	74.71	-136.98	-305.82	-135.35	396.07	309.25	86.81	4.562	
3,500.00	3,498.34	3,488.09	3,487.34	12.47	76.75	-137.32	-305.82	-135.35	398.63	309.42	89.20	4.469	
3,600.00	3,598.27	3,588.02	3,587.27	12.83	78.78	-137.66	-305.82	-135.35	401.20	309.60	91.60	4.380	
3,700.00	3,698.21	3,686.30	3,685.53	13.19	80.78	-137.96	-304.69	-135.35	402.69	308.73	93.95	4.286	
3,800.00	3,798.15	3,784.53	3,783.75	13.55	82.77	-138.30	-305.33	-135.35	405.92	309.61	96.31	4.215	
3,900.00	3,898.09	3,887.90	3,887.09	13.91	84.78	-138.65	-305.82	-135.35	409.00	310.32	98.68	4.145	
4,000.00	3,998.03	3,987.84	3,987.03	14.27	86.64	-138.97	-305.82	-135.35	411.63	310.73	100.90	4.080	
4,100.00	4,097.97	4,087.71	4,086.89	14.63	88.49	-139.27	-305.29	-135.35	413.75	310.64	103.11	4.013	
4,200.00	4,197.91	4,186.92	4,186.10	14.99	90.34	-139.59	-305.40	-135.35	416.51	311.19	105.31	3.955	
4,300.00	4,297.85	4,286.12	4,285.30	15.35	92.18	-139.90	-305.68	-135.35	419.45	311.94	107.51	3.901	
4,400.00	4,397.79	4,387.63	4,386.79	15.71	93.95	-140.21	-305.82	-135.35	422.26	312.61	109.65	3.851	
4,500.00	4,497.73	4,487.57	4,486.73	16.07	95.65	-140.51	-305.82	-135.35	424.95	313.24	111.70	3.804	
4,600.00	4,597.66	4,587.37	4,586.53	16.43	97.34	-140.79	-304.99	-135.35	426.83	313.07	113.76	3.752	
4,700.00	4,697.60	4,686.24	4,685.39	16.79	99.01	-141.09	-305.14	-135.35	429.69	313.90	115.79	3.711	
4,800.00	4,797.54	4,785.10	4,784.25	17.15	100.69	-141.38	-305.55	-135.35	432.82	315.00	117.82	3.674	
4,900.00	4,897.48	4,887.34	4,886.48	17.51	102.67	-141.68	-305.82	-135.35	435.82	315.65	120.17	3.627	
5,000.00	4,997.42	4,987.28	4,986.42	17.87	104.80	-141.96	-305.82	-135.35	438.56	315.91	122.65	3.576	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)			
5,100.00	5,097.36	5,087.22	5,086.36	18.23	106.92	-142.24	-305.82	-135.35	441.31	316.18	125.14	3.527	
5,200.00	5,197.30	5,187.15	5,186.30	18.59	109.05	-142.52	-305.82	-135.35	444.08	316.45	127.63	3.480	
5,300.00	5,297.24	5,287.09	5,286.24	18.95	111.18	-142.79	-305.82	-135.35	446.85	316.74	130.11	3.434	
5,402.82	5,400.00	5,389.88	5,389.00	19.32	113.37	-143.07	-305.82	-135.35	449.72	317.05	132.67	3.390	
5,500.00	5,497.13	5,487.01	5,486.13	19.67	115.43	-143.30	-305.82	-135.35	452.10	317.02	135.09	3.347	
5,600.00	5,597.11	5,586.89	5,586.00	20.03	117.56	-143.46	-304.82	-135.35	452.89	315.32	137.57	3.292	
5,700.00	5,697.10	5,685.21	5,684.31	20.39	119.65	-143.56	-305.03	-135.35	454.16	314.15	140.02	3.244	
5,802.82	5,799.92	5,786.31	5,785.41	20.75	121.80	-173.61	-305.62	-135.35	455.14	312.61	142.53	3.193	
5,900.00	5,897.09	5,887.05	5,886.09	21.10	123.95	-173.61	-305.82	-135.35	455.32	310.29	145.03	3.140	
6,000.00	5,997.09	5,987.05	5,986.09	21.45	126.07	-173.61	-305.82	-135.35	455.32	307.81	147.51	3.087	
6,078.34	6,075.43	6,065.38	6,064.42	21.73	127.74	-173.60	-304.71	-135.35	454.21	304.76	149.46	3.039	
6,100.00	6,097.09	6,086.71	6,085.75	21.81	128.19	-173.60	-304.71	-135.35	454.22	304.23	149.99	3.028	
6,200.00	6,197.09	6,185.21	6,184.24	22.16	130.29	-173.60	-304.95	-135.35	454.46	302.03	152.44	2.981	
6,300.00	6,297.09	6,283.71	6,282.74	22.52	132.39	-173.61	-305.53	-135.35	455.04	300.15	154.89	2.938	
6,354.91	6,352.00	6,342.03	6,341.00	22.72	133.65	-173.61	-305.82	-135.35	455.32	298.97	156.35	2.912	
6,400.00	6,397.06	6,387.09	6,386.06	22.87	134.64	-107.54	-305.82	-135.35	455.80	298.30	157.50	2.894 ES	
6,450.00	6,446.74	6,436.77	6,435.74	23.04	135.74	108.05	-305.82	-135.35	457.49	298.72	158.77	2.881	
6,500.00	6,495.84	6,485.87	6,484.84	23.20	136.83	108.88	-305.82	-135.35	460.51	300.49	160.02	2.878 SF	
6,550.00	6,544.06	6,534.08	6,533.06	23.36	137.90	109.98	-305.82	-135.35	465.05	303.80	161.25	2.884	
6,600.00	6,591.08	6,581.11	6,580.08	23.51	138.94	111.29	-305.82	-135.35	471.35	308.90	162.45	2.902	
6,650.00	6,636.64	6,626.21	6,625.17	23.66	139.94	112.71	-304.64	-135.35	478.55	314.95	163.60	2.925	
6,700.00	6,680.44	6,669.37	6,668.33	23.82	140.89	114.11	-304.71	-135.35	489.33	324.62	164.71	2.971	
6,750.00	6,722.22	6,710.53	6,709.48	23.99	141.80	115.43	-304.83	-135.35	502.77	337.01	165.76	3.033	
6,800.00	6,761.71	6,749.41	6,748.37	24.16	142.67	116.56	-305.00	-135.35	519.12	352.36	166.76	3.113	
6,850.00	6,798.68	6,785.80	6,784.75	24.33	143.47	117.43	-305.20	-135.35	538.53	370.84	167.69	3.211	
6,900.00	6,832.89	6,819.45	6,818.40	24.50	144.22	117.94	-305.42	-135.35	561.08	392.53	168.56	3.329	
6,950.00	6,864.14	6,850.17	6,849.11	24.69	144.90	118.02	-305.65	-135.35	586.78	417.44	169.34	3.465	
7,000.00	6,892.23	6,882.36	6,881.23	24.88	145.62	117.96	-305.82	-135.35	615.47	445.29	170.17	3.617	
7,050.00	6,916.99	6,907.12	6,905.99	25.08	146.19	116.95	-305.82	-135.35	646.95	476.12	170.83	3.787	
7,100.00	6,938.27	6,928.40	6,927.27	25.29	146.68	115.20	-305.82	-135.35	681.14	509.75	171.39	3.974	
7,150.00	6,955.93	6,946.06	6,944.93	25.51	147.09	112.58	-305.82	-135.35	717.77	545.91	171.86	4.177	
7,200.00	6,969.87	6,960.00	6,958.87	25.75	147.41	108.95	-305.82	-135.35	756.54	584.31	172.23	4.393	
7,250.00	6,980.00	6,970.13	6,969.00	25.99	147.64	104.16	-305.82	-135.35	797.10	624.61	172.49	4.621	
7,300.00	6,986.25	6,976.39	6,975.25	26.25	147.78	98.10	-305.82	-135.35	839.12	666.45	172.66	4.860	
7,354.68	6,988.62	6,978.76	6,977.62	26.53	147.84	90.04	-305.82	-135.35	886.29	713.56	172.73	5.131	
7,400.00	6,988.64	6,978.77	6,977.64	26.78	147.84	90.04	-305.82	-135.35	926.05	753.31	172.74	5.361	
7,500.00	6,988.67	6,978.81	6,977.67	27.40	147.84	90.04	-305.82	-135.35	1,015.45	842.68	172.77	5.878	
7,600.00	6,988.71	6,978.84	6,977.71	28.08	147.84	90.05	-305.82	-135.35	1,106.66	933.87	172.79	6.405	
7,700.00	6,988.74	6,978.88	6,977.74	28.84	147.84	90.05	-305.82	-135.35	1,199.27	1,026.46	172.82	6.940	
7,800.00	6,988.78	6,978.91	6,977.78	29.67	147.84	90.06	-305.82	-135.35	1,292.98	1,120.15	172.84	7.481	
7,900.00	6,988.81	6,978.95	6,977.81	30.55	147.84	90.06	-305.82	-135.35	1,387.58	1,214.71	172.86	8.027	
8,000.00	6,988.85	6,978.98	6,977.85	31.49	147.84	90.07	-305.82	-135.35	1,482.88	1,309.99	172.89	8.577	
8,100.00	6,988.88	6,979.02	6,977.88	32.48	147.84	90.07	-305.82	-135.35	1,578.76	1,405.85	172.91	9.131	
8,200.00	6,988.91	6,979.05	6,977.91	33.51	147.84	90.07	-305.82	-135.35	1,675.12	1,502.19	172.93	9.687	
8,211.68	6,988.92	6,979.05	6,977.92	33.63	147.84	90.08	-305.82	-135.35	1,686.41	1,513.47	172.94	9.752	
8,300.00	6,988.95	6,979.08	6,977.95	34.58	147.85	90.07	-305.82	-135.35	1,771.54	1,598.59	172.96	10.243	
8,400.00	6,988.98	6,979.12	6,977.98	35.70	147.85	90.06	-305.82	-135.35	1,867.44	1,694.46	172.98	10.796	
8,500.00	6,989.01	6,979.15	6,978.01	36.84	147.85	90.05	-305.82	-135.35	1,962.77	1,789.76	173.00	11.345	
8,600.00	6,989.04	6,979.18	6,978.04	38.02	147.85	90.05	-305.82	-135.35	2,057.51	1,884.48	173.03	11.891	
8,700.00	6,989.07	6,979.21	6,978.07	39.22	147.85	90.04	-305.82	-135.35	2,151.62	1,978.57	173.06	12.433	
8,772.79	6,989.09	6,979.23	6,978.09	40.11	147.85	90.04	-305.82	-135.35	2,219.72	2,046.64	173.08	12.825	
8,800.00	6,989.10	6,979.24	6,978.10	40.44	147.85	90.04	-305.82	-135.35	2,245.13	2,072.05	173.08	12.971	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
Reference	Offset	Reference	Offset	Reference	Offset	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	(usft)	(usft)											
8,900.00	6,989.13	6,979.26	6,978.13	41.68	147.85	90.04	-305.82	-135.35	2,338.87	2,165.76	173.11	13.511				
9,000.00	6,989.15	6,979.29	6,978.15	42.95	147.85	90.04	-305.82	-135.35	2,433.11	2,259.96	173.14	14.052				
9,100.00	6,989.18	6,979.32	6,978.18	44.24	147.85	90.05	-305.82	-135.35	2,527.79	2,354.61	173.18	14.597				
9,200.00	6,989.21	6,979.34	6,978.21	45.55	147.85	90.05	-305.82	-135.35	2,622.86	2,449.66	173.21	15.143				
9,300.00	6,989.24	6,979.37	6,978.24	46.88	147.85	90.05	-305.82	-135.35	2,718.29	2,545.05	173.24	15.691				
9,400.00	6,989.26	6,979.40	6,978.26	48.23	147.85	90.05	-305.82	-135.35	2,814.04	2,640.77	173.27	16.241				
9,500.00	6,989.29	6,979.43	6,978.29	49.59	147.85	90.05	-305.82	-135.35	2,910.07	2,736.77	173.30	16.792				
9,600.00	6,989.32	6,979.45	6,978.32	50.96	147.85	90.06	-305.82	-135.35	3,006.36	2,833.02	173.34	17.344				
9,700.00	6,989.34	6,979.48	6,978.34	52.35	147.85	90.06	-305.82	-135.35	3,102.89	2,929.51	173.37	17.897				
9,800.00	6,989.37	6,979.51	6,978.37	53.75	147.86	90.06	-305.82	-135.35	3,199.63	3,026.22	173.41	18.452				
9,900.00	6,989.40	6,979.53	6,978.40	55.16	147.86	90.06	-305.82	-135.35	3,296.56	3,123.12	173.44	19.007				
10,000.00	6,989.42	6,979.56	6,978.42	56.58	147.86	90.06	-305.82	-135.35	3,393.67	3,220.19	173.48	19.562				
10,100.00	6,989.45	6,979.59	6,978.45	58.01	147.86	90.07	-305.82	-135.35	3,490.95	3,317.43	173.52	20.119				
10,200.00	6,989.48	6,979.61	6,978.48	59.45	147.86	90.07	-305.82	-135.35	3,588.37	3,414.82	173.55	20.676				
10,300.00	6,989.51	6,979.64	6,978.51	60.90	147.86	90.07	-305.82	-135.35	3,685.93	3,512.34	173.59	21.234				
10,400.00	6,989.53	6,979.67	6,978.53	62.35	147.86	90.07	-305.82	-135.35	3,783.62	3,609.99	173.63	21.791				
10,500.00	6,989.56	6,979.70	6,978.56	63.81	147.86	90.07	-305.82	-135.35	3,881.43	3,707.76	173.67	22.350				
10,600.00	6,989.59	6,979.72	6,978.59	65.28	147.86	90.08	-305.82	-135.35	3,979.35	3,805.64	173.71	22.908				
10,700.00	6,989.61	6,979.75	6,978.61	66.76	147.86	90.08	-305.82	-135.35	4,077.36	3,903.61	173.75	23.467				
10,800.00	6,989.64	6,979.78	6,978.64	68.24	147.86	90.08	-305.82	-135.35	4,175.47	4,001.68	173.79	24.026				
10,900.00	6,989.67	6,979.80	6,978.67	69.73	147.86	90.08	-305.82	-135.35	4,273.67	4,099.84	173.83	24.585				
11,000.00	6,989.70	6,979.83	6,978.70	71.22	147.86	90.08	-305.82	-135.35	4,371.95	4,198.08	173.88	25.144				
11,100.00	6,989.72	6,979.86	6,978.72	72.71	147.86	90.09	-305.82	-135.35	4,470.31	4,296.39	173.92	25.703				
11,200.00	6,989.75	6,979.88	6,978.75	74.22	147.86	90.09	-305.82	-135.35	4,568.74	4,394.78	173.96	26.263				
11,300.00	6,989.78	6,979.91	6,978.78	75.72	147.86	90.09	-305.82	-135.35	4,667.24	4,493.23	174.01	26.822				
11,400.00	6,989.80	6,979.94	6,978.80	77.23	147.87	90.09	-305.82	-135.35	4,765.79	4,591.74	174.05	27.381				
11,500.00	6,989.83	6,979.97	6,978.83	78.74	147.87	90.09	-305.82	-135.35	4,864.41	4,690.31	174.10	27.940				
11,600.00	6,989.86	6,979.99	6,978.86	80.26	147.87	90.10	-305.82	-135.35	4,963.08	4,788.93	174.15	28.499				
11,700.00	6,989.88	6,980.02	6,978.88	81.78	147.87	90.10	-305.82	-135.35	5,061.81	4,887.61	174.20	29.058				
11,800.00	6,989.91	6,980.05	6,978.91	83.30	147.87	90.10	-305.82	-135.35	5,160.58	4,986.34	174.24	29.617				
11,900.00	6,989.94	6,980.07	6,978.94	84.83	147.87	90.10	-305.82	-135.35	5,259.40	5,085.11	174.29	30.176				
12,000.00	6,989.97	6,980.10	6,978.97	86.36	147.87	90.10	-305.82	-135.35	5,358.26	5,183.92	174.34	30.734				
12,100.00	6,989.99	6,980.13	6,978.99	87.89	147.87	90.10	-305.82	-135.35	5,457.17	5,282.77	174.39	31.292				
12,200.00	6,990.02	6,980.15	6,979.02	89.42	147.87	90.11	-305.82	-135.35	5,556.11	5,381.67	174.45	31.850				
12,300.00	6,990.05	6,980.18	6,979.05	90.96	147.87	90.11	-305.82	-135.35	5,655.09	5,480.59	174.50	32.408				
12,400.00	6,990.07	6,980.21	6,979.07	92.50	147.87	90.11	-305.82	-135.35	5,754.11	5,579.56	174.55	32.965				
12,500.00	6,990.10	6,980.24	6,979.10	94.04	147.87	90.11	-305.82	-135.35	5,853.16	5,678.55	174.61	33.522				
12,600.00	6,990.13	6,980.26	6,979.13	95.58	147.87	90.11	-305.82	-135.35	5,952.24	5,777.58	174.66	34.079				
12,700.00	6,990.15	6,980.29	6,979.15	97.13	147.87	90.12	-305.82	-135.35	6,051.35	5,876.64	174.71	34.636				
12,800.00	6,990.18	6,980.32	6,979.18	98.68	147.87	90.12	-305.82	-135.35	6,150.49	5,975.72	174.77	35.192				
12,900.00	6,990.21	6,980.34	6,979.21	100.22	147.87	90.12	-305.82	-135.35	6,249.66	6,074.83	174.83	35.748				
13,000.00	6,990.24	6,980.37	6,979.24	101.78	147.88	90.12	-305.82	-135.35	6,348.85	6,173.97	174.89	36.303				
13,100.00	6,990.26	6,980.40	6,979.26	103.33	147.88	90.12	-305.82	-135.35	6,448.07	6,273.13	174.94	36.858				
13,200.00	6,990.29	6,980.43	6,979.29	104.88	147.88	90.13	-305.82	-135.35	6,547.32	6,372.31	175.00	37.413				
13,300.00	6,990.32	6,980.45	6,979.32	106.44	147.88	90.13	-305.82	-135.35	6,646.58	6,471.52	175.06	37.967				
13,400.00	6,990.34	6,980.48	6,979.34	107.99	147.88	90.13	-305.82	-135.35	6,745.87	6,570.75	175.12	38.521				
13,500.00	6,990.37	6,980.51	6,979.37	109.55	147.88	90.13	-305.82	-135.35	6,845.18	6,669.99	175.18	39.074				
13,600.00	6,990.40	6,980.53	6,979.40	111.11	147.88	90.13	-305.82	-135.35	6,944.50	6,769.26	175.25	39.627				
13,700.00	6,990.42	6,980.56	6,979.42	112.67	147.88	90.14	-305.82	-135.35	7,043.85	6,868.54	175.31	40.180				
13,800.00	6,990.45	6,980.59	6,979.45	114.23	147.88	90.14	-305.82	-135.35	7,143.22	6,967.85	175.37	40.732				
13,900.00	6,990.48	6,980.61	6,979.48	115.80	147.88	90.14	-305.82	-135.35	7,242.60	7,067.16	175.43	41.284				
14,000.00	6,990.51	6,980.64	6,979.51	117.36	147.88	90.14	-305.82	-135.35	7,342.00	7,166.50	175.50	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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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												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)			
14,100.00	6,990.53	6,980.67	6,979.53	118.93	147.88	90.14	-305.82	-135.35	7,441.41	7,265.85	175.56	42.386	
14,200.00	6,990.56	6,980.70	6,979.56	120.49	147.88	90.15	-305.82	-135.35	7,540.84	7,365.21	175.63	42.936	
14,300.00	6,990.59	6,980.72	6,979.59	122.06	147.88	90.15	-305.82	-135.35	7,640.29	7,464.59	175.70	43.486	
14,400.00	6,990.61	6,980.75	6,979.61	123.63	147.88	90.15	-305.82	-135.35	7,739.75	7,563.99	175.76	44.035	
14,500.00	6,990.64	6,980.78	6,979.64	125.20	147.88	90.15	-305.82	-135.35	7,839.22	7,663.39	175.83	44.584	
14,600.00	6,990.67	6,980.80	6,979.67	126.77	147.89	90.15	-305.82	-135.35	7,938.71	7,762.81	175.90	45.132	
14,700.00	6,990.70	6,980.83	6,979.70	128.34	147.89	90.16	-305.82	-135.35	8,038.21	7,862.24	175.97	45.679	
14,800.00	6,990.72	6,980.86	6,979.72	129.91	147.89	90.16	-305.82	-135.35	8,137.72	7,961.68	176.04	46.227	
14,900.00	6,990.75	6,980.88	6,979.75	131.48	147.89	90.16	-305.82	-135.35	8,237.25	8,061.14	176.11	46.773	
15,000.00	6,990.78	6,980.91	6,979.78	133.06	147.89	90.16	-305.82	-135.35	8,336.78	8,160.60	176.18	47.319	
15,100.00	6,990.80	6,980.94	6,979.80	134.63	147.89	90.16	-305.82	-135.35	8,436.33	8,260.07	176.25	47.865	
15,200.00	6,990.83	6,980.97	6,979.83	136.20	147.89	90.16	-305.82	-135.35	8,535.88	8,359.56	176.33	48.410	
15,300.00	6,990.86	6,980.99	6,979.86	137.78	147.89	90.17	-305.82	-135.35	8,635.45	8,459.05	176.40	48.954	
15,400.00	6,990.88	6,981.02	6,979.88	139.36	147.89	90.17	-305.82	-135.35	8,735.03	8,558.56	176.47	49.498	
15,500.00	6,990.91	6,981.05	6,979.91	140.93	147.89	90.17	-305.82	-135.35	8,834.61	8,658.07	176.55	50.041	
15,600.00	6,990.94	6,981.07	6,979.94	142.51	147.89	90.17	-305.82	-135.35	8,934.21	8,757.59	176.62	50.584	
15,700.00	6,990.97	6,981.10	6,979.97	144.09	147.89	90.17	-305.82	-135.35	9,033.82	8,857.12	176.70	51.126	
15,800.00	6,990.99	6,981.13	6,979.99	145.67	147.89	90.18	-305.82	-135.35	9,133.43	8,956.65	176.77	51.667	
15,900.00	6,991.02	6,981.15	6,980.02	147.24	147.89	90.18	-305.82	-135.35	9,233.05	9,056.20	176.85	52.208	
16,000.00	6,991.05	6,981.18	6,980.05	148.82	147.89	90.18	-305.82	-135.35	9,332.68	9,155.75	176.93	52.748	
16,100.00	6,991.07	6,981.21	6,980.07	150.40	147.89	90.18	-305.82	-135.35	9,432.32	9,255.31	177.01	53.288	
16,200.00	6,991.10	6,981.24	6,980.10	151.99	147.90	90.18	-305.82	-135.35	9,531.96	9,354.88	177.09	53.827	
16,300.00	6,991.13	6,981.26	6,980.13	153.57	147.90	90.19	-305.82	-135.35	9,631.61	9,454.45	177.17	54.365	
16,400.00	6,991.15	6,981.29	6,980.15	155.15	147.90	90.19	-305.82	-135.35	9,731.27	9,554.03	177.25	54.903	
16,500.00	6,991.18	6,981.32	6,980.18	156.73	147.90	90.19	-305.82	-135.35	9,830.94	9,653.61	177.33	55.440	
16,600.00	6,991.21	6,981.34	6,980.21	158.31	147.90	90.19	-305.82	-135.35	9,930.61	9,753.21	177.41	55.976	
16,700.00	6,991.24	6,981.37	6,980.24	159.90	147.90	90.19	-305.82	-135.35	10,030.29	9,852.81	177.49	56.512	
16,800.00	6,991.26	6,981.40	6,980.26	161.48	147.90	90.20	-305.82	-135.35	10,129.98	9,952.41	177.57	57.047	
16,900.00	6,991.29	6,981.42	6,980.29	163.06	147.90	90.20	-305.82	-135.35	10,229.67	10,052.02	177.65	57.582	
17,000.00	6,991.32	6,981.45	6,980.32	164.65	147.90	90.20	-305.82	-135.35	10,329.37	10,151.63	177.74	58.116	
17,100.00	6,991.34	6,981.48	6,980.34	166.23	147.90	90.20	-305.82	-135.35	10,429.07	10,251.25	177.82	58.649	
17,200.00	6,991.37	6,981.51	6,980.37	167.82	147.90	90.20	-305.82	-135.35	10,528.78	10,350.88	177.91	59.182	
17,300.00	6,991.40	6,981.53	6,980.40	169.40	147.90	90.21	-305.82	-135.35	10,628.50	10,450.51	177.99	59.714	
17,400.00	6,991.42	6,981.56	6,980.42	170.99	147.90	90.21	-305.82	-135.35	10,728.22	10,550.14	178.08	60.245	
17,500.00	6,991.45	6,981.59	6,980.45	172.57	147.90	90.21	-305.82	-135.35	10,827.94	10,649.78	178.16	60.775	
17,600.00	6,991.48	6,981.61	6,980.48	174.16	147.90	90.21	-305.82	-135.35	10,927.68	10,749.43	178.25	61.305	
17,700.00	6,991.51	6,981.64	6,980.51	175.75	147.90	90.21	-305.82	-135.35	11,027.41	10,849.07	178.34	61.835	
17,800.00	6,991.53	6,981.67	6,980.53	177.33	147.91	90.22	-305.82	-135.35	11,127.15	10,948.73	178.42	62.363	
17,900.00	6,991.56	6,981.70	6,980.56	178.92	147.91	90.22	-305.82	-135.35	11,226.90	11,048.38	178.51	62.891	
18,000.00	6,991.59	6,981.72	6,980.59	180.51	147.91	90.22	-305.82	-135.35	11,326.64	11,148.04	178.60	63.418	
18,100.00	6,991.61	6,981.75	6,980.61	182.10	147.91	90.22	-305.82	-135.35	11,426.40	11,247.71	178.69	63.945	
18,200.00	6,991.64	6,981.78	6,980.64	183.68	147.91	90.22	-305.82	-135.35	11,526.16	11,347.38	178.78	64.471	
18,300.00	6,991.67	6,981.80	6,980.67	185.27	147.91	90.23	-305.82	-135.35	11,625.92	11,447.05	178.87	64.996	
18,400.00	6,991.69	6,981.83	6,980.69	186.86	147.91	90.23	-305.82	-135.35	11,725.68	11,546.72	178.96	65.520	
18,500.00	6,991.72	6,981.86	6,980.72	188.45	147.91	90.23	-305.82	-135.35	11,825.45	11,646.40	179.05	66.044	
18,600.00	6,991.75	6,981.88	6,980.75	190.04	147.91	90.23	-305.82	-135.35	11,925.23	11,746.08	179.15	66.567	
18,700.00	6,991.78	6,981.91	6,980.78	191.63	147.91	90.23	-305.82	-135.35	12,025.01	11,845.77	179.24	67.090	
18,800.00	6,991.80	6,981.94	6,980.80	193.22	147.91	90.23	-305.82	-135.35	12,124.79	11,945.46	179.33	67.611	
18,900.00	6,991.83	6,981.97	6,980.83	194.81	147.91	90.24	-305.82	-135.35	12,224.57	12,045.15	179.42	68.132	
19,000.00	6,991.86	6,981.99	6,980.86	196.40	147.91	90.24	-305.82	-135.35	12,324.36	12,144.84	179.52	68.653	
19,100.00	6,991.88	6,982.02	6,980.88	197.99	147.91	90.24	-305.82	-135.35	12,424.15	12,244.54	179.61	69.172	
19,200.00	6,991.91	6,982.05	6,980.91	199.58	147.91	90.24	-305.82	-135.35	12,523.95	12,344.24	179.71	69.691	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,300.00	6,991.94	6,982.07	6,980.94	201.17	147.91	90.24	-305.82	-135.35	12,623.75	12,443.94	179.80	70.209		
19,342.28	6,991.95	6,982.08	6,980.95	201.84	147.91	90.25	-305.82	-135.35	12,665.94	12,486.10	179.84	70.428		
19,400.00	6,991.97	6,982.10	6,980.97	202.76	147.92	90.25	-305.82	-135.35	12,723.55	12,543.65	179.90	70.726		
19,500.00	6,991.99	6,982.13	6,980.99	204.35	147.92	90.25	-305.82	-135.35	12,823.35	12,643.36	179.99	71.243		
19,542.28	6,992.00	6,982.14	6,981.00	205.03	147.92	90.25	-305.82	-135.35	12,865.55	12,685.51	180.03	71.461		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	49.01	49.01	0.00	0.06	-68.62	2,486.19	-6,349.35	6,818.77				
100.00	100.00	1,252.51	1,235.74	0.25	3.55	-69.64	2,340.96	-6,307.20	6,812.45	6,808.79	3.66	1,861.835	
200.00	200.00	1,317.96	1,299.17	0.61	3.85	-69.75	2,325.58	-6,302.37	6,797.04	6,792.87	4.18	1,627.261	
300.00	300.00	1,437.64	1,415.03	0.97	4.44	-69.95	2,296.86	-6,293.73	6,781.68	6,776.67	5.01	1,353.675	
400.00	400.00	1,544.84	1,518.67	1.33	4.98	-70.14	2,270.60	-6,285.88	6,766.11	6,760.29	5.82	1,163.233	
500.00	500.00	1,594.00	1,566.21	1.68	5.21	-70.23	2,258.58	-6,282.34	6,750.80	6,744.44	6.37	1,060.467	
600.00	600.00	1,658.00	1,628.34	2.04	5.48	-70.33	2,243.91	-6,277.95	6,736.30	6,729.35	6.95	968.972	
700.00	700.00	1,700.68	1,669.92	2.40	5.66	-70.40	2,234.70	-6,275.17	6,722.53	6,715.07	7.46	900.776	
800.00	799.98	1,800.07	1,766.78	2.76	6.09	-40.76	2,213.30	-6,268.86	6,707.81	6,699.60	8.20	817.636	
900.00	899.92	1,940.06	1,902.97	3.12	6.75	-41.01	2,182.27	-6,259.63	6,691.38	6,682.25	9.13	732.594	
1,000.00	999.86	2,132.85	2,089.79	3.47	7.68	-41.39	2,136.50	-6,246.55	6,674.56	6,664.26	10.31	647.474	
1,100.00	1,099.80	2,225.00	2,178.91	3.83	8.14	-41.57	2,114.15	-6,239.46	6,656.59	6,645.53	11.06	601.699	
1,200.00	1,199.74	2,321.53	2,272.17	4.19	8.62	-41.77	2,090.32	-6,232.28	6,638.76	6,626.92	11.84	560.579	
1,300.00	1,299.68	2,399.01	2,347.19	4.55	8.98	-41.92	2,071.90	-6,226.37	6,621.16	6,608.64	12.51	529.115	
1,400.00	1,399.61	2,476.00	2,421.79	4.91	9.33	-42.08	2,053.68	-6,220.71	6,603.91	6,590.73	13.19	500.712	
1,500.00	1,499.55	2,559.29	2,502.45	5.27	9.74	-42.24	2,033.83	-6,214.74	6,586.87	6,572.96	13.91	473.541	
1,600.00	1,599.49	2,611.45	2,553.12	5.63	9.98	-42.34	2,021.98	-6,211.12	6,570.44	6,555.95	14.49	453.497	
1,700.00	1,699.43	2,710.01	2,648.98	5.99	10.41	-42.53	2,000.04	-6,204.51	6,554.46	6,539.22	15.24	430.178	
1,800.00	1,799.37	2,790.00	2,726.80	6.35	10.77	-42.68	1,982.32	-6,199.12	6,538.54	6,522.63	15.92	410.811	
1,900.00	1,899.31	2,910.93	2,844.39	6.71	11.32	-42.91	1,955.35	-6,190.81	6,522.51	6,505.74	16.77	388.968	
2,000.00	1,999.25	3,052.05	2,981.35	7.07	12.00	-43.19	1,922.87	-6,180.73	6,506.06	6,488.33	17.73	366.964	
2,100.00	2,099.19	3,128.34	3,055.37	7.42	12.35	-43.35	1,905.29	-6,175.16	6,489.57	6,471.16	18.41	352.543	
2,200.00	2,199.13	3,166.00	3,091.96	7.78	12.51	-43.42	1,896.76	-6,172.50	6,473.67	6,454.74	18.93	341.962	
2,300.00	2,299.07	3,229.00	3,153.32	8.14	12.78	-43.54	1,883.09	-6,168.39	6,458.51	6,438.97	19.54	330.455	
2,400.00	2,399.01	3,259.78	3,183.41	8.50	12.90	-43.60	1,876.88	-6,166.57	6,444.32	6,424.29	20.03	321.725	
2,500.00	2,498.94	3,291.00	3,214.03	8.86	13.02	-43.65	1,871.00	-6,164.87	6,431.13	6,410.61	20.52	313.447	
2,600.00	2,598.88	3,354.00	3,275.97	9.22	13.25	-43.75	1,860.01	-6,161.55	6,418.61	6,397.52	21.10	304.258	
2,700.00	2,698.82	3,417.00	3,338.06	9.58	13.47	-43.84	1,849.78	-6,158.39	6,406.70	6,385.04	21.67	295.706	
2,800.00	2,798.76	3,447.45	3,368.12	9.94	13.57	-43.89	1,845.14	-6,157.08	6,395.74	6,373.61	22.13	288.982	
2,900.00	2,898.70	3,480.00	3,400.32	10.30	13.67	-43.93	1,840.51	-6,155.97	6,385.89	6,363.28	22.60	282.524	
3,000.00	2,998.64	3,568.78	3,488.24	10.66	13.95	-44.05	1,828.40	-6,153.34	6,376.68	6,353.45	23.23	274.498	
3,100.00	3,098.58	3,652.58	3,571.37	11.02	14.19	-44.15	1,818.22	-6,150.56	6,367.61	6,343.78	23.82	267.289	
3,200.00	3,198.52	3,702.82	3,621.30	11.38	14.32	-44.20	1,812.99	-6,148.86	6,359.03	6,334.71	24.32	261.526	
3,300.00	3,298.46	3,732.00	3,650.34	11.75	14.39	-44.23	1,810.28	-6,148.02	6,351.37	6,326.62	24.75	256.580	
3,400.00	3,398.40	3,794.00	3,712.15	12.11	14.52	-44.28	1,805.70	-6,146.63	6,344.67	6,319.42	25.25	251.276	
3,500.00	3,498.34	3,825.00	3,743.10	12.47	14.58	-44.30	1,804.02	-6,146.09	6,338.85	6,313.18	25.67	246.910	
3,600.00	3,598.27	3,899.49	3,817.51	12.83	14.71	-44.34	1,800.66	-6,145.07	6,333.78	6,307.62	26.17	242.048	
3,700.00	3,698.21	3,997.19	3,915.11	13.19	14.89	-44.40	1,796.39	-6,143.80	6,328.85	6,302.15	26.71	236.964	
3,800.00	3,798.15	4,094.72	4,012.54	13.55	15.06	-44.45	1,792.19	-6,142.55	6,323.96	6,296.72	27.25	232.083	
3,900.00	3,898.09	4,192.25	4,109.98	13.91	15.23	-44.51	1,788.04	-6,141.32	6,319.12	6,291.33	27.79	227.395	
4,000.00	3,998.03	4,289.80	4,207.43	14.27	15.40	-44.56	1,783.95	-6,140.10	6,314.31	6,285.98	28.33	222.887	
4,100.00	4,097.97	4,387.36	4,304.90	14.63	15.58	-44.62	1,779.93	-6,138.91	6,309.54	6,280.67	28.87	218.550	
4,200.00	4,197.91	4,484.92	4,402.38	14.99	15.75	-44.67	1,775.96	-6,137.73	6,304.81	6,275.40	29.41	214.375	
4,300.00	4,297.85	4,582.50	4,499.87	15.35	15.92	-44.72	1,772.05	-6,136.57	6,300.12	6,270.17	29.95	210.352	
4,400.00	4,397.79	4,680.08	4,597.37	15.71	16.10	-44.78	1,768.20	-6,135.42	6,295.47	6,264.98	30.49	206.473	
4,500.00	4,497.73	4,777.68	4,694.88	16.07	16.27	-44.83	1,764.41	-6,134.30	6,290.85	6,259.82	31.03	202.731	
4,600.00	4,597.66	4,875.28	4,792.41	16.43	16.44	-44.88	1,760.68	-6,133.19	6,286.28	6,254.71	31.57	199.119	
4,700.00	4,697.60	4,972.89	4,889.95	16.79	16.62	-44.93	1,757.01	-6,132.10	6,281.75	6,249.64	32.11	195.630	
4,800.00	4,797.54	5,070.52	4,987.50	17.15	16.79	-44.98	1,753.40	-6,131.03	6,277.25	6,244.60	32.65	192.257	
4,900.00	4,897.48	5,168.15	5,085.06	17.51	16.96	-45.03	1,749.85	-6,129.97	6,272.80	6,239.61	33.19	188.997	
5,000.00	4,997.42	5,265.79	5,182.63	17.87	17.14	-45.08	1,746.36	-6,128.93	6,268.38	6,234.65	33.73	185.841	
5,100.00	5,097.36	5,363.44	5,280.21	18.23	17.31	-45.13	1,742.93	-6,127.91	6,264.00	6,229.73	34.27	182.787	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #072C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		320-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
5,200.00	5,197.30	5,461.09	5,377.81	18.59	17.49	-45.18	1,739.56	-6,126.91	6,259.66	6,224.85	34.81	179.829		
5,300.00	5,297.24	5,558.76	5,475.41	18.95	17.66	-45.23	1,736.24	-6,125.93	6,255.36	6,220.01	35.35	176.963		
5,402.82	5,400.00	5,659.19	5,575.78	19.32	17.84	-45.28	1,732.90	-6,124.94	6,250.97	6,215.07	35.90	174.107		
5,500.00	5,497.13	5,754.14	5,670.68	19.67	18.01	-45.31	1,729.80	-6,124.01	6,247.16	6,210.73	36.43	171.499		
5,600.00	5,597.11	5,851.91	5,768.39	20.03	18.18	-45.34	1,726.66	-6,123.08	6,243.87	6,206.91	36.96	168.914		
5,700.00	5,697.10	5,949.73	5,866.16	20.39	18.36	-45.37	1,723.59	-6,122.17	6,241.23	6,203.73	37.50	166.424		
5,802.82	5,799.92	6,050.35	5,966.73	20.75	18.54	-75.39	1,720.48	-6,121.25	6,239.20	6,201.14	38.05	163.964		
5,900.00	5,897.09	6,145.46	6,061.79	21.10	18.71	-75.41	1,717.61	-6,120.39	6,237.61	6,199.04	38.57	161.717		
6,000.00	5,997.09	6,243.34	6,159.63	21.45	18.88	-75.43	1,714.71	-6,119.53	6,236.01	6,196.91	39.11	159.468		
6,100.00	6,097.09	6,341.23	6,257.47	21.81	19.06	-75.46	1,711.87	-6,118.69	6,234.45	6,194.81	39.64	157.281		
6,200.00	6,197.09	6,439.11	6,355.31	22.16	19.23	-75.48	1,709.10	-6,117.86	6,232.92	6,192.75	40.17	155.152		
6,300.00	6,297.09	6,537.01	6,453.16	22.52	19.41	-75.50	1,706.38	-6,117.06	6,231.43	6,190.72	40.71	153.080		
6,354.91	6,352.00	6,590.76	6,506.89	22.72	19.50	-75.52	1,704.91	-6,116.62	6,230.62	6,189.62	41.00	151.965		
6,365.19	6,362.28	6,600.82	6,516.95	22.75	19.52	-154.52	1,704.64	-6,116.54	6,230.55	6,189.49	41.05	151.764	CC, ES	
6,400.00	6,397.06	6,634.87	6,550.98	22.87	19.58	-154.50	1,703.72	-6,116.27	6,231.41	6,190.17	41.24	151.112		
6,450.00	6,446.74	6,683.52	6,599.62	23.04	19.67	-154.37	1,702.42	-6,115.88	6,235.66	6,194.16	41.50	150.273		
6,500.00	6,495.84	6,731.62	6,647.69	23.20	19.76	-154.11	1,701.15	-6,115.50	6,243.43	6,201.67	41.75	149.534		
6,550.00	6,544.06	6,778.85	6,694.91	23.36	19.84	-153.71	1,699.92	-6,115.14	6,254.68	6,212.67	42.01	148.899		
6,600.00	6,591.08	6,824.94	6,740.98	23.51	19.92	-153.17	1,698.73	-6,114.78	6,269.34	6,227.09	42.25	148.370		
6,650.00	6,636.64	6,869.59	6,785.62	23.66	20.00	-152.47	1,697.59	-6,114.45	6,287.34	6,244.84	42.50	147.950		
6,700.00	6,680.44	6,912.53	6,828.54	23.82	20.08	-151.59	1,696.51	-6,114.12	6,308.56	6,265.83	42.73	147.639		
6,750.00	6,722.22	6,953.50	6,869.49	23.99	20.15	-150.49	1,695.49	-6,113.82	6,332.88	6,289.93	42.95	147.435		
6,800.00	6,761.71	6,992.23	6,908.22	24.16	20.22	-149.16	1,694.53	-6,113.54	6,360.16	6,317.00	43.17	147.338	SF	
6,850.00	6,798.68	7,028.51	6,944.48	24.33	20.29	-147.53	1,693.64	-6,113.27	6,390.24	6,346.87	43.37	147.345		
6,900.00	6,832.89	7,062.09	6,978.05	24.50	20.35	-145.55	1,692.83	-6,113.03	6,422.93	6,379.38	43.56	147.453		
6,950.00	6,864.14	7,092.77	7,008.73	24.69	20.40	-143.14	1,692.09	-6,112.81	6,458.05	6,414.31	43.74	147.658		
7,000.00	6,892.23	7,120.37	7,036.31	24.88	20.45	-140.21	1,691.43	-6,112.61	6,495.38	6,451.48	43.90	147.955		
7,050.00	6,916.99	7,144.71	7,060.65	25.08	20.50	-136.61	1,690.85	-6,112.44	6,534.69	6,490.64	44.05	148.340		
7,100.00	6,938.27	7,165.64	7,081.57	25.29	20.53	-132.19	1,690.36	-6,112.30	6,575.75	6,531.56	44.19	148.807		
7,150.00	6,955.93	7,183.04	7,098.97	25.51	20.56	-126.77	1,689.95	-6,112.18	6,618.32	6,574.00	44.31	149.349		
7,200.00	6,969.87	7,196.80	7,112.72	25.75	20.59	-120.15	1,689.63	-6,112.08	6,662.11	6,617.69	44.43	149.960		
7,250.00	6,980.00	7,206.82	7,122.74	25.99	20.61	-112.20	1,689.40	-6,112.01	6,706.88	6,662.36	44.52	150.633		
7,300.00	6,986.25	7,213.06	7,128.98	26.25	20.62	-102.95	1,689.25	-6,111.97	6,752.35	6,707.74	44.61	151.359		
7,354.68	6,988.62	7,215.50	7,131.42	26.53	20.62	-91.74	1,689.20	-6,111.95	6,802.54	6,757.84	44.69	152.203		
7,400.00	6,988.64	7,215.62	7,131.54	26.78	20.62	-91.74	1,689.19	-6,111.95	6,844.25	6,799.49	44.76	152.919		
7,500.00	6,988.67	7,215.89	7,131.80	27.40	20.62	-91.75	1,689.19	-6,111.95	6,936.47	6,891.56	44.90	154.473		
7,600.00	6,988.71	7,216.15	7,132.07	28.08	20.62	-91.75	1,689.18	-6,111.95	7,028.89	6,983.83	45.06	155.992		
7,700.00	6,988.74	7,216.41	7,132.33	28.84	20.62	-91.76	1,689.18	-6,111.94	7,121.52	7,076.30	45.22	157.480		
7,800.00	6,988.78	7,216.67	7,132.59	29.67	20.62	-91.77	1,689.17	-6,111.94	7,214.35	7,168.96	45.39	158.938		
7,900.00	6,988.81	7,216.94	7,132.85	30.55	20.62	-91.77	1,689.16	-6,111.94	7,307.37	7,261.81	45.57	160.370		
8,000.00	6,988.85	7,217.20	7,133.12	31.49	20.62	-91.78	1,689.16	-6,111.94	7,400.57	7,354.82	45.75	161.776		
8,100.00	6,988.88	7,217.46	7,133.38	32.48	20.63	-91.78	1,689.15	-6,111.94	7,493.95	7,448.02	45.93	163.160		
8,200.00	6,988.91	7,217.73	7,133.64	33.51	20.63	-91.79	1,689.15	-6,111.94	7,587.49	7,541.37	46.12	164.523		
8,211.68	6,988.92	7,217.76	7,133.67	33.63	20.63	-91.79	1,689.14	-6,111.94	7,598.43	7,552.29	46.14	164.681		
8,300.00	6,988.95	7,218.02	7,133.94	34.58	20.63	-91.96	1,689.14	-6,111.93	7,681.66	7,635.35	46.30	165.895		
8,400.00	6,988.98	7,218.39	7,134.31	35.70	20.63	-92.20	1,689.13	-6,111.93	7,777.05	7,730.58	46.48	167.330		
8,500.00	6,989.01	7,218.85	7,134.76	36.84	20.63	-92.51	1,689.12	-6,111.93	7,873.54	7,826.90	46.63	168.835		
8,600.00	6,989.04	7,219.38	7,135.30	38.02	20.63	-92.93	1,689.11	-6,111.92	7,970.95	7,924.17	46.77	170.413		
8,700.00	6,989.07	7,220.00	7,135.91	39.22	20.63	-93.54	1,689.09	-6,111.92	8,069.13	8,022.24	46.90	172.065		
8,772.79	6,989.09	7,220.49	7,136.41	40.11	20.63	-94.17	1,689.08	-6,111.92	8,141.01	8,094.03	46.97	173.313		
8,800.00	6,989.10	7,220.68	7,136.60	40.44	20.63	-94.18	1,689.08	-6,111.92	8,167.94	8,120.94	47.00	173.787		
8,900.00	6,989.13	7,221.39	7,137.31	41.68	20.63	-94.21	1,689.06	-6,111.91	8,266.90	8,219.81	47.10	175.530		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)
9,000.00	6,989.15	7,222.10	7,138.01	42.95	20.63	-94.24	1,689.04	-6,111.91	8,365.90	8,318.70	47.19	177.266	
9,100.00	6,989.18	7,222.80	7,138.72	44.24	20.63	-94.28	1,689.03	-6,111.90	8,464.92	8,417.62	47.29	178.996	
9,200.00	6,989.21	7,223.51	7,139.43	45.55	20.64	-94.31	1,689.01	-6,111.90	8,563.96	8,516.57	47.39	180.721	
9,300.00	6,989.24	7,224.22	7,140.13	46.88	20.64	-94.35	1,689.00	-6,111.89	8,663.02	8,615.53	47.48	182.439	
9,400.00	6,989.26	7,224.92	7,140.84	48.23	20.64	-94.38	1,688.98	-6,111.89	8,762.10	8,714.52	47.58	184.152	
9,500.00	6,989.29	7,225.63	7,141.54	49.59	20.64	-94.42	1,688.96	-6,111.88	8,861.21	8,813.53	47.68	185.860	
9,600.00	6,989.32	7,226.34	7,142.25	50.96	20.64	-94.45	1,688.95	-6,111.88	8,960.33	8,912.56	47.77	187.562	
9,700.00	6,989.34	7,227.04	7,142.96	52.35	20.64	-94.48	1,688.93	-6,111.87	9,059.47	9,011.60	47.87	189.258	
9,800.00	6,989.37	7,227.75	7,143.66	53.75	20.64	-94.52	1,688.91	-6,111.87	9,158.63	9,110.67	47.96	190.949	
9,900.00	6,989.40	7,228.45	7,144.37	55.16	20.65	-94.55	1,688.90	-6,111.86	9,257.81	9,209.75	48.06	192.634	
10,000.00	6,989.42	7,229.16	7,145.07	56.58	20.65	-94.59	1,688.88	-6,111.86	9,357.01	9,308.86	48.15	194.314	
10,100.00	6,989.45	7,229.86	7,145.78	58.01	20.65	-94.62	1,688.86	-6,111.85	9,456.22	9,407.97	48.25	195.988	
10,200.00	6,989.48	7,230.57	7,146.48	59.45	20.65	-94.66	1,688.85	-6,111.85	9,555.45	9,507.11	48.34	197.657	
10,300.00	6,989.51	7,231.27	7,147.18	60.90	20.65	-94.69	1,688.83	-6,111.84	9,654.70	9,606.26	48.44	199.321	
10,400.00	6,989.53	7,231.97	7,147.89	62.35	20.65	-94.72	1,688.82	-6,111.84	9,753.96	9,705.43	48.53	200.979	
10,500.00	6,989.56	7,232.68	7,148.59	63.81	20.65	-94.76	1,688.80	-6,111.83	9,853.24	9,804.61	48.63	202.632	
10,600.00	6,989.59	7,233.38	7,149.29	65.28	20.65	-94.79	1,688.78	-6,111.83	9,952.53	9,903.81	48.72	204.280	
10,700.00	6,989.61	7,234.08	7,150.00	66.76	20.66	-94.83	1,688.77	-6,111.82	10,051.83	10,003.02	48.81	205.922	
10,800.00	6,989.64	7,234.79	7,150.70	68.24	20.66	-94.86	1,688.75	-6,111.82	10,151.15	10,102.24	48.91	207.559	
10,900.00	6,989.67	7,235.49	7,151.40	69.73	20.66	-94.90	1,688.73	-6,111.81	10,250.48	10,201.48	49.00	209.190	
11,000.00	6,989.70	7,236.19	7,152.10	71.22	20.66	-94.93	1,688.72	-6,111.81	10,349.83	10,300.73	49.09	210.816	
11,100.00	6,989.72	7,236.89	7,152.80	72.71	20.66	-94.96	1,688.70	-6,111.80	10,449.18	10,400.00	49.19	212.437	
11,200.00	6,989.75	7,237.60	7,153.51	74.22	20.66	-95.00	1,688.69	-6,111.80	10,548.55	10,499.27	49.28	214.053	
11,300.00	6,989.78	7,238.30	7,154.21	75.72	20.66	-95.03	1,688.67	-6,111.79	10,647.93	10,598.56	49.37	215.663	
11,400.00	6,989.80	7,239.00	7,154.91	77.23	20.66	-95.07	1,688.65	-6,111.79	10,747.32	10,697.86	49.47	217.268	
11,500.00	6,989.83	7,239.70	7,155.61	78.74	20.67	-95.10	1,688.64	-6,111.78	10,846.73	10,797.17	49.56	218.867	
11,600.00	6,989.86	7,240.40	7,156.31	80.26	20.67	-95.13	1,688.62	-6,111.78	10,946.14	10,896.49	49.65	220.461	
11,700.00	6,989.88	7,241.10	7,157.01	81.78	20.67	-95.17	1,688.61	-6,111.77	11,045.57	10,995.82	49.74	222.050	
11,800.00	6,989.91	7,241.80	7,157.71	83.30	20.67	-95.20	1,688.59	-6,111.77	11,145.00	11,095.17	49.84	223.634	
11,900.00	6,989.94	7,242.50	7,158.41	84.83	20.67	-95.24	1,688.57	-6,111.77	11,244.45	11,194.52	49.93	225.212	
12,000.00	6,989.97	7,243.20	7,159.11	86.36	20.67	-95.27	1,688.56	-6,111.76	11,343.90	11,293.88	50.02	226.785	
12,100.00	6,989.99	7,243.90	7,159.81	87.89	20.67	-95.30	1,688.54	-6,111.76	11,443.36	11,393.25	50.11	228.352	
12,200.00	6,990.02	7,244.60	7,160.51	89.42	20.67	-95.34	1,688.53	-6,111.75	11,542.84	11,492.63	50.21	229.914	
12,300.00	6,990.05	7,245.30	7,161.21	90.96	20.68	-95.37	1,688.51	-6,111.75	11,642.32	11,592.02	50.30	231.471	
12,400.00	6,990.07	7,246.00	7,161.90	92.50	20.68	-95.40	1,688.49	-6,111.74	11,741.81	11,691.42	50.39	233.022	
12,500.00	6,990.10	7,246.70	7,162.60	94.04	20.68	-95.44	1,688.48	-6,111.74	11,841.31	11,790.83	50.48	234.568	
12,600.00	6,990.13	7,247.39	7,163.30	95.58	20.68	-95.47	1,688.46	-6,111.73	11,940.82	11,890.24	50.57	236.108	
12,700.00	6,990.15	7,248.09	7,164.00	97.13	20.68	-95.51	1,688.44	-6,111.73	12,040.33	11,989.67	50.67	237.643	
12,800.00	6,990.18	7,248.79	7,164.70	98.68	20.68	-95.54	1,688.43	-6,111.72	12,139.86	12,089.10	50.76	239.173	
12,900.00	6,990.21	7,249.49	7,165.39	100.22	20.68	-95.57	1,688.41	-6,111.72	12,239.39	12,188.54	50.85	240.697	
13,000.00	6,990.24	7,250.18	7,166.09	101.78	20.68	-95.61	1,688.40	-6,111.71	12,338.93	12,287.99	50.94	242.215	
13,100.00	6,990.26	7,250.88	7,166.79	103.33	20.69	-95.64	1,688.38	-6,111.71	12,438.47	12,387.44	51.03	243.729	
13,200.00	6,990.29	7,251.58	7,167.48	104.88	20.69	-95.68	1,688.36	-6,111.70	12,538.03	12,486.90	51.13	245.236	
13,300.00	6,990.32	7,252.27	7,168.18	106.44	20.69	-95.71	1,688.35	-6,111.70	12,637.59	12,586.37	51.22	246.739	
13,400.00	6,990.34	7,252.97	7,168.88	107.99	20.69	-95.74	1,688.33	-6,111.69	12,737.16	12,685.85	51.31	248.235	
13,500.00	6,990.37	7,253.66	7,169.57	109.55	20.69	-95.78	1,688.32	-6,111.69	12,836.73	12,785.33	51.40	249.727	
13,600.00	6,990.40	7,254.36	7,170.27	111.11	20.69	-95.81	1,688.30	-6,111.68	12,936.31	12,884.82	51.50	251.212	
13,700.00	6,990.42	7,255.06	7,170.96	112.67	20.69	-95.84	1,688.28	-6,111.68	13,035.90	12,984.31	51.59	252.693	
13,800.00	6,990.45	7,255.75	7,171.66	114.23	20.69	-95.88	1,688.27	-6,111.67	13,135.49	13,083.81	51.68	254.167	
13,900.00	6,990.48	7,256.45	7,172.35	115.80	20.70	-95.91	1,688.25	-6,111.67	13,235.09	13,183.32	51.77	255.637	
14,000.00	6,990.51	7,257.14	7,173.04	117.36	20.70	-95.95	1,688.24	-6,111.67	13,334.70	13,282.83	51.87	257.100	
14,100.00	6,990.53	7,257.83	7,173.74	118.93	20.70	-95.98	1,688.22	-6,111.66	13,434.31	13,382.35	51.96	258.559	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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: 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
14,200.00	6,990.56	7,258.53	7,174.43	120.49	20.70	-96.01	1,688.21	-6,111.66	13,533.92	13,481.87	52.05	260.011	
14,300.00	6,990.59	7,259.22	7,175.13	122.06	20.70	-96.05	1,688.19	-6,111.65	13,633.55	13,581.40	52.14	261.458	
14,400.00	6,990.61	7,259.92	7,175.82	123.63	20.70	-96.08	1,688.17	-6,111.65	13,733.17	13,680.94	52.24	262.900	
14,500.00	6,990.64	7,260.61	7,176.51	125.20	20.70	-96.11	1,688.16	-6,111.64	13,832.81	13,780.48	52.33	264.336	
14,600.00	6,990.67	7,261.30	7,177.21	126.77	20.70	-96.15	1,688.14	-6,111.64	13,932.45	13,880.02	52.42	265.766	
14,700.00	6,990.70	7,261.99	7,177.90	128.34	20.71	-96.18	1,688.13	-6,111.63	14,032.09	13,979.57	52.52	267.191	
14,800.00	6,990.72	7,262.69	7,178.59	129.91	20.71	-96.21	1,688.11	-6,111.63	14,131.74	14,079.13	52.61	268.611	
14,900.00	6,990.75	7,263.38	7,179.28	131.48	20.71	-96.25	1,688.09	-6,111.62	14,231.39	14,178.69	52.70	270.024	
15,000.00	6,990.78	7,264.07	7,179.97	133.06	20.71	-96.28	1,688.08	-6,111.62	14,331.05	14,278.25	52.80	271.432	
15,100.00	6,990.80	7,264.76	7,180.67	134.63	20.71	-96.31	1,688.06	-6,111.61	14,430.71	14,377.82	52.89	272.835	
15,200.00	6,990.83	7,265.46	7,181.36	136.20	20.71	-96.35	1,688.05	-6,111.61	14,530.38	14,477.40	52.99	274.232	
15,300.00	6,990.86	7,266.15	7,182.05	137.78	20.71	-96.38	1,688.03	-6,111.60	14,630.05	14,576.97	53.08	275.624	
15,400.00	6,990.88	7,266.84	7,182.74	139.36	20.71	-96.41	1,688.02	-6,111.60	14,729.73	14,676.56	53.17	277.009	
15,500.00	6,990.91	7,267.53	7,183.43	140.93	20.72	-96.45	1,688.00	-6,111.59	14,829.41	14,776.14	53.27	278.390	
15,600.00	6,990.94	7,268.22	7,184.12	142.51	20.72	-96.48	1,687.98	-6,111.59	14,929.10	14,875.73	53.36	279.764	
15,700.00	6,990.97	7,268.91	7,184.81	144.09	20.72	-96.51	1,687.97	-6,111.59	15,028.78	14,975.33	53.46	281.133	
15,800.00	6,990.99	7,269.60	7,185.50	145.67	20.72	-96.55	1,687.95	-6,111.58	15,128.48	15,074.92	53.55	282.497	
15,900.00	6,991.02	7,270.29	7,186.19	147.24	20.72	-96.58	1,687.94	-6,111.58	15,228.17	15,174.53	53.65	283.855	
16,000.00	6,991.05	7,270.98	7,186.88	148.82	20.72	-96.61	1,687.92	-6,111.57	15,327.88	15,274.13	53.74	285.207	
16,100.00	6,991.07	7,271.67	7,187.57	150.40	20.72	-96.65	1,687.90	-6,111.57	15,427.58	15,373.74	53.84	286.554	
16,200.00	6,991.10	7,272.36	7,188.26	151.99	20.72	-96.68	1,687.89	-6,111.56	15,527.29	15,473.36	53.93	287.895	
16,300.00	6,991.13	7,273.04	7,188.95	153.57	20.72	-96.71	1,687.87	-6,111.56	15,627.00	15,572.97	54.03	289.230	
16,400.00	6,991.15	7,273.73	7,189.63	155.15	20.73	-96.75	1,687.86	-6,111.55	15,726.72	15,672.59	54.13	290.560	
16,500.00	6,991.18	7,274.42	7,190.32	156.73	20.73	-96.78	1,687.84	-6,111.55	15,826.44	15,772.22	54.22	291.885	
16,600.00	6,991.21	7,275.11	7,191.01	158.31	20.73	-96.81	1,687.83	-6,111.54	15,926.16	15,871.84	54.32	293.204	
16,700.00	6,991.24	7,275.80	7,191.70	159.90	20.73	-96.85	1,687.81	-6,111.54	16,025.89	15,971.47	54.41	294.517	
16,800.00	6,991.26	7,276.48	7,192.38	161.48	20.73	-96.88	1,687.79	-6,111.53	16,125.62	16,071.11	54.51	295.825	
16,900.00	6,991.29	7,277.17	7,193.07	163.06	20.73	-96.91	1,687.78	-6,111.53	16,225.35	16,170.74	54.61	297.127	
17,000.00	6,991.32	7,277.86	7,193.76	164.65	20.73	-96.95	1,687.76	-6,111.52	16,325.09	16,270.38	54.70	298.423	
17,100.00	6,991.34	7,278.55	7,194.44	166.23	20.73	-96.98	1,687.75	-6,111.52	16,424.83	16,370.02	54.80	299.714	
17,200.00	6,991.37	7,279.23	7,195.13	167.82	20.74	-97.01	1,687.73	-6,111.52	16,524.57	16,469.67	54.90	301.000	
17,300.00	6,991.40	7,279.92	7,195.82	169.40	20.74	-97.05	1,687.72	-6,111.51	16,624.31	16,569.32	55.00	302.280	
17,400.00	6,991.42	7,280.60	7,196.50	170.99	20.74	-97.08	1,687.70	-6,111.51	16,724.06	16,668.97	55.09	303.554	
17,500.00	6,991.45	7,281.29	7,197.19	172.57	20.74	-97.11	1,687.69	-6,111.50	16,823.82	16,768.62	55.19	304.823	
17,600.00	6,991.48	7,281.98	7,197.87	174.16	20.74	-97.15	1,687.67	-6,111.50	16,923.57	16,868.28	55.29	306.086	
17,700.00	6,991.51	7,282.66	7,198.56	175.75	20.74	-97.18	1,687.65	-6,111.49	17,023.33	16,967.94	55.39	307.344	
17,800.00	6,991.53	7,283.35	7,199.24	177.33	20.74	-97.21	1,687.64	-6,111.49	17,123.09	17,067.60	55.49	308.596	
17,900.00	6,991.56	7,284.03	7,199.93	178.92	20.74	-97.24	1,687.62	-6,111.48	17,222.85	17,167.26	55.59	309.843	
18,000.00	6,991.59	7,284.72	7,200.61	180.51	20.75	-97.28	1,687.61	-6,111.48	17,322.62	17,266.93	55.68	311.084	
18,100.00	6,991.61	7,285.40	7,201.30	182.10	20.75	-97.31	1,687.59	-6,111.47	17,422.38	17,366.60	55.78	312.320	
18,200.00	6,991.64	7,286.08	7,201.98	183.68	20.75	-97.34	1,687.58	-6,111.47	17,522.16	17,466.27	55.88	313.550	
18,300.00	6,991.67	7,286.77	7,202.66	185.27	20.75	-97.38	1,687.56	-6,111.46	17,621.93	17,565.95	55.98	314.775	
18,400.00	6,991.69	7,287.45	7,203.35	186.86	20.75	-97.41	1,687.55	-6,111.46	17,721.71	17,665.62	56.08	315.995	
18,500.00	6,991.72	7,288.13	7,204.03	188.45	20.75	-97.44	1,687.53	-6,111.46	17,821.48	17,765.30	56.18	317.209	
18,600.00	6,991.75	7,288.82	7,204.71	190.04	20.75	-97.48	1,687.51	-6,111.45	17,921.26	17,864.98	56.28	318.417	
18,700.00	6,991.78	7,289.50	7,205.39	191.63	20.75	-97.51	1,687.50	-6,111.45	18,021.05	17,964.67	56.38	319.620	
18,800.00	6,991.80	7,290.18	7,206.08	193.22	20.76	-97.54	1,687.48	-6,111.44	18,120.83	18,064.35	56.48	320.818	
18,900.00	6,991.83	7,290.86	7,206.76	194.81	20.76	-97.57	1,687.47	-6,111.44	18,220.62	18,164.04	56.58	322.010	
19,000.00	6,991.86	7,291.55	7,207.44	196.40	20.76	-97.61	1,687.45	-6,111.43	18,320.41	18,263.73	56.68	323.197	
19,100.00	6,991.88	7,292.23	7,208.12	197.99	20.76	-97.64	1,687.44	-6,111.43	18,420.21	18,363.42	56.79	324.378	
19,200.00	6,991.91	7,292.91	7,208.80	199.58	20.76	-97.67	1,687.42	-6,111.42	18,520.00	18,463.11	56.89	325.554	
19,300.00	6,991.94	7,293.59	7,209.49	201.17	20.76	-97.71	1,687.41	-6,111.42	18,619.80	18,562.81	56.99	326.725	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,342.28	6,991.95	7,293.88	7,209.77	201.84	20.76	-97.72	1,687.40	-6,111.42	18,661.99	18,604.96	57.03	327.219		
19,400.00	6,991.97	7,294.27	7,210.17	202.76	20.76	-97.74	1,687.39	-6,111.41	18,719.60	18,662.51	57.09	327.891		
19,500.00	6,991.99	7,294.95	7,210.85	204.35	20.76	-97.77	1,687.37	-6,111.41	18,819.40	18,762.20	57.19	329.051		
19,542.28	6,992.00	7,295.24	7,211.13	205.03	20.76	-97.78	1,687.37	-6,111.41	18,861.59	18,804.35	57.24	329.540		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	-117.02	-879.10	-1,724.06	1,937.53						
100.00	100.00	6.00	6.00	0.25	0.13	-117.02	-879.10	-1,724.06	1,935.25	1,934.87	0.38	5,108.672			
200.00	200.00	106.00	106.00	0.61	2.24	-117.02	-879.10	-1,724.06	1,935.25	1,932.41	2.85	679.639			
281.72	281.72	187.70	187.69	0.90	3.84	-117.01	-878.70	-1,724.06	1,935.07	1,930.32	4.75	407.798			
300.00	300.00	204.59	204.58	0.97	4.17	-117.01	-878.71	-1,724.06	1,935.08	1,929.93	5.14	376.298			
400.00	400.00	306.02	306.00	1.33	6.15	-117.02	-879.10	-1,724.06	1,935.25	1,927.78	7.48	258.849			
500.00	500.00	406.02	406.00	1.68	8.05	-117.02	-879.10	-1,724.06	1,935.25	1,925.52	9.73	198.808			
600.00	600.00	506.02	506.00	2.04	9.95	-117.02	-879.10	-1,724.06	1,935.25	1,923.26	11.99	161.377			
641.05	641.05	546.90	546.88	2.19	10.73	-117.00	-878.55	-1,724.06	1,935.00	1,922.08	12.92	149.816			
700.00	700.00	604.99	604.97	2.40	11.83	-117.00	-878.59	-1,724.06	1,935.02	1,920.79	14.23	135.977			
800.00	799.98	703.50	703.47	2.76	13.70	-87.06	-878.78	-1,724.06	1,935.02	1,918.56	16.46	117.570			
900.00	899.92	805.97	805.92	3.12	15.68	-87.17	-879.10	-1,724.06	1,934.99	1,916.20	18.79	102.973			
1,000.00	999.86	905.91	905.86	3.47	17.79	-87.28	-879.10	-1,724.06	1,934.82	1,913.56	21.26	91.004			
1,100.00	1,099.80	1,005.85	1,005.80	3.83	19.90	-87.38	-879.10	-1,724.06	1,934.66	1,910.93	23.73	81.525			
1,200.00	1,199.74	1,104.84	1,104.78	4.19	21.99	-87.46	-878.25	-1,724.06	1,934.10	1,907.92	26.18	73.874			
1,290.28	1,289.96	1,193.15	1,193.09	4.51	23.86	-87.56	-878.44	-1,724.06	1,934.06	1,905.69	28.37	68.169			
1,300.00	1,299.68	1,202.66	1,202.59	4.55	24.06	-87.57	-878.47	-1,724.06	1,934.06	1,905.45	28.61	67.607			
1,400.00	1,399.61	1,300.46	1,300.40	4.91	26.13	-87.68	-878.92	-1,724.06	1,934.13	1,903.09	31.03	62.325			
1,500.00	1,499.55	1,405.69	1,405.55	5.27	28.48	-87.79	-879.10	-1,724.06	1,934.07	1,900.32	33.75	57.313			
1,600.00	1,599.49	1,505.63	1,505.49	5.63	30.76	-87.90	-879.10	-1,724.06	1,933.94	1,897.55	36.39	53.148			
1,700.00	1,699.43	1,604.53	1,604.38	5.99	33.02	-87.96	-877.76	-1,724.06	1,933.18	1,894.18	39.01	49.560			
1,734.30	1,733.71	1,637.51	1,637.35	6.11	33.78	-88.00	-877.83	-1,724.06	1,933.17	1,893.29	39.88	48.470			
1,800.00	1,799.37	1,700.66	1,700.50	6.35	35.22	-88.07	-878.08	-1,724.06	1,933.22	1,891.65	41.56	46.514			
1,900.00	1,899.31	1,796.77	1,796.60	6.71	37.42	-88.19	-878.80	-1,724.06	1,933.45	1,889.34	44.12	43.825			
2,000.00	1,999.25	1,905.50	1,905.25	7.07	39.91	-88.31	-879.10	-1,724.06	1,933.47	1,886.50	46.97	41.162			
2,100.00	2,099.19	2,005.44	2,005.19	7.42	42.21	-88.41	-879.10	-1,724.06	1,933.37	1,883.74	49.63	38.956			
2,200.00	2,199.13	2,103.91	2,103.64	7.78	44.47	-88.48	-877.82	-1,724.06	1,932.67	1,880.41	52.25	36.986			
2,207.54	2,206.66	2,111.15	2,110.88	7.81	44.64	-88.49	-877.83	-1,724.06	1,932.67	1,880.22	52.45	36.850			
2,300.00	2,299.07	2,199.87	2,199.59	8.14	46.68	-88.59	-878.18	-1,724.06	1,932.76	1,877.94	54.82	35.257			
2,400.00	2,399.01	2,295.81	2,295.52	8.50	48.88	-88.71	-878.95	-1,724.06	1,933.06	1,875.68	57.38	33.686			
2,500.00	2,498.94	2,405.31	2,404.94	8.86	51.49	-88.83	-879.10	-1,724.06	1,933.04	1,872.68	60.35	32.028			
2,600.00	2,598.88	2,505.25	2,504.88	9.22	53.89	-88.93	-879.10	-1,724.06	1,932.97	1,869.86	63.11	30.629			
2,684.62	2,683.45	2,588.63	2,588.24	9.53	55.89	-88.98	-877.76	-1,724.06	1,932.27	1,866.86	65.41	29.540			
2,700.00	2,698.82	2,603.40	2,603.01	9.58	56.24	-89.00	-877.79	-1,724.06	1,932.27	1,866.45	65.82	29.357			
2,800.00	2,798.76	2,699.42	2,699.02	9.94	58.54	-89.11	-878.17	-1,724.06	1,932.41	1,863.93	68.48	28.219			
2,900.00	2,898.70	2,795.42	2,795.01	10.30	60.84	-89.23	-878.96	-1,724.06	1,932.76	1,861.62	71.14	27.169			
3,000.00	2,998.64	2,905.15	2,904.64	10.66	63.57	-89.34	-879.10	-1,724.06	1,932.76	1,858.53	74.23	26.038			
3,100.00	3,098.58	3,005.09	3,004.58	11.02	66.06	-89.45	-879.10	-1,724.06	1,932.72	1,855.64	77.08	25.073			
3,200.00	3,198.52	3,104.50	3,103.96	11.38	68.55	-89.50	-877.25	-1,724.06	1,931.78	1,851.85	79.93	24.169 CC			
3,204.45	3,202.97	3,108.76	3,108.22	11.40	68.65	-89.51	-877.26	-1,724.06	1,931.78	1,851.73	80.05	24.132			
3,300.00	3,298.46	3,200.26	3,199.71	11.75	70.94	-89.61	-877.52	-1,724.06	1,931.89	1,849.21	82.68	23.366			
3,400.00	3,398.40	3,296.00	3,295.43	12.11	73.33	-89.72	-878.21	-1,724.06	1,932.22	1,846.79	85.43	22.618			
3,500.00	3,498.34	3,405.04	3,404.34	12.47	75.92	-89.86	-879.10	-1,724.06	1,932.64	1,844.26	88.38	21.867			
3,600.00	3,598.27	3,504.98	3,504.27	12.83	77.95	-89.96	-879.10	-1,724.06	1,932.63	1,841.86	90.77	21.291			
3,635.51	3,633.76	3,540.47	3,539.76	12.95	78.67	-90.00	-879.10	-1,724.06	1,932.63	1,841.01	91.62	21.094			
3,700.00	3,698.21	3,604.92	3,604.21	13.19	79.98	-90.07	-879.10	-1,724.06	1,932.63	1,839.47	93.16	20.744			
3,800.00	3,798.15	3,704.86	3,704.15	13.55	82.02	-90.17	-879.10	-1,724.06	1,932.64	1,837.08	95.56	20.225			
3,900.00	3,898.09	3,804.80	3,804.09	13.91	84.05	-90.27	-879.10	-1,724.06	1,932.65	1,834.70	97.95	19.731			
4,000.00	3,998.03	3,904.74	3,904.03	14.27	86.08	-90.38	-879.10	-1,724.06	1,932.67	1,832.33	100.34	19.261			
4,100.00	4,097.97	4,004.68	4,003.97	14.63	88.11	-90.48	-879.10	-1,724.06	1,932.70	1,829.97	102.73	18.813			
4,200.00	4,197.91	4,104.62	4,103.91	14.99	90.15	-90.58	-879.10	-1,724.06	1,932.73	1,827.61	105.13	18.385			
4,300.00	4,297.85	4,204.56	4,203.85	15.35	92.18	-90.69	-879.10	-1,724.06	1,932.77	1,825.25	107.52	17.976			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		Offset Wellbore Centre		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
4,400.00	4,397.79	4,304.49	4,303.79	15.71	94.21	-90.79	-879.10	-1,724.06	1,932.82	1,822.90	109.91	17.585		
4,500.00	4,497.73	4,404.43	4,403.73	16.07	96.24	-90.89	-879.10	-1,724.06	1,932.87	1,820.56	112.30	17.211		
4,600.00	4,597.66	4,504.37	4,503.66	16.43	98.27	-91.00	-879.10	-1,724.06	1,932.92	1,818.23	114.70	16.853		
4,700.00	4,697.60	4,604.31	4,603.60	16.79	100.31	-91.10	-879.10	-1,724.06	1,932.99	1,815.90	117.09	16.509		
4,800.00	4,797.54	4,704.25	4,703.54	17.15	102.34	-91.20	-879.10	-1,724.06	1,933.06	1,813.58	119.48	16.179		
4,800.45	4,797.99	4,704.70	4,703.99	17.15	102.35	-91.20	-879.10	-1,724.06	1,933.06	1,813.57	119.49	16.177		
4,900.00	4,897.48	4,786.00	4,785.10	17.51	104.00	-91.29	-879.10	-1,724.06	1,933.22	1,811.72	121.50	15.912 ES, SF		
5,000.00	4,997.42	4,786.00	4,785.10	17.87	104.00	-91.29	-879.10	-1,724.06	1,936.84	1,815.19	121.64	15.922		
5,100.00	5,097.36	4,786.00	4,785.10	18.23	104.00	-91.29	-879.10	-1,724.06	1,945.59	1,824.11	121.48	16.015		
5,200.00	5,197.30	4,786.00	4,785.10	18.59	104.00	-91.29	-879.10	-1,724.06	1,959.41	1,838.39	121.02	16.190		
5,300.00	5,297.24	4,786.00	4,785.10	18.95	104.00	-91.29	-879.10	-1,724.06	1,978.20	1,857.92	120.28	16.446		
5,402.82	5,400.00	4,786.00	4,785.10	19.32	104.00	-91.29	-879.10	-1,724.06	2,002.55	1,883.30	119.25	16.793		
5,500.00	5,497.13	4,786.00	4,785.10	19.67	104.00	-91.43	-879.10	-1,724.06	2,030.08	1,912.02	118.05	17.196		
5,600.00	5,597.11	4,786.00	4,785.10	20.03	104.00	-91.60	-879.10	-1,724.06	2,062.78	1,946.16	116.62	17.689		
5,700.00	5,697.10	4,786.00	4,785.10	20.39	104.00	-91.80	-879.10	-1,724.06	2,099.72	1,984.71	115.01	18.257		
5,802.82	5,799.92	4,786.00	4,785.10	20.75	104.00	-122.03	-879.10	-1,724.06	2,141.89	2,028.68	113.20	18.921		
5,900.00	5,897.09	4,786.00	4,785.10	21.10	104.00	-122.03	-879.10	-1,724.06	2,185.43	2,074.04	111.39	19.620		
6,000.00	5,997.09	4,786.00	4,785.10	21.45	104.00	-122.03	-879.10	-1,724.06	2,233.76	2,124.32	109.44	20.411		
6,100.00	6,097.09	4,786.00	4,785.10	21.81	104.00	-122.03	-879.10	-1,724.06	2,285.45	2,178.02	107.44	21.273		
6,200.00	6,197.09	4,786.00	4,785.10	22.16	104.00	-122.03	-879.10	-1,724.06	2,340.27	2,234.88	105.40	22.205		
6,300.00	6,297.09	4,786.00	4,785.10	22.52	104.00	-122.03	-879.10	-1,724.06	2,398.02	2,294.68	103.34	23.205		
6,354.91	6,352.00	4,786.00	4,785.10	22.72	104.00	-122.03	-879.10	-1,724.06	2,430.89	2,328.67	102.21	23.782		
6,400.00	6,397.06	4,786.00	4,785.10	22.87	104.00	157.73	-879.10	-1,724.06	2,459.62	2,358.30	101.32	24.276		
6,450.00	6,446.74	4,786.00	4,785.10	23.04	104.00	155.99	-879.10	-1,724.06	2,494.58	2,394.18	100.39	24.848		
6,500.00	6,495.84	4,786.00	4,785.10	23.20	104.00	153.77	-879.10	-1,724.06	2,532.46	2,432.90	99.56	25.437		
6,550.00	6,544.06	4,786.00	4,785.10	23.36	104.00	150.90	-879.10	-1,724.06	2,572.90	2,474.09	98.81	26.038		
6,600.00	6,591.08	4,786.00	4,785.10	23.51	104.00	147.10	-879.10	-1,724.06	2,615.54	2,517.37	98.17	26.643		
6,650.00	6,636.64	4,786.00	4,785.10	23.66	104.00	142.01	-879.10	-1,724.06	2,660.03	2,562.40	97.63	27.247		
6,700.00	6,680.44	4,786.00	4,785.10	23.82	104.00	135.04	-879.10	-1,724.06	2,705.99	2,608.80	97.19	27.842		
6,750.00	6,722.22	4,786.00	4,785.10	23.99	104.00	125.39	-879.10	-1,724.06	2,753.09	2,656.23	96.86	28.423		
6,800.00	6,761.71	4,786.00	4,785.10	24.16	104.00	112.27	-879.10	-1,724.06	2,800.98	2,704.34	96.64	28.984		
6,850.00	6,798.68	4,786.00	4,785.10	24.33	104.00	95.73	-879.10	-1,724.06	2,849.33	2,752.81	96.52	29.520		
6,900.00	6,832.89	4,786.00	4,785.10	24.50	104.00	77.86	-879.10	-1,724.06	2,897.83	2,801.33	96.50	30.028		
6,950.00	6,864.14	4,786.00	4,785.10	24.69	104.00	61.86	-879.10	-1,724.06	2,946.19	2,849.60	96.59	30.503		
7,000.00	6,892.23	4,786.00	4,785.10	24.88	104.00	49.41	-879.10	-1,724.06	2,994.11	2,897.34	96.76	30.942		
7,050.00	6,916.99	4,786.00	4,785.10	25.08	104.00	40.30	-879.10	-1,724.06	3,041.33	2,944.29	97.03	31.344		
7,100.00	6,938.27	4,786.00	4,785.10	25.29	104.00	33.69	-879.10	-1,724.06	3,087.59	2,990.21	97.38	31.706		
7,150.00	6,955.93	4,786.00	4,785.10	25.51	104.00	28.82	-879.10	-1,724.06	3,132.67	3,034.85	97.82	32.026		
7,200.00	6,969.87	4,786.00	4,785.10	25.75	104.00	25.16	-879.10	-1,724.06	3,176.33	3,078.01	98.33	32.304		
7,250.00	6,980.00	4,786.00	4,785.10	25.99	104.00	22.34	-879.10	-1,724.06	3,218.38	3,119.47	98.91	32.540		
7,300.00	6,986.25	4,786.00	4,785.10	26.25	104.00	20.13	-879.10	-1,724.06	3,258.61	3,159.06	99.55	32.733		
7,354.68	6,988.62	4,786.00	4,785.10	26.53	104.00	18.22	-879.10	-1,724.06	3,300.34	3,200.01	100.33	32.895		
7,400.00	6,988.64	4,786.00	4,785.10	26.78	104.00	18.22	-879.10	-1,724.06	3,334.01	3,233.01	101.00	33.011		
7,500.00	6,988.67	4,786.00	4,785.10	27.40	104.00	18.22	-879.10	-1,724.06	3,409.27	3,306.85	102.42	33.286		
7,600.00	6,988.71	4,786.00	4,785.10	28.08	104.00	18.22	-879.10	-1,724.06	3,485.77	3,382.00	103.78	33.590		
7,700.00	6,988.74	4,786.00	4,785.10	28.84	104.00	18.22	-879.10	-1,724.06	3,563.44	3,458.38	105.06	33.919		
7,800.00	6,988.78	4,786.00	4,785.10	29.67	104.00	18.22	-879.10	-1,724.06	3,642.19	3,535.92	106.27	34.273		
7,900.00	6,988.81	4,786.00	4,785.10	30.55	104.00	18.22	-879.10	-1,724.06	3,721.97	3,614.55	107.42	34.649		
8,000.00	6,988.85	4,786.00	4,785.10	31.49	104.00	18.22	-879.10	-1,724.06	3,802.70	3,694.19	108.51	35.045		
8,100.00	6,988.88	4,786.00	4,785.10	32.48	104.00	18.22	-879.10	-1,724.06	3,884.33	3,774.79	109.54	35.460		
8,200.00	6,988.91	4,786.00	4,785.10	33.51	104.00	18.22	-879.10	-1,724.06	3,966.80	3,856.28	110.52	35.892		
8,211.68	6,988.92	4,786.00	4,785.10	33.63	104.00	18.22	-879.10	-1,724.06	3,976.49	3,865.86	110.63	35.944		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 34 - (O) Rosa Unit #080A - OH - OH-INC										Offset Site Error:		0.00 usft	
Survey Program:		95-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft			
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)		
8,300.00	6,988.95	4,786.00	4,785.10	34.58	104.00	20.70	-879.10	-1,724.06	4,049.82	3,938.37	111.45	36.338			
8,400.00	6,988.98	4,786.00	4,785.10	35.70	104.00	23.47	-879.10	-1,724.06	4,132.92	4,020.59	112.32	36.795			
8,500.00	6,989.01	4,786.00	4,785.10	36.84	104.00	26.17	-879.10	-1,724.06	4,215.99	4,102.83	113.16	37.258			
8,600.00	6,989.04	4,786.00	4,785.10	38.02	104.00	28.81	-879.10	-1,724.06	4,298.94	4,184.99	113.94	37.728			
8,700.00	6,989.07	4,786.00	4,785.10	39.22	104.00	31.36	-879.10	-1,724.06	4,381.68	4,266.98	114.70	38.203			
8,772.79	6,989.09	4,786.00	4,785.10	40.11	104.00	33.15	-879.10	-1,724.06	4,441.72	4,326.50	115.22	38.550			
8,800.00	6,989.10	4,786.00	4,785.10	40.44	104.00	33.15	-879.10	-1,724.06	4,464.16	4,348.75	115.41	38.681			
8,900.00	6,989.13	4,786.00	4,785.10	41.68	104.00	33.15	-879.10	-1,724.06	4,547.07	4,430.97	116.10	39.166			
9,000.00	6,989.15	4,786.00	4,785.10	42.95	104.00	33.15	-879.10	-1,724.06	4,630.65	4,513.89	116.76	39.660			
9,100.00	6,989.18	4,786.00	4,785.10	44.24	104.00	33.15	-879.10	-1,724.06	4,714.87	4,597.48	117.39	40.164			
9,200.00	6,989.21	4,786.00	4,785.10	45.55	104.00	33.15	-879.10	-1,724.06	4,799.70	4,681.70	118.00	40.675			
9,300.00	6,989.24	4,786.00	4,785.10	46.88	104.00	33.15	-879.10	-1,724.06	4,885.10	4,766.52	118.58	41.195			
9,400.00	6,989.26	4,786.00	4,785.10	48.23	104.00	33.15	-879.10	-1,724.06	4,971.05	4,851.91	119.15	41.723			
9,500.00	6,989.29	4,786.00	4,785.10	49.59	104.00	33.15	-879.10	-1,724.06	5,057.51	4,937.83	119.68	42.257			
9,600.00	6,989.32	4,786.00	4,785.10	50.96	104.00	33.15	-879.10	-1,724.06	5,144.47	5,024.27	120.20	42.798			
9,700.00	6,989.34	4,786.00	4,785.10	52.35	104.00	33.15	-879.10	-1,724.06	5,231.89	5,111.19	120.70	43.345			
9,800.00	6,989.37	4,786.00	4,785.10	53.75	104.00	33.15	-879.10	-1,724.06	5,319.75	5,198.57	121.18	43.898			
9,900.00	6,989.40	4,786.00	4,785.10	55.16	104.00	33.15	-879.10	-1,724.06	5,408.04	5,286.39	121.65	44.457			
10,000.00	6,989.42	4,786.00	4,785.10	56.58	104.00	33.15	-879.10	-1,724.06	5,496.73	5,374.63	122.09	45.021			
10,100.00	6,989.45	4,786.00	4,785.10	58.01	104.00	33.15	-879.10	-1,724.06	5,585.79	5,463.27	122.52	45.591			
10,200.00	6,989.48	4,786.00	4,785.10	59.45	104.00	33.15	-879.10	-1,724.06	5,675.23	5,552.29	122.94	46.164			
10,300.00	6,989.51	4,786.00	4,785.10	60.90	104.00	33.15	-879.10	-1,724.06	5,765.01	5,641.67	123.34	46.743			
10,400.00	6,989.53	4,786.00	4,785.10	62.35	104.00	33.15	-879.10	-1,724.06	5,855.12	5,731.40	123.72	47.325			
10,500.00	6,989.56	4,786.00	4,785.10	63.81	104.00	33.15	-879.10	-1,724.06	5,945.55	5,821.45	124.09	47.911			
10,600.00	6,989.59	4,786.00	4,785.10	65.28	104.00	33.15	-879.10	-1,724.06	6,036.28	5,911.82	124.46	48.501			
10,700.00	6,989.61	4,786.00	4,785.10	66.76	104.00	33.15	-879.10	-1,724.06	6,127.30	6,002.49	124.80	49.095			
10,800.00	6,989.64	4,786.00	4,785.10	68.24	104.00	33.15	-879.10	-1,724.06	6,218.59	6,093.45	125.14	49.692			
10,900.00	6,989.67	4,786.00	4,785.10	69.73	104.00	33.15	-879.10	-1,724.06	6,310.15	6,184.68	125.47	50.292			
11,000.00	6,989.70	4,786.00	4,785.10	71.22	104.00	33.15	-879.10	-1,724.06	6,401.96	6,276.17	125.79	50.895			
11,100.00	6,989.72	4,786.00	4,785.10	72.71	104.00	33.15	-879.10	-1,724.06	6,494.01	6,367.92	126.09	51.501			
11,200.00	6,989.75	4,786.00	4,785.10	74.22	104.00	33.15	-879.10	-1,724.06	6,586.30	6,459.90	126.39	52.110			
11,300.00	6,989.78	4,786.00	4,785.10	75.72	104.00	33.15	-879.10	-1,724.06	6,678.80	6,552.12	126.68	52.721			
11,400.00	6,989.80	4,786.00	4,785.10	77.23	104.00	33.15	-879.10	-1,724.06	6,771.52	6,644.56	126.96	53.334			
11,500.00	6,989.83	4,786.00	4,785.10	78.74	104.00	33.15	-879.10	-1,724.06	6,864.45	6,737.21	127.24	53.950			
11,600.00	6,989.86	4,786.00	4,785.10	80.26	104.00	33.15	-879.10	-1,724.06	6,957.57	6,830.06	127.50	54.568			
11,700.00	6,989.88	4,786.00	4,785.10	81.78	104.00	33.15	-879.10	-1,724.06	7,050.87	6,923.11	127.76	55.187			
11,800.00	6,989.91	4,786.00	4,785.10	83.30	104.00	33.15	-879.10	-1,724.06	7,144.36	7,016.35	128.01	55.809			
11,900.00	6,989.94	4,786.00	4,785.10	84.83	104.00	33.15	-879.10	-1,724.06	7,238.03	7,109.77	128.26	56.432			
12,000.00	6,989.97	4,786.00	4,785.10	86.36	104.00	33.15	-879.10	-1,724.06	7,331.86	7,203.36	128.50	57.057			
12,100.00	6,989.99	4,786.00	4,785.10	87.89	104.00	33.15	-879.10	-1,724.06	7,425.85	7,297.12	128.73	57.684			
12,200.00	6,990.02	4,786.00	4,785.10	89.42	104.00	33.15	-879.10	-1,724.06	7,520.00	7,391.04	128.96	58.312			
12,300.00	6,990.05	4,786.00	4,785.10	90.96	104.00	33.15	-879.10	-1,724.06	7,614.29	7,485.11	129.19	58.941			
12,400.00	6,990.07	4,786.00	4,785.10	92.50	104.00	33.15	-879.10	-1,724.06	7,708.73	7,579.33	129.40	59.571			
12,500.00	6,990.10	4,786.00	4,785.10	94.04	104.00	33.15	-879.10	-1,724.06	7,803.31	7,673.70	129.62	60.203			
12,600.00	6,990.13	4,786.00	4,785.10	95.58	104.00	33.15	-879.10	-1,724.06	7,898.03	7,768.20	129.82	60.836			
12,700.00	6,990.15	4,786.00	4,785.10	97.13	104.00	33.15	-879.10	-1,724.06	7,992.87	7,862.84	130.03	61.470			
12,800.00	6,990.18	4,786.00	4,785.10	98.68	104.00	33.15	-879.10	-1,724.06	8,087.83	7,957.60	130.23	62.105			
12,900.00	6,990.21	4,786.00	4,785.10	100.22	104.00	33.15	-879.10	-1,724.06	8,182.92	8,052.49	130.42	62.741			
13,000.00	6,990.24	4,786.00	4,785.10	101.78	104.00	33.15	-879.10	-1,724.06	8,278.12	8,147.50	130.62	63.377			
13,100.00	6,990.26	4,786.00	4,785.10	103.33	104.00	33.15	-879.10	-1,724.06	8,373.43	8,242.63	130.80	64.015			
13,200.00	6,990.29	4,786.00	4,785.10	104.88	104.00	33.15	-879.10	-1,724.06	8,468.85	8,337.86	130.99	64.653			
13,300.00	6,990.32	4,786.00	4,785.10	106.44	104.00	33.15	-879.10	-1,724.06	8,564.38	8,433.21	131.17	65.292			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)
13,400.00	6,990.34	4,786.00	4,785.10	107.99	104.00	33.15	-879.10	-1,724.06	8,660.00	8,528.65	131.35	65.931	
13,500.00	6,990.37	4,786.00	4,785.10	109.55	104.00	33.15	-879.10	-1,724.06	8,755.73	8,624.20	131.52	66.571	
13,600.00	6,990.40	4,786.00	4,785.10	111.11	104.00	33.15	-879.10	-1,724.06	8,851.55	8,719.85	131.70	67.211	
13,700.00	6,990.42	4,786.00	4,785.10	112.67	104.00	33.15	-879.10	-1,724.06	8,947.46	8,815.59	131.87	67.852	
13,800.00	6,990.45	4,786.00	4,785.10	114.23	104.00	33.15	-879.10	-1,724.06	9,043.46	8,911.42	132.03	68.493	
13,900.00	6,990.48	4,786.00	4,785.10	115.80	104.00	33.15	-879.10	-1,724.06	9,139.54	9,007.34	132.20	69.135	
14,000.00	6,990.51	4,786.00	4,785.10	117.36	104.00	33.15	-879.10	-1,724.06	9,235.71	9,103.35	132.36	69.777	
14,100.00	6,990.53	4,786.00	4,785.10	118.93	104.00	33.15	-879.10	-1,724.06	9,331.96	9,199.44	132.52	70.419	
14,200.00	6,990.56	4,786.00	4,785.10	120.49	104.00	33.15	-879.10	-1,724.06	9,428.28	9,295.61	132.68	71.062	
14,300.00	6,990.59	4,786.00	4,785.10	122.06	104.00	33.15	-879.10	-1,724.06	9,524.69	9,391.85	132.83	71.704	
14,400.00	6,990.61	4,786.00	4,785.10	123.63	104.00	33.15	-879.10	-1,724.06	9,621.16	9,488.18	132.99	72.347	
14,500.00	6,990.64	4,786.00	4,785.10	125.20	104.00	33.15	-879.10	-1,724.06	9,717.71	9,584.57	133.14	72.990	
14,600.00	6,990.67	4,786.00	4,785.10	126.77	104.00	33.15	-879.10	-1,724.06	9,814.33	9,681.04	133.29	73.633	
14,700.00	6,990.70	4,786.00	4,785.10	128.34	104.00	33.15	-879.10	-1,724.06	9,911.01	9,777.57	133.44	74.276	
14,800.00	6,990.72	4,786.00	4,785.10	129.91	104.00	33.15	-879.10	-1,724.06	10,007.76	9,874.18	133.58	74.919	
14,900.00	6,990.75	4,786.00	4,785.10	131.48	104.00	33.15	-879.10	-1,724.06	10,104.57	9,970.84	133.73	75.562	
15,000.00	6,990.78	4,786.00	4,785.10	133.06	104.00	33.15	-879.10	-1,724.06	10,201.44	10,067.57	133.87	76.205	
15,100.00	6,990.80	4,786.00	4,785.10	134.63	104.00	33.15	-879.10	-1,724.06	10,298.37	10,164.36	134.01	76.848	
15,200.00	6,990.83	4,786.00	4,785.10	136.20	104.00	33.15	-879.10	-1,724.06	10,395.37	10,261.22	134.15	77.490	
15,300.00	6,990.86	4,786.00	4,785.10	137.78	104.00	33.15	-879.10	-1,724.06	10,492.41	10,358.12	134.29	78.133	
15,400.00	6,990.88	4,786.00	4,785.10	139.36	104.00	33.15	-879.10	-1,724.06	10,589.52	10,455.09	134.43	78.776	
15,500.00	6,990.91	4,786.00	4,785.10	140.93	104.00	33.15	-879.10	-1,724.06	10,686.67	10,552.11	134.56	79.418	
15,600.00	6,990.94	4,786.00	4,785.10	142.51	104.00	33.15	-879.10	-1,724.06	10,783.88	10,649.18	134.70	80.060	
15,700.00	6,990.97	4,786.00	4,785.10	144.09	104.00	33.15	-879.10	-1,724.06	10,881.14	10,746.31	134.83	80.702	
15,800.00	6,990.99	4,786.00	4,785.10	145.67	104.00	33.15	-879.10	-1,724.06	10,978.45	10,843.48	134.96	81.343	
15,900.00	6,991.02	4,786.00	4,785.10	147.24	104.00	33.15	-879.10	-1,724.06	11,075.80	10,940.71	135.10	81.985	
16,000.00	6,991.05	4,786.00	4,785.10	148.82	104.00	33.15	-879.10	-1,724.06	11,173.20	11,037.98	135.23	82.626	
16,100.00	6,991.07	4,786.00	4,785.10	150.40	104.00	33.15	-879.10	-1,724.06	11,270.65	11,135.30	135.36	83.266	
16,200.00	6,991.10	4,786.00	4,785.10	151.99	104.00	33.15	-879.10	-1,724.06	11,368.14	11,232.66	135.49	83.907	
16,300.00	6,991.13	4,786.00	4,785.10	153.57	104.00	33.15	-879.10	-1,724.06	11,465.68	11,330.07	135.61	84.547	
16,400.00	6,991.15	4,786.00	4,785.10	155.15	104.00	33.15	-879.10	-1,724.06	11,563.26	11,427.52	135.74	85.186	
16,500.00	6,991.18	4,786.00	4,785.10	156.73	104.00	33.15	-879.10	-1,724.06	11,660.88	11,525.01	135.87	85.826	
16,600.00	6,991.21	4,786.00	4,785.10	158.31	104.00	33.15	-879.10	-1,724.06	11,758.53	11,622.54	135.99	86.464	
16,700.00	6,991.24	4,786.00	4,785.10	159.90	104.00	33.15	-879.10	-1,724.06	11,856.23	11,720.11	136.12	87.103	
16,800.00	6,991.26	4,786.00	4,785.10	161.48	104.00	33.15	-879.10	-1,724.06	11,953.97	11,817.73	136.24	87.741	
16,900.00	6,991.29	4,786.00	4,785.10	163.06	104.00	33.15	-879.10	-1,724.06	12,051.74	11,915.38	136.37	88.378	
17,000.00	6,991.32	4,786.00	4,785.10	164.65	104.00	33.15	-879.10	-1,724.06	12,149.55	12,013.06	136.49	89.015	
17,100.00	6,991.34	4,786.00	4,785.10	166.23	104.00	33.15	-879.10	-1,724.06	12,247.39	12,110.78	136.61	89.652	
17,200.00	6,991.37	4,786.00	4,785.10	167.82	104.00	33.15	-879.10	-1,724.06	12,345.27	12,208.54	136.73	90.288	
17,300.00	6,991.40	4,786.00	4,785.10	169.40	104.00	33.15	-879.10	-1,724.06	12,443.19	12,306.33	136.85	90.923	
17,400.00	6,991.42	4,786.00	4,785.10	170.99	104.00	33.15	-879.10	-1,724.06	12,541.13	12,404.16	136.97	91.558	
17,500.00	6,991.45	4,786.00	4,785.10	172.57	104.00	33.15	-879.10	-1,724.06	12,639.11	12,502.02	137.10	92.192	
17,600.00	6,991.48	4,786.00	4,785.10	174.16	104.00	33.15	-879.10	-1,724.06	12,737.12	12,599.90	137.22	92.826	
17,700.00	6,991.51	4,786.00	4,785.10	175.75	104.00	33.15	-879.10	-1,724.06	12,835.16	12,697.83	137.33	93.459	
17,800.00	6,991.53	4,786.00	4,785.10	177.33	104.00	33.15	-879.10	-1,724.06	12,933.23	12,795.78	137.45	94.092	
17,900.00	6,991.56	4,786.00	4,785.10	178.92	104.00	33.15	-879.10	-1,724.06	13,031.33	12,893.76	137.57	94.724	
18,000.00	6,991.59	4,786.00	4,785.10	180.51	104.00	33.15	-879.10	-1,724.06	13,129.46	12,991.77	137.69	95.355	
18,100.00	6,991.61	4,786.00	4,785.10	182.10	104.00	33.15	-879.10	-1,724.06	13,227.61	13,089.81	137.81	95.986	
18,200.00	6,991.64	4,786.00	4,785.10	183.68	104.00	33.15	-879.10	-1,724.06	13,325.80	13,187.87	137.93	96.616	
18,300.00	6,991.67	4,786.00	4,785.10	185.27	104.00	33.15	-879.10	-1,724.06	13,424.01	13,285.96	138.04	97.245	
18,400.00	6,991.69	4,786.00	4,785.10	186.86	104.00	33.15	-879.10	-1,724.06	13,522.24	13,384.08	138.16	97.874	
18,500.00	6,991.72	4,786.00	4,785.10	188.45	104.00	33.15	-879.10	-1,724.06	13,620.51	13,482.23	138.28	98.502	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
18,600.00	6,991.75	4,786.00	4,785.10	190.04	104.00	33.15	-879.10	-1,724.06	13,718.79	13,580.40	138.39	99.129	
18,700.00	6,991.78	4,786.00	4,785.10	191.63	104.00	33.15	-879.10	-1,724.06	13,817.11	13,678.60	138.51	99.756	
18,800.00	6,991.80	4,786.00	4,785.10	193.22	104.00	33.15	-879.10	-1,724.06	13,915.44	13,776.82	138.62	100.382	
18,900.00	6,991.83	4,786.00	4,785.10	194.81	104.00	33.15	-879.10	-1,724.06	14,013.80	13,875.06	138.74	101.007	
19,000.00	6,991.86	4,786.00	4,785.10	196.40	104.00	33.15	-879.10	-1,724.06	14,112.18	13,973.33	138.86	101.632	
19,100.00	6,991.88	4,786.00	4,785.10	197.99	104.00	33.15	-879.10	-1,724.06	14,210.59	14,071.62	138.97	102.256	
19,200.00	6,991.91	4,786.00	4,785.10	199.58	104.00	33.15	-879.10	-1,724.06	14,309.02	14,169.93	139.09	102.879	
19,300.00	6,991.94	4,786.00	4,785.10	201.17	104.00	33.15	-879.10	-1,724.06	14,407.47	14,268.26	139.20	103.501	
19,342.28	6,991.95	4,786.00	4,785.10	201.84	104.00	33.15	-879.10	-1,724.06	14,449.09	14,309.84	139.25	103.764	
19,400.00	6,991.97	4,786.00	4,785.10	202.76	104.00	33.15	-879.10	-1,724.06	14,505.94	14,366.62	139.32	104.123	
19,500.00	6,991.99	4,786.00	4,785.10	204.35	104.00	33.15	-879.10	-1,724.06	14,604.43	14,465.00	139.43	104.743	
19,542.28	6,992.00	4,786.00	4,785.10	205.03	104.00	33.15	-879.10	-1,724.06	14,646.07	14,506.59	139.48	105.006	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	52.75	2,929.59	3,852.71	4,843.56				
100.00	100.00	0.00	0.00	0.25	0.00	52.75	2,929.59	3,852.71	4,840.77	4,840.52	0.25	N/A	
200.00	200.00	15.00	15.00	0.61	0.28	52.75	2,929.59	3,852.71	4,840.02	4,839.14	0.89	5,457.455	
300.00	300.00	115.00	115.00	0.97	2.13	52.75	2,929.59	3,852.71	4,840.02	4,836.93	3.09	1,564.450	
400.00	400.00	215.00	215.00	1.33	4.10	52.75	2,929.59	3,852.71	4,840.02	4,834.60	5.43	892.044	
500.00	500.00	318.51	318.50	1.68	6.27	52.75	2,929.83	3,852.71	4,840.17	4,832.22	7.96	608.339	
600.00	600.00	415.04	415.00	2.04	8.31	52.75	2,929.59	3,852.71	4,840.02	4,829.67	10.35	467.599	
700.00	700.00	515.04	515.00	2.40	10.52	52.75	2,929.59	3,852.71	4,840.02	4,827.11	12.92	374.631	
800.00	799.98	615.02	614.98	2.76	12.73	82.78	2,929.59	3,852.71	4,839.80	4,824.32	15.49	312.521	
900.00	899.92	714.96	714.92	3.12	14.94	82.82	2,929.59	3,852.71	4,839.37	4,821.31	18.05	268.082	
950.50	950.39	765.43	765.39	3.30	16.05	82.84	2,929.59	3,852.71	4,839.15	4,819.80	19.35	250.115	
1,000.00	999.86	816.13	816.05	3.47	17.17	82.83	2,932.18	3,852.71	4,840.50	4,819.86	20.65	234.462	
1,100.00	1,099.80	926.74	926.65	3.83	19.62	82.88	2,931.94	3,852.71	4,839.93	4,816.48	23.45	206.413	
1,200.00	1,199.74	1,037.35	1,037.25	4.19	22.06	82.93	2,931.29	3,852.71	4,839.14	4,812.89	26.25	184.345	
1,300.00	1,299.68	1,147.94	1,147.82	4.55	24.51	82.99	2,930.23	3,852.71	4,838.14	4,809.09	29.05	166.528	
1,400.00	1,399.61	1,214.81	1,214.61	4.91	25.95	83.02	2,929.59	3,852.71	4,837.21	4,806.36	30.86	156.769	
1,500.00	1,499.55	1,314.75	1,314.55	5.27	27.91	83.06	2,929.59	3,852.71	4,836.79	4,803.62	33.17	145.813	
1,600.00	1,599.49	1,414.69	1,414.49	5.63	29.86	83.10	2,929.59	3,852.71	4,836.37	4,800.88	35.49	136.287	
1,652.40	1,651.86	1,467.06	1,466.86	5.82	30.89	83.13	2,929.59	3,852.71	4,836.15	4,799.45	36.70	131.775	
1,700.00	1,699.43	1,518.25	1,518.05	5.99	31.89	83.14	2,930.43	3,852.71	4,836.46	4,798.58	37.87	127.701	
1,800.00	1,799.37	1,625.86	1,625.65	6.35	34.00	83.18	2,930.15	3,852.71	4,835.89	4,795.55	40.34	119.881	
1,900.00	1,899.31	1,733.45	1,733.24	6.71	36.10	83.23	2,929.59	3,852.71	4,835.16	4,792.36	42.80	112.960	
2,000.00	1,999.25	1,814.50	1,814.25	7.07	37.82	83.27	2,929.59	3,852.71	4,834.71	4,789.83	44.89	107.707	
2,100.00	2,099.19	1,914.43	1,914.19	7.42	39.95	83.31	2,929.59	3,852.71	4,834.31	4,786.93	47.37	102.047	
2,200.00	2,199.13	2,014.37	2,014.13	7.78	42.08	83.35	2,929.59	3,852.71	4,833.90	4,784.04	49.86	96.950	
2,232.00	2,231.11	2,046.35	2,046.11	7.90	42.76	83.36	2,929.59	3,852.71	4,833.77	4,783.12	50.66	95.425	
2,300.00	2,299.07	2,118.68	2,118.43	8.14	44.30	83.38	2,930.55	3,852.71	4,834.08	4,781.64	52.44	92.186	
2,400.00	2,399.01	2,225.04	2,224.79	8.50	46.56	83.43	2,930.27	3,852.71	4,833.52	4,778.46	55.06	87.785	
2,500.00	2,498.94	2,331.40	2,331.13	8.86	48.82	83.48	2,929.76	3,852.71	4,832.83	4,775.15	57.68	83.782	
2,600.00	2,598.88	2,414.23	2,413.88	9.22	50.54	83.51	2,929.59	3,852.71	4,832.30	4,772.54	59.76	80.862	
2,700.00	2,698.82	2,514.17	2,513.82	9.58	52.58	83.56	2,929.59	3,852.71	4,831.91	4,769.75	62.16	77.731	
2,800.00	2,798.76	2,614.11	2,613.76	9.94	54.62	83.60	2,929.59	3,852.71	4,831.52	4,766.95	64.56	74.832	
2,844.00	2,842.73	2,658.08	2,657.73	10.10	55.52	83.61	2,929.59	3,852.71	4,831.35	4,765.72	65.62	73.624	
2,900.00	2,898.70	2,719.98	2,719.62	10.30	56.79	83.62	2,931.18	3,852.71	4,832.08	4,764.99	67.09	72.025	
3,000.00	2,998.64	2,831.41	2,831.04	10.66	59.06	83.67	2,930.73	3,852.71	4,831.45	4,761.73	69.73	69.292	
3,100.00	3,098.58	2,942.83	2,942.44	11.02	61.34	83.73	2,929.83	3,852.71	4,830.59	4,758.23	72.36	66.756	
3,200.00	3,198.52	3,013.94	3,013.52	11.38	62.72	83.76	2,929.59	3,852.71	4,829.98	4,755.88	74.10	65.181	
3,300.00	3,298.46	3,113.88	3,113.46	11.75	64.60	83.80	2,929.59	3,852.71	4,829.60	4,753.25	76.35	63.259	
3,400.00	3,398.40	3,213.81	3,213.40	12.11	66.49	83.84	2,929.59	3,852.71	4,829.23	4,750.63	78.59	61.447	
3,500.00	3,498.34	3,313.75	3,313.34	12.47	68.38	83.88	2,929.59	3,852.71	4,828.85	4,748.01	80.84	59.735	
3,600.00	3,598.27	3,413.69	3,413.27	12.83	70.26	83.93	2,929.59	3,852.71	4,828.48	4,745.40	83.08	58.116	
3,700.00	3,698.21	3,513.63	3,513.21	13.19	72.15	83.97	2,929.59	3,852.71	4,828.11	4,742.78	85.33	56.582	
3,800.00	3,798.15	3,613.57	3,613.15	13.55	74.03	84.01	2,929.59	3,852.71	4,827.75	4,740.17	87.57	55.127	
3,900.00	3,898.09	3,713.51	3,713.09	13.91	75.92	84.05	2,929.59	3,852.71	4,827.38	4,737.56	89.82	53.745	
3,950.40	3,948.46	3,763.88	3,763.46	14.09	76.87	84.07	2,929.59	3,852.71	4,827.20	4,736.25	90.95	53.074	
4,000.00	3,998.03	3,813.71	3,813.28	14.27	77.81	84.07	2,931.40	3,852.71	4,828.09	4,736.02	92.07	52.439	
4,100.00	4,097.97	3,915.16	3,914.73	14.63	79.72	84.11	2,931.36	3,852.71	4,827.71	4,733.36	94.34	51.171	
4,200.00	4,197.91	4,016.60	4,016.18	14.99	81.64	84.16	2,931.27	3,852.71	4,827.30	4,730.68	96.62	49.962	
4,300.00	4,297.85	4,118.05	4,117.62	15.35	83.55	84.20	2,931.13	3,852.71	4,826.86	4,727.97	98.89	48.809	
4,400.00	4,397.79	4,219.49	4,219.06	15.71	85.46	84.24	2,930.93	3,852.71	4,826.39	4,725.23	101.17	47.707	
4,500.00	4,497.73	4,320.93	4,320.50	16.07	87.38	84.29	2,930.68	3,852.71	4,825.90	4,722.46	103.44	46.654	
4,600.00	4,597.66	4,422.37	4,421.93	16.43	89.29	84.33	2,930.37	3,852.71	4,825.38	4,719.66	105.71	45.645	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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		
4,700.00	4,697.60	4,523.80	4,523.37	16.79	91.20	84.38	2,930.01	3,852.71	4,824.83	4,716.84	107.99	44.679			
4,800.00	4,797.54	4,625.24	4,624.80	17.15	93.12	84.42	2,929.59	3,852.71	4,824.25	4,713.99	110.26	43.753			
4,900.00	4,897.48	4,713.00	4,712.48	17.51	94.84	84.46	2,929.59	3,852.71	4,823.89	4,711.54	112.35	42.937			
5,000.00	4,997.42	4,812.94	4,812.42	17.87	96.81	84.50	2,929.59	3,852.71	4,823.55	4,708.88	114.68	42.062			
5,100.00	5,097.36	4,912.88	4,912.36	18.23	98.78	84.54	2,929.59	3,852.71	4,823.22	4,706.22	117.00	41.223			
5,200.00	5,197.30	5,012.82	5,012.30	18.59	100.75	84.58	2,929.59	3,852.71	4,822.89	4,703.56	119.33	40.416			
5,300.00	5,297.24	5,112.76	5,112.24	18.95	102.71	84.63	2,929.59	3,852.71	4,822.56	4,700.90	121.66	39.640			
5,351.82	5,349.03	5,164.55	5,164.03	19.14	103.73	84.65	2,929.59	3,852.71	4,822.39	4,699.53	122.87	39.249			
5,402.82	5,400.00	5,217.09	5,216.56	19.32	104.77	84.65	2,931.35	3,852.71	4,823.25	4,699.16	124.08	38.871			
5,500.00	5,497.13	5,317.60	5,317.07	19.67	106.75	84.69	2,931.23	3,852.71	4,822.90	4,696.49	126.41	38.152			
5,600.00	5,597.11	5,421.05	5,420.52	20.03	108.78	84.72	2,930.99	3,852.71	4,822.56	4,693.75	128.81	37.440			
5,700.00	5,697.10	5,524.52	5,523.98	20.39	110.82	84.73	2,930.61	3,852.71	4,822.23	4,691.03	131.20	36.754			
5,802.82	5,799.92	5,630.93	5,630.38	20.75	112.92	54.74	2,930.09	3,852.71	4,821.90	4,688.23	133.66	36.075			
5,900.00	5,897.09	5,731.49	5,730.94	21.10	114.89	54.75	2,929.47	3,852.71	4,821.55	4,685.56	135.99	35.456			
5,928.83	5,925.92	5,741.54	5,740.92	21.20	115.11	54.75	2,929.59	3,852.71	4,821.58	4,685.27	136.31	35.372			
6,000.00	5,997.09	5,812.71	5,812.09	21.45	116.57	54.75	2,929.59	3,852.71	4,821.58	4,683.57	138.02	34.935			
6,100.00	6,097.09	5,912.71	5,912.09	21.81	118.61	54.75	2,929.59	3,852.71	4,821.58	4,681.17	140.42	34.338			
6,200.00	6,197.09	6,012.71	6,012.09	22.16	120.66	54.75	2,929.59	3,852.71	4,821.58	4,678.77	142.82	33.761			
6,300.00	6,297.09	6,112.71	6,112.09	22.52	122.70	54.75	2,929.59	3,852.71	4,821.58	4,676.37	145.21	33.203			
6,354.91	6,352.00	6,167.61	6,167.00	22.72	123.82	54.75	2,929.59	3,852.71	4,821.58	4,675.05	146.53	32.905			
6,400.00	6,397.06	6,212.67	6,212.06	22.87	124.74	-24.31	2,929.59	3,852.71	4,820.13	4,672.52	147.61	32.655			
6,450.00	6,446.74	6,262.35	6,261.74	23.04	125.76	-24.53	2,929.59	3,852.71	4,815.12	4,666.33	148.79	32.362			
6,500.00	6,495.84	6,311.45	6,310.84	23.20	126.76	-24.90	2,929.59	3,852.71	4,806.58	4,656.62	149.96	32.053			
6,550.00	6,544.06	6,359.67	6,359.06	23.36	127.75	-25.44	2,929.59	3,852.71	4,794.55	4,643.45	151.10	31.731			
6,600.00	6,591.08	6,406.70	6,406.08	23.51	128.71	-26.17	2,929.59	3,852.71	4,779.13	4,626.92	152.21	31.398			
6,650.00	6,636.64	6,452.25	6,451.64	23.66	129.64	-27.09	2,929.59	3,852.71	4,760.41	4,607.12	153.29	31.055			
6,700.00	6,680.44	6,496.05	6,495.44	23.82	130.54	-28.24	2,929.59	3,852.71	4,738.52	4,584.20	154.32	30.706			
6,750.00	6,722.22	6,537.83	6,537.22	23.99	131.39	-29.65	2,929.59	3,852.71	4,713.60	4,558.29	155.30	30.351			
6,800.00	6,761.71	6,577.32	6,576.71	24.16	132.20	-31.35	2,929.59	3,852.71	4,685.81	4,529.58	156.23	29.993			
6,850.00	6,798.68	6,614.29	6,613.68	24.33	132.95	-33.41	2,929.59	3,852.71	4,655.33	4,498.24	157.09	29.634			
6,900.00	6,832.89	6,648.50	6,647.89	24.50	133.65	-35.89	2,929.59	3,852.71	4,622.38	4,464.48	157.90	29.275			
6,950.00	6,864.14	6,679.75	6,679.14	24.69	134.29	-38.86	2,929.59	3,852.71	4,587.15	4,428.53	158.63	28.918			
7,000.00	6,892.23	6,707.84	6,707.23	24.88	134.87	-42.42	2,929.59	3,852.71	4,549.89	4,390.61	159.29	28.564			
7,050.00	6,916.99	6,732.60	6,731.99	25.08	135.37	-46.68	2,929.59	3,852.71	4,510.84	4,350.97	159.87	28.216			
7,100.00	6,938.27	6,753.88	6,753.27	25.29	135.81	-51.74	2,929.59	3,852.71	4,470.24	4,309.87	160.37	27.874			
7,150.00	6,955.93	6,771.54	6,770.93	25.51	136.17	-57.68	2,929.59	3,852.71	4,428.37	4,267.57	160.80	27.540			
7,200.00	6,969.87	6,785.48	6,784.87	25.75	136.45	-64.55	2,929.59	3,852.71	4,385.49	4,224.34	161.14	27.215			
7,250.00	6,980.00	6,795.61	6,795.00	25.99	136.66	-72.25	2,929.59	3,852.71	4,341.87	4,180.46	161.41	26.900			
7,300.00	6,986.25	6,801.87	6,801.25	26.25	136.79	-80.58	2,929.59	3,852.71	4,297.79	4,136.21	161.59	26.597			
7,354.68	6,988.62	6,804.23	6,803.62	26.53	136.84	-89.96	2,929.59	3,852.71	4,249.40	4,087.70	161.69	26.281			
7,400.00	6,988.64	6,804.25	6,803.64	26.78	136.84	-89.96	2,929.59	3,852.71	4,209.36	4,047.61	161.75	26.025			
7,500.00	6,988.67	6,804.28	6,803.67	27.40	136.84	-89.96	2,929.59	3,852.71	4,121.38	3,959.50	161.88	25.459			
7,600.00	6,988.71	6,804.32	6,803.71	28.08	136.84	-89.96	2,929.59	3,852.71	4,033.97	3,871.91	162.06	24.892			
7,700.00	6,988.74	6,804.35	6,803.74	28.84	136.84	-89.97	2,929.59	3,852.71	3,947.16	3,784.88	162.28	24.324			
7,800.00	6,988.78	6,804.39	6,803.78	29.67	136.84	-89.97	2,929.59	3,852.71	3,860.99	3,698.45	162.54	23.754			
7,900.00	6,988.81	6,804.42	6,803.81	30.55	136.84	-89.97	2,929.59	3,852.71	3,775.49	3,612.64	162.85	23.184			
8,000.00	6,988.85	6,804.46	6,803.85	31.49	136.84	-89.97	2,929.59	3,852.71	3,690.73	3,527.52	163.21	22.613			
8,100.00	6,988.88	6,804.49	6,803.88	32.48	136.84	-89.97	2,929.59	3,852.71	3,606.74	3,443.11	163.63	22.042			
8,200.00	6,988.91	6,804.53	6,803.91	33.51	136.84	-89.97	2,929.59	3,852.71	3,523.60	3,359.48	164.11	21.471			
8,211.68	6,988.92	6,804.53	6,803.92	33.63	136.84	-89.97	2,929.59	3,852.71	3,513.94	3,349.77	164.17	21.404			
8,300.00	6,988.95	6,804.56	6,803.95	34.58	136.84	-89.97	2,929.59	3,852.71	3,442.14	3,277.47	164.67	20.904			
8,400.00	6,988.98	6,804.59	6,803.98	35.70	136.84	-89.98	2,929.59	3,852.71	3,363.82	3,198.49	165.32	20.347			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #107 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: 165-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	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)			
8,500.00	6,989.01	6,804.63	6,804.01	36.84	136.84	-89.98	2,929.59	3,852.71	3,288.97	3,122.87	166.09	19.802	
8,600.00	6,989.04	6,804.66	6,804.04	38.02	136.85	-89.98	2,929.59	3,852.71	3,217.92	3,050.93	166.99	19.270	
8,700.00	6,989.07	6,804.69	6,804.07	39.22	136.85	-89.99	2,929.59	3,852.71	3,151.03	2,983.02	168.01	18.755	
8,772.79	6,989.09	6,804.71	6,804.09	40.11	136.85	-89.99	2,929.59	3,852.71	3,105.15	2,936.31	168.84	18.391	
8,800.00	6,989.10	6,804.71	6,804.10	40.44	136.85	-89.99	2,929.59	3,852.71	3,088.54	2,919.37	169.17	18.257	
8,900.00	6,989.13	6,804.74	6,804.13	41.68	136.85	-89.99	2,929.59	3,852.71	3,028.81	2,858.37	170.44	17.771	
9,000.00	6,989.15	6,804.77	6,804.15	42.95	136.85	-89.99	2,929.59	3,852.71	2,971.24	2,799.43	171.81	17.294	
9,100.00	6,989.18	6,804.79	6,804.18	44.24	136.85	-89.99	2,929.59	3,852.71	2,915.97	2,742.69	173.28	16.828	
9,200.00	6,989.21	6,804.82	6,804.21	45.55	136.85	-89.99	2,929.59	3,852.71	2,863.12	2,688.28	174.85	16.375	
9,300.00	6,989.24	6,804.85	6,804.24	46.88	136.85	-89.99	2,929.59	3,852.71	2,812.84	2,636.34	176.50	15.937	
9,400.00	6,989.26	6,804.87	6,804.26	48.23	136.85	-89.99	2,929.59	3,852.71	2,765.26	2,587.03	178.23	15.515	
9,500.00	6,989.29	6,804.90	6,804.29	49.59	136.85	-89.99	2,929.59	3,852.71	2,720.53	2,540.49	180.04	15.110	
9,600.00	6,989.32	6,804.93	6,804.32	50.96	136.85	-89.99	2,929.59	3,852.71	2,678.78	2,496.87	181.92	14.725	
9,700.00	6,989.34	6,804.96	6,804.34	52.35	136.85	-89.99	2,929.59	3,852.71	2,640.17	2,456.32	183.84	14.361	
9,800.00	6,989.37	6,804.98	6,804.37	53.75	136.85	-89.99	2,929.59	3,852.71	2,604.82	2,419.00	185.82	14.018	
9,900.00	6,989.40	6,805.01	6,804.40	55.16	136.85	-90.00	2,929.59	3,852.71	2,572.87	2,385.06	187.82	13.699	
10,000.00	6,989.42	6,805.04	6,804.42	56.58	136.85	-90.00	2,929.59	3,852.71	2,544.46	2,354.62	189.84	13.403	
10,100.00	6,989.45	6,805.06	6,804.45	58.01	136.85	-90.00	2,929.59	3,852.71	2,519.70	2,327.83	191.87	13.132	
10,200.00	6,989.48	6,805.09	6,804.48	59.45	136.85	-90.00	2,929.59	3,852.71	2,498.70	2,304.81	193.88	12.888	
10,300.00	6,989.51	6,805.12	6,804.51	60.90	136.85	-90.00	2,929.59	3,852.71	2,481.55	2,285.67	195.88	12.669	
10,400.00	6,989.53	6,805.15	6,804.53	62.35	136.86	-90.00	2,929.59	3,852.71	2,468.34	2,270.50	197.83	12.477	
10,500.00	6,989.56	6,805.17	6,804.56	63.81	136.86	-90.00	2,929.59	3,852.71	2,459.12	2,259.39	199.74	12.312	
10,600.00	6,989.59	6,805.20	6,804.59	65.28	136.86	-90.00	2,929.59	3,852.71	2,453.95	2,252.38	201.57	12.174	
10,676.99	6,989.61	6,805.22	6,804.61	66.42	136.86	-90.00	2,929.59	3,852.71	2,452.75	2,249.81	202.94	12.086 CC	
10,700.00	6,989.61	6,805.23	6,804.61	66.76	136.86	-90.00	2,929.59	3,852.71	2,452.85	2,249.52	203.33	12.063 ES	
10,800.00	6,989.64	6,805.25	6,804.64	68.24	136.86	-90.00	2,929.59	3,852.71	2,455.83	2,250.82	205.01	11.979	
10,900.00	6,989.67	6,805.28	6,804.67	69.73	136.86	-90.00	2,929.59	3,852.71	2,462.86	2,256.28	206.58	11.922	
11,000.00	6,989.70	6,805.31	6,804.70	71.22	136.86	-90.00	2,929.59	3,852.71	2,473.92	2,265.87	208.05	11.891	
11,100.00	6,989.72	6,805.33	6,804.72	72.71	136.86	-90.00	2,929.59	3,852.71	2,488.96	2,279.55	209.41	11.886 SF	
11,200.00	6,989.75	6,805.36	6,804.75	74.22	136.86	-90.00	2,929.59	3,852.71	2,507.89	2,297.24	210.65	11.905	
11,300.00	6,989.78	6,805.39	6,804.78	75.72	136.86	-90.00	2,929.59	3,852.71	2,530.63	2,318.85	211.78	11.949	
11,400.00	6,989.80	6,805.42	6,804.80	77.23	136.86	-90.00	2,929.59	3,852.71	2,557.09	2,344.29	212.79	12.017	
11,500.00	6,989.83	6,805.44	6,804.83	78.74	136.86	-90.01	2,929.59	3,852.71	2,587.14	2,373.45	213.69	12.107	
11,600.00	6,989.86	6,805.47	6,804.86	80.26	136.86	-90.01	2,929.59	3,852.71	2,620.67	2,406.18	214.48	12.219	
11,700.00	6,989.88	6,805.50	6,804.88	81.78	136.86	-90.01	2,929.59	3,852.71	2,657.54	2,442.37	215.17	12.351	
11,800.00	6,989.91	6,805.52	6,804.91	83.30	136.86	-90.01	2,929.59	3,852.71	2,697.61	2,481.86	215.75	12.504	
11,900.00	6,989.94	6,805.55	6,804.94	84.83	136.86	-90.01	2,929.59	3,852.71	2,740.75	2,524.52	216.23	12.675	
12,000.00	6,989.97	6,805.58	6,804.97	86.36	136.86	-90.01	2,929.59	3,852.71	2,786.81	2,570.18	216.63	12.864	
12,100.00	6,989.99	6,805.60	6,804.99	87.89	136.86	-90.01	2,929.59	3,852.71	2,835.65	2,618.70	216.95	13.071	
12,200.00	6,990.02	6,805.63	6,805.02	89.42	136.87	-90.01	2,929.59	3,852.71	2,887.13	2,669.94	217.19	13.293	
12,300.00	6,990.05	6,805.66	6,805.05	90.96	136.87	-90.01	2,929.59	3,852.71	2,941.11	2,723.75	217.36	13.531	
12,400.00	6,990.07	6,805.69	6,805.07	92.50	136.87	-90.01	2,929.59	3,852.71	2,997.45	2,779.99	217.46	13.784	
12,500.00	6,990.10	6,805.71	6,805.10	94.04	136.87	-90.01	2,929.59	3,852.71	3,056.03	2,838.51	217.52	14.050	
12,600.00	6,990.13	6,805.74	6,805.13	95.58	136.87	-90.01	2,929.59	3,852.71	3,116.72	2,899.20	217.52	14.328	
12,700.00	6,990.15	6,805.77	6,805.15	97.13	136.87	-90.01	2,929.59	3,852.71	3,179.39	2,961.91	217.48	14.619	
12,800.00	6,990.18	6,805.79	6,805.18	98.68	136.87	-90.01	2,929.59	3,852.71	3,243.94	3,026.54	217.40	14.922	
12,900.00	6,990.21	6,805.82	6,805.21	100.22	136.87	-90.01	2,929.59	3,852.71	3,310.24	3,092.96	217.28	15.235	
13,000.00	6,990.24	6,805.85	6,805.24	101.78	136.87	-90.01	2,929.59	3,852.71	3,378.21	3,161.07	217.14	15.558	
13,100.00	6,990.26	6,805.87	6,805.26	103.33	136.87	-90.02	2,929.59	3,852.71	3,447.74	3,230.77	216.97	15.890	
13,200.00	6,990.29	6,805.90	6,805.29	104.88	136.87	-90.02	2,929.59	3,852.71	3,518.74	3,301.96	216.78	16.232	
13,300.00	6,990.32	6,805.93	6,805.32	106.44	136.87	-90.02	2,929.59	3,852.71	3,591.12	3,374.55	216.57	16.582	
13,400.00	6,990.34	6,805.96	6,805.34	107.99	136.87	-90.02	2,929.59	3,852.71	3,664.80	3,448.45	216.34	16.940	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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)		
13,500.00	6,990.37	6,805.98	6,805.37	109.55	136.87	-90.02	2,929.59	3,852.71	3,739.70	3,523.59	216.11	17.305			
13,600.00	6,990.40	6,806.01	6,805.40	111.11	136.87	-90.02	2,929.59	3,852.71	3,815.75	3,599.89	215.86	17.677			
13,700.00	6,990.42	6,806.04	6,805.42	112.67	136.87	-90.02	2,929.59	3,852.71	3,892.88	3,677.28	215.60	18.056			
13,800.00	6,990.45	6,806.06	6,805.45	114.23	136.87	-90.02	2,929.59	3,852.71	3,971.04	3,755.70	215.34	18.441			
13,900.00	6,990.48	6,806.09	6,805.48	115.80	136.87	-90.02	2,929.59	3,852.71	4,050.15	3,835.08	215.07	18.832			
14,000.00	6,990.51	6,806.12	6,805.51	117.36	136.88	-90.02	2,929.59	3,852.71	4,130.17	3,915.37	214.80	19.228			
14,100.00	6,990.53	6,806.14	6,805.53	118.93	136.88	-90.02	2,929.59	3,852.71	4,211.05	3,996.52	214.53	19.629			
14,200.00	6,990.56	6,806.17	6,805.56	120.49	136.88	-90.02	2,929.59	3,852.71	4,292.73	4,078.47	214.26	20.036			
14,300.00	6,990.59	6,806.20	6,805.59	122.06	136.88	-90.02	2,929.59	3,852.71	4,375.17	4,161.19	213.98	20.447			
14,400.00	6,990.61	6,806.23	6,805.61	123.63	136.88	-90.02	2,929.59	3,852.71	4,458.33	4,244.62	213.71	20.862			
14,500.00	6,990.64	6,806.25	6,805.64	125.20	136.88	-90.02	2,929.59	3,852.71	4,542.17	4,328.74	213.44	21.281			
14,600.00	6,990.67	6,806.28	6,805.67	126.77	136.88	-90.02	2,929.59	3,852.71	4,626.66	4,413.49	213.17	21.704			
14,700.00	6,990.70	6,806.31	6,805.70	128.34	136.88	-90.03	2,929.59	3,852.71	4,711.74	4,498.84	212.90	22.131			
14,800.00	6,990.72	6,806.33	6,805.72	129.91	136.88	-90.03	2,929.59	3,852.71	4,797.41	4,584.77	212.64	22.561			
14,900.00	6,990.75	6,806.36	6,805.75	131.48	136.88	-90.03	2,929.59	3,852.71	4,883.62	4,671.24	212.38	22.995			
15,000.00	6,990.78	6,806.39	6,805.78	133.06	136.88	-90.03	2,929.59	3,852.71	4,970.35	4,758.22	212.12	23.432			
15,100.00	6,990.80	6,806.42	6,805.80	134.63	136.88	-90.03	2,929.59	3,852.71	5,057.56	4,845.69	211.87	23.871			
15,200.00	6,990.83	6,806.44	6,805.83	136.20	136.88	-90.03	2,929.59	3,852.71	5,145.24	4,933.62	211.62	24.313			
15,300.00	6,990.86	6,806.47	6,805.86	137.78	136.88	-90.03	2,929.59	3,852.71	5,233.37	5,021.99	211.38	24.758			
15,400.00	6,990.88	6,806.50	6,805.88	139.36	136.88	-90.03	2,929.59	3,852.71	5,321.91	5,110.77	211.14	25.205			
15,500.00	6,990.91	6,806.52	6,805.91	140.93	136.88	-90.03	2,929.59	3,852.71	5,410.85	5,199.95	210.91	25.655			
15,600.00	6,990.94	6,806.55	6,805.94	142.51	136.88	-90.03	2,929.59	3,852.71	5,500.18	5,289.50	210.68	26.107			
15,700.00	6,990.97	6,806.58	6,805.97	144.09	136.88	-90.03	2,929.59	3,852.71	5,589.86	5,379.41	210.45	26.561			
15,800.00	6,990.99	6,806.60	6,805.99	145.67	136.89	-90.03	2,929.59	3,852.71	5,679.89	5,469.66	210.23	27.017			
15,900.00	6,991.02	6,806.63	6,806.02	147.24	136.89	-90.03	2,929.59	3,852.71	5,770.25	5,560.23	210.02	27.475			
16,000.00	6,991.05	6,806.66	6,806.05	148.82	136.89	-90.03	2,929.59	3,852.71	5,860.92	5,651.11	209.81	27.934			
16,100.00	6,991.07	6,806.69	6,806.07	150.40	136.89	-90.03	2,929.59	3,852.71	5,951.89	5,742.28	209.61	28.396			
16,200.00	6,991.10	6,806.71	6,806.10	151.99	136.89	-90.03	2,929.59	3,852.71	6,043.14	5,833.73	209.41	28.858			
16,300.00	6,991.13	6,806.74	6,806.13	153.57	136.89	-90.04	2,929.59	3,852.71	6,134.67	5,925.46	209.21	29.323			
16,400.00	6,991.15	6,806.77	6,806.15	155.15	136.89	-90.04	2,929.59	3,852.71	6,226.46	6,017.43	209.02	29.789			
16,500.00	6,991.18	6,806.79	6,806.18	156.73	136.89	-90.04	2,929.59	3,852.71	6,318.49	6,109.66	208.84	30.256			
16,600.00	6,991.21	6,806.82	6,806.21	158.31	136.89	-90.04	2,929.59	3,852.71	6,410.77	6,202.11	208.66	30.724			
16,700.00	6,991.24	6,806.85	6,806.24	159.90	136.89	-90.04	2,929.59	3,852.71	6,503.27	6,294.79	208.48	31.194			
16,800.00	6,991.26	6,806.87	6,806.26	161.48	136.89	-90.04	2,929.59	3,852.71	6,596.00	6,387.69	208.31	31.665			
16,900.00	6,991.29	6,806.90	6,806.29	163.06	136.89	-90.04	2,929.59	3,852.71	6,688.93	6,480.79	208.14	32.136			
17,000.00	6,991.32	6,806.93	6,806.32	164.65	136.89	-90.04	2,929.59	3,852.71	6,782.06	6,574.08	207.98	32.609			
17,100.00	6,991.34	6,806.96	6,806.34	166.23	136.89	-90.04	2,929.59	3,852.71	6,875.39	6,667.57	207.82	33.083			
17,200.00	6,991.37	6,806.98	6,806.37	167.82	136.89	-90.04	2,929.59	3,852.71	6,968.90	6,761.23	207.67	33.558			
17,300.00	6,991.40	6,807.01	6,806.40	169.40	136.89	-90.04	2,929.59	3,852.71	7,062.59	6,855.07	207.52	34.034			
17,400.00	6,991.42	6,807.04	6,806.42	170.99	136.89	-90.04	2,929.59	3,852.71	7,156.45	6,949.08	207.37	34.510			
17,500.00	6,991.45	6,807.06	6,806.45	172.57	136.89	-90.04	2,929.59	3,852.71	7,250.47	7,043.25	207.23	34.988			
17,600.00	6,991.48	6,807.09	6,806.48	174.16	136.90	-90.04	2,929.59	3,852.71	7,344.66	7,137.57	207.09	35.466			
17,700.00	6,991.51	6,807.12	6,806.51	175.75	136.90	-90.04	2,929.59	3,852.71	7,438.99	7,232.03	206.96	35.945			
17,800.00	6,991.53	6,807.14	6,806.53	177.33	136.90	-90.04	2,929.59	3,852.71	7,533.47	7,326.64	206.83	36.424			
17,900.00	6,991.56	6,807.17	6,806.56	178.92	136.90	-90.05	2,929.59	3,852.71	7,628.09	7,421.39	206.70	36.904			
18,000.00	6,991.59	6,807.20	6,806.59	180.51	136.90	-90.05	2,929.59	3,852.71	7,722.85	7,516.27	206.58	37.385			
18,100.00	6,991.61	6,807.23	6,806.61	182.10	136.90	-90.05	2,929.59	3,852.71	7,817.73	7,611.28	206.46	37.866			
18,200.00	6,991.64	6,807.25	6,806.64	183.68	136.90	-90.05	2,929.59	3,852.71	7,912.75	7,706.41	206.34	38.348			
18,300.00	6,991.67	6,807.28	6,806.67	185.27	136.90	-90.05	2,929.59	3,852.71	8,007.88	7,801.65	206.23	38.830			
18,400.00	6,991.69	6,807.31	6,806.69	186.86	136.90	-90.05	2,929.59	3,852.71	8,103.13	7,897.01	206.12	39.313			
18,500.00	6,991.72	6,807.33	6,806.72	188.45	136.90	-90.05	2,929.59	3,852.71	8,198.50	7,992.48	206.02	39.796			
18,600.00	6,991.75	6,807.36	6,806.75	190.04	136.90	-90.05	2,929.59	3,852.71	8,293.97	8,088.06	205.91	40.279			

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
18,700.00	6,991.78	6,807.39	6,806.78	191.63	136.90	-90.05	2,929.59	3,852.71	8,389.55	8,183.74	205.81	40.763	
18,800.00	6,991.80	6,807.42	6,806.80	193.22	136.90	-90.05	2,929.59	3,852.71	8,485.23	8,279.52	205.72	41.247	
18,900.00	6,991.83	6,807.44	6,806.83	194.81	136.90	-90.05	2,929.59	3,852.71	8,581.01	8,375.39	205.62	41.732	
19,000.00	6,991.86	6,807.47	6,806.86	196.40	136.90	-90.05	2,929.59	3,852.71	8,676.89	8,471.35	205.53	42.216	
19,100.00	6,991.88	6,807.50	6,806.88	197.99	136.90	-90.05	2,929.59	3,852.71	8,772.86	8,567.41	205.45	42.701	
19,200.00	6,991.91	6,807.52	6,806.91	199.58	136.90	-90.05	2,929.59	3,852.71	8,868.91	8,663.55	205.36	43.187	
19,300.00	6,991.94	6,807.55	6,806.94	201.17	136.90	-90.05	2,929.59	3,852.71	8,965.05	8,759.77	205.28	43.672	
19,342.28	6,991.95	6,807.56	6,806.95	201.84	136.90	-90.05	2,929.59	3,852.71	9,005.73	8,800.48	205.25	43.878	
19,400.00	6,991.97	6,807.58	6,806.97	202.76	136.90	-90.06	2,929.59	3,852.71	9,061.28	8,856.08	205.20	44.158	
19,500.00	6,991.99	6,807.60	6,806.99	204.35	136.91	-90.06	2,929.59	3,852.71	9,157.59	8,952.46	205.12	44.644	
19,542.28	6,992.00	6,807.62	6,807.00	205.03	136.91	-90.06	2,929.59	3,852.71	9,198.33	8,993.23	205.09	44.850	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	-102.20	-1,080.08	-4,993.71	5,110.20				
100.00	100.00	0.00	0.00	0.25	0.00	-102.20	-1,080.08	-4,993.71	5,109.18	5,108.93	0.25	N/A	
134.01	134.01	32.01	32.01	0.37	0.20	-102.20	-1,080.08	-4,993.71	5,109.18	5,108.61	0.57	8,958.451	
200.00	200.00	98.00	98.00	0.61	0.61	-102.20	-1,080.08	-4,993.71	5,109.18	5,107.97	1.21	4,210.443	
268.00	268.00	166.00	166.00	0.85	1.17	-102.20	-1,079.88	-4,993.71	5,109.14	5,107.15	1.99	2,564.141	
300.00	300.00	194.58	194.57	0.97	1.40	-102.20	-1,079.93	-4,993.71	5,109.15	5,106.81	2.34	2,183.693	
400.00	400.00	298.01	298.00	1.33	2.23	-102.20	-1,080.08	-4,993.71	5,109.18	5,105.68	3.50	1,460.325	
417.52	417.52	315.52	315.52	1.39	2.37	-102.20	-1,079.98	-4,993.71	5,109.16	5,105.47	3.69	1,383.039	
500.00	500.00	395.91	395.91	1.68	3.00	-102.20	-1,080.06	-4,993.71	5,109.18	5,104.58	4.60	1,110.971	
600.00	600.00	498.02	498.00	2.04	4.74	-102.20	-1,080.08	-4,993.71	5,109.18	5,102.49	6.69	764.097	
700.00	700.00	598.02	598.00	2.40	6.55	-102.20	-1,080.08	-4,993.71	5,109.18	5,100.34	8.84	577.876	
800.00	799.98	696.90	696.88	2.76	8.34	-72.22	-1,079.27	-4,993.71	5,108.48	5,097.50	10.97	465.483	
900.00	899.92	794.11	794.09	3.12	10.10	-72.26	-1,079.49	-4,993.71	5,107.46	5,094.38	13.08	390.570	
1,000.00	999.86	891.31	891.28	3.47	11.85	-72.30	-1,079.96	-4,993.71	5,106.50	5,091.32	15.18	336.401	
1,100.00	1,099.80	997.86	997.80	3.83	13.28	-72.34	-1,080.08	-4,993.71	5,105.46	5,088.52	16.95	301.293	
1,200.00	1,199.74	1,097.79	1,097.74	4.19	14.52	-72.38	-1,080.08	-4,993.71	5,104.40	5,085.88	18.52	275.577	
1,300.00	1,299.68	1,194.92	1,194.85	4.55	15.72	-72.41	-1,079.51	-4,993.71	5,103.23	5,083.16	20.07	254.322	
1,400.00	1,399.61	1,291.46	1,291.39	4.91	16.92	-72.45	-1,079.91	-4,993.71	5,102.26	5,080.66	21.60	236.187	
1,500.00	1,499.55	1,397.64	1,397.55	5.27	17.68	-72.49	-1,080.08	-4,993.71	5,101.24	5,078.54	22.70	224.711	
1,600.00	1,599.49	1,496.90	1,496.81	5.63	18.22	-72.53	-1,079.74	-4,993.71	5,100.12	5,076.55	23.57	216.381	
1,700.00	1,699.43	1,593.83	1,593.75	5.99	18.74	-72.57	-1,079.93	-4,993.71	5,099.12	5,074.69	24.43	208.748	
1,800.00	1,799.37	1,697.46	1,697.37	6.35	19.41	-72.61	-1,080.08	-4,993.71	5,098.10	5,072.67	25.43	200.467	
1,900.00	1,899.31	1,797.40	1,797.31	6.71	20.12	-72.64	-1,080.08	-4,993.71	5,097.06	5,070.59	26.47	192.539	
2,000.00	1,999.25	1,896.82	1,896.73	7.07	20.83	-72.68	-1,079.85	-4,993.71	5,095.97	5,068.46	27.51	185.233	
2,100.00	2,099.19	1,995.66	1,995.57	7.42	21.53	-72.72	-1,079.94	-4,993.71	5,094.95	5,066.40	28.55	178.484	
2,200.00	2,199.13	2,097.24	2,097.13	7.78	22.15	-72.76	-1,080.08	-4,993.71	5,093.94	5,064.44	29.50	172.682	
2,300.00	2,299.07	2,197.08	2,196.97	8.14	22.51	-72.79	-1,079.67	-4,993.71	5,092.82	5,062.64	30.17	168.778	
2,400.00	2,399.01	2,291.47	2,291.35	8.50	22.85	-72.83	-1,079.91	-4,993.71	5,091.84	5,061.01	30.83	165.142	
2,500.00	2,498.94	2,397.08	2,396.94	8.86	23.24	-72.87	-1,080.08	-4,993.71	5,090.85	5,059.31	31.54	161.404	
2,600.00	2,598.88	2,496.86	2,496.71	9.22	23.62	-72.90	-1,079.32	-4,993.71	5,089.65	5,057.42	32.23	157.893	
2,700.00	2,698.82	2,591.38	2,591.23	9.58	23.98	-72.94	-1,079.56	-4,993.71	5,088.68	5,055.77	32.91	154.620	
2,800.00	2,798.76	2,696.95	2,696.76	9.94	24.65	-72.98	-1,080.08	-4,993.71	5,087.77	5,053.88	33.89	150.113	
2,900.00	2,898.70	2,796.89	2,796.70	10.30	25.90	-73.02	-1,080.08	-4,993.71	5,086.75	5,051.27	35.48	143.353	
3,000.00	2,998.64	2,896.83	2,896.64	10.66	27.15	-73.06	-1,080.08	-4,993.71	5,085.73	5,048.66	37.08	137.173	
3,100.00	3,098.58	2,996.77	2,996.58	11.02	28.40	-73.09	-1,080.08	-4,993.71	5,084.72	5,046.05	38.67	131.502	
3,200.00	3,198.52	3,093.77	3,093.56	11.38	29.61	-73.12	-1,078.76	-4,993.71	5,083.40	5,043.18	40.22	126.385	
3,300.00	3,298.46	3,190.76	3,190.54	11.75	30.83	-73.16	-1,079.13	-4,993.71	5,082.48	5,040.70	41.78	121.659	
3,400.00	3,398.40	3,287.73	3,287.51	12.11	32.04	-73.20	-1,079.75	-4,993.71	5,081.61	5,038.28	43.33	117.274	
3,500.00	3,498.34	3,396.58	3,396.34	12.47	34.78	-73.24	-1,080.08	-4,993.71	5,080.67	5,034.24	46.43	109.432	
3,600.00	3,598.27	3,496.52	3,496.27	12.83	38.00	-73.28	-1,080.08	-4,993.71	5,079.67	5,029.64	50.02	101.547	
3,700.00	3,698.21	3,596.46	3,596.21	13.19	41.23	-73.32	-1,080.08	-4,993.71	5,078.66	5,025.04	53.62	94.719	
3,800.00	3,798.15	3,696.40	3,696.15	13.55	44.45	-73.36	-1,080.08	-4,993.71	5,077.66	5,020.45	57.21	88.749	
3,900.00	3,898.09	3,796.34	3,796.09	13.91	47.68	-73.40	-1,080.08	-4,993.71	5,076.66	5,015.85	60.81	83.485	
4,000.00	3,998.03	3,896.10	3,895.85	14.27	50.89	-73.42	-1,078.88	-4,993.71	5,075.39	5,010.99	64.40	78.812	
4,100.00	4,097.97	3,995.12	3,994.86	14.63	54.09	-73.46	-1,078.93	-4,993.71	5,074.40	5,006.44	67.96	74.663	
4,200.00	4,197.91	4,094.13	4,093.87	14.99	57.28	-73.50	-1,079.06	-4,993.71	5,073.44	5,001.91	71.53	70.928	
4,300.00	4,297.85	4,193.13	4,192.87	15.35	60.48	-73.54	-1,079.27	-4,993.71	5,072.50	4,997.41	75.09	67.548	
4,400.00	4,397.79	4,292.14	4,291.88	15.71	63.67	-73.58	-1,079.56	-4,993.71	5,071.58	4,992.92	78.66	64.475	
4,500.00	4,497.73	4,391.13	4,390.87	16.07	66.87	-73.62	-1,079.92	-4,993.71	5,070.68	4,988.46	82.22	61.669	
4,600.00	4,597.66	4,496.01	4,495.66	16.43	68.47	-73.66	-1,080.08	-4,993.71	5,069.73	4,985.56	84.17	60.231	
4,700.00	4,697.60	4,595.95	4,595.60	16.79	69.11	-73.70	-1,080.08	-4,993.71	5,068.75	4,983.60	85.15	59.528	
4,800.00	4,797.54	4,692.26	4,691.91	17.15	69.73	-73.73	-1,079.32	-4,993.71	5,067.59	4,981.49	86.10	58.854	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		107-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference	Offset	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	
4,900.00	4,897.48	4,787.15	4,786.79	17.51	70.34	-73.77	-1,079.81	-4,993.71	5,066.74	4,979.69	87.05	58.205		
5,000.00	4,997.42	4,895.80	4,895.42	17.87	71.79	-73.81	-1,080.08	-4,993.71	5,065.82	4,976.98	88.84	57.022		
5,100.00	5,097.36	4,995.74	4,995.36	18.23	73.44	-73.85	-1,080.08	-4,993.71	5,064.85	4,974.02	90.83	55.762		
5,200.00	5,197.30	5,095.68	5,095.30	18.59	75.08	-73.89	-1,080.08	-4,993.71	5,063.88	4,971.06	92.82	54.555		
5,300.00	5,297.24	5,195.62	5,195.24	18.95	76.73	-73.92	-1,080.08	-4,993.71	5,062.91	4,968.10	94.81	53.400		
5,402.82	5,400.00	5,298.38	5,298.00	19.32	78.42	-73.96	-1,080.08	-4,993.71	5,061.92	4,965.06	96.86	52.261		
5,500.00	5,497.13	5,395.49	5,395.10	19.67	80.02	-73.98	-1,078.83	-4,993.71	5,060.79	4,962.00	98.79	51.227		
5,600.00	5,597.11	5,494.54	5,494.15	20.03	81.65	-74.00	-1,078.87	-4,993.71	5,060.19	4,959.43	100.77	50.217		
5,700.00	5,697.10	5,593.61	5,593.22	20.39	83.28	-74.01	-1,078.98	-4,993.71	5,059.85	4,957.11	102.74	49.249		
5,781.19	5,778.28	5,674.04	5,673.65	20.68	84.60	-74.02	-1,079.13	-4,993.71	5,059.77	4,955.43	104.34	48.492	CC	
5,802.82	5,799.92	5,695.48	5,695.09	20.75	84.95	-104.02	-1,079.18	-4,993.71	5,059.77	4,955.00	104.77	48.295		
5,900.00	5,897.09	5,791.76	5,791.37	21.10	86.54	-104.02	-1,079.43	-4,993.71	5,059.84	4,953.15	106.68	47.428		
6,000.00	5,997.09	5,890.84	5,890.45	21.45	88.17	-104.03	-1,079.77	-4,993.71	5,059.92	4,951.26	108.66	46.568		
6,100.00	6,097.09	5,995.55	5,995.09	21.81	91.06	-104.03	-1,080.08	-4,993.71	5,059.99	4,948.10	111.89	45.221		
6,200.00	6,197.09	6,095.55	6,095.09	22.16	96.53	-104.03	-1,080.08	-4,993.71	5,059.99	4,942.26	117.73	42.980		
6,300.00	6,297.09	6,195.55	6,195.09	22.52	102.00	-104.03	-1,080.08	-4,993.71	5,059.99	4,936.43	123.56	40.950		
6,354.91	6,352.00	6,250.45	6,250.00	22.72	105.00	-104.03	-1,080.08	-4,993.71	5,059.99	4,933.22	126.77	39.915		
6,400.00	6,397.06	6,295.51	6,295.06	22.87	107.47	176.96	-1,080.08	-4,993.71	5,061.58	4,932.19	129.39	39.118	ES	
6,450.00	6,446.74	6,345.19	6,344.74	23.04	110.18	176.94	-1,080.08	-4,993.71	5,067.07	4,934.79	132.28	38.305		
6,500.00	6,495.84	6,394.29	6,393.84	23.20	112.87	176.90	-1,080.08	-4,993.71	5,076.43	4,941.29	135.14	37.565		
6,550.00	6,544.06	6,442.51	6,442.06	23.36	115.51	176.84	-1,080.08	-4,993.71	5,089.61	4,951.67	137.94	36.898		
6,600.00	6,591.08	6,489.54	6,489.08	23.51	118.08	176.76	-1,080.08	-4,993.71	5,106.53	4,965.86	140.67	36.302		
6,650.00	6,636.64	6,535.09	6,534.64	23.66	120.57	176.66	-1,080.08	-4,993.71	5,127.08	4,983.76	143.31	35.776		
6,700.00	6,680.44	6,578.89	6,578.44	23.82	122.97	176.53	-1,080.08	-4,993.71	5,151.13	5,005.28	145.85	35.318		
6,750.00	6,722.22	6,620.67	6,620.22	23.99	125.25	176.36	-1,080.08	-4,993.71	5,178.54	5,030.28	148.27	34.927		
6,800.00	6,761.71	6,660.16	6,659.71	24.16	127.41	176.16	-1,080.08	-4,993.71	5,209.15	5,058.60	150.55	34.601		
6,850.00	6,798.68	6,697.13	6,696.68	24.33	129.43	175.90	-1,080.08	-4,993.71	5,242.75	5,090.07	152.68	34.338		
6,900.00	6,832.89	6,731.34	6,730.89	24.50	131.31	175.57	-1,080.08	-4,993.71	5,279.15	5,124.50	154.65	34.136		
6,950.00	6,864.14	6,762.59	6,762.14	24.69	133.02	175.15	-1,080.08	-4,993.71	5,318.11	5,161.67	156.45	33.993		
7,000.00	6,892.23	6,790.68	6,790.23	24.88	134.55	174.60	-1,080.08	-4,993.71	5,359.41	5,201.35	158.06	33.908		
7,050.00	6,916.99	6,815.44	6,814.99	25.08	135.91	173.86	-1,080.08	-4,993.71	5,402.78	5,243.31	159.47	33.879	SF	
7,100.00	6,938.27	6,836.72	6,836.27	25.29	137.07	172.81	-1,080.08	-4,993.71	5,447.96	5,287.27	160.69	33.904		
7,150.00	6,955.93	6,854.38	6,853.93	25.51	138.04	171.24	-1,080.08	-4,993.71	5,494.66	5,332.97	161.69	33.982		
7,200.00	6,969.87	6,868.32	6,867.87	25.75	138.80	168.66	-1,080.08	-4,993.71	5,542.61	5,380.13	162.49	34.112		
7,250.00	6,980.00	6,878.45	6,878.00	25.99	139.35	163.72	-1,080.08	-4,993.71	5,591.51	5,428.45	163.06	34.291		
7,300.00	6,986.25	6,884.70	6,884.25	26.25	139.69	151.14	-1,080.08	-4,993.71	5,641.04	5,477.63	163.41	34.520		
7,354.68	6,988.62	6,887.07	6,886.62	26.53	139.82	90.43	-1,080.08	-4,993.71	5,695.60	5,532.05	163.55	34.825		
7,400.00	6,988.64	6,887.09	6,886.64	26.78	139.83	90.43	-1,080.08	-4,993.71	5,740.86	5,577.31	163.55	35.101		
7,500.00	6,988.67	6,887.12	6,886.67	27.40	139.83	90.44	-1,080.08	-4,993.71	5,840.76	5,677.20	163.56	35.711		
7,600.00	6,988.71	6,887.16	6,886.71	28.08	139.83	90.44	-1,080.08	-4,993.71	5,940.65	5,777.09	163.57	36.319		
7,700.00	6,988.74	6,887.19	6,886.74	28.84	139.83	90.45	-1,080.08	-4,993.71	6,040.55	5,876.98	163.58	36.928		
7,800.00	6,988.78	6,887.23	6,886.78	29.67	139.83	90.46	-1,080.08	-4,993.71	6,140.46	5,976.87	163.59	37.536		
7,900.00	6,988.81	6,887.26	6,886.81	30.55	139.83	90.47	-1,080.08	-4,993.71	6,240.36	6,076.77	163.60	38.144		
8,000.00	6,988.85	6,887.30	6,886.85	31.49	139.84	90.47	-1,080.08	-4,993.71	6,340.27	6,176.66	163.61	38.752		
8,100.00	6,988.88	6,887.33	6,886.88	32.48	139.84	90.48	-1,080.08	-4,993.71	6,440.19	6,276.56	163.63	39.359		
8,200.00	6,988.91	6,887.37	6,886.91	33.51	139.84	90.49	-1,080.08	-4,993.71	6,540.10	6,376.46	163.64	39.966		
8,211.68	6,988.92	6,887.37	6,886.92	33.63	139.84	90.49	-1,080.08	-4,993.71	6,551.78	6,388.13	163.64	40.037		
8,300.00	6,988.95	6,887.40	6,886.95	34.58	139.84	90.27	-1,080.08	-4,993.71	6,639.95	6,476.29	163.66	40.573		
8,400.00	6,988.98	6,887.43	6,886.98	35.70	139.84	90.18	-1,080.08	-4,993.71	6,739.56	6,575.89	163.67	41.178		
8,500.00	6,989.01	6,887.46	6,887.01	36.84	139.85	90.13	-1,080.08	-4,993.71	6,838.82	6,675.14	163.69	41.780		
8,600.00	6,989.04	6,887.50	6,887.04	38.02	139.85	90.10	-1,080.08	-4,993.71	6,937.64	6,773.93	163.70	42.379		
8,700.00	6,989.07	6,887.52	6,887.07	39.22	139.85	90.08	-1,080.08	-4,993.71	7,035.90	6,872.18	163.72	42.975		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		107-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:		0.00 usft	
Reference	Offset	Semi Major Axis		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	
8,772.79	6,989.09	6,887.54	6,887.09	40.11	139.85	90.07	-1,080.08	-4,993.71	7,107.02	6,943.28	163.74	43.405		
8,800.00	6,989.10	6,887.55	6,887.10	40.44	139.85	90.07	-1,080.08	-4,993.71	7,133.54	6,969.80	163.74	43.566		
8,900.00	6,989.13	6,887.58	6,887.13	41.68	139.85	90.07	-1,080.08	-4,993.71	7,231.06	7,067.29	163.77	44.154		
9,000.00	6,989.15	6,887.61	6,887.15	42.95	139.85	90.07	-1,080.08	-4,993.71	7,328.64	7,164.84	163.80	44.742		
9,100.00	6,989.18	6,887.63	6,887.18	44.24	139.85	90.07	-1,080.08	-4,993.71	7,426.29	7,262.46	163.83	45.329		
9,200.00	6,989.21	6,887.66	6,887.21	45.55	139.86	90.07	-1,080.08	-4,993.71	7,524.00	7,360.13	163.86	45.916		
9,300.00	6,989.24	6,887.69	6,887.24	46.88	139.86	90.07	-1,080.08	-4,993.71	7,621.76	7,457.86	163.90	46.502		
9,400.00	6,989.26	6,887.71	6,887.26	48.23	139.86	90.07	-1,080.08	-4,993.71	7,719.59	7,555.64	163.94	47.087		
9,500.00	6,989.29	6,887.74	6,887.29	49.59	139.86	90.07	-1,080.08	-4,993.71	7,817.47	7,653.48	163.99	47.671		
9,600.00	6,989.32	6,887.77	6,887.32	50.96	139.86	90.08	-1,080.08	-4,993.71	7,915.40	7,751.37	164.03	48.255		
9,700.00	6,989.34	6,887.79	6,887.34	52.35	139.86	90.08	-1,080.08	-4,993.71	8,013.38	7,849.30	164.08	48.838		
9,800.00	6,989.37	6,887.82	6,887.37	53.75	139.87	90.08	-1,080.08	-4,993.71	8,111.42	7,947.29	164.13	49.421		
9,900.00	6,989.40	6,887.85	6,887.40	55.16	139.87	90.08	-1,080.08	-4,993.71	8,209.50	8,045.32	164.18	50.003		
10,000.00	6,989.42	6,887.88	6,887.42	56.58	139.87	90.08	-1,080.08	-4,993.71	8,307.62	8,143.39	164.24	50.584		
10,100.00	6,989.45	6,887.90	6,887.45	58.01	139.87	90.08	-1,080.08	-4,993.71	8,405.79	8,241.50	164.29	51.164		
10,200.00	6,989.48	6,887.93	6,887.48	59.45	139.87	90.08	-1,080.08	-4,993.71	8,504.01	8,339.66	164.35	51.744		
10,300.00	6,989.51	6,887.96	6,887.51	60.90	139.87	90.08	-1,080.08	-4,993.71	8,602.26	8,437.86	164.41	52.323		
10,400.00	6,989.53	6,887.98	6,887.53	62.35	139.87	90.08	-1,080.08	-4,993.71	8,700.56	8,536.09	164.47	52.902		
10,500.00	6,989.56	6,888.01	6,887.56	63.81	139.88	90.08	-1,080.08	-4,993.71	8,798.89	8,634.36	164.53	53.480		
10,600.00	6,989.59	6,888.04	6,887.59	65.28	139.88	90.09	-1,080.08	-4,993.71	8,897.26	8,732.67	164.59	54.057		
10,700.00	6,989.61	6,888.06	6,887.61	66.76	139.88	90.09	-1,080.08	-4,993.71	8,995.66	8,831.01	164.66	54.633		
10,800.00	6,989.64	6,888.09	6,887.64	68.24	139.88	90.09	-1,080.08	-4,993.71	9,094.10	8,929.38	164.72	55.209		
10,900.00	6,989.67	6,888.12	6,887.67	69.73	139.88	90.09	-1,080.08	-4,993.71	9,192.58	9,027.79	164.79	55.784		
11,000.00	6,989.70	6,888.15	6,887.70	71.22	139.88	90.09	-1,080.08	-4,993.71	9,291.09	9,126.23	164.86	56.359		
11,100.00	6,989.72	6,888.17	6,887.72	72.71	139.88	90.09	-1,080.08	-4,993.71	9,389.62	9,224.70	164.92	56.933		
11,200.00	6,989.75	6,888.20	6,887.75	74.22	139.89	90.09	-1,080.08	-4,993.71	9,488.19	9,323.20	164.99	57.506		
11,300.00	6,989.78	6,888.23	6,887.78	75.72	139.89	90.09	-1,080.08	-4,993.71	9,586.79	9,421.73	165.06	58.079		
11,400.00	6,989.80	6,888.25	6,887.80	77.23	139.89	90.09	-1,080.08	-4,993.71	9,685.42	9,520.28	165.14	58.651		
11,500.00	6,989.83	6,888.28	6,887.83	78.74	139.89	90.09	-1,080.08	-4,993.71	9,784.07	9,618.86	165.21	59.222		
11,600.00	6,989.86	6,888.31	6,887.86	80.26	139.89	90.09	-1,080.08	-4,993.71	9,882.76	9,717.47	165.28	59.793		
11,700.00	6,989.88	6,888.34	6,887.88	81.78	139.89	90.10	-1,080.08	-4,993.71	9,981.46	9,816.11	165.36	60.363		
11,800.00	6,989.91	6,888.36	6,887.91	83.30	139.89	90.10	-1,080.08	-4,993.71	10,080.20	9,914.77	165.43	60.933		
11,900.00	6,989.94	6,888.39	6,887.94	84.83	139.90	90.10	-1,080.08	-4,993.71	10,178.96	10,013.45	165.51	61.501		
12,000.00	6,989.97	6,888.42	6,887.97	86.36	139.90	90.10	-1,080.08	-4,993.71	10,277.74	10,112.15	165.58	62.069		
12,100.00	6,989.99	6,888.44	6,887.99	87.89	139.90	90.10	-1,080.08	-4,993.71	10,376.54	10,210.88	165.66	62.637		
12,200.00	6,990.02	6,888.47	6,888.02	89.42	139.90	90.10	-1,080.08	-4,993.71	10,475.37	10,309.63	165.74	63.204		
12,300.00	6,990.05	6,888.50	6,888.05	90.96	139.90	90.10	-1,080.08	-4,993.71	10,574.22	10,408.40	165.82	63.770		
12,400.00	6,990.07	6,888.52	6,888.07	92.50	139.90	90.10	-1,080.08	-4,993.71	10,673.10	10,507.20	165.90	64.335		
12,500.00	6,990.10	6,888.55	6,888.10	94.04	139.91	90.10	-1,080.08	-4,993.71	10,771.99	10,606.01	165.98	64.900		
12,600.00	6,990.13	6,888.58	6,888.13	95.58	139.91	90.10	-1,080.08	-4,993.71	10,870.90	10,704.84	166.06	65.464		
12,700.00	6,990.15	6,888.61	6,888.15	97.13	139.91	90.11	-1,080.08	-4,993.71	10,969.83	10,803.69	166.14	66.027		
12,800.00	6,990.18	6,888.63	6,888.18	98.68	139.91	90.11	-1,080.08	-4,993.71	11,068.79	10,902.56	166.22	66.590		
12,900.00	6,990.21	6,888.66	6,888.21	100.22	139.91	90.11	-1,080.08	-4,993.71	11,167.76	11,001.45	166.31	67.152		
13,000.00	6,990.24	6,888.69	6,888.24	101.78	139.91	90.11	-1,080.08	-4,993.71	11,266.75	11,100.36	166.39	67.714		
13,100.00	6,990.26	6,888.71	6,888.26	103.33	139.91	90.11	-1,080.08	-4,993.71	11,365.75	11,199.28	166.47	68.274		
13,200.00	6,990.29	6,888.74	6,888.29	104.88	139.92	90.11	-1,080.08	-4,993.71	11,464.78	11,298.22	166.56	68.834		
13,300.00	6,990.32	6,888.77	6,888.32	106.44	139.92	90.11	-1,080.08	-4,993.71	11,563.82	11,397.18	166.64	69.394		
13,400.00	6,990.34	6,888.79	6,888.34	107.99	139.92	90.11	-1,080.08	-4,993.71	11,662.87	11,496.15	166.73	69.952		
13,500.00	6,990.37	6,888.82	6,888.37	109.55	139.92	90.11	-1,080.08	-4,993.71	11,761.95	11,595.13	166.81	70.510		
13,600.00	6,990.40	6,888.85	6,888.40	111.11	139.92	90.11	-1,080.08	-4,993.71	11,861.03	11,694.14	166.90	71.068		
13,700.00	6,990.42	6,888.88	6,888.42	112.67	139.92	90.12	-1,080.08	-4,993.71	11,960.14	11,793.15	166.98	71.624		
13,800.00	6,990.45	6,888.90	6,888.45	114.23	139.92	90.12	-1,080.08	-4,993.71	12,059.26	11,892.18	167.07	72.180		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #108 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		107-MWD OWSG Rev5					Rule Assigned:			Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		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	6,990.48	6,888.93	6,888.48	115.80	139.93	90.12	-1,080.08	-4,993.71	12,158.39	11,991.23	167.16	72.735		
14,000.00	6,990.51	6,888.96	6,888.51	117.36	139.93	90.12	-1,080.08	-4,993.71	12,257.54	12,090.29	167.25	73.290		
14,100.00	6,990.53	6,888.98	6,888.53	118.93	139.93	90.12	-1,080.08	-4,993.71	12,356.70	12,189.36	167.34	73.844		
14,200.00	6,990.56	6,889.01	6,888.56	120.49	139.93	90.12	-1,080.08	-4,993.71	12,455.87	12,288.45	167.42	74.397		
14,300.00	6,990.59	6,889.04	6,888.59	122.06	139.93	90.12	-1,080.08	-4,993.71	12,555.06	12,387.54	167.51	74.949		
14,400.00	6,990.61	6,889.06	6,888.61	123.63	139.93	90.12	-1,080.08	-4,993.71	12,654.26	12,486.65	167.60	75.501		
14,500.00	6,990.64	6,889.09	6,888.64	125.20	139.93	90.12	-1,080.08	-4,993.71	12,753.47	12,585.78	167.69	76.052		
14,600.00	6,990.67	6,889.12	6,888.67	126.77	139.94	90.12	-1,080.08	-4,993.71	12,852.70	12,684.91	167.78	76.603		
14,700.00	6,990.70	6,889.15	6,888.70	128.34	139.94	90.13	-1,080.08	-4,993.71	12,951.93	12,784.06	167.88	77.152		
14,800.00	6,990.72	6,889.17	6,888.72	129.91	139.94	90.13	-1,080.08	-4,993.71	13,051.18	12,883.21	167.97	77.701		
14,900.00	6,990.75	6,889.20	6,888.75	131.48	139.94	90.13	-1,080.08	-4,993.71	13,150.44	12,982.38	168.06	78.249		
15,000.00	6,990.78	6,889.23	6,888.78	133.06	139.94	90.13	-1,080.08	-4,993.71	13,249.71	13,081.56	168.15	78.797		
15,100.00	6,990.80	6,889.25	6,888.80	134.63	139.94	90.13	-1,080.08	-4,993.71	13,348.99	13,180.75	168.24	79.344		
15,200.00	6,990.83	6,889.28	6,888.83	136.20	139.95	90.13	-1,080.08	-4,993.71	13,448.28	13,279.95	168.34	79.890		
15,300.00	6,990.86	6,889.31	6,888.86	137.78	139.95	90.13	-1,080.08	-4,993.71	13,547.59	13,379.16	168.43	80.435		
15,400.00	6,990.88	6,889.34	6,888.88	139.36	139.95	90.13	-1,080.08	-4,993.71	13,646.90	13,478.38	168.52	80.980		
15,500.00	6,990.91	6,889.36	6,888.91	140.93	139.95	90.13	-1,080.08	-4,993.71	13,746.22	13,577.61	168.62	81.523		
15,600.00	6,990.94	6,889.39	6,888.94	142.51	139.95	90.13	-1,080.08	-4,993.71	13,845.56	13,676.84	168.71	82.067		
15,700.00	6,990.97	6,889.42	6,888.97	144.09	139.95	90.13	-1,080.08	-4,993.71	13,944.90	13,776.09	168.81	82.609		
15,800.00	6,990.99	6,889.44	6,888.99	145.67	139.95	90.14	-1,080.08	-4,993.71	14,044.25	13,875.35	168.90	83.151		
15,900.00	6,991.02	6,889.47	6,889.02	147.24	139.96	90.14	-1,080.08	-4,993.71	14,143.61	13,974.61	169.00	83.692		
16,000.00	6,991.05	6,889.50	6,889.05	148.82	139.96	90.14	-1,080.08	-4,993.71	14,242.98	14,073.89	169.09	84.232		
16,100.00	6,991.07	6,889.52	6,889.07	150.40	139.96	90.14	-1,080.08	-4,993.71	14,342.36	14,173.17	169.19	84.771		
16,200.00	6,991.10	6,889.55	6,889.10	151.99	139.96	90.14	-1,080.08	-4,993.71	14,441.75	14,272.46	169.29	85.310		
16,300.00	6,991.13	6,889.58	6,889.13	153.57	139.96	90.14	-1,080.08	-4,993.71	14,541.14	14,371.76	169.38	85.848		
16,400.00	6,991.15	6,889.61	6,889.15	155.15	139.96	90.14	-1,080.08	-4,993.71	14,640.54	14,471.06	169.48	86.385		
16,500.00	6,991.18	6,889.63	6,889.18	156.73	139.96	90.14	-1,080.08	-4,993.71	14,739.96	14,570.38	169.58	86.922		
16,600.00	6,991.21	6,889.66	6,889.21	158.31	139.97	90.14	-1,080.08	-4,993.71	14,839.38	14,669.70	169.67	87.458		
16,700.00	6,991.24	6,889.69	6,889.24	159.90	139.97	90.14	-1,080.08	-4,993.71	14,938.80	14,769.03	169.77	87.993		
16,800.00	6,991.26	6,889.71	6,889.26	161.48	139.97	90.15	-1,080.08	-4,993.71	15,038.24	14,868.37	169.87	88.527		
16,900.00	6,991.29	6,889.74	6,889.29	163.06	139.97	90.15	-1,080.08	-4,993.71	15,137.68	14,967.71	169.97	89.061		
17,000.00	6,991.32	6,889.77	6,889.32	164.65	139.97	90.15	-1,080.08	-4,993.71	15,237.13	15,067.06	170.07	89.593		
17,100.00	6,991.34	6,889.79	6,889.34	166.23	139.97	90.15	-1,080.08	-4,993.71	15,336.59	15,166.42	170.17	90.125		
17,200.00	6,991.37	6,889.82	6,889.37	167.82	139.97	90.15	-1,080.08	-4,993.71	15,436.05	15,265.78	170.27	90.657		
17,300.00	6,991.40	6,889.85	6,889.40	169.40	139.98	90.15	-1,080.08	-4,993.71	15,535.52	15,365.15	170.37	91.187		
17,400.00	6,991.42	6,889.88	6,889.42	170.99	139.98	90.15	-1,080.08	-4,993.71	15,635.00	15,464.53	170.47	91.717		
17,500.00	6,991.45	6,889.90	6,889.45	172.57	139.98	90.15	-1,080.08	-4,993.71	15,734.48	15,563.91	170.57	92.246		
17,600.00	6,991.48	6,889.93	6,889.48	174.16	139.98	90.15	-1,080.08	-4,993.71	15,833.97	15,663.30	170.67	92.774		
17,700.00	6,991.51	6,889.96	6,889.51	175.75	139.98	90.15	-1,080.08	-4,993.71	15,933.47	15,762.70	170.77	93.302		
17,800.00	6,991.53	6,889.98	6,889.53	177.33	139.98	90.16	-1,080.08	-4,993.71	16,032.97	15,862.10	170.87	93.829		
17,900.00	6,991.56	6,890.01	6,889.56	178.92	139.99	90.16	-1,080.08	-4,993.71	16,132.48	15,961.51	170.98	94.355		
18,000.00	6,991.59	6,890.04	6,889.59	180.51	139.99	90.16	-1,080.08	-4,993.71	16,232.00	16,060.92	171.08	94.880		
18,100.00	6,991.61	6,890.06	6,889.61	182.10	139.99	90.16	-1,080.08	-4,993.71	16,331.52	16,160.34	171.18	95.405		
18,200.00	6,991.64	6,890.09	6,889.64	183.68	139.99	90.16	-1,080.08	-4,993.71	16,431.05	16,259.76	171.28	95.928		
18,300.00	6,991.67	6,890.12	6,889.67	185.27	139.99	90.16	-1,080.08	-4,993.71	16,530.58	16,359.19	171.39	96.451		
18,400.00	6,991.69	6,890.15	6,889.69	186.86	139.99	90.16	-1,080.08	-4,993.71	16,630.12	16,458.63	171.49	96.973		
18,500.00	6,991.72	6,890.17	6,889.72	188.45	139.99	90.16	-1,080.08	-4,993.71	16,729.66	16,558.07	171.60	97.495		
18,600.00	6,991.75	6,890.20	6,889.75	190.04	140.00	90.16	-1,080.08	-4,993.71	16,829.21	16,657.51	171.70	98.016		
18,700.00	6,991.78	6,890.23	6,889.78	191.63	140.00	90.16	-1,080.08	-4,993.71	16,928.77	16,756.96	171.80	98.535		
18,800.00	6,991.80	6,890.25	6,889.80	193.22	140.00	90.16	-1,080.08	-4,993.71	17,028.33	16,856.42	171.91	99.055		
18,900.00	6,991.83	6,890.28	6,889.83	194.81	140.00	90.17	-1,080.08	-4,993.71	17,127.89	16,955.88	172.01	99.573		
19,000.00	6,991.86	6,890.31	6,889.86	196.40	140.00	90.17	-1,080.08	-4,993.71	17,227.46	17,055.34	172.12	100.091		

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,100.00	6,991.88	6,890.33	6,889.88	197.99	140.00	90.17	-1,080.08	-4,993.71	17,327.04	17,154.81	172.22	100.607		
19,200.00	6,991.91	6,890.36	6,889.91	199.58	140.00	90.17	-1,080.08	-4,993.71	17,426.62	17,254.29	172.33	101.123		
19,300.00	6,991.94	6,890.39	6,889.94	201.17	140.01	90.17	-1,080.08	-4,993.71	17,526.20	17,353.76	172.44	101.639		
19,342.28	6,991.95	6,890.40	6,889.95	201.84	140.01	90.17	-1,080.08	-4,993.71	17,568.30	17,395.82	172.48	101.856		
19,400.00	6,991.97	6,890.42	6,889.97	202.76	140.01	90.17	-1,080.08	-4,993.71	17,625.79	17,453.25	172.54	102.153		
19,500.00	6,991.99	6,890.44	6,889.99	204.35	140.01	90.17	-1,080.08	-4,993.71	17,725.38	17,552.73	172.65	102.667		
19,542.28	6,992.00	6,890.45	6,890.00	205.03	140.01	90.17	-1,080.08	-4,993.71	17,767.49	17,594.80	172.69	102.884		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-94.99	-691.92	-7,919.81	7,950.49				
100.00	100.00	9.00	9.00	0.25	0.18	-94.99	-691.92	-7,919.81	7,949.97	7,949.55	0.43	N/A	
200.00	200.00	109.00	109.00	0.61	2.15	-94.99	-691.92	-7,919.81	7,949.97	7,947.22	2.76	2,883.906	
300.00	300.00	209.00	209.00	0.97	4.61	-94.99	-691.92	-7,919.81	7,949.97	7,944.40	5.57	1,426.369	
400.00	400.00	309.00	309.00	1.33	7.11	-94.99	-691.92	-7,919.81	7,949.97	7,941.54	8.43	942.735	
435.81	435.81	344.02	344.01	1.45	7.98	-94.99	-691.31	-7,919.81	7,949.92	7,940.48	9.44	842.430	
500.00	500.00	406.74	406.73	1.68	9.55	-94.99	-691.44	-7,919.81	7,949.93	7,938.70	11.24	707.575	
600.00	600.00	509.15	509.00	2.04	12.15	-94.99	-691.92	-7,919.81	7,949.97	7,935.78	14.19	560.249	
700.00	700.00	609.15	609.00	2.40	15.22	-94.99	-691.92	-7,919.81	7,949.97	7,932.36	17.62	451.220	
800.00	799.98	700.48	700.29	2.76	18.02	-65.01	-691.22	-7,919.81	7,949.18	7,928.40	20.78	382.542	
900.00	899.92	809.23	808.92	3.12	21.08	-65.04	-691.92	-7,919.81	7,947.76	7,923.57	24.19	328.508	
1,000.00	999.86	905.61	905.27	3.47	23.62	-65.06	-690.92	-7,919.81	7,946.20	7,919.11	27.09	293.291	
1,100.00	1,099.80	1,009.21	1,008.80	3.83	26.30	-65.09	-691.92	-7,919.81	7,944.82	7,914.68	30.13	263.655	
1,200.00	1,199.74	1,109.15	1,108.74	4.19	28.61	-65.11	-691.92	-7,919.81	7,943.35	7,910.55	32.79	242.220	
1,300.00	1,299.68	1,209.09	1,208.68	4.55	30.91	-65.13	-691.92	-7,919.81	7,941.88	7,906.42	35.45	224.000	
1,400.00	1,399.61	1,307.00	1,306.57	4.91	33.17	-65.15	-690.66	-7,919.81	7,940.30	7,902.23	38.07	208.575	
1,500.00	1,499.55	1,403.92	1,403.48	5.27	35.40	-65.17	-691.14	-7,919.81	7,938.88	7,898.22	40.66	195.246	
1,600.00	1,599.49	1,509.03	1,508.49	5.63	37.80	-65.20	-691.92	-7,919.81	7,937.48	7,894.06	43.42	182.798	
1,700.00	1,699.43	1,608.96	1,608.43	5.99	40.00	-65.22	-691.92	-7,919.81	7,936.02	7,890.03	45.98	172.587	
1,800.00	1,799.37	1,708.90	1,708.37	6.35	42.21	-65.25	-691.92	-7,919.81	7,934.55	7,886.01	48.54	163.452	
1,900.00	1,899.31	1,806.70	1,806.15	6.71	44.36	-65.26	-690.66	-7,919.81	7,932.98	7,881.92	51.06	155.375	
2,000.00	1,999.25	1,903.56	1,903.00	7.07	46.49	-65.29	-691.15	-7,919.81	7,931.56	7,878.01	53.55	148.115	
2,100.00	2,099.19	2,008.82	2,008.19	7.42	48.77	-65.31	-691.92	-7,919.81	7,930.17	7,873.99	56.19	141.140	
2,200.00	2,199.13	2,108.76	2,108.13	7.78	50.77	-65.34	-691.92	-7,919.81	7,928.71	7,870.17	58.55	135.424	
2,300.00	2,299.07	2,208.70	2,208.07	8.14	52.77	-65.36	-691.92	-7,919.81	7,927.26	7,866.35	60.91	130.151	
2,400.00	2,399.01	2,306.22	2,305.58	8.50	54.73	-65.38	-691.05	-7,919.81	7,925.72	7,862.50	63.22	125.366	
2,500.00	2,498.94	2,403.44	2,402.79	8.86	56.67	-65.40	-691.54	-7,919.81	7,924.32	7,858.79	65.53	120.932	
2,600.00	2,598.88	2,508.57	2,507.88	9.22	58.79	-65.43	-691.92	-7,919.81	7,922.90	7,854.90	68.00	116.515	
2,700.00	2,698.82	2,608.51	2,607.82	9.58	60.80	-65.45	-691.92	-7,919.81	7,921.45	7,851.07	70.37	112.565	
2,800.00	2,798.76	2,708.38	2,707.69	9.94	62.81	-65.47	-691.09	-7,919.81	7,919.92	7,847.17	72.74	108.874	
2,900.00	2,898.70	2,806.41	2,805.72	10.30	64.79	-65.49	-691.22	-7,919.81	7,918.48	7,843.40	75.08	105.469	
3,000.00	2,998.64	2,904.43	2,903.74	10.66	66.76	-65.52	-691.60	-7,919.81	7,917.07	7,839.66	77.41	102.270	
3,100.00	3,098.58	3,008.32	3,007.58	11.02	68.81	-65.54	-691.92	-7,919.81	7,915.65	7,835.83	79.82	99.165	
3,200.00	3,198.52	3,108.26	3,107.52	11.38	70.74	-65.57	-691.92	-7,919.81	7,914.21	7,832.10	82.11	96.386	
3,300.00	3,298.46	3,208.20	3,207.46	11.75	72.67	-65.59	-691.92	-7,919.81	7,912.76	7,828.37	84.40	93.758	
3,400.00	3,398.40	3,306.54	3,305.78	12.11	74.56	-65.60	-690.76	-7,919.81	7,911.21	7,824.56	86.65	91.300	
3,500.00	3,498.34	3,404.13	3,403.37	12.47	76.44	-65.63	-691.11	-7,919.81	7,909.80	7,820.91	88.89	88.983	
3,600.00	3,598.27	3,501.72	3,500.95	12.83	78.33	-65.66	-691.76	-7,919.81	7,908.43	7,817.30	91.13	86.780	
3,700.00	3,698.21	3,608.01	3,607.21	13.19	80.55	-65.68	-691.92	-7,919.81	7,907.00	7,813.29	93.71	84.375	
3,800.00	3,798.15	3,705.97	3,705.18	13.55	82.63	-65.70	-691.74	-7,919.81	7,905.55	7,809.40	96.15	82.218	
3,900.00	3,898.09	3,807.92	3,807.09	13.91	85.51	-65.73	-691.92	-7,919.81	7,904.13	7,804.73	99.40	79.522	
4,000.00	3,998.03	3,907.86	3,907.03	14.27	89.01	-65.75	-691.92	-7,919.81	7,902.70	7,799.44	103.26	76.533	
4,100.00	4,097.97	4,007.70	4,006.84	14.63	92.51	-65.76	-690.29	-7,919.81	7,901.10	7,793.98	107.12	73.760	
4,200.00	4,197.91	4,103.66	4,102.79	14.99	95.88	-65.79	-690.54	-7,919.81	7,899.69	7,788.85	110.84	71.269	
4,300.00	4,297.85	4,199.60	4,198.72	15.35	99.24	-65.81	-691.28	-7,919.81	7,898.34	7,783.77	114.57	68.941	
4,400.00	4,397.79	4,308.23	4,306.79	15.71	103.76	-65.84	-691.92	-7,919.81	7,896.97	7,777.53	119.44	66.116	
4,500.00	4,497.73	4,408.52	4,406.73	16.07	108.62	-65.87	-691.92	-7,919.81	7,895.54	7,770.88	124.66	63.335	
4,600.00	4,597.66	4,508.72	4,506.66	16.43	113.47	-65.89	-691.92	-7,919.81	7,894.11	7,764.24	129.87	60.783	
4,700.00	4,697.60	4,608.89	4,606.60	16.79	118.30	-65.91	-691.92	-7,919.81	7,892.69	7,757.62	135.06	58.437	
4,800.00	4,797.54	4,709.20	4,706.54	17.15	123.31	-65.94	-691.92	-7,919.81	7,891.26	7,750.83	140.43	56.193	
4,900.00	4,897.48	4,809.40	4,806.48	17.51	128.35	-65.96	-691.92	-7,919.81	7,889.84	7,744.01	145.83	54.104	
5,000.00	4,997.42	4,899.64	4,896.67	17.87	132.82	-65.97	-690.77	-7,919.81	7,888.31	7,737.64	150.66	52.358	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		117-A027Ua_INC-ONLY								Rule Assigned:			Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,097.36	5,009.66	5,006.36	18.23	138.37	-66.01	-691.92	-7,919.81	7,887.00	7,730.43	156.57	50.375		
5,200.00	5,197.30	5,109.94	5,106.30	18.59	143.42	-66.03	-691.92	-7,919.81	7,885.58	7,723.60	161.98	48.682		
5,300.00	5,297.24	5,209.88	5,206.24	18.95	148.35	-66.05	-691.92	-7,919.81	7,884.16	7,716.89	167.27	47.135		
5,402.82	5,400.00	5,309.94	5,306.14	19.32	153.28	-66.05	-687.90	-7,919.81	7,882.28	7,709.71	172.57	45.676		
5,500.00	5,497.13	5,395.30	5,391.42	19.67	157.48	-66.06	-688.80	-7,919.81	7,881.18	7,704.06	177.12	44.495		
5,600.00	5,597.11	5,510.81	5,506.11	20.03	163.17	-66.10	-691.92	-7,919.81	7,880.60	7,697.43	183.17	43.023		
5,700.00	5,697.10	5,610.81	5,606.10	20.39	167.91	-66.11	-691.92	-7,919.81	7,880.06	7,691.80	188.27	41.856		
5,802.82	5,799.92	5,713.63	5,708.92	20.75	172.78	-96.11	-691.92	-7,919.81	7,879.87	7,686.37	193.50	40.723		
5,900.00	5,897.09	5,810.80	5,806.09	21.10	177.38	-96.11	-691.92	-7,919.81	7,879.87	7,681.43	198.45	39.708		
6,000.00	5,997.09	5,910.80	5,906.09	21.45	182.12	-96.11	-691.92	-7,919.81	7,879.87	7,676.34	203.54	38.714		
6,010.00	6,007.09	5,920.80	5,916.09	21.49	182.59	-96.11	-691.92	-7,919.81	7,879.87	7,675.83	204.05	38.618	CC	
6,100.00	6,097.09	5,949.00	5,943.35	21.81	183.92	-96.11	-691.92	-7,919.81	7,880.12	7,674.43	205.70	38.309	ES	
6,200.00	6,197.09	5,949.00	5,943.35	22.16	183.92	-96.11	-691.92	-7,919.81	7,881.56	7,675.54	206.02	38.256		
6,300.00	6,297.09	5,949.00	5,943.35	22.52	183.92	-96.11	-691.92	-7,919.81	7,884.25	7,677.95	206.31	38.216		
6,354.91	6,352.00	5,949.00	5,943.35	22.72	183.92	-96.11	-691.92	-7,919.81	7,886.27	7,679.82	206.45	38.199		
6,400.00	6,397.06	5,949.00	5,943.35	22.87	183.92	-175.08	-691.92	-7,919.81	7,889.81	7,683.25	206.56	38.196	SF	
6,450.00	6,446.74	5,949.00	5,943.35	23.04	183.92	-175.02	-691.92	-7,919.81	7,897.71	7,691.04	206.67	38.215		
6,500.00	6,495.84	5,949.00	5,943.35	23.20	183.92	-174.92	-691.92	-7,919.81	7,909.75	7,702.99	206.77	38.255		
6,550.00	6,544.06	5,949.00	5,943.35	23.36	183.92	-174.78	-691.92	-7,919.81	7,925.83	7,718.98	206.85	38.316		
6,600.00	6,591.08	5,949.00	5,943.35	23.51	183.92	-174.60	-691.92	-7,919.81	7,945.83	7,738.91	206.93	38.399		
6,650.00	6,636.64	5,949.00	5,943.35	23.66	183.92	-174.37	-691.92	-7,919.81	7,969.60	7,762.61	206.99	38.502		
6,700.00	6,680.44	5,949.00	5,943.35	23.82	183.92	-174.07	-691.92	-7,919.81	7,996.95	7,789.91	207.05	38.624		
6,750.00	6,722.22	5,949.00	5,943.35	23.99	183.92	-173.70	-691.92	-7,919.81	8,027.69	7,820.60	207.09	38.764		
6,800.00	6,761.71	5,949.00	5,943.35	24.16	183.92	-173.23	-691.92	-7,919.81	8,061.58	7,854.45	207.13	38.921		
6,850.00	6,798.68	5,949.00	5,943.35	24.33	183.92	-172.62	-691.92	-7,919.81	8,098.38	7,891.23	207.15	39.094		
6,900.00	6,832.89	5,949.00	5,943.35	24.50	183.92	-171.84	-691.92	-7,919.81	8,137.82	7,930.65	207.17	39.281		
6,950.00	6,864.14	5,949.00	5,943.35	24.69	183.92	-170.80	-691.92	-7,919.81	8,179.63	7,972.44	207.18	39.480		
7,000.00	6,892.23	5,949.00	5,943.35	24.88	183.92	-169.38	-691.92	-7,919.81	8,223.51	8,016.31	207.19	39.690		
7,050.00	6,916.99	5,949.00	5,943.35	25.08	183.92	-167.35	-691.92	-7,919.81	8,269.16	8,061.96	207.20	39.909		
7,100.00	6,938.27	5,949.00	5,943.35	25.29	183.92	-164.23	-691.92	-7,919.81	8,316.27	8,109.07	207.20	40.136		
7,150.00	6,955.93	5,949.00	5,943.35	25.51	183.92	-158.97	-691.92	-7,919.81	8,364.53	8,157.33	207.20	40.369		
7,200.00	6,969.87	5,949.00	5,943.35	25.75	183.92	-148.59	-691.92	-7,919.81	8,413.63	8,206.42	207.21	40.605		
7,250.00	6,980.00	5,949.00	5,943.35	25.99	183.92	-123.36	-691.92	-7,919.81	8,463.24	8,256.03	207.22	40.843		
7,300.00	6,986.25	5,949.00	5,943.35	26.25	183.92	-71.72	-691.92	-7,919.81	8,513.07	8,305.84	207.23	41.081		
7,354.68	6,988.62	5,949.00	5,943.35	26.53	183.92	-35.23	-691.92	-7,919.81	8,567.44	8,360.19	207.25	41.339		
7,400.00	6,988.64	5,949.00	5,943.35	26.78	183.92	-35.23	-691.92	-7,919.81	8,612.34	8,405.07	207.27	41.551		
7,500.00	6,988.67	5,949.00	5,943.35	27.40	183.92	-35.23	-691.92	-7,919.81	8,711.43	8,504.11	207.32	42.019		
7,600.00	6,988.71	5,949.00	5,943.35	28.08	183.92	-35.23	-691.92	-7,919.81	8,810.54	8,603.17	207.37	42.487		
7,700.00	6,988.74	5,949.00	5,943.35	28.84	183.92	-35.23	-691.92	-7,919.81	8,909.67	8,702.25	207.42	42.955		
7,800.00	6,988.78	5,949.00	5,943.35	29.67	183.92	-35.23	-691.92	-7,919.81	9,008.83	8,801.35	207.47	43.422		
7,900.00	6,988.81	5,949.00	5,943.35	30.55	183.92	-35.23	-691.92	-7,919.81	9,108.00	8,900.47	207.52	43.889		
8,000.00	6,988.85	5,949.00	5,943.35	31.49	183.92	-35.23	-691.92	-7,919.81	9,207.18	8,999.61	207.57	44.356		
8,100.00	6,988.88	5,949.00	5,943.35	32.48	183.92	-35.23	-691.92	-7,919.81	9,306.39	9,098.76	207.63	44.823		
8,200.00	6,988.91	5,949.00	5,943.35	33.51	183.92	-35.23	-691.92	-7,919.81	9,405.61	9,197.93	207.68	45.289		
8,211.68	6,988.92	5,949.00	5,943.35	33.63	183.92	-35.23	-691.92	-7,919.81	9,417.20	9,209.52	207.69	45.344		
8,300.00	6,988.95	5,949.00	5,943.35	34.58	183.92	-21.88	-691.92	-7,919.81	9,504.93	9,297.20	207.73	45.756		
8,400.00	6,988.98	5,949.00	5,943.35	35.70	183.92	-3.03	-691.92	-7,919.81	9,604.40	9,396.63	207.78	46.225		
8,500.00	6,989.01	5,949.00	5,943.35	36.84	183.92	16.67	-691.92	-7,919.81	9,703.90	9,496.09	207.82	46.695		
8,600.00	6,989.04	5,949.00	5,943.35	38.02	183.92	33.22	-691.92	-7,919.81	9,803.31	9,595.46	207.85	47.165		
8,700.00	6,989.07	5,949.00	5,943.35	39.22	183.92	45.38	-691.92	-7,919.81	9,902.51	9,694.63	207.88	47.636		
8,772.79	6,989.09	5,949.00	5,943.35	40.11	183.92	51.90	-691.92	-7,919.81	9,974.52	9,766.62	207.90	47.978		
8,800.00	6,989.10	5,949.00	5,943.35	40.44	183.92	51.90	-691.92	-7,919.81	10,001.41	9,793.51	207.90	48.106		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		Semi Maior 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	
8,900.00	6,989.13	5,949.00	5,943.35	41.68	183.92	51.90	-691.92	-7,919.81	10,100.23	9,892.29	207.93	48.575		
9,000.00	6,989.15	5,949.00	5,943.35	42.95	183.92	51.90	-691.92	-7,919.81	10,199.06	9,991.10	207.96	49.044		
9,100.00	6,989.18	5,949.00	5,943.35	44.24	183.92	51.90	-691.92	-7,919.81	10,297.92	10,089.93	207.99	49.512		
9,200.00	6,989.21	5,949.00	5,943.35	45.55	183.92	51.90	-691.92	-7,919.81	10,396.80	10,188.79	208.02	49.980		
9,300.00	6,989.24	5,949.00	5,943.35	46.88	183.92	51.90	-691.92	-7,919.81	10,495.71	10,287.66	208.05	50.448		
9,400.00	6,989.26	5,949.00	5,943.35	48.23	183.92	51.90	-691.92	-7,919.81	10,594.63	10,386.54	208.09	50.915		
9,500.00	6,989.29	5,949.00	5,943.35	49.59	183.92	51.90	-691.92	-7,919.81	10,693.57	10,485.45	208.12	51.381		
9,600.00	6,989.32	5,949.00	5,943.35	50.96	183.92	51.90	-691.92	-7,919.81	10,792.54	10,584.38	208.16	51.848		
9,700.00	6,989.34	5,949.00	5,943.35	52.35	183.92	51.90	-691.92	-7,919.81	10,891.52	10,683.32	208.20	52.313		
9,800.00	6,989.37	5,949.00	5,943.35	53.75	183.92	51.90	-691.92	-7,919.81	10,990.52	10,782.28	208.24	52.779		
9,900.00	6,989.40	5,949.00	5,943.35	55.16	183.92	51.90	-691.92	-7,919.81	11,089.54	10,881.26	208.28	53.244		
10,000.00	6,989.42	5,949.00	5,943.35	56.58	183.92	51.90	-691.92	-7,919.81	11,188.57	10,980.25	208.32	53.708		
10,100.00	6,989.45	5,949.00	5,943.35	58.01	183.92	51.90	-691.92	-7,919.81	11,287.63	11,079.26	208.37	54.172		
10,200.00	6,989.48	5,949.00	5,943.35	59.45	183.92	51.90	-691.92	-7,919.81	11,386.70	11,178.29	208.41	54.636		
10,300.00	6,989.51	5,949.00	5,943.35	60.90	183.92	51.90	-691.92	-7,919.81	11,485.78	11,277.32	208.46	55.099		
10,400.00	6,989.53	5,949.00	5,943.35	62.35	183.92	51.90	-691.92	-7,919.81	11,584.88	11,376.38	208.51	55.562		
10,500.00	6,989.56	5,949.00	5,943.35	63.81	183.92	51.90	-691.92	-7,919.81	11,684.00	11,475.45	208.55	56.024		
10,600.00	6,989.59	5,949.00	5,943.35	65.28	183.92	51.90	-691.92	-7,919.81	11,783.13	11,574.53	208.60	56.486		
10,700.00	6,989.61	5,949.00	5,943.35	66.76	183.92	51.90	-691.92	-7,919.81	11,882.28	11,673.62	208.66	56.947		
10,800.00	6,989.64	5,949.00	5,943.35	68.24	183.92	51.90	-691.92	-7,919.81	11,981.44	11,772.73	208.71	57.408		
10,900.00	6,989.67	5,949.00	5,943.35	69.73	183.92	51.90	-691.92	-7,919.81	12,080.61	11,871.85	208.76	57.868		
11,000.00	6,989.70	5,949.00	5,943.35	71.22	183.92	51.90	-691.92	-7,919.81	12,179.80	11,970.98	208.82	58.328		
11,100.00	6,989.72	5,949.00	5,943.35	72.71	183.92	51.90	-691.92	-7,919.81	12,279.00	12,070.13	208.87	58.787		
11,200.00	6,989.75	5,949.00	5,943.35	74.22	183.92	51.90	-691.92	-7,919.81	12,378.21	12,169.29	208.93	59.246		
11,300.00	6,989.78	5,949.00	5,943.35	75.72	183.92	51.90	-691.92	-7,919.81	12,477.44	12,268.45	208.98	59.705		
11,400.00	6,989.80	5,949.00	5,943.35	77.23	183.92	51.90	-691.92	-7,919.81	12,576.68	12,367.63	209.04	60.163		
11,500.00	6,989.83	5,949.00	5,943.35	78.74	183.92	51.90	-691.92	-7,919.81	12,675.93	12,466.83	209.10	60.621		
11,600.00	6,989.86	5,949.00	5,943.35	80.26	183.92	51.90	-691.92	-7,919.81	12,775.19	12,566.03	209.16	61.078		
11,700.00	6,989.88	5,949.00	5,943.35	81.78	183.92	51.90	-691.92	-7,919.81	12,874.46	12,665.24	209.22	61.534		
11,800.00	6,989.91	5,949.00	5,943.35	83.30	183.92	51.90	-691.92	-7,919.81	12,973.75	12,764.46	209.29	61.990		
11,900.00	6,989.94	5,949.00	5,943.35	84.83	183.92	51.90	-691.92	-7,919.81	13,073.04	12,863.69	209.35	62.446		
12,000.00	6,989.97	5,949.00	5,943.35	86.36	183.92	51.90	-691.92	-7,919.81	13,172.35	12,962.94	209.41	62.901		
12,100.00	6,989.99	5,949.00	5,943.35	87.89	183.92	51.90	-691.92	-7,919.81	13,271.67	13,062.19	209.48	63.356		
12,200.00	6,990.02	5,949.00	5,943.35	89.42	183.92	51.90	-691.92	-7,919.81	13,370.99	13,161.45	209.54	63.810		
12,300.00	6,990.05	5,949.00	5,943.35	90.96	183.92	51.90	-691.92	-7,919.81	13,470.33	13,260.72	209.61	64.264		
12,400.00	6,990.07	5,949.00	5,943.35	92.50	183.92	51.90	-691.92	-7,919.81	13,569.68	13,360.00	209.68	64.717		
12,500.00	6,990.10	5,949.00	5,943.35	94.04	183.92	51.90	-691.92	-7,919.81	13,669.03	13,459.29	209.75	65.170		
12,600.00	6,990.13	5,949.00	5,943.35	95.58	183.92	51.90	-691.92	-7,919.81	13,768.40	13,558.58	209.81	65.622		
12,700.00	6,990.15	5,949.00	5,943.35	97.13	183.92	51.90	-691.92	-7,919.81	13,867.77	13,657.89	209.88	66.073		
12,800.00	6,990.18	5,949.00	5,943.35	98.68	183.92	51.90	-691.92	-7,919.81	13,967.16	13,757.20	209.95	66.525		
12,900.00	6,990.21	5,949.00	5,943.35	100.22	183.92	51.90	-691.92	-7,919.81	14,066.55	13,856.52	210.03	66.975		
13,000.00	6,990.24	5,949.00	5,943.35	101.78	183.92	51.90	-691.92	-7,919.81	14,165.95	13,955.85	210.10	67.426		
13,100.00	6,990.26	5,949.00	5,943.35	103.33	183.92	51.90	-691.92	-7,919.81	14,265.36	14,055.19	210.17	67.875		
13,200.00	6,990.29	5,949.00	5,943.35	104.88	183.92	51.90	-691.92	-7,919.81	14,364.78	14,154.53	210.24	68.324		
13,300.00	6,990.32	5,949.00	5,943.35	106.44	183.92	51.90	-691.92	-7,919.81	14,464.20	14,253.88	210.32	68.773		
13,400.00	6,990.34	5,949.00	5,943.35	107.99	183.92	51.90	-691.92	-7,919.81	14,563.63	14,353.24	210.39	69.221		
13,500.00	6,990.37	5,949.00	5,943.35	109.55	183.92	51.90	-691.92	-7,919.81	14,663.08	14,452.61	210.47	69.669		
13,600.00	6,990.40	5,949.00	5,943.35	111.11	183.92	51.90	-691.92	-7,919.81	14,762.52	14,551.98	210.54	70.116		
13,700.00	6,990.42	5,949.00	5,943.35	112.67	183.92	51.90	-691.92	-7,919.81	14,861.98	14,651.36	210.62	70.563		
13,800.00	6,990.45	5,949.00	5,943.35	114.23	183.92	51.90	-691.92	-7,919.81	14,961.44	14,750.74	210.70	71.009		
13,900.00	6,990.48	5,949.00	5,943.35	115.80	183.92	51.90	-691.92	-7,919.81	15,060.91	14,850.14	210.78	71.455		
14,000.00	6,990.51	5,949.00	5,943.35	117.36	183.92	51.90	-691.92	-7,919.81	15,160.39	14,949.54	210.85	71.900		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		Semi Maior Axis		Rule Assigned:		Warning		Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
14,100.00	6,990.53	5,949.00	5,943.35	118.93	183.92	51.90	-691.92	-7,919.81	15,259.87	15,048.94	210.93	72.344				
14,200.00	6,990.56	5,949.00	5,943.35	120.49	183.92	51.90	-691.92	-7,919.81	15,359.36	15,148.35	211.01	72.788				
14,300.00	6,990.59	5,949.00	5,943.35	122.06	183.92	51.90	-691.92	-7,919.81	15,458.86	15,247.77	211.09	73.232				
14,400.00	6,990.61	5,949.00	5,943.35	123.63	183.92	51.90	-691.92	-7,919.81	15,558.37	15,347.19	211.18	73.675				
14,500.00	6,990.64	5,949.00	5,943.35	125.20	183.92	51.90	-691.92	-7,919.81	15,657.88	15,446.62	211.26	74.117				
14,600.00	6,990.67	5,949.00	5,943.35	126.77	183.92	51.90	-691.92	-7,919.81	15,757.39	15,546.05	211.34	74.559				
14,700.00	6,990.70	5,949.00	5,943.35	128.34	183.92	51.90	-691.92	-7,919.81	15,856.91	15,645.49	211.42	75.001				
14,800.00	6,990.72	5,949.00	5,943.35	129.91	183.92	51.90	-691.92	-7,919.81	15,956.44	15,744.94	211.51	75.442				
14,900.00	6,990.75	5,949.00	5,943.35	131.48	183.92	51.90	-691.92	-7,919.81	16,055.98	15,844.39	211.59	75.882				
15,000.00	6,990.78	5,949.00	5,943.35	133.06	183.92	51.90	-691.92	-7,919.81	16,155.52	15,943.84	211.68	76.322				
15,100.00	6,990.80	5,949.00	5,943.35	134.63	183.92	51.90	-691.92	-7,919.81	16,255.06	16,043.30	211.76	76.761				
15,200.00	6,990.83	5,949.00	5,943.35	136.20	183.92	51.90	-691.92	-7,919.81	16,354.61	16,142.77	211.85	77.200				
15,300.00	6,990.86	5,949.00	5,943.35	137.78	183.92	51.90	-691.92	-7,919.81	16,454.17	16,242.24	211.93	77.638				
15,400.00	6,990.88	5,949.00	5,943.35	139.36	183.92	51.90	-691.92	-7,919.81	16,553.73	16,341.71	212.02	78.076				
15,500.00	6,990.91	5,949.00	5,943.35	140.93	183.92	51.90	-691.92	-7,919.81	16,653.30	16,441.19	212.11	78.513				
15,600.00	6,990.94	5,949.00	5,943.35	142.51	183.92	51.90	-691.92	-7,919.81	16,752.87	16,540.68	212.20	78.950				
15,700.00	6,990.97	5,949.00	5,943.35	144.09	183.92	51.90	-691.92	-7,919.81	16,852.45	16,640.17	212.28	79.386				
15,800.00	6,990.99	5,949.00	5,943.35	145.67	183.92	51.90	-691.92	-7,919.81	16,952.03	16,739.66	212.37	79.822				
15,900.00	6,991.02	5,949.00	5,943.35	147.24	183.92	51.90	-691.92	-7,919.81	17,051.62	16,839.16	212.46	80.257				
16,000.00	6,991.05	5,949.00	5,943.35	148.82	183.92	51.90	-691.92	-7,919.81	17,151.21	16,938.66	212.55	80.691				
16,100.00	6,991.07	5,949.00	5,943.35	150.40	183.92	51.90	-691.92	-7,919.81	17,250.81	17,038.16	212.64	81.126				
16,200.00	6,991.10	5,949.00	5,943.35	151.99	183.92	51.90	-691.92	-7,919.81	17,350.41	17,137.68	212.73	81.559				
16,300.00	6,991.13	5,949.00	5,943.35	153.57	183.92	51.90	-691.92	-7,919.81	17,450.02	17,237.19	212.83	81.992				
16,400.00	6,991.15	5,949.00	5,943.35	155.15	183.92	51.90	-691.92	-7,919.81	17,549.63	17,336.71	212.92	82.424				
16,500.00	6,991.18	5,949.00	5,943.35	156.73	183.92	51.90	-691.92	-7,919.81	17,649.24	17,436.23	213.01	82.856				
16,600.00	6,991.21	5,949.00	5,943.35	158.31	183.92	51.90	-691.92	-7,919.81	17,748.86	17,535.76	213.10	83.287				
16,700.00	6,991.24	5,949.00	5,943.35	159.90	183.92	51.90	-691.92	-7,919.81	17,848.48	17,635.29	213.20	83.718				
16,800.00	6,991.26	5,949.00	5,943.35	161.48	183.92	51.90	-691.92	-7,919.81	17,948.11	17,734.82	213.29	84.149				
16,900.00	6,991.29	5,949.00	5,943.35	163.06	183.92	51.90	-691.92	-7,919.81	18,047.74	17,834.36	213.39	84.578				
17,000.00	6,991.32	5,949.00	5,943.35	164.65	183.92	51.90	-691.92	-7,919.81	18,147.38	17,933.90	213.48	85.007				
17,100.00	6,991.34	5,949.00	5,943.35	166.23	183.92	51.90	-691.92	-7,919.81	18,247.02	18,033.44	213.58	85.436				
17,200.00	6,991.37	5,949.00	5,943.35	167.82	183.92	51.90	-691.92	-7,919.81	18,346.66	18,132.99	213.67	85.864				
17,300.00	6,991.40	5,949.00	5,943.35	169.40	183.92	51.90	-691.92	-7,919.81	18,446.31	18,232.54	213.77	86.292				
17,400.00	6,991.42	5,949.00	5,943.35	170.99	183.92	51.90	-691.92	-7,919.81	18,545.96	18,332.10	213.86	86.719				
17,500.00	6,991.45	5,949.00	5,943.35	172.57	183.92	51.90	-691.92	-7,919.81	18,645.62	18,431.66	213.96	87.145				
17,600.00	6,991.48	5,949.00	5,943.35	174.16	183.92	51.90	-691.92	-7,919.81	18,745.28	18,531.22	214.06	87.571				
17,700.00	6,991.51	5,949.00	5,943.35	175.75	183.92	51.90	-691.92	-7,919.81	18,844.94	18,630.78	214.16	87.996				
17,800.00	6,991.53	5,949.00	5,943.35	177.33	183.92	51.90	-691.92	-7,919.81	18,944.60	18,730.35	214.25	88.421				
17,900.00	6,991.56	5,949.00	5,943.35	178.92	183.92	51.90	-691.92	-7,919.81	19,044.27	18,829.92	214.35	88.845				
18,000.00	6,991.59	5,949.00	5,943.35	180.51	183.92	51.90	-691.92	-7,919.81	19,143.95	18,929.49	214.45	89.269				
18,100.00	6,991.61	5,949.00	5,943.35	182.10	183.92	51.90	-691.92	-7,919.81	19,243.62	19,029.07	214.55	89.692				
18,200.00	6,991.64	5,949.00	5,943.35	183.68	183.92	51.90	-691.92	-7,919.81	19,343.30	19,128.65	214.65	90.115				
18,300.00	6,991.67	5,949.00	5,943.35	185.27	183.92	51.90	-691.92	-7,919.81	19,442.99	19,228.23	214.75	90.537				
18,400.00	6,991.69	5,949.00	5,943.35	186.86	183.92	51.90	-691.92	-7,919.81	19,542.67	19,327.82	214.85	90.958				
18,500.00	6,991.72	5,949.00	5,943.35	188.45	183.92	51.90	-691.92	-7,919.81	19,642.36	19,427.41	214.95	91.379				
18,600.00	6,991.75	5,949.00	5,943.35	190.04	183.92	51.90	-691.92	-7,919.81	19,742.05	19,527.00	215.06	91.800				
18,700.00	6,991.78	5,949.00	5,943.35	191.63	183.92	51.90	-691.92	-7,919.81	19,841.75	19,626.59	215.16	92.220				
18,800.00	6,991.80	5,949.00	5,943.35	193.22	183.92	51.90	-691.92	-7,919.81	19,941.45	19,726.19	215.26	92.639				
18,900.00	6,991.83	5,949.00	5,943.35	194.81	183.92	51.90	-691.92	-7,919.81	20,041.15	19,825.79	215.36	93.058				
19,000.00	6,991.86	5,949.00	5,943.35	196.40	183.92	51.90	-691.92	-7,919.81	20,140.85	19,925.39	215.47	93.476				
19,100.00	6,991.88	5,949.00	5,943.35	197.99	183.92	51.90	-691.92	-7,919.81	20,240.56	20,024.99	215.57	93.894				
19,200.00	6,991.91	5,949.00	5,943.35	199.58	183.92	51.90	-691.92	-7,919.81	20,340.27	20,124.60	215.67	94.311				

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:		
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
19,300.00	6,991.94	5,949.00	5,943.35	201.17	183.92	51.90	-691.92	-7,919.81	20,439.98	20,224.21		215.78	94.728
19,342.28	6,991.95	5,949.00	5,943.35	201.84	183.92	51.90	-691.92	-7,919.81	20,482.14	20,266.32		215.82	94.904
19,400.00	6,991.97	5,949.00	5,943.35	202.76	183.92	51.90	-691.92	-7,919.81	20,539.70	20,323.82		215.88	95.144
19,500.00	6,991.99	5,949.00	5,943.35	204.35	183.92	51.90	-691.92	-7,919.81	20,639.42	20,423.43		215.99	95.559
19,542.28	6,992.00	5,949.00	5,943.35	205.03	183.92	51.90	-691.92	-7,919.81	20,681.58	20,465.55		216.03	95.735

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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													
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	-96.47	-1,054.61	-9,299.14	9,359.21				
100.00	100.00	7.00	7.00	0.25	0.12	-96.47	-1,054.61	-9,299.14	9,358.75	9,358.37	0.38	N/A	
200.00	200.00	107.00	107.00	0.61	1.90	-96.47	-1,054.61	-9,299.14	9,358.75	9,356.24	2.51	3,735.685	
300.00	300.00	207.00	207.00	0.97	3.67	-96.47	-1,054.61	-9,299.14	9,358.75	9,354.11	4.64	2,019.010	
400.00	400.00	307.00	307.00	1.33	5.44	-96.47	-1,054.61	-9,299.14	9,358.75	9,351.98	6.77	1,383.312	
456.81	456.81	363.80	363.80	1.53	6.45	-96.47	-1,054.48	-9,299.14	9,358.74	9,350.76	7.98	1,173.448	
500.00	500.00	406.17	406.17	1.68	7.20	-96.47	-1,054.50	-9,299.14	9,358.74	9,349.86	8.88	1,053.803	
600.00	600.00	507.00	507.00	2.04	9.00	-96.47	-1,054.61	-9,299.14	9,358.75	9,347.71	11.04	847.616	
700.00	700.00	607.00	607.00	2.40	10.83	-96.47	-1,054.61	-9,299.14	9,358.75	9,345.52	13.23	707.224	
800.00	799.98	705.68	705.68	2.76	12.64	-66.49	-1,054.51	-9,299.14	9,358.04	9,342.64	15.40	607.699	
900.00	899.92	806.93	806.92	3.12	14.52	-66.51	-1,054.61	-9,299.14	9,356.66	9,339.03	17.63	530.652	
1,000.00	999.86	906.87	906.86	3.47	16.40	-66.53	-1,054.61	-9,299.14	9,355.27	9,335.40	19.87	470.714	
1,100.00	1,099.80	1,006.81	1,006.80	3.83	18.29	-66.55	-1,054.61	-9,299.14	9,353.88	9,331.76	22.12	422.919	
1,200.00	1,199.74	1,104.26	1,104.24	4.19	20.13	-66.57	-1,053.90	-9,299.14	9,352.41	9,328.10	24.31	384.656	
1,300.00	1,299.68	1,201.46	1,201.43	4.55	21.96	-66.59	-1,054.26	-9,299.14	9,351.06	9,324.56	26.51	352.799	
1,400.00	1,399.61	1,306.66	1,306.61	4.91	23.95	-66.61	-1,054.61	-9,299.14	9,349.72	9,320.86	28.85	324.049	
1,500.00	1,499.55	1,406.60	1,406.55	5.27	25.85	-66.63	-1,054.61	-9,299.14	9,348.33	9,317.22	31.11	300.523	
1,600.00	1,599.49	1,506.54	1,506.49	5.63	27.74	-66.65	-1,054.61	-9,299.14	9,346.95	9,313.59	33.36	280.175	
1,700.00	1,699.43	1,604.71	1,604.66	5.99	29.60	-66.67	-1,054.15	-9,299.14	9,345.51	9,309.93	35.58	262.647	
1,800.00	1,799.37	1,702.77	1,702.72	6.35	31.46	-66.69	-1,054.39	-9,299.14	9,344.16	9,306.36	37.80	247.194	
1,900.00	1,899.31	1,806.38	1,806.31	6.71	33.54	-66.71	-1,054.61	-9,299.14	9,342.80	9,302.57	40.23	232.215	
2,000.00	1,999.25	1,906.32	1,906.25	7.07	35.66	-66.73	-1,054.61	-9,299.14	9,341.42	9,298.70	42.72	218.661	
2,100.00	2,099.19	2,006.26	2,006.19	7.42	37.79	-66.75	-1,054.61	-9,299.14	9,340.04	9,294.83	45.21	206.598	
2,200.00	2,199.13	2,103.51	2,103.43	7.78	39.86	-66.76	-1,053.91	-9,299.14	9,338.58	9,290.94	47.64	196.027	
2,300.00	2,299.07	2,200.65	2,200.56	8.14	41.93	-66.78	-1,054.27	-9,299.14	9,337.25	9,287.18	50.07	186.493	
2,400.00	2,399.01	2,306.18	2,306.01	8.50	44.20	-66.81	-1,054.61	-9,299.14	9,335.91	9,283.22	52.69	177.183	
2,500.00	2,498.94	2,406.12	2,405.94	8.86	46.36	-66.83	-1,054.61	-9,299.14	9,334.54	9,279.32	55.21	169.060	
2,600.00	2,598.88	2,506.02	2,505.83	9.22	48.53	-66.84	-1,053.01	-9,299.14	9,332.97	9,275.23	57.74	161.645	
2,700.00	2,698.82	2,600.39	2,600.18	9.58	50.57	-66.86	-1,053.25	-9,299.14	9,331.63	9,271.49	60.14	155.164	
2,800.00	2,798.76	2,694.74	2,694.52	9.94	52.61	-66.88	-1,053.96	-9,299.14	9,330.35	9,267.80	62.54	149.183	
2,900.00	2,898.70	2,805.97	2,805.70	10.30	54.95	-66.91	-1,054.61	-9,299.14	9,329.05	9,263.81	65.24	142.991	
3,000.00	2,998.64	2,905.91	2,905.64	10.66	56.99	-66.93	-1,054.61	-9,299.14	9,327.68	9,260.04	67.64	137.902	
3,100.00	3,098.58	3,005.62	3,005.34	11.02	59.02	-66.94	-1,053.81	-9,299.14	9,326.21	9,256.18	70.03	133.168	
3,200.00	3,198.52	3,102.66	3,102.38	11.38	61.00	-66.96	-1,053.95	-9,299.14	9,324.86	9,252.49	72.37	128.846	
3,300.00	3,298.46	3,199.69	3,199.41	11.75	62.98	-66.98	-1,054.34	-9,299.14	9,323.55	9,248.84	74.71	124.795	
3,400.00	3,398.40	3,305.73	3,305.40	12.11	65.10	-67.00	-1,054.61	-9,299.14	9,322.21	9,245.02	77.19	120.769	
3,500.00	3,498.34	3,405.67	3,405.34	12.47	67.07	-67.02	-1,054.61	-9,299.14	9,320.85	9,241.33	79.52	117.216	
3,600.00	3,598.27	3,505.60	3,505.27	12.83	69.04	-67.04	-1,054.61	-9,299.14	9,319.49	9,237.64	81.85	113.864	
3,700.00	3,698.21	3,603.26	3,602.92	13.19	70.96	-67.06	-1,053.41	-9,299.14	9,317.98	9,233.85	84.13	110.756	
3,800.00	3,798.15	3,699.89	3,699.54	13.55	72.87	-67.08	-1,053.74	-9,299.14	9,316.66	9,230.27	86.39	107.839	
3,900.00	3,898.09	3,796.51	3,796.15	13.91	74.77	-67.10	-1,054.35	-9,299.14	9,315.38	9,226.72	88.66	105.072	
4,000.00	3,998.03	3,905.41	3,905.03	14.27	76.92	-67.12	-1,054.61	-9,299.14	9,314.05	9,222.89	91.16	102.171	
4,100.00	4,097.97	4,005.35	4,004.97	14.63	78.88	-67.14	-1,054.61	-9,299.14	9,312.69	9,219.20	93.49	99.611	
4,200.00	4,197.91	4,104.41	4,104.03	14.99	80.84	-67.16	-1,054.12	-9,299.14	9,311.27	9,215.47	95.80	97.194	
4,300.00	4,297.85	4,202.24	4,201.86	15.35	82.76	-67.18	-1,054.28	-9,299.14	9,309.94	9,211.85	98.09	94.914	
4,400.00	4,397.79	4,305.21	4,304.79	15.71	84.80	-67.20	-1,054.61	-9,299.14	9,308.63	9,208.15	100.48	92.641	
4,500.00	4,497.73	4,405.15	4,404.73	16.07	86.84	-67.22	-1,054.61	-9,299.14	9,307.28	9,204.40	102.88	90.467	
4,600.00	4,597.66	4,505.09	4,504.66	16.43	88.88	-67.24	-1,054.61	-9,299.14	9,305.92	9,200.64	105.28	88.393	
4,700.00	4,697.60	4,602.73	4,602.29	16.79	90.87	-67.25	-1,053.59	-9,299.14	9,304.44	9,196.81	107.63	86.447	
4,800.00	4,797.54	4,698.70	4,698.26	17.15	92.83	-67.28	-1,053.94	-9,299.14	9,303.14	9,193.19	109.95	84.612	
4,900.00	4,897.48	4,804.96	4,804.48	17.51	94.98	-67.30	-1,054.61	-9,299.14	9,301.88	9,189.41	112.46	82.709	
5,000.00	4,997.42	4,904.90	4,904.42	17.87	96.88	-67.32	-1,054.61	-9,299.14	9,300.53	9,185.81	114.72	81.070	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		245-A027Ua_INC-ONLY				Rule Assigned:				Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,100.00	5,097.36	5,004.84	5,004.36	18.23	98.78	-67.34	-1,054.61	-9,299.14	9,299.18	9,182.20	116.98	79.494		
5,200.00	5,197.30	5,102.94	5,102.45	18.59	100.64	-67.36	-1,053.84	-9,299.14	9,297.74	9,178.54	119.20	78.000		
5,300.00	5,297.24	5,199.84	5,199.35	18.95	102.48	-67.38	-1,054.12	-9,299.14	9,296.43	9,175.03	121.40	76.575		
5,402.82	5,400.00	5,307.51	5,307.00	19.32	104.55	-67.40	-1,054.61	-9,299.14	9,295.12	9,171.28	123.84	75.059		
5,500.00	5,497.13	5,404.64	5,404.13	19.67	106.53	-67.41	-1,054.61	-9,299.14	9,293.97	9,167.80	126.17	73.663		
5,600.00	5,597.11	5,504.62	5,504.11	20.03	108.57	-67.42	-1,054.61	-9,299.14	9,293.12	9,164.56	128.57	72.282		
5,700.00	5,697.10	5,603.27	5,602.75	20.39	110.58	-67.42	-1,054.11	-9,299.14	9,292.55	9,161.61	130.94	70.969		
5,792.32	5,789.41	5,693.66	5,693.15	20.72	112.43	-67.43	-1,054.28	-9,299.14	9,292.39	9,159.28	133.11	69.809	CC	
5,802.82	5,799.92	5,703.95	5,703.43	20.75	112.64	-97.43	-1,054.31	-9,299.14	9,292.40	9,159.04	133.36	69.679		
5,900.00	5,897.09	5,804.67	5,804.09	21.10	114.76	-97.43	-1,054.61	-9,299.14	9,292.43	9,156.61	135.82	68.415		
6,000.00	5,997.09	5,904.67	5,904.09	21.45	117.16	-97.43	-1,054.61	-9,299.14	9,292.43	9,153.85	138.58	67.053		
6,065.01	6,062.10	5,969.68	5,969.10	21.68	118.72	-97.43	-1,054.61	-9,299.14	9,292.43	9,152.06	140.38	66.197		
6,100.00	6,097.09	6,000.00	5,999.35	21.81	119.45	-97.43	-1,054.61	-9,299.14	9,292.44	9,151.21	141.23	65.797	ES	
6,200.00	6,197.09	6,000.00	5,999.35	22.16	119.45	-97.43	-1,054.61	-9,299.14	9,293.02	9,151.45	141.58	65.639		
6,300.00	6,297.09	6,000.00	5,999.35	22.52	119.45	-97.43	-1,054.61	-9,299.14	9,294.69	9,152.78	141.91	65.497		
6,354.91	6,352.00	6,000.00	5,999.35	22.72	119.45	-97.43	-1,054.61	-9,299.14	9,296.06	9,153.97	142.09	65.425		
6,400.00	6,397.06	6,000.00	5,999.35	22.87	119.45	-176.41	-1,054.61	-9,299.14	9,299.02	9,156.80	142.22	65.383		
6,450.00	6,446.74	6,000.00	5,999.35	23.04	119.45	-176.37	-1,054.61	-9,299.14	9,306.26	9,163.89	142.37	65.368	SF	
6,500.00	6,495.84	6,000.00	5,999.35	23.20	119.45	-176.30	-1,054.61	-9,299.14	9,317.61	9,175.10	142.50	65.385		
6,550.00	6,544.06	6,000.00	5,999.35	23.36	119.45	-176.21	-1,054.61	-9,299.14	9,332.97	9,190.34	142.63	65.434		
6,600.00	6,591.08	6,000.00	5,999.35	23.51	119.45	-176.08	-1,054.61	-9,299.14	9,352.25	9,209.50	142.75	65.514		
6,650.00	6,636.64	6,000.00	5,999.35	23.66	119.45	-175.92	-1,054.61	-9,299.14	9,375.29	9,232.43	142.86	65.624		
6,700.00	6,680.44	6,000.00	5,999.35	23.82	119.45	-175.71	-1,054.61	-9,299.14	9,401.93	9,258.97	142.96	65.765		
6,750.00	6,722.22	6,000.00	5,999.35	23.99	119.45	-175.45	-1,054.61	-9,299.14	9,431.98	9,288.92	143.05	65.933		
6,800.00	6,761.71	6,000.00	5,999.35	24.16	119.45	-175.12	-1,054.61	-9,299.14	9,465.20	9,322.07	143.13	66.129		
6,850.00	6,798.68	6,000.00	5,999.35	24.33	119.45	-174.70	-1,054.61	-9,299.14	9,501.38	9,358.18	143.20	66.350		
6,900.00	6,832.89	6,000.00	5,999.35	24.50	119.45	-174.16	-1,054.61	-9,299.14	9,540.25	9,396.99	143.26	66.594		
6,950.00	6,864.14	6,000.00	5,999.35	24.69	119.45	-173.45	-1,054.61	-9,299.14	9,581.55	9,438.24	143.31	66.860		
7,000.00	6,892.23	6,000.00	5,999.35	24.88	119.45	-172.48	-1,054.61	-9,299.14	9,624.98	9,481.63	143.35	67.144		
7,050.00	6,916.99	6,000.00	5,999.35	25.08	119.45	-171.11	-1,054.61	-9,299.14	9,670.25	9,526.87	143.38	67.445		
7,100.00	6,938.27	6,000.00	5,999.35	25.29	119.45	-169.03	-1,054.61	-9,299.14	9,717.07	9,573.67	143.41	67.759		
7,150.00	6,955.93	6,000.00	5,999.35	25.51	119.45	-165.58	-1,054.61	-9,299.14	9,765.12	9,621.70	143.42	68.085		
7,200.00	6,969.87	6,000.00	5,999.35	25.75	119.45	-158.88	-1,054.61	-9,299.14	9,814.09	9,670.65	143.44	68.420		
7,250.00	6,980.00	6,000.00	5,999.35	25.99	119.45	-141.70	-1,054.61	-9,299.14	9,863.67	9,720.21	143.45	68.759		
7,300.00	6,986.25	6,000.00	5,999.35	26.25	119.45	-85.89	-1,054.61	-9,299.14	9,913.54	9,770.07	143.46	69.102		
7,354.68	6,988.62	6,000.00	5,999.35	26.53	119.45	-32.96	-1,054.61	-9,299.14	9,968.05	9,824.57	143.48	69.476		
7,400.00	6,988.64	6,000.00	5,999.35	26.78	119.45	-32.96	-1,054.61	-9,299.14	10,013.11	9,869.62	143.49	69.784		
7,500.00	6,988.67	6,000.00	5,999.35	27.40	119.45	-32.96	-1,054.61	-9,299.14	10,112.55	9,969.03	143.52	70.463		
7,600.00	6,988.71	6,000.00	5,999.35	28.08	119.45	-32.96	-1,054.61	-9,299.14	10,212.00	10,068.45	143.54	71.142		
7,700.00	6,988.74	6,000.00	5,999.35	28.84	119.45	-32.96	-1,054.61	-9,299.14	10,311.46	10,167.89	143.57	71.820		
7,800.00	6,988.78	6,000.00	5,999.35	29.67	119.45	-32.96	-1,054.61	-9,299.14	10,410.93	10,267.33	143.60	72.497		
7,900.00	6,988.81	6,000.00	5,999.35	30.55	119.45	-32.96	-1,054.61	-9,299.14	10,510.41	10,366.78	143.64	73.174		
8,000.00	6,988.85	6,000.00	5,999.35	31.49	119.45	-32.96	-1,054.61	-9,299.14	10,609.90	10,466.23	143.67	73.850		
8,100.00	6,988.88	6,000.00	5,999.35	32.48	119.45	-32.96	-1,054.61	-9,299.14	10,709.40	10,565.70	143.70	74.525		
8,200.00	6,988.91	6,000.00	5,999.35	33.51	119.45	-32.96	-1,054.61	-9,299.14	10,808.91	10,665.18	143.74	75.200		
8,211.68	6,988.92	6,000.00	5,999.35	33.63	119.45	-32.96	-1,054.61	-9,299.14	10,820.54	10,676.80	143.74	75.279		
8,300.00	6,988.95	6,000.00	5,999.35	34.58	119.45	-15.37	-1,054.61	-9,299.14	10,908.49	10,764.72	143.77	75.875		
8,400.00	6,988.98	6,000.00	5,999.35	35.70	119.45	8.64	-1,054.61	-9,299.14	11,008.15	10,864.35	143.80	76.553		
8,500.00	6,989.01	6,000.00	5,999.35	36.84	119.45	30.22	-1,054.61	-9,299.14	11,107.77	10,963.95	143.82	77.233		
8,600.00	6,989.04	6,000.00	5,999.35	38.02	119.45	45.45	-1,054.61	-9,299.14	11,207.24	11,063.40	143.84	77.914		
8,700.00	6,989.07	6,000.00	5,999.35	39.22	119.45	55.44	-1,054.61	-9,299.14	11,306.44	11,162.59	143.86	78.595		
8,772.79	6,989.09	6,000.00	5,999.35	40.11	119.45	60.54	-1,054.61	-9,299.14	11,378.41	11,234.54	143.87	79.091		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC												Offset Site Error: 0.00 usft							
Survey Program: 245-A027Ua_INC-ONLY				Reference		Offset		Semi Major Axis		Highside		Offset Wellbore Centre		Rule Assigned:		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						
8,800.00	6,989.10	6,000.00	5,999.35	40.44	119.45	60.54	-1,054.61	-9,299.14	11,405.27	11,261.41	143.87	79.276							
8,900.00	6,989.13	6,000.00	5,999.35	41.68	119.45	60.54	-1,054.61	-9,299.14	11,504.01	11,360.12	143.88	79.954							
9,000.00	6,989.15	6,000.00	5,999.35	42.95	119.45	60.54	-1,054.61	-9,299.14	11,602.76	11,458.86	143.90	80.630							
9,100.00	6,989.18	6,000.00	5,999.35	44.24	119.45	60.54	-1,054.61	-9,299.14	11,701.54	11,557.62	143.92	81.306							
9,200.00	6,989.21	6,000.00	5,999.35	45.55	119.45	60.54	-1,054.61	-9,299.14	11,800.34	11,656.39	143.94	81.980							
9,300.00	6,989.24	6,000.00	5,999.35	46.88	119.45	60.54	-1,054.61	-9,299.14	11,899.15	11,755.19	143.97	82.652							
9,400.00	6,989.26	6,000.00	5,999.35	48.23	119.45	60.54	-1,054.61	-9,299.14	11,997.99	11,854.00	143.99	83.324							
9,500.00	6,989.29	6,000.00	5,999.35	49.59	119.45	60.54	-1,054.61	-9,299.14	12,096.84	11,952.82	144.02	83.994							
9,600.00	6,989.32	6,000.00	5,999.35	50.96	119.45	60.54	-1,054.61	-9,299.14	12,195.72	12,051.67	144.05	84.663							
9,700.00	6,989.34	6,000.00	5,999.35	52.35	119.45	60.54	-1,054.61	-9,299.14	12,294.61	12,150.53	144.08	85.330							
9,800.00	6,989.37	6,000.00	5,999.35	53.75	119.45	60.54	-1,054.61	-9,299.14	12,393.52	12,249.41	144.12	85.997							
9,900.00	6,989.40	6,000.00	5,999.35	55.16	119.45	60.54	-1,054.61	-9,299.14	12,492.45	12,348.30	144.15	86.661							
10,000.00	6,989.42	6,000.00	5,999.35	56.58	119.45	60.54	-1,054.61	-9,299.14	12,591.39	12,447.20	144.19	87.325							
10,100.00	6,989.45	6,000.00	5,999.35	58.01	119.45	60.54	-1,054.61	-9,299.14	12,690.36	12,546.13	144.23	87.987							
10,200.00	6,989.48	6,000.00	5,999.35	59.45	119.45	60.54	-1,054.61	-9,299.14	12,789.33	12,645.06	144.27	88.648							
10,300.00	6,989.51	6,000.00	5,999.35	60.90	119.45	60.54	-1,054.61	-9,299.14	12,888.33	12,744.01	144.31	89.308							
10,400.00	6,989.53	6,000.00	5,999.35	62.35	119.45	60.54	-1,054.61	-9,299.14	12,987.33	12,842.98	144.36	89.967							
10,500.00	6,989.56	6,000.00	5,999.35	63.81	119.45	60.54	-1,054.61	-9,299.14	13,086.36	12,941.96	144.40	90.624							
10,600.00	6,989.59	6,000.00	5,999.35	65.28	119.45	60.54	-1,054.61	-9,299.14	13,185.40	13,040.95	144.45	91.280							
10,700.00	6,989.61	6,000.00	5,999.35	66.76	119.45	60.54	-1,054.61	-9,299.14	13,284.45	13,139.95	144.50	91.935							
10,800.00	6,989.64	6,000.00	5,999.35	68.24	119.45	60.54	-1,054.61	-9,299.14	13,383.52	13,238.97	144.55	92.588							
10,900.00	6,989.67	6,000.00	5,999.35	69.73	119.45	60.54	-1,054.61	-9,299.14	13,482.60	13,338.00	144.60	93.240							
11,000.00	6,989.70	6,000.00	5,999.35	71.22	119.45	60.54	-1,054.61	-9,299.14	13,581.69	13,437.04	144.65	93.891							
11,100.00	6,989.72	6,000.00	5,999.35	72.71	119.45	60.54	-1,054.61	-9,299.14	13,680.80	13,536.09	144.71	94.541							
11,200.00	6,989.75	6,000.00	5,999.35	74.22	119.45	60.54	-1,054.61	-9,299.14	13,779.92	13,635.16	144.76	95.189							
11,300.00	6,989.78	6,000.00	5,999.35	75.72	119.45	60.54	-1,054.61	-9,299.14	13,879.05	13,734.23	144.82	95.837							
11,400.00	6,989.80	6,000.00	5,999.35	77.23	119.45	60.54	-1,054.61	-9,299.14	13,978.20	13,833.32	144.88	96.482							
11,500.00	6,989.83	6,000.00	5,999.35	78.74	119.45	60.54	-1,054.61	-9,299.14	14,077.35	13,932.42	144.94	97.127							
11,600.00	6,989.86	6,000.00	5,999.35	80.26	119.45	60.54	-1,054.61	-9,299.14	14,176.52	14,031.52	145.00	97.771							
11,700.00	6,989.88	6,000.00	5,999.35	81.78	119.45	60.54	-1,054.61	-9,299.14	14,275.70	14,130.64	145.06	98.413							
11,800.00	6,989.91	6,000.00	5,999.35	83.30	119.45	60.54	-1,054.61	-9,299.14	14,374.90	14,229.77	145.12	99.054							
11,900.00	6,989.94	6,000.00	5,999.35	84.83	119.45	60.54	-1,054.61	-9,299.14	14,474.10	14,328.91	145.19	99.694							
12,000.00	6,989.97	6,000.00	5,999.35	86.36	119.45	60.54	-1,054.61	-9,299.14	14,573.31	14,428.06	145.25	100.332							
12,100.00	6,989.99	6,000.00	5,999.35	87.89	119.45	60.54	-1,054.61	-9,299.14	14,672.54	14,527.22	145.32	100.970							
12,200.00	6,990.02	6,000.00	5,999.35	89.42	119.45	60.54	-1,054.61	-9,299.14	14,771.77	14,626.39	145.38	101.606							
12,300.00	6,990.05	6,000.00	5,999.35	90.96	119.45	60.54	-1,054.61	-9,299.14	14,871.02	14,725.57	145.45	102.241							
12,400.00	6,990.07	6,000.00	5,999.35	92.50	119.45	60.54	-1,054.61	-9,299.14	14,970.27	14,824.75	145.52	102.875							
12,500.00	6,990.10	6,000.00	5,999.35	94.04	119.45	60.54	-1,054.61	-9,299.14	15,069.54	14,923.95	145.59	103.507							
12,600.00	6,990.13	6,000.00	5,999.35	95.58	119.45	60.54	-1,054.61	-9,299.14	15,168.81	15,023.15	145.66	104.138							
12,700.00	6,990.15	6,000.00	5,999.35	97.13	119.45	60.54	-1,054.61	-9,299.14	15,268.10	15,122.37	145.73	104.768							
12,800.00	6,990.18	6,000.00	5,999.35	98.68	119.45	60.54	-1,054.61	-9,299.14	15,367.39	15,221.59	145.80	105.397							
12,900.00	6,990.21	6,000.00	5,999.35	100.22	119.45	60.54	-1,054.61	-9,299.14	15,466.69	15,320.82	145.88	106.025							
13,000.00	6,990.24	6,000.00	5,999.35	101.78	119.45	60.54	-1,054.61	-9,299.14	15,566.01	15,420.05	145.95	106.652							
13,100.00	6,990.26	6,000.00	5,999.35	103.33	119.45	60.54	-1,054.61	-9,299.14	15,665.33	15,519.30	146.03	107.277							
13,200.00	6,990.29	6,000.00	5,999.35	104.88	119.45	60.54	-1,054.61	-9,299.14	15,764.66	15,618.55	146.10	107.901							
13,300.00	6,990.32	6,000.00	5,999.35	106.44	119.45	60.54	-1,054.61	-9,299.14	15,863.99	15,717.81	146.18	108.524							
13,400.00	6,990.34	6,000.00	5,999.35	107.99	119.45	60.54	-1,054.61	-9,299.14	15,963.34	15,817.08	146.26	109.146							
13,500.00	6,990.37	6,000.00	5,999.35	109.55	119.45	60.54	-1,054.61	-9,299.14	16,062.69	15,916.36	146.34	109.766							
13,600.00	6,990.40	6,000.00	5,999.35	111.11	119.45	60.54	-1,054.61	-9,299.14	16,162.05	16,015.64	146.41	110.386							
13,700.00	6,990.42	6,000.00	5,999.35	112.67	119.45	60.54	-1,054.61	-9,299.14	16,261.42	16,114.93	146.49	111.004							
13,800.00	6,990.45	6,000.00	5,999.35	114.23	119.45	60.54	-1,054.61	-9,299.14	16,360.80	16,214.23	146.57	111.621							
13,900.00	6,990.48	6,000.00	5,999.35	115.80	119.45	60.54	-1,054.61	-9,299.14	16,460.19	16,313.53	146.66	112.237							

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149A - OH - OH-INC													Offset Site Error:	0.00 usft	
Survey Program:		245-A027Ua_INC-ONLY		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
14,000.00	6,990.51	6,000.00	5,999.35	117.36	119.45	60.54	-1,054.61	-9,299.14	16,559.58	16,412.84	146.74	112.851			
14,100.00	6,990.53	6,000.00	5,999.35	118.93	119.45	60.54	-1,054.61	-9,299.14	16,658.98	16,512.16	146.82	113.465			
14,200.00	6,990.56	6,000.00	5,999.35	120.49	119.45	60.54	-1,054.61	-9,299.14	16,758.39	16,611.48	146.90	114.077			
14,300.00	6,990.59	6,000.00	5,999.35	122.06	119.45	60.54	-1,054.61	-9,299.14	16,857.80	16,710.81	146.99	114.688			
14,400.00	6,990.61	6,000.00	5,999.35	123.63	119.45	60.54	-1,054.61	-9,299.14	16,957.22	16,810.15	147.07	115.298			
14,500.00	6,990.64	6,000.00	5,999.35	125.20	119.45	60.54	-1,054.61	-9,299.14	17,056.65	16,909.49	147.16	115.907			
14,600.00	6,990.67	6,000.00	5,999.35	126.77	119.45	60.54	-1,054.61	-9,299.14	17,156.08	17,008.84	147.24	116.515			
14,700.00	6,990.70	6,000.00	5,999.35	128.34	119.45	60.54	-1,054.61	-9,299.14	17,255.52	17,108.19	147.33	117.121			
14,800.00	6,990.72	6,000.00	5,999.35	129.91	119.45	60.54	-1,054.61	-9,299.14	17,354.97	17,207.55	147.42	117.727			
14,900.00	6,990.75	6,000.00	5,999.35	131.48	119.45	60.54	-1,054.61	-9,299.14	17,454.42	17,306.92	147.51	118.331			
15,000.00	6,990.78	6,000.00	5,999.35	133.06	119.45	60.54	-1,054.61	-9,299.14	17,553.88	17,406.29	147.59	118.934			
15,100.00	6,990.80	6,000.00	5,999.35	134.63	119.45	60.54	-1,054.61	-9,299.14	17,653.35	17,505.67	147.68	119.536			
15,200.00	6,990.83	6,000.00	5,999.35	136.20	119.45	60.54	-1,054.61	-9,299.14	17,752.82	17,605.05	147.77	120.137			
15,300.00	6,990.86	6,000.00	5,999.35	137.78	119.45	60.54	-1,054.61	-9,299.14	17,852.30	17,704.44	147.86	120.736			
15,400.00	6,990.88	6,000.00	5,999.35	139.36	119.45	60.54	-1,054.61	-9,299.14	17,951.78	17,803.83	147.95	121.335			
15,500.00	6,990.91	6,000.00	5,999.35	140.93	119.45	60.54	-1,054.61	-9,299.14	18,051.27	17,903.23	148.04	121.932			
15,600.00	6,990.94	6,000.00	5,999.35	142.51	119.45	60.54	-1,054.61	-9,299.14	18,150.76	18,002.63	148.14	122.528			
15,700.00	6,990.97	6,000.00	5,999.35	144.09	119.45	60.54	-1,054.61	-9,299.14	18,250.26	18,102.04	148.23	123.123			
15,800.00	6,990.99	6,000.00	5,999.35	145.67	119.45	60.54	-1,054.61	-9,299.14	18,349.77	18,201.45	148.32	123.717			
15,900.00	6,991.02	6,000.00	5,999.35	147.24	119.45	60.54	-1,054.61	-9,299.14	18,449.28	18,300.87	148.41	124.310			
16,000.00	6,991.05	6,000.00	5,999.35	148.82	119.45	60.54	-1,054.61	-9,299.14	18,548.80	18,400.29	148.51	124.901			
16,100.00	6,991.07	6,000.00	5,999.35	150.40	119.45	60.54	-1,054.61	-9,299.14	18,648.32	18,499.72	148.60	125.492			
16,200.00	6,991.10	6,000.00	5,999.35	151.99	119.45	60.54	-1,054.61	-9,299.14	18,747.85	18,599.15	148.70	126.081			
16,300.00	6,991.13	6,000.00	5,999.35	153.57	119.45	60.54	-1,054.61	-9,299.14	18,847.38	18,698.59	148.79	126.669			
16,400.00	6,991.15	6,000.00	5,999.35	155.15	119.45	60.54	-1,054.61	-9,299.14	18,946.91	18,798.03	148.89	127.256			
16,500.00	6,991.18	6,000.00	5,999.35	156.73	119.45	60.54	-1,054.61	-9,299.14	19,046.45	18,897.47	148.98	127.842			
16,600.00	6,991.21	6,000.00	5,999.35	158.31	119.45	60.54	-1,054.61	-9,299.14	19,146.00	18,996.92	149.08	128.427			
16,700.00	6,991.24	6,000.00	5,999.35	159.90	119.45	60.54	-1,054.61	-9,299.14	19,245.55	19,096.37	149.18	129.011			
16,800.00	6,991.26	6,000.00	5,999.35	161.48	119.45	60.54	-1,054.61	-9,299.14	19,345.11	19,195.83	149.28	129.593			
16,900.00	6,991.29	6,000.00	5,999.35	163.06	119.45	60.54	-1,054.61	-9,299.14	19,444.67	19,295.29	149.37	130.175			
17,000.00	6,991.32	6,000.00	5,999.35	164.65	119.45	60.54	-1,054.61	-9,299.14	19,544.23	19,394.76	149.47	130.755			
17,100.00	6,991.34	6,000.00	5,999.35	166.23	119.45	60.54	-1,054.61	-9,299.14	19,643.80	19,494.23	149.57	131.334			
17,200.00	6,991.37	6,000.00	5,999.35	167.82	119.45	60.54	-1,054.61	-9,299.14	19,743.37	19,593.70	149.67	131.912			
17,300.00	6,991.40	6,000.00	5,999.35	169.40	119.45	60.54	-1,054.61	-9,299.14	19,842.95	19,693.18	149.77	132.489			
17,400.00	6,991.42	6,000.00	5,999.35	170.99	119.45	60.54	-1,054.61	-9,299.14	19,942.53	19,792.66	149.87	133.065			
17,500.00	6,991.45	6,000.00	5,999.35	172.57	119.45	60.54	-1,054.61	-9,299.14	20,042.12	19,892.15	149.97	133.640			
17,600.00	6,991.48	6,000.00	5,999.35	174.16	119.45	60.54	-1,054.61	-9,299.14	20,141.71	19,991.64	150.07	134.214			
17,700.00	6,991.51	6,000.00	5,999.35	175.75	119.45	60.54	-1,054.61	-9,299.14	20,241.30	20,091.13	150.17	134.786			
17,800.00	6,991.53	6,000.00	5,999.35	177.33	119.45	60.54	-1,054.61	-9,299.14	20,340.90	20,190.63	150.28	135.357			
17,900.00	6,991.56	6,000.00	5,999.35	178.92	119.45	60.54	-1,054.61	-9,299.14	20,440.50	20,290.13	150.38	135.928			
18,000.00	6,991.59	6,000.00	5,999.35	180.51	119.45	60.54	-1,054.61	-9,299.14	20,540.11	20,389.63	150.48	136.497			
18,100.00	6,991.61	6,000.00	5,999.35	182.10	119.45	60.54	-1,054.61	-9,299.14	20,639.72	20,489.14	150.58	137.065			
18,200.00	6,991.64	6,000.00	5,999.35	183.68	119.45	60.54	-1,054.61	-9,299.14	20,739.33	20,588.65	150.69	137.632			
18,300.00	6,991.67	6,000.00	5,999.35	185.27	119.45	60.54	-1,054.61	-9,299.14	20,838.95	20,688.16	150.79	138.198			
18,400.00	6,991.69	6,000.00	5,999.35	186.86	119.45	60.54	-1,054.61	-9,299.14	20,938.57	20,787.68	150.89	138.763			
18,500.00	6,991.72	6,000.00	5,999.35	188.45	119.45	60.54	-1,054.61	-9,299.14	21,038.20	20,887.20	151.00	139.327			
18,600.00	6,991.75	6,000.00	5,999.35	190.04	119.45	60.54	-1,054.61	-9,299.14	21,137.82	20,986.72	151.10	139.889			
18,700.00	6,991.78	6,000.00	5,999.35	191.63	119.45	60.54	-1,054.61	-9,299.14	21,237.45	21,086.25	151.21	140.451			
18,800.00	6,991.80	6,000.00	5,999.35	193.22	119.45	60.54	-1,054.61	-9,299.14	21,337.09	21,185.78	151.31	141.011			
18,900.00	6,991.83	6,000.00	5,999.35	194.81	119.45	60.54	-1,054.61	-9,299.14	21,436.73	21,285.31	151.42	141.571			
19,000.00	6,991.86	6,000.00	5,999.35	196.40	119.45	60.54	-1,054.61	-9,299.14	21,536.37	21,384.84	151.53	142.129			
19,100.00	6,991.88	6,000.00	5,999.35	197.99	119.45	60.54	-1,054.61	-9,299.14	21,636.01	21,484.38	151.63	142.686			

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)				
19,200.00	6,991.91	6,000.00	5,999.35	199.58	119.45	60.54	-1,054.61	-9,299.14	21,735.66	21,583.92	151.74	143.242		
19,300.00	6,991.94	6,000.00	5,999.35	201.17	119.45	60.54	-1,054.61	-9,299.14	21,835.31	21,683.47	151.85	143.797		
19,342.28	6,991.95	6,000.00	5,999.35	201.84	119.45	60.54	-1,054.61	-9,299.14	21,877.45	21,725.55	151.89	144.032		
19,400.00	6,991.97	6,000.00	5,999.35	202.76	119.45	60.54	-1,054.61	-9,299.14	21,934.97	21,783.01	151.96	144.351		
19,500.00	6,991.99	6,000.00	5,999.35	204.35	119.45	60.54	-1,054.61	-9,299.14	22,034.63	21,882.56	152.06	144.904		
19,542.28	6,992.00	6,000.00	5,999.35	205.03	119.45	60.54	-1,054.61	-9,299.14	22,076.76	21,924.65	152.11	145.138		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
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 +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	44.00	44.00	0.00	0.94	-92.93	-575.51	-11,236.21	11,250.94				
100.00	100.00	144.00	144.00	0.25	3.06	-92.93	-575.51	-11,236.21	11,250.94	11,247.62	3.32	3,393.066	
200.00	200.00	244.00	244.00	0.61	5.19	-92.93	-575.51	-11,236.21	11,250.94	11,245.14	5.80	1,938.941	
300.00	300.00	344.00	344.00	0.97	7.32	-92.93	-575.51	-11,236.21	11,250.94	11,242.65	8.29	1,357.272	
400.00	400.00	444.00	444.00	1.33	9.45	-92.93	-575.51	-11,236.21	11,250.94	11,240.16	10.78	1,044.061	
500.00	500.00	544.03	544.00	1.68	11.58	-92.93	-575.51	-11,236.21	11,250.94	11,237.68	13.26	848.266	
600.00	600.00	644.03	644.00	2.04	13.71	-92.93	-575.51	-11,236.21	11,250.94	11,235.19	15.75	714.334	
700.00	700.00	744.03	744.00	2.40	15.84	-92.93	-575.51	-11,236.21	11,250.94	11,232.70	18.24	616.927	
800.00	799.98	842.24	842.20	2.76	17.93	-62.95	-574.60	-11,236.21	11,250.10	11,229.41	20.68	543.895	
900.00	899.92	940.10	940.06	3.12	20.01	-62.97	-575.07	-11,236.21	11,248.54	11,225.41	23.12	486.458	
1,000.00	999.86	1,043.96	1,043.86	3.47	22.30	-62.99	-575.51	-11,236.21	11,246.97	11,221.20	25.77	436.361	
1,100.00	1,099.80	1,143.90	1,143.80	3.83	24.61	-63.00	-575.51	-11,236.21	11,245.39	11,216.95	28.44	395.440	
1,200.00	1,199.74	1,243.84	1,243.74	4.19	26.91	-63.02	-575.51	-11,236.21	11,243.80	11,212.70	31.10	361.523	
1,300.00	1,299.68	1,341.80	1,341.69	4.55	29.17	-63.03	-574.58	-11,236.21	11,242.17	11,208.45	33.72	333.401	
1,400.00	1,399.61	1,439.70	1,439.59	4.91	31.43	-63.05	-575.07	-11,236.21	11,240.61	11,204.28	36.34	309.345	
1,500.00	1,499.55	1,543.77	1,543.55	5.27	33.93	-63.07	-575.51	-11,236.21	11,239.05	11,199.86	39.19	286.784	
1,600.00	1,599.49	1,643.71	1,643.49	5.63	36.43	-63.08	-575.51	-11,236.21	11,237.47	11,195.42	42.05	267.241	
1,700.00	1,699.43	1,743.65	1,743.43	5.99	38.93	-63.10	-575.51	-11,236.21	11,235.89	11,190.98	44.91	250.185	
1,800.00	1,799.37	1,840.60	1,840.35	6.35	41.36	-63.10	-574.11	-11,236.21	11,234.24	11,186.54	47.70	235.539	
1,900.00	1,899.31	1,937.46	1,937.20	6.71	43.78	-63.12	-574.83	-11,236.21	11,232.70	11,182.22	50.48	222.521	
2,000.00	1,999.25	2,043.64	2,043.25	7.07	46.49	-63.14	-575.51	-11,236.21	11,231.16	11,177.61	53.55	209.737	
2,100.00	2,099.19	2,143.58	2,143.19	7.42	49.11	-63.16	-575.51	-11,236.21	11,229.58	11,173.06	56.52	198.683	
2,200.00	2,199.13	2,243.42	2,243.01	7.78	51.71	-63.17	-573.91	-11,236.21	11,227.91	11,168.42	59.49	188.740	
2,300.00	2,299.07	2,340.15	2,339.73	8.14	54.24	-63.18	-574.18	-11,236.21	11,226.35	11,163.98	62.38	179.978	
2,400.00	2,399.01	2,436.88	2,436.44	8.50	56.77	-63.20	-574.94	-11,236.21	11,224.82	11,159.56	65.26	171.992	
2,500.00	2,498.94	2,543.53	2,542.94	8.86	59.44	-63.22	-575.51	-11,236.21	11,223.28	11,154.98	68.30	164.333	
2,600.00	2,598.88	2,643.47	2,642.88	9.22	61.86	-63.24	-575.51	-11,236.21	11,221.71	11,150.64	71.07	157.894	
2,700.00	2,698.82	2,743.37	2,742.76	9.58	64.28	-63.25	-573.54	-11,236.21	11,220.02	11,146.18	73.85	151.939	
2,800.00	2,798.76	2,839.70	2,839.07	9.94	66.60	-63.26	-573.82	-11,236.21	11,218.47	11,141.94	76.53	146.583	
2,900.00	2,898.70	2,936.02	2,935.37	10.30	68.93	-63.28	-574.66	-11,236.21	11,216.95	11,137.73	79.22	141.590	
3,000.00	2,998.64	3,043.38	3,042.64	10.66	71.40	-63.30	-575.51	-11,236.21	11,215.42	11,133.38	82.04	136.699	
3,100.00	3,098.58	3,143.32	3,142.58	11.02	73.51	-63.32	-575.51	-11,236.21	11,213.86	11,129.34	84.52	132.681	
3,200.00	3,198.52	3,243.26	3,242.52	11.38	75.62	-63.34	-575.51	-11,236.21	11,212.29	11,125.30	86.99	128.891	
3,300.00	3,298.46	3,343.20	3,342.46	11.75	77.74	-63.35	-575.51	-11,236.21	11,210.72	11,121.26	89.46	125.310	
3,400.00	3,398.40	3,441.96	3,441.21	12.11	79.83	-63.36	-573.98	-11,236.21	11,209.07	11,117.16	91.91	121.954	
3,500.00	3,498.34	3,540.36	3,539.60	12.47	81.91	-63.38	-574.27	-11,236.21	11,207.52	11,113.17	94.35	118.783	
3,600.00	3,598.27	3,638.76	3,637.99	12.83	83.99	-63.39	-574.79	-11,236.21	11,205.99	11,109.19	96.79	115.773	
3,700.00	3,698.21	3,743.06	3,742.21	13.19	86.23	-63.41	-575.51	-11,236.21	11,204.47	11,105.07	99.40	112.722	
3,800.00	3,798.15	3,843.00	3,842.15	13.55	88.75	-63.43	-575.51	-11,236.21	11,202.90	11,100.63	102.28	109.536	
3,900.00	3,898.09	3,942.94	3,942.09	13.91	91.27	-63.45	-575.51	-11,236.21	11,201.34	11,096.19	105.15	106.524	
4,000.00	3,998.03	4,042.88	4,042.03	14.27	93.79	-63.46	-575.51	-11,236.21	11,199.78	11,091.75	108.03	103.673	
4,100.00	4,097.97	4,142.82	4,141.97	14.63	96.30	-63.48	-575.51	-11,236.21	11,198.22	11,087.31	110.91	100.969	
4,200.00	4,197.91	4,242.76	4,241.91	14.99	98.82	-63.49	-575.51	-11,236.21	11,196.66	11,082.88	113.78	98.402	
4,300.00	4,297.85	4,342.70	4,341.85	15.35	101.34	-63.51	-575.51	-11,236.21	11,195.11	11,078.44	116.66	95.962	
4,400.00	4,397.79	4,442.64	4,441.79	15.71	103.86	-63.53	-575.51	-11,236.21	11,193.55	11,074.01	119.54	93.640	
4,500.00	4,497.73	4,542.58	4,541.73	16.07	106.37	-63.54	-575.51	-11,236.21	11,191.99	11,069.58	122.42	91.426	
4,600.00	4,597.66	4,642.52	4,641.66	16.43	108.89	-63.56	-575.51	-11,236.21	11,190.44	11,065.14	125.29	89.314	
4,700.00	4,697.60	4,742.46	4,741.60	16.79	111.41	-63.57	-575.51	-11,236.21	11,188.88	11,060.71	128.17	87.297	
4,800.00	4,797.54	4,841.82	4,840.93	17.15	113.91	-63.57	-571.14	-11,236.21	11,187.06	11,056.02	131.03	85.376	
4,900.00	4,897.48	4,941.17	4,940.27	17.51	116.42	-63.58	-571.26	-11,236.21	11,185.51	11,051.61	133.89	83.539	
5,000.00	4,997.42	5,040.52	5,039.62	17.87	118.92	-63.60	-571.47	-11,236.21	11,183.97	11,047.21	136.76	81.780	
5,100.00	5,097.36	5,139.86	5,138.96	18.23	121.42	-63.62	-571.77	-11,236.21	11,182.44	11,042.82	139.62	80.092	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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)	
5,200.00	5,197.30	5,239.21	5,238.29	18.59	123.92	-63.64	-572.15	-11,236.21	11,180.91	11,038.43	
5,300.00	5,297.24	5,338.54	5,337.62	18.95	126.42	-63.66	-572.62	-11,236.21	11,179.39	11,034.05	
5,402.82	5,400.00	5,440.68	5,439.76	19.32	129.00	-63.67	-573.19	-11,236.21	11,177.83	11,029.55	
5,500.00	5,497.13	5,537.22	5,536.29	19.67	131.43	-63.69	-573.80	-11,236.21	11,176.55	11,025.49	
5,600.00	5,597.11	5,636.60	5,635.65	20.03	133.93	-63.70	-574.53	-11,236.21	11,175.62	11,021.69	
5,700.00	5,697.10	5,735.99	5,735.04	20.39	136.44	-63.70	-575.33	-11,236.21	11,175.08	11,018.29	
5,802.82	5,799.92	5,845.49	5,843.92	20.75	139.58	-93.71	-575.51	-11,236.21	11,174.89	11,014.59	
5,900.00	5,897.09	5,942.67	5,941.09	21.10	142.45	-93.71	-575.51	-11,236.21	11,174.89	11,011.37	
6,000.00	5,997.09	6,042.67	6,041.09	21.45	145.40	-93.71	-575.51	-11,236.21	11,174.89	11,008.06	
6,100.00	6,097.09	6,142.67	6,141.09	21.81	148.36	-93.71	-575.51	-11,236.21	11,174.89	11,004.76	
6,200.00	6,197.09	6,242.67	6,241.09	22.16	151.31	-93.71	-575.51	-11,236.21	11,174.89	11,001.45	
6,300.00	6,297.09	6,342.67	6,341.09	22.52	154.27	-93.71	-575.51	-11,236.21	11,174.89	10,998.14	
6,354.91	6,352.00	6,397.57	6,396.00	22.72	155.89	-93.71	-575.51	-11,236.21	11,174.89	10,996.32	
6,400.00	6,397.06	6,442.63	6,441.06	22.87	157.22	-172.69	-575.51	-11,236.21	11,176.47	10,996.42	
6,450.00	6,446.74	6,492.31	6,490.74	23.04	158.69	-172.63	-575.51	-11,236.21	11,181.92	11,000.23	
6,500.00	6,495.84	6,541.41	6,539.84	23.20	160.14	-172.52	-575.51	-11,236.21	11,191.22	11,007.91	
6,550.00	6,544.06	6,589.63	6,588.06	23.36	161.56	-172.37	-575.51	-11,236.21	11,204.31	11,019.42	
6,600.00	6,591.08	6,636.66	6,635.08	23.51	162.95	-172.17	-575.51	-11,236.21	11,221.11	11,034.68	
6,650.00	6,636.64	6,682.21	6,680.64	23.66	164.30	-171.90	-575.51	-11,236.21	11,241.53	11,053.59	
6,700.00	6,680.44	6,726.01	6,724.44	23.82	165.59	-171.57	-575.51	-11,236.21	11,265.42	11,076.06	
6,750.00	6,722.22	6,767.79	6,766.22	23.99	166.82	-171.15	-575.51	-11,236.21	11,292.65	11,101.92	
6,800.00	6,761.71	6,807.28	6,805.71	24.16	167.99	-170.63	-575.51	-11,236.21	11,323.06	11,131.04	
6,850.00	6,798.68	6,844.25	6,842.68	24.33	169.08	-169.98	-575.51	-11,236.21	11,356.44	11,163.22	
6,900.00	6,832.89	6,878.46	6,876.89	24.50	170.09	-169.16	-575.51	-11,236.21	11,392.60	11,198.26	
6,950.00	6,864.14	6,909.71	6,908.14	24.69	171.02	-168.11	-575.51	-11,236.21	11,431.31	11,235.96	
7,000.00	6,892.23	6,937.80	6,936.23	24.88	171.85	-166.74	-575.51	-11,236.21	11,472.34	11,276.08	
7,050.00	6,916.99	6,962.56	6,960.99	25.08	172.58	-164.92	-575.51	-11,236.21	11,515.43	11,318.38	
7,100.00	6,938.27	6,983.84	6,982.27	25.29	173.21	-162.40	-575.51	-11,236.21	11,560.32	11,362.58	
7,150.00	6,955.93	7,001.50	6,999.93	25.51	173.73	-158.73	-575.51	-11,236.21	11,606.73	11,408.42	
7,200.00	6,969.87	7,015.44	7,013.87	25.75	174.14	-153.02	-575.51	-11,236.21	11,654.38	11,455.62	
7,250.00	6,980.00	7,025.57	7,024.00	25.99	174.44	-143.33	-575.51	-11,236.21	11,702.97	11,503.88	
7,300.00	6,986.25	7,031.82	7,030.25	26.25	174.62	-125.31	-575.51	-11,236.21	11,752.19	11,552.90	
7,354.68	6,988.62	7,034.19	7,032.62	26.53	174.69	-90.17	-575.51	-11,236.21	11,806.41	11,607.03	
7,400.00	6,988.64	7,034.21	7,032.64	26.78	174.69	-90.17	-575.51	-11,236.21	11,851.40	11,652.01	
7,500.00	6,988.67	7,034.24	7,032.67	27.40	174.70	-90.17	-575.51	-11,236.21	11,950.69	11,751.27	
7,600.00	6,988.71	7,034.28	7,032.71	28.08	174.70	-90.17	-575.51	-11,236.21	12,049.99	11,850.54	
7,700.00	6,988.74	7,034.31	7,032.74	28.84	174.70	-90.17	-575.51	-11,236.21	12,149.30	11,949.82	
7,800.00	6,988.78	7,034.35	7,032.78	29.67	174.70	-90.17	-575.51	-11,236.21	12,248.62	12,049.10	
7,900.00	6,988.81	7,034.38	7,032.81	30.55	174.70	-90.17	-575.51	-11,236.21	12,347.95	12,148.40	
8,000.00	6,988.85	7,034.42	7,032.85	31.49	174.70	-90.17	-575.51	-11,236.21	12,447.29	12,247.71	
8,100.00	6,988.88	7,034.45	7,032.88	32.48	174.70	-90.18	-575.51	-11,236.21	12,546.65	12,347.02	
8,200.00	6,988.91	7,034.49	7,032.91	33.51	174.70	-90.18	-575.51	-11,236.21	12,646.01	12,446.34	
8,211.68	6,988.92	7,034.49	7,032.92	33.63	174.70	-90.18	-575.51	-11,236.21	12,657.62	12,457.95	
8,300.00	6,988.95	7,034.52	7,032.95	34.58	174.70	-90.24	-575.51	-11,236.21	12,745.52	12,545.82	
8,400.00	6,988.98	7,034.55	7,032.98	35.70	174.70	-90.41	-575.51	-11,236.21	12,845.32	12,645.58	
8,500.00	6,989.01	7,034.58	7,033.01	36.84	174.71	-91.72	-575.51	-11,236.21	12,945.27	12,745.51	
8,600.00	6,989.04	7,034.62	7,033.04	38.02	174.71	90.69	-575.51	-11,236.21	13,045.27	12,845.49	
8,700.00	6,989.07	7,034.64	7,033.07	39.22	174.71	90.27	-575.51	-11,236.21	13,145.17	12,945.38	
8,772.79	6,989.09	7,034.66	7,033.09	40.11	174.71	90.18	-575.51	-11,236.21	13,217.77	13,017.98	
8,800.00	6,989.10	7,034.67	7,033.10	40.44	174.71	90.18	-575.51	-11,236.21	13,244.89	13,045.10	
8,900.00	6,989.13	7,034.70	7,033.13	41.68	174.71	90.19	-575.51	-11,236.21	13,344.54	13,144.74	
9,000.00	6,989.15	7,034.73	7,033.15	42.95	174.71	90.19	-575.51	-11,236.21	13,444.19	13,244.39	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149B - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		520-A027Ua_INC-ONLY				Rule Assigned:				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
9,100.00	6,989.18	7,034.75	7,033.18	44.24	174.71	90.19	-575.51	-11,236.21	13,543.86	13,344.05	199.81	67.784	
9,200.00	6,989.21	7,034.78	7,033.21	45.55	174.71	90.19	-575.51	-11,236.21	13,643.52	13,443.70	199.82	68.280	
9,300.00	6,989.24	7,034.81	7,033.24	46.88	174.71	90.19	-575.51	-11,236.21	13,743.19	13,543.36	199.83	68.776	
9,400.00	6,989.26	7,034.83	7,033.26	48.23	174.71	90.19	-575.51	-11,236.21	13,842.87	13,643.03	199.84	69.270	
9,500.00	6,989.29	7,034.86	7,033.29	49.59	174.71	90.19	-575.51	-11,236.21	13,942.55	13,742.69	199.85	69.765	
9,600.00	6,989.32	7,034.89	7,033.32	50.96	174.71	90.20	-575.51	-11,236.21	14,042.23	13,842.36	199.87	70.258	
9,700.00	6,989.34	7,034.91	7,033.34	52.35	174.72	90.20	-575.51	-11,236.21	14,141.92	13,942.04	199.88	70.751	
9,800.00	6,989.37	7,034.94	7,033.37	53.75	174.72	90.20	-575.51	-11,236.21	14,241.61	14,041.71	199.90	71.244	
9,900.00	6,989.40	7,034.97	7,033.40	55.16	174.72	90.20	-575.51	-11,236.21	14,341.31	14,141.39	199.92	71.735	
10,000.00	6,989.42	7,035.00	7,033.42	56.58	174.72	90.20	-575.51	-11,236.21	14,441.01	14,241.07	199.94	72.227	
10,100.00	6,989.45	7,035.02	7,033.45	58.01	174.72	90.20	-575.51	-11,236.21	14,540.72	14,340.76	199.96	72.717	
10,200.00	6,989.48	7,035.05	7,033.48	59.45	174.72	90.20	-575.51	-11,236.21	14,640.43	14,440.44	199.99	73.207	
10,300.00	6,989.51	7,035.08	7,033.51	60.90	174.72	90.20	-575.51	-11,236.21	14,740.14	14,540.13	200.01	73.697	
10,400.00	6,989.53	7,035.10	7,033.53	62.35	174.72	90.21	-575.51	-11,236.21	14,839.86	14,639.82	200.04	74.185	
10,500.00	6,989.56	7,035.13	7,033.56	63.81	174.72	90.21	-575.51	-11,236.21	14,939.58	14,739.51	200.07	74.674	
10,600.00	6,989.59	7,035.16	7,033.59	65.28	174.72	90.21	-575.51	-11,236.21	15,039.30	14,839.21	200.09	75.161	
10,700.00	6,989.61	7,035.18	7,033.61	66.76	174.72	90.21	-575.51	-11,236.21	15,139.03	14,938.91	200.12	75.648	
10,800.00	6,989.64	7,035.21	7,033.64	68.24	174.72	90.21	-575.51	-11,236.21	15,238.77	15,038.61	200.16	76.134	
10,900.00	6,989.67	7,035.24	7,033.67	69.73	174.73	90.21	-575.51	-11,236.21	15,338.50	15,138.31	200.19	76.620	
11,000.00	6,989.70	7,035.27	7,033.70	71.22	174.73	90.21	-575.51	-11,236.21	15,438.24	15,238.02	200.22	77.105	
11,100.00	6,989.72	7,035.29	7,033.72	72.71	174.73	90.22	-575.51	-11,236.21	15,537.98	15,337.72	200.26	77.589	
11,200.00	6,989.75	7,035.32	7,033.75	74.22	174.73	90.22	-575.51	-11,236.21	15,637.73	15,437.43	200.30	78.073	
11,300.00	6,989.78	7,035.35	7,033.78	75.72	174.73	90.22	-575.51	-11,236.21	15,737.48	15,537.14	200.33	78.556	
11,400.00	6,989.80	7,035.37	7,033.80	77.23	174.73	90.22	-575.51	-11,236.21	15,837.23	15,636.86	200.37	79.039	
11,500.00	6,989.83	7,035.40	7,033.83	78.74	174.73	90.22	-575.51	-11,236.21	15,936.99	15,736.57	200.41	79.521	
11,600.00	6,989.86	7,035.43	7,033.86	80.26	174.73	90.22	-575.51	-11,236.21	16,036.74	15,836.29	200.45	80.002	
11,700.00	6,989.88	7,035.46	7,033.88	81.78	174.73	90.22	-575.51	-11,236.21	16,136.50	15,936.01	200.50	80.482	
11,800.00	6,989.91	7,035.48	7,033.91	83.30	174.73	90.23	-575.51	-11,236.21	16,236.27	16,035.73	200.54	80.962	
11,900.00	6,989.94	7,035.51	7,033.94	84.83	174.73	90.23	-575.51	-11,236.21	16,336.04	16,135.45	200.59	81.441	
12,000.00	6,989.97	7,035.54	7,033.97	86.36	174.73	90.23	-575.51	-11,236.21	16,435.81	16,235.17	200.63	81.920	
12,100.00	6,989.99	7,035.56	7,033.99	87.89	174.73	90.23	-575.51	-11,236.21	16,535.58	16,334.90	200.68	82.398	
12,200.00	6,990.02	7,035.59	7,034.02	89.42	174.74	90.23	-575.51	-11,236.21	16,635.35	16,434.63	200.73	82.875	
12,300.00	6,990.05	7,035.62	7,034.05	90.96	174.74	90.23	-575.51	-11,236.21	16,735.13	16,534.36	200.78	83.352	
12,400.00	6,990.07	7,035.64	7,034.07	92.50	174.74	90.23	-575.51	-11,236.21	16,834.91	16,634.09	200.83	83.828	
12,500.00	6,990.10	7,035.67	7,034.10	94.04	174.74	90.24	-575.51	-11,236.21	16,934.70	16,733.82	200.88	84.303	
12,600.00	6,990.13	7,035.70	7,034.13	95.58	174.74	90.24	-575.51	-11,236.21	17,034.48	16,833.55	200.93	84.778	
12,700.00	6,990.15	7,035.73	7,034.15	97.13	174.74	90.24	-575.51	-11,236.21	17,134.27	16,933.29	200.98	85.252	
12,800.00	6,990.18	7,035.75	7,034.18	98.68	174.74	90.24	-575.51	-11,236.21	17,234.06	17,033.02	201.04	85.725	
12,900.00	6,990.21	7,035.78	7,034.21	100.22	174.74	90.24	-575.51	-11,236.21	17,333.86	17,132.76	201.09	86.198	
13,000.00	6,990.24	7,035.81	7,034.24	101.78	174.74	90.24	-575.51	-11,236.21	17,433.65	17,232.50	201.15	86.670	
13,100.00	6,990.26	7,035.83	7,034.26	103.33	174.74	90.24	-575.51	-11,236.21	17,533.45	17,332.24	201.21	87.141	
13,200.00	6,990.29	7,035.86	7,034.29	104.88	174.74	90.25	-575.51	-11,236.21	17,633.25	17,431.98	201.27	87.611	
13,300.00	6,990.32	7,035.89	7,034.32	106.44	174.74	90.25	-575.51	-11,236.21	17,733.05	17,531.73	201.33	88.081	
13,400.00	6,990.34	7,035.91	7,034.34	107.99	174.75	90.25	-575.51	-11,236.21	17,832.86	17,631.47	201.39	88.551	
13,500.00	6,990.37	7,035.94	7,034.37	109.55	174.75	90.25	-575.51	-11,236.21	17,932.66	17,731.22	201.45	89.019	
13,600.00	6,990.40	7,035.97	7,034.40	111.11	174.75	90.25	-575.51	-11,236.21	18,032.47	17,830.96	201.51	89.487	
13,700.00	6,990.42	7,036.00	7,034.42	112.67	174.75	90.25	-575.51	-11,236.21	18,132.28	17,930.71	201.57	89.955	
13,800.00	6,990.45	7,036.02	7,034.45	114.23	174.75	90.25	-575.51	-11,236.21	18,232.10	18,030.46	201.64	90.421	
13,900.00	6,990.48	7,036.05	7,034.48	115.80	174.75	90.26	-575.51	-11,236.21	18,331.91	18,130.21	201.70	90.887	
14,000.00	6,990.51	7,036.08	7,034.51	117.36	174.75	90.26	-575.51	-11,236.21	18,431.73	18,229.96	201.77	91.352	
14,100.00	6,990.53	7,036.10	7,034.53	118.93	174.75	90.26	-575.51	-11,236.21	18,531.55	18,329.72	201.83	91.817	
14,200.00	6,990.56	7,036.13	7,034.56	120.49	174.75	90.26	-575.51	-11,236.21	18,631.37	18,429.47	201.90	92.281	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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
14,300.00	6,990.59	7,036.16	7,034.59	122.06	174.75	90.26	-575.51	-11,236.21	18,731.19	18,529.23	201.97	92.744	
14,400.00	6,990.61	7,036.18	7,034.61	123.63	174.75	90.26	-575.51	-11,236.21	18,831.02	18,628.98	202.04	93.206	
14,500.00	6,990.64	7,036.21	7,034.64	125.20	174.75	90.26	-575.51	-11,236.21	18,930.84	18,728.74	202.11	93.668	
14,600.00	6,990.67	7,036.24	7,034.67	126.77	174.75	90.26	-575.51	-11,236.21	19,030.67	18,828.50	202.18	94.129	
14,700.00	6,990.70	7,036.27	7,034.70	128.34	174.76	90.27	-575.51	-11,236.21	19,130.50	18,928.26	202.25	94.590	
14,800.00	6,990.72	7,036.29	7,034.72	129.91	174.76	90.27	-575.51	-11,236.21	19,230.34	19,028.02	202.32	95.049	
14,900.00	6,990.75	7,036.32	7,034.75	131.48	174.76	90.27	-575.51	-11,236.21	19,330.17	19,127.78	202.39	95.509	
15,000.00	6,990.78	7,036.35	7,034.78	133.06	174.76	90.27	-575.51	-11,236.21	19,430.00	19,227.54	202.47	95.967	
15,100.00	6,990.80	7,036.37	7,034.80	134.63	174.76	90.27	-575.51	-11,236.21	19,529.84	19,327.30	202.54	96.425	
15,200.00	6,990.83	7,036.40	7,034.83	136.20	174.76	90.27	-575.51	-11,236.21	19,629.68	19,427.07	202.62	96.882	
15,300.00	6,990.86	7,036.43	7,034.86	137.78	174.76	90.27	-575.51	-11,236.21	19,729.52	19,526.83	202.69	97.338	
15,400.00	6,990.88	7,036.45	7,034.88	139.36	174.76	90.28	-575.51	-11,236.21	19,829.36	19,626.60	202.77	97.794	
15,500.00	6,990.91	7,036.48	7,034.91	140.93	174.76	90.28	-575.51	-11,236.21	19,929.21	19,726.36	202.84	98.249	
15,600.00	6,990.94	7,036.51	7,034.94	142.51	174.76	90.28	-575.51	-11,236.21	20,029.05	19,826.13	202.92	98.703	
15,700.00	6,990.97	7,036.54	7,034.97	144.09	174.76	90.28	-575.51	-11,236.21	20,128.90	19,925.90	203.00	99.156	
15,800.00	6,990.99	7,036.56	7,034.99	145.67	174.76	90.28	-575.51	-11,236.21	20,228.75	20,025.67	203.08	99.609	
15,900.00	6,991.02	7,036.59	7,035.02	147.24	174.77	90.28	-575.51	-11,236.21	20,328.60	20,125.44	203.16	100.062	
16,000.00	6,991.05	7,036.62	7,035.05	148.82	174.77	90.28	-575.51	-11,236.21	20,428.45	20,225.21	203.24	100.513	
16,100.00	6,991.07	7,036.64	7,035.07	150.40	174.77	90.29	-575.51	-11,236.21	20,528.30	20,324.98	203.32	100.964	
16,200.00	6,991.10	7,036.67	7,035.10	151.99	174.77	90.29	-575.51	-11,236.21	20,628.16	20,424.75	203.41	101.414	
16,300.00	6,991.13	7,036.70	7,035.13	153.57	174.77	90.29	-575.51	-11,236.21	20,728.01	20,524.52	203.49	101.864	
16,400.00	6,991.15	7,036.73	7,035.15	155.15	174.77	90.29	-575.51	-11,236.21	20,827.87	20,624.30	203.57	102.312	
16,500.00	6,991.18	7,036.75	7,035.18	156.73	174.77	90.29	-575.51	-11,236.21	20,927.73	20,724.07	203.66	102.761	
16,600.00	6,991.21	7,036.78	7,035.21	158.31	174.77	90.29	-575.51	-11,236.21	21,027.59	20,823.85	203.74	103.208	
16,700.00	6,991.24	7,036.81	7,035.24	159.90	174.77	90.29	-575.51	-11,236.21	21,127.45	20,923.62	203.83	103.655	
16,800.00	6,991.26	7,036.83	7,035.26	161.48	174.77	90.30	-575.51	-11,236.21	21,227.31	21,023.40	203.91	104.101	
16,900.00	6,991.29	7,036.86	7,035.29	163.06	174.77	90.30	-575.51	-11,236.21	21,327.17	21,123.18	204.00	104.546	
17,000.00	6,991.32	7,036.89	7,035.32	164.65	174.77	90.30	-575.51	-11,236.21	21,427.04	21,222.95	204.08	104.991	
17,100.00	6,991.34	7,036.91	7,035.34	166.23	174.77	90.30	-575.51	-11,236.21	21,526.90	21,322.73	204.17	105.435	
17,200.00	6,991.37	7,036.94	7,035.37	167.82	174.78	90.30	-575.51	-11,236.21	21,626.77	21,422.51	204.26	105.878	
17,300.00	6,991.40	7,036.97	7,035.40	169.40	174.78	90.30	-575.51	-11,236.21	21,726.64	21,522.29	204.35	106.321	
17,400.00	6,991.42	7,037.00	7,035.42	170.99	174.78	90.30	-575.51	-11,236.21	21,826.51	21,622.07	204.44	106.763	
17,500.00	6,991.45	7,037.02	7,035.45	172.57	174.78	90.31	-575.51	-11,236.21	21,926.38	21,721.85	204.53	107.204	
17,600.00	6,991.48	7,037.05	7,035.48	174.16	174.78	90.31	-575.51	-11,236.21	22,026.25	21,821.63	204.62	107.645	
17,700.00	6,991.51	7,037.08	7,035.51	175.75	174.78	90.31	-575.51	-11,236.21	22,126.13	21,921.42	204.71	108.085	
17,800.00	6,991.53	7,037.10	7,035.53	177.33	174.78	90.31	-575.51	-11,236.21	22,226.00	22,021.20	204.80	108.524	
17,900.00	6,991.56	7,037.13	7,035.56	178.92	174.78	90.31	-575.51	-11,236.21	22,325.88	22,120.98	204.90	108.962	
18,000.00	6,991.59	7,037.16	7,035.59	180.51	174.78	90.31	-575.51	-11,236.21	22,425.75	22,220.77	204.99	109.400	
18,100.00	6,991.61	7,037.18	7,035.61	182.10	174.78	90.31	-575.51	-11,236.21	22,525.63	22,320.55	205.08	109.837	
18,200.00	6,991.64	7,037.21	7,035.64	183.68	174.78	90.31	-575.51	-11,236.21	22,625.51	22,420.34	205.18	110.274	
18,300.00	6,991.67	7,037.24	7,035.67	185.27	174.78	90.32	-575.51	-11,236.21	22,725.39	22,520.12	205.27	110.710	
18,400.00	6,991.69	7,037.27	7,035.69	186.86	174.79	90.32	-575.51	-11,236.21	22,825.27	22,619.91	205.37	111.145	
18,500.00	6,991.72	7,037.29	7,035.72	188.45	174.79	90.32	-575.51	-11,236.21	22,925.15	22,719.69	205.46	111.579	
18,600.00	6,991.75	7,037.32	7,035.75	190.04	174.79	90.32	-575.51	-11,236.21	23,025.04	22,819.48	205.56	112.013	
18,700.00	6,991.78	7,037.35	7,035.78	191.63	174.79	90.32	-575.51	-11,236.21	23,124.92	22,919.27	205.65	112.446	
18,800.00	6,991.80	7,037.37	7,035.80	193.22	174.79	90.32	-575.51	-11,236.21	23,224.81	23,019.06	205.75	112.879	
18,900.00	6,991.83	7,037.40	7,035.83	194.81	174.79	90.32	-575.51	-11,236.21	23,324.69	23,118.84	205.85	113.311	
19,000.00	6,991.86	7,037.43	7,035.86	196.40	174.79	90.33	-575.51	-11,236.21	23,424.58	23,218.63	205.95	113.742	
19,100.00	6,991.88	7,037.45	7,035.88	197.99	174.79	90.33	-575.51	-11,236.21	23,524.47	23,318.42	206.04	114.172	
19,200.00	6,991.91	7,037.48	7,035.91	199.58	174.79	90.33	-575.51	-11,236.21	23,624.36	23,418.21	206.14	114.602	
19,300.00	6,991.94	7,037.51	7,035.94	201.17	174.79	90.33	-575.51	-11,236.21	23,724.25	23,518.00	206.24	115.031	
19,342.28	6,991.95	7,037.52	7,035.95	201.84	174.79	90.33	-575.51	-11,236.21	23,766.48	23,560.19	206.28	115.212	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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		
19,400.00	6,991.97	7,037.54	7,035.97	202.76	174.79	90.33	-575.51	-11,236.21	23,824.14	23,617.79	206.34	115.459		
19,500.00	6,991.99	7,037.56	7,035.99	204.35	174.79	90.33	-575.51	-11,236.21	23,924.03	23,717.59	206.44	115.887		
19,542.28	6,992.00	7,037.57	7,036.00	205.03	174.79	90.33	-575.51	-11,236.21	23,966.26	23,759.77	206.49	116.068		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #149C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 327-MWD OWSG Rev5												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	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	2,707.00	2,536.45	0.00	15.45	-93.32	-506.82	-8,739.22	9,135.41				
100.00	100.00	2,738.00	2,565.17	0.25	15.64	-93.27	-498.35	-8,731.21	9,107.14	9,091.43	15.71	579.703	
200.00	200.00	2,738.00	2,565.17	0.61	15.64	-93.27	-498.35	-8,731.21	9,079.74	9,063.86	15.88	571.743	
300.00	300.00	2,738.00	2,565.17	0.97	15.64	-93.27	-498.35	-8,731.21	9,053.37	9,037.23	16.14	560.983	
400.00	400.00	2,770.90	2,595.90	1.33	15.83	-93.21	-489.62	-8,723.35	9,027.62	9,010.99	16.63	542.723	
500.00	500.00	2,800.00	2,623.28	1.68	16.00	-93.17	-482.17	-8,716.91	9,002.99	8,985.86	17.13	525.709	
600.00	600.00	2,800.00	2,623.28	2.04	16.00	-93.17	-482.17	-8,716.91	8,979.08	8,961.63	17.45	514.462	
700.00	700.00	2,829.22	2,650.96	2.40	16.16	-93.12	-475.08	-8,710.75	8,956.09	8,938.12	17.96	498.645	
800.00	799.98	2,974.11	2,789.30	2.76	16.88	-63.39	-445.20	-8,679.82	8,932.49	8,913.43	19.05	468.889	
900.00	899.92	2,988.00	2,802.59	3.12	16.95	-63.37	-442.47	-8,676.84	8,908.26	8,888.80	19.46	457.803	
1,000.00	999.86	3,019.00	2,832.38	3.47	17.09	-63.34	-436.67	-8,670.53	8,884.94	8,864.99	19.95	445.415	
1,100.00	1,099.80	3,019.00	2,832.38	3.83	17.09	-63.34	-436.67	-8,670.53	8,862.46	8,842.17	20.29	436.818	
1,200.00	1,199.74	3,082.00	2,893.27	4.19	17.36	-63.29	-425.92	-8,658.45	8,840.66	8,819.74	20.92	422.554	
1,300.00	1,299.68	3,145.00	2,954.24	4.55	17.63	-63.23	-415.34	-8,646.67	8,819.32	8,797.77	21.56	409.112	
1,400.00	1,399.61	3,175.00	2,983.33	4.91	17.75	-63.21	-410.39	-8,641.27	8,798.59	8,776.56	22.04	399.292	
1,500.00	1,499.55	3,206.00	3,013.49	5.27	17.86	-63.19	-405.61	-8,635.90	8,778.62	8,756.11	22.52	389.880	
1,600.00	1,599.49	3,237.00	3,043.73	5.63	17.98	-63.16	-401.17	-8,630.72	8,759.39	8,736.39	22.99	380.944	
1,700.00	1,699.43	3,269.00	3,075.01	5.99	18.09	-63.14	-396.82	-8,625.59	8,740.90	8,717.42	23.47	372.385	
1,800.00	1,799.37	3,301.00	3,106.36	6.35	18.19	-63.12	-392.65	-8,620.69	8,723.16	8,699.21	23.95	364.246	
1,900.00	1,899.31	3,333.00	3,137.76	6.71	18.30	-63.11	-388.55	-8,616.08	8,706.23	8,681.80	24.42	356.501	
2,000.00	1,999.25	3,352.98	3,157.39	7.07	18.36	-63.09	-385.99	-8,613.37	8,690.09	8,665.24	24.84	349.796	
2,100.00	2,099.19	3,394.00	3,197.72	7.42	18.48	-63.07	-380.78	-8,607.96	8,674.63	8,649.28	25.35	342.240	
2,200.00	2,199.13	3,426.00	3,229.25	7.78	18.57	-63.05	-377.05	-8,603.98	8,659.93	8,634.11	25.81	335.515	
2,300.00	2,299.07	3,458.00	3,260.86	8.14	18.65	-63.04	-373.76	-8,600.27	8,646.05	8,619.78	26.27	329.113	
2,400.00	2,399.01	3,458.00	3,260.86	8.50	18.65	-63.04	-373.76	-8,600.27	8,633.04	8,606.43	26.61	324.434	
2,500.00	2,498.94	3,488.00	3,290.58	8.86	18.72	-63.03	-371.09	-8,597.17	8,620.89	8,593.83	27.05	318.647	
2,600.00	2,598.88	3,519.00	3,321.36	9.22	18.78	-63.02	-368.65	-8,594.40	8,609.74	8,582.25	27.50	313.128	
2,700.00	2,698.82	3,519.00	3,321.36	9.58	18.78	-63.02	-368.65	-8,594.40	8,599.46	8,571.63	27.83	309.006	
2,800.00	2,798.76	3,550.00	3,352.18	9.94	18.84	-63.01	-366.30	-8,592.04	8,590.07	8,561.81	28.26	303.957	
2,900.00	2,898.70	3,582.00	3,384.03	10.30	18.90	-63.00	-363.97	-8,590.05	8,581.66	8,552.97	28.69	299.150	
3,000.00	2,998.64	3,582.00	3,384.03	10.66	18.90	-63.00	-363.97	-8,590.05	8,574.11	8,545.10	29.01	295.515	
3,100.00	3,098.58	3,613.00	3,414.93	11.02	18.94	-63.00	-361.95	-8,588.49	8,567.43	8,538.01	29.43	291.149	
3,200.00	3,198.52	3,644.00	3,445.86	11.38	18.98	-62.99	-360.45	-8,587.29	8,561.69	8,531.86	29.83	287.011	
3,300.00	3,298.46	3,657.63	3,459.48	11.75	18.99	-62.99	-360.02	-8,586.90	8,556.86	8,526.67	30.19	283.472	
3,400.00	3,398.40	3,676.00	3,477.84	12.11	19.01	-62.99	-359.73	-8,586.48	8,552.97	8,522.42	30.55	279.956	
3,500.00	3,498.34	3,707.00	3,508.84	12.47	19.01	-63.00	-359.70	-8,586.05	8,549.98	8,519.05	30.93	276.406	
3,600.00	3,598.27	3,738.00	3,539.84	12.83	19.00	-63.01	-359.94	-8,585.81	8,547.74	8,516.45	31.29	273.145	
3,700.00	3,698.21	3,789.00	3,590.84	13.19	18.99	-63.02	-360.24	-8,585.80	8,546.20	8,514.59	31.62	270.299	
3,800.00	3,798.15	3,840.00	3,641.84	13.55	19.00	-63.03	-360.29	-8,586.05	8,545.20	8,513.30	31.90	267.915	
3,900.00	3,898.09	3,974.17	3,776.00	13.91	36.05	-63.06	-360.43	-8,586.74	8,544.06	8,494.56	49.50	172.624	
4,000.00	3,998.03	4,071.75	3,873.59	14.27	48.51	-63.08	-360.53	-8,587.28	8,543.03	8,480.67	62.36	136.985	
4,100.00	4,097.97	4,169.34	3,971.17	14.63	60.99	-63.10	-360.64	-8,587.84	8,542.03	8,466.80	75.23	113.544	
4,200.00	4,197.91	4,266.92	4,068.75	14.99	73.48	-63.12	-360.75	-8,588.43	8,541.06	8,452.97	88.09	96.953	
4,300.00	4,297.85	4,364.51	4,166.33	15.35	85.97	-63.15	-360.87	-8,589.05	8,540.12	8,439.16	100.96	84.591	
4,400.00	4,397.79	4,462.09	4,263.92	15.71	98.47	-63.17	-360.99	-8,589.69	8,539.21	8,425.39	113.82	75.023	
4,500.00	4,497.73	4,559.68	4,361.50	16.07	110.96	-63.19	-361.12	-8,590.36	8,538.32	8,411.64	126.68	67.399	
4,600.00	4,597.66	4,657.26	4,459.08	16.43	123.46	-63.21	-361.25	-8,591.05	8,537.47	8,397.92	139.55	61.180	
4,700.00	4,697.60	4,754.85	4,556.67	16.79	135.96	-63.23	-361.39	-8,591.77	8,536.64	8,384.23	152.41	56.011	
4,800.00	4,797.54	4,852.44	4,654.25	17.15	148.46	-63.25	-361.53	-8,592.52	8,535.85	8,370.57	165.27	51.647	
4,900.00	4,897.48	4,950.02	4,751.83	17.51	160.96	-63.27	-361.68	-8,593.30	8,535.08	8,356.94	178.14	47.913	
5,000.00	4,997.42	5,047.61	4,849.42	17.87	173.45	-63.29	-361.84	-8,594.10	8,534.34	8,343.34	191.00	44.682	
5,100.00	5,097.36	5,145.20	4,947.00	18.23	185.95	-63.31	-362.00	-8,594.93	8,533.63	8,329.76	203.86	41.859	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)	
5,200.00	5,197.30	5,242.78	5,044.58	18.59	198.45	-63.33	-362.16	-8,595.79	8,532.95	8,316.22	216.73	39.372		
5,300.00	5,297.24	5,340.37	5,142.17	18.95	210.95	-63.36	-362.33	-8,596.67	8,532.29	8,302.70	229.59	37.163		
5,402.82	5,400.00	5,440.71	5,242.51	19.32	223.81	-63.38	-362.51	-8,597.60	8,531.65	8,288.83	242.82	35.136		
5,500.00	5,497.13	5,535.56	5,337.35	19.67	235.96	-63.39	-362.68	-8,598.51	8,531.26	8,275.94	255.32	33.414		
5,548.00	5,545.12	5,582.41	5,384.20	19.84	241.96	-63.40	-362.77	-8,598.97	8,531.21	8,269.71	261.50	32.624 CC		
5,600.00	5,597.11	5,633.18	5,434.96	20.03	248.46	-63.41	-362.87	-8,599.48	8,531.27	8,263.08	268.19	31.811		
5,700.00	5,697.10	5,730.81	5,532.58	20.39	260.97	-63.42	-363.06	-8,600.47	8,531.69	8,250.64	281.06	30.356		
5,802.82	5,799.92	5,831.20	5,632.97	20.75	273.83	-93.43	-363.26	-8,601.51	8,532.57	8,238.28	294.29	28.994		
5,900.00	5,897.09	5,926.08	5,727.84	21.10	285.98	-93.43	-363.45	-8,602.53	8,533.62	8,226.83	306.79	27.816		
6,000.00	5,997.09	6,023.71	5,825.47	21.45	298.49	-93.43	-363.66	-8,603.60	8,534.72	8,215.07	319.66	26.700		
6,100.00	6,097.09	6,121.34	5,923.10	21.81	310.99	-93.43	-363.87	-8,604.69	8,535.86	8,203.34	332.52	25.670		
6,200.00	6,197.09	6,218.97	6,020.72	22.16	323.50	-93.43	-364.09	-8,605.82	8,537.02	8,191.63	345.39	24.717		
6,300.00	6,297.09	6,316.61	6,118.35	22.52	336.00	-93.43	-364.31	-8,606.97	8,538.21	8,179.95	358.25	23.833		
6,354.91	6,352.00	6,370.21	6,171.95	22.72	342.87	-93.43	-364.43	-8,607.61	8,538.87	8,173.56	365.32	23.374		
6,400.00	6,397.06	6,414.18	6,215.91	22.87	348.50	-172.41	-364.53	-8,608.14	8,541.01	8,169.90	371.11	23.015		
6,450.00	6,446.74	6,462.62	6,264.35	23.04	354.71	-172.34	-364.65	-8,608.74	8,547.07	8,169.58	377.48	22.642 ES		
6,500.00	6,495.84	6,510.44	6,312.17	23.20	360.83	-172.23	-364.76	-8,609.33	8,556.97	8,173.20	383.78	22.297		
6,550.00	6,544.06	6,557.34	6,359.07	23.36	366.84	-172.06	-364.87	-8,609.92	8,570.67	8,180.72	389.95	21.979		
6,600.00	6,591.08	6,603.04	6,404.76	23.51	372.70	-171.85	-364.98	-8,610.49	8,588.06	8,192.10	395.96	21.689		
6,650.00	6,636.64	6,647.25	6,448.96	23.66	378.36	-171.57	-365.09	-8,611.06	8,609.04	8,207.27	401.77	21.428		
6,700.00	6,680.44	6,689.69	6,491.40	23.82	383.80	-171.21	-365.20	-8,611.61	8,633.50	8,226.15	407.35	21.194		
6,750.00	6,722.22	6,730.11	6,531.82	23.99	388.97	-170.77	-365.30	-8,612.13	8,661.26	8,248.60	412.66	20.989		
6,800.00	6,761.71	6,768.25	6,569.95	24.16	393.86	-170.22	-365.39	-8,612.63	8,692.17	8,274.50	417.67	20.811		
6,850.00	6,798.68	6,803.88	6,605.58	24.33	398.42	-169.53	-365.48	-8,613.11	8,726.02	8,303.68	422.34	20.661		
6,900.00	6,832.89	6,836.78	6,638.48	24.50	402.64	-168.65	-365.57	-8,613.55	8,762.62	8,335.96	426.66	20.538		
6,950.00	6,864.14	6,866.75	6,668.44	24.69	406.48	-167.54	-365.65	-8,613.95	8,801.74	8,371.15	430.59	20.441		
7,000.00	6,892.23	6,893.60	6,695.29	24.88	409.92	-166.08	-365.72	-8,614.31	8,843.13	8,409.02	434.11	20.371		
7,050.00	6,916.99	6,917.16	6,718.85	25.08	412.94	-164.12	-365.78	-8,614.63	8,886.53	8,449.34	437.19	20.326		
7,100.00	6,938.27	6,937.30	6,738.99	25.29	415.52	-161.39	-365.83	-8,614.90	8,931.69	8,491.86	439.83	20.307 SF		
7,150.00	6,955.93	6,953.89	6,755.57	25.51	417.64	-157.38	-365.87	-8,615.13	8,978.33	8,536.33	442.00	20.313		
7,200.00	6,969.87	6,966.82	6,768.51	25.75	419.30	-151.08	-365.91	-8,615.31	9,026.14	8,582.45	443.70	20.343		
7,250.00	6,980.00	6,976.03	6,777.72	25.99	420.48	-140.26	-365.93	-8,615.44	9,074.85	8,629.95	444.90	20.397		
7,300.00	6,986.25	6,981.45	6,783.14	26.25	421.17	-120.15	-365.95	-8,615.51	9,124.15	8,678.53	445.62	20.475		
7,354.68	6,988.62	6,983.01	6,784.70	26.53	421.37	-83.67	-365.95	-8,615.53	9,178.38	8,732.54	445.84	20.587		
7,400.00	6,988.64	6,982.41	6,784.09	26.78	421.29	-83.64	-365.95	-8,615.52	9,223.35	8,777.58	445.77	20.691		
7,500.00	6,988.67	6,981.07	6,782.76	27.40	421.12	-83.57	-365.94	-8,615.50	9,322.60	8,876.97	445.63	20.920		
7,600.00	6,988.71	6,979.74	6,781.42	28.08	420.95	-83.51	-365.94	-8,615.49	9,421.87	8,976.38	445.49	21.150		
7,700.00	6,988.74	6,978.41	6,780.09	28.84	420.78	-83.44	-365.94	-8,615.47	9,521.15	9,075.81	445.35	21.379		
7,800.00	6,988.78	6,977.08	6,778.76	29.67	420.61	-83.37	-365.93	-8,615.45	9,620.45	9,175.24	445.21	21.609		
7,900.00	6,988.81	6,975.75	6,777.43	30.55	420.44	-83.30	-365.93	-8,615.43	9,719.76	9,274.69	445.07	21.839		
8,000.00	6,988.85	6,974.42	6,776.10	31.49	420.27	-83.24	-365.93	-8,615.41	9,819.09	9,374.15	444.94	22.069		
8,100.00	6,988.88	6,973.09	6,774.77	32.48	420.10	-83.17	-365.92	-8,615.39	9,918.43	9,473.63	444.80	22.298		
8,200.00	6,988.91	6,971.76	6,773.44	33.51	419.93	-83.10	-365.92	-8,615.38	10,017.78	9,573.11	444.67	22.529		
8,211.68	6,988.92	6,971.60	6,773.29	33.63	419.91	-83.10	-365.92	-8,615.37	10,029.39	9,584.73	444.66	22.555		
8,300.00	6,988.95	6,970.43	6,772.12	34.58	419.76	-80.43	-365.92	-8,615.36	10,117.28	9,672.74	444.54	22.759		
8,400.00	6,988.98	6,969.10	6,770.79	35.70	419.59	-73.25	-365.91	-8,615.34	10,217.07	9,772.67	444.40	22.991		
8,500.00	6,989.01	6,967.78	6,769.46	36.84	419.42	-36.32	-365.91	-8,615.32	10,317.02	9,872.77	444.25	23.223		
8,600.00	6,989.04	6,966.46	6,768.14	38.02	419.25	61.26	-365.91	-8,615.30	10,417.00	9,972.90	444.10	23.456		
8,700.00	6,989.07	6,965.14	6,766.83	39.22	419.08	77.06	-365.90	-8,615.29	10,516.90	10,072.96	443.94	23.690		
8,772.79	6,989.09	6,964.19	6,765.88	40.11	418.96	80.80	-365.90	-8,615.27	10,589.49	10,145.67	443.82	23.860		
8,800.00	6,989.10	6,963.83	6,765.52	40.44	418.91	80.77	-365.90	-8,615.27	10,616.60	10,172.83	443.78	23.923		
8,900.00	6,989.13	6,962.53	6,764.21	41.68	418.75	80.69	-365.90	-8,615.25	10,716.24	10,272.63	443.61	24.157		

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
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
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Warning
9,000.00	6,989.15	6,961.22	6,762.91	42.95	418.58	80.61	-365.89	-8,615.23	10,815.89	10,372.44	443.45	24.390
9,100.00	6,989.18	6,959.92	6,761.61	44.24	418.41	80.53	-365.89	-8,615.21	10,915.55	10,472.25	443.29	24.624
9,200.00	6,989.21	6,958.62	6,760.30	45.55	418.25	80.45	-365.89	-8,615.20	11,015.21	10,572.07	443.13	24.858
9,300.00	6,989.24	6,957.31	6,759.00	46.88	418.08	80.37	-365.88	-8,615.18	11,114.87	10,671.90	442.98	25.091
9,400.00	6,989.26	6,956.01	6,757.70	48.23	417.91	80.28	-365.88	-8,615.16	11,214.54	10,771.72	442.82	25.325
9,500.00	6,989.29	6,954.71	6,756.40	49.59	417.75	80.20	-365.87	-8,615.14	11,314.22	10,871.55	442.67	25.559
9,600.00	6,989.32	6,953.41	6,755.10	50.96	417.58	80.12	-365.87	-8,615.12	11,413.90	10,971.39	442.52	25.793
9,700.00	6,989.34	6,952.11	6,753.80	52.35	417.41	80.04	-365.87	-8,615.11	11,513.59	11,071.23	442.37	26.027
9,800.00	6,989.37	6,950.81	6,752.50	53.75	417.25	79.96	-365.86	-8,615.09	11,613.29	11,171.07	442.22	26.261
9,900.00	6,989.40	6,949.51	6,751.20	55.16	417.08	79.88	-365.86	-8,615.07	11,712.98	11,270.91	442.07	26.496
10,000.00	6,989.42	6,948.21	6,749.90	56.58	416.91	79.80	-365.86	-8,615.05	11,812.69	11,370.76	441.93	26.730
10,100.00	6,989.45	6,946.92	6,748.60	58.01	416.75	79.72	-365.85	-8,615.04	11,912.40	11,470.61	441.78	26.964
10,200.00	6,989.48	6,945.62	6,747.31	59.45	416.58	79.64	-365.85	-8,615.02	12,012.11	11,570.47	441.64	27.199
10,300.00	6,989.51	6,944.32	6,746.01	60.90	416.42	79.56	-365.85	-8,615.00	12,111.83	11,670.33	441.50	27.433
10,400.00	6,989.53	6,943.03	6,744.72	62.35	416.25	79.48	-365.84	-8,614.98	12,211.55	11,770.19	441.36	27.668
10,500.00	6,989.56	6,941.74	6,743.42	63.81	416.08	79.40	-365.84	-8,614.96	12,311.27	11,870.05	441.22	27.903
10,600.00	6,989.59	6,940.44	6,742.13	65.28	415.92	79.31	-365.84	-8,614.95	12,411.01	11,969.92	441.08	28.138
10,700.00	6,989.61	6,939.15	6,740.84	66.76	415.75	79.23	-365.83	-8,614.93	12,510.74	12,069.79	440.95	28.372
10,800.00	6,989.64	6,937.86	6,739.54	68.24	415.59	79.15	-365.83	-8,614.91	12,610.48	12,169.66	440.81	28.607
10,900.00	6,989.67	6,936.57	6,738.25	69.73	415.42	79.07	-365.83	-8,614.89	12,710.22	12,269.54	440.68	28.842
11,000.00	6,989.70	6,935.27	6,736.96	71.22	415.26	78.99	-365.82	-8,614.88	12,809.97	12,369.42	440.55	29.077
11,100.00	6,989.72	6,933.98	6,735.67	72.71	415.09	78.91	-365.82	-8,614.86	12,909.72	12,469.30	440.42	29.312
11,200.00	6,989.75	6,932.69	6,734.38	74.22	414.93	78.83	-365.82	-8,614.84	13,009.47	12,569.18	440.29	29.547
11,300.00	6,989.78	6,931.41	6,733.09	75.72	414.76	78.75	-365.81	-8,614.82	13,109.23	12,669.07	440.16	29.783
11,400.00	6,989.80	6,930.12	6,731.81	77.23	414.60	78.67	-365.81	-8,614.81	13,208.99	12,768.95	440.04	30.018
11,500.00	6,989.83	6,928.83	6,730.52	78.74	414.43	78.60	-365.81	-8,614.79	13,308.76	12,868.84	439.91	30.253
11,600.00	6,989.86	6,927.54	6,729.23	80.26	414.27	78.52	-365.80	-8,614.77	13,408.53	12,968.74	439.79	30.489
11,700.00	6,989.88	6,926.26	6,727.95	81.78	414.10	78.44	-365.80	-8,614.75	13,508.30	13,068.63	439.67	30.724
11,800.00	6,989.91	6,924.97	6,726.66	83.30	413.94	78.36	-365.80	-8,614.74	13,608.07	13,168.53	439.55	30.959
11,900.00	6,989.94	6,923.69	6,725.38	84.83	413.77	78.28	-365.79	-8,614.72	13,707.85	13,268.43	439.43	31.195
12,000.00	6,989.97	6,922.40	6,724.09	86.36	413.61	78.20	-365.79	-8,614.70	13,807.63	13,368.33	439.31	31.431
12,100.00	6,989.99	6,921.12	6,722.81	87.89	413.44	78.12	-365.79	-8,614.68	13,907.42	13,468.23	439.19	31.666
12,200.00	6,990.02	6,919.84	6,721.53	89.42	413.28	78.04	-365.78	-8,614.67	14,007.20	13,568.13	439.07	31.902
12,300.00	6,990.05	6,918.56	6,720.25	90.96	413.11	77.96	-365.78	-8,614.65	14,106.99	13,668.04	438.96	32.138
12,400.00	6,990.07	6,917.28	6,718.97	92.50	412.95	77.88	-365.78	-8,614.63	14,206.78	13,767.94	438.84	32.373
12,500.00	6,990.10	6,916.00	6,717.69	94.04	412.79	77.80	-365.77	-8,614.61	14,306.58	13,867.85	438.73	32.609
12,600.00	6,990.13	6,914.72	6,716.41	95.58	412.62	77.73	-365.77	-8,614.60	14,406.38	13,967.76	438.61	32.845
12,700.00	6,990.15	6,913.44	6,715.13	97.13	412.46	77.65	-365.77	-8,614.58	14,506.18	14,067.68	438.50	33.081
12,800.00	6,990.18	6,912.16	6,713.85	98.68	412.29	77.57	-365.76	-8,614.56	14,605.98	14,167.59	438.39	33.317
12,900.00	6,990.21	6,910.88	6,712.57	100.22	412.13	77.49	-365.76	-8,614.54	14,705.79	14,267.50	438.28	33.553
13,000.00	6,990.24	6,909.60	6,711.29	101.78	411.97	77.41	-365.76	-8,614.53	14,805.60	14,367.42	438.18	33.789
13,100.00	6,990.26	6,908.33	6,710.02	103.33	411.80	77.33	-365.75	-8,614.51	14,905.41	14,467.34	438.07	34.025
13,200.00	6,990.29	6,907.05	6,708.74	104.88	411.64	77.26	-365.75	-8,614.49	15,005.22	14,567.26	437.96	34.261
13,300.00	6,990.32	6,905.78	6,707.47	106.44	411.48	77.18	-365.75	-8,614.47	15,105.04	14,667.18	437.86	34.498
13,400.00	6,990.34	6,904.50	6,706.19	107.99	411.31	77.10	-365.74	-8,614.46	15,204.86	14,767.10	437.75	34.734
13,500.00	6,990.37	6,903.23	6,704.92	109.55	411.15	77.02	-365.74	-8,614.44	15,304.68	14,867.03	437.65	34.970
13,600.00	6,990.40	6,901.96	6,703.65	111.11	410.99	76.94	-365.74	-8,614.42	15,404.50	14,966.95	437.55	35.206
13,700.00	6,990.42	6,900.68	6,702.38	112.67	410.82	76.87	-365.73	-8,614.41	15,504.32	15,066.88	437.45	35.443
13,800.00	6,990.45	6,899.41	6,701.10	114.23	410.66	76.79	-365.73	-8,614.39	15,604.15	15,166.80	437.35	35.679
13,900.00	6,990.48	6,898.14	6,699.83	115.80	410.50	76.71	-365.73	-8,614.37	15,703.98	15,266.73	437.25	35.916
14,000.00	6,990.51	6,896.87	6,698.56	117.36	410.34	76.63	-365.72	-8,614.35	15,803.81	15,366.66	437.15	36.152
14,100.00	6,990.53	6,895.60	6,697.29	118.93	410.17	76.56	-365.72	-8,614.34	15,903.64	15,466.59	437.05	36.389

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
14,200.00	6,990.56	6,894.33	6,696.03	120.49	410.01	76.48	-365.72	-8,614.32	16,003.48	15,566.52	436.95	36.625		
14,300.00	6,990.59	6,893.07	6,694.76	122.06	409.85	76.40	-365.71	-8,614.30	16,103.31	15,666.46	436.86	36.862		
14,400.00	6,990.61	6,891.80	6,693.49	123.63	409.69	76.33	-365.71	-8,614.29	16,203.15	15,766.39	436.76	37.098		
14,500.00	6,990.64	6,890.53	6,692.22	125.20	409.52	76.25	-365.71	-8,614.27	16,302.99	15,866.33	436.67	37.335		
14,600.00	6,990.67	6,889.26	6,690.96	126.77	409.36	76.17	-365.70	-8,614.25	16,402.84	15,966.26	436.58	37.572		
14,700.00	6,990.70	6,888.00	6,689.69	128.34	409.20	76.09	-365.70	-8,614.23	16,502.68	16,066.20	436.48	37.808		
14,800.00	6,990.72	6,886.73	6,688.43	129.91	409.04	76.02	-365.70	-8,614.22	16,602.53	16,166.14	436.39	38.045		
14,900.00	6,990.75	6,885.47	6,687.16	131.48	408.88	75.94	-365.69	-8,614.20	16,702.38	16,266.07	436.30	38.282		
15,000.00	6,990.78	6,884.21	6,685.90	133.06	408.71	75.86	-365.69	-8,614.18	16,802.22	16,366.01	436.21	38.519		
15,100.00	6,990.80	6,882.94	6,684.64	134.63	408.55	75.79	-365.69	-8,614.17	16,902.08	16,465.95	436.12	38.755		
15,200.00	6,990.83	6,881.68	6,683.38	136.20	408.39	75.71	-365.68	-8,614.15	17,001.93	16,565.89	436.03	38.992		
15,300.00	6,990.86	6,880.42	6,682.12	137.78	408.23	75.64	-365.68	-8,614.13	17,101.78	16,665.84	435.95	39.229		
15,400.00	6,990.88	6,879.16	6,680.85	139.36	408.07	75.56	-365.68	-8,614.11	17,201.64	16,765.78	435.86	39.466		
15,500.00	6,990.91	6,877.90	6,679.59	140.93	407.91	75.48	-365.67	-8,614.10	17,301.50	16,865.72	435.77	39.703		
15,600.00	6,990.94	6,876.64	6,678.34	142.51	407.75	75.41	-365.67	-8,614.08	17,401.36	16,965.67	435.69	39.940		
15,700.00	6,990.97	6,875.38	6,677.08	144.09	407.58	75.33	-365.67	-8,614.06	17,501.22	17,065.61	435.61	40.177		
15,800.00	6,990.99	6,874.13	6,675.82	145.67	407.42	75.26	-365.66	-8,614.05	17,601.08	17,165.56	435.52	40.414		
15,900.00	6,991.02	6,872.87	6,674.56	147.24	407.26	75.18	-365.66	-8,614.03	17,700.94	17,265.50	435.44	40.651		
16,000.00	6,991.05	6,871.61	6,673.31	148.82	407.10	75.11	-365.66	-8,614.01	17,800.81	17,365.45	435.36	40.888		
16,100.00	6,991.07	6,870.36	6,672.05	150.40	406.94	75.03	-365.65	-8,614.00	17,900.68	17,465.40	435.28	41.125		
16,200.00	6,991.10	6,869.10	6,670.79	151.99	406.78	74.95	-365.65	-8,613.98	18,000.54	17,565.35	435.20	41.362		
16,300.00	6,991.13	6,867.85	6,669.54	153.57	406.62	74.88	-365.65	-8,613.96	18,100.41	17,665.30	435.12	41.599		
16,400.00	6,991.15	6,866.59	6,668.29	155.15	406.46	74.80	-365.65	-8,613.95	18,200.28	17,765.25	435.04	41.836		
16,500.00	6,991.18	6,865.34	6,667.03	156.73	406.30	74.73	-365.64	-8,613.93	18,300.15	17,865.20	434.96	42.073		
16,600.00	6,991.21	6,864.09	6,665.78	158.31	406.14	74.65	-365.64	-8,613.91	18,400.03	17,965.15	434.88	42.310		
16,700.00	6,991.24	6,862.83	6,664.53	159.90	405.98	74.58	-365.64	-8,613.89	18,499.90	18,065.10	434.81	42.548		
16,800.00	6,991.26	6,861.58	6,663.28	161.48	405.82	74.50	-365.63	-8,613.88	18,599.78	18,165.05	434.73	42.785		
16,900.00	6,991.29	6,860.33	6,662.03	163.06	405.66	74.43	-365.63	-8,613.86	18,699.66	18,265.00	434.65	43.022		
17,000.00	6,991.32	6,859.08	6,660.78	164.65	405.50	74.35	-365.63	-8,613.84	18,799.53	18,364.95	434.58	43.259		
17,100.00	6,991.34	6,857.83	6,659.53	166.23	405.34	74.28	-365.62	-8,613.83	18,899.41	18,464.91	434.51	43.496		
17,200.00	6,991.37	6,856.58	6,658.28	167.82	405.18	74.21	-365.62	-8,613.81	18,999.29	18,564.86	434.43	43.734		
17,300.00	6,991.40	6,855.34	6,657.03	169.40	405.02	74.13	-365.62	-8,613.79	19,099.18	18,664.82	434.36	43.971		
17,400.00	6,991.42	6,854.09	6,655.79	170.99	404.86	74.06	-365.61	-8,613.78	19,199.06	18,764.77	434.29	44.208		
17,500.00	6,991.45	6,852.84	6,654.54	172.57	404.70	73.98	-365.61	-8,613.76	19,298.94	18,864.73	434.22	44.445		
17,600.00	6,991.48	6,851.60	6,653.29	174.16	404.54	73.91	-365.61	-8,613.74	19,398.83	18,964.68	434.15	44.683		
17,700.00	6,991.51	6,850.35	6,652.05	175.75	404.38	73.83	-365.60	-8,613.73	19,498.71	19,064.64	434.08	44.920		
17,800.00	6,991.53	6,849.11	6,650.80	177.33	404.22	73.76	-365.60	-8,613.71	19,598.60	19,164.60	434.01	45.157		
17,900.00	6,991.56	6,847.86	6,649.56	178.92	404.06	73.69	-365.60	-8,613.69	19,698.49	19,264.55	433.94	45.395		
18,000.00	6,991.59	6,846.62	6,648.32	180.51	403.90	73.61	-365.59	-8,613.68	19,798.38	19,364.51	433.87	45.632		
18,100.00	6,991.61	6,845.38	6,647.07	182.10	403.74	73.54	-365.59	-8,613.66	19,898.27	19,464.47	433.80	45.869		
18,200.00	6,991.64	6,844.13	6,645.83	183.68	403.58	73.47	-365.59	-8,613.64	19,998.16	19,564.43	433.73	46.107		
18,300.00	6,991.67	6,842.89	6,644.59	185.27	403.42	73.39	-365.58	-8,613.63	20,098.05	19,664.39	433.67	46.344		
18,400.00	6,991.69	6,841.65	6,643.35	186.86	403.26	73.32	-365.58	-8,613.61	20,197.95	19,764.34	433.60	46.582		
18,500.00	6,991.72	6,840.41	6,642.11	188.45	403.10	73.25	-365.58	-8,613.59	20,297.84	19,864.30	433.54	46.819		
18,600.00	6,991.75	6,839.17	6,640.87	190.04	402.95	73.17	-365.57	-8,613.58	20,397.74	19,964.26	433.47	47.056		
18,700.00	6,991.78	6,837.93	6,639.63	191.63	402.79	73.10	-365.57	-8,613.56	20,497.63	20,064.22	433.41	47.294		
18,800.00	6,991.80	6,836.70	6,638.39	193.22	402.63	73.03	-365.57	-8,613.54	20,597.53	20,164.18	433.35	47.531		
18,900.00	6,991.83	6,835.46	6,637.16	194.81	402.47	72.95	-365.57	-8,613.53	20,697.43	20,264.15	433.28	47.769		
19,000.00	6,991.86	6,834.22	6,635.92	196.40	402.31	72.88	-365.56	-8,613.51	20,797.33	20,364.11	433.22	48.006		
19,100.00	6,991.88	6,832.99	6,634.68	197.99	402.15	72.81	-365.56	-8,613.49	20,897.23	20,464.07	433.16	48.244		
19,200.00	6,991.91	6,831.75	6,633.45	199.58	401.99	72.74	-365.56	-8,613.48	20,997.13	20,564.03	433.10	48.481		
19,300.00	6,991.94	6,830.52	6,632.21	201.17	401.84	72.66	-365.55	-8,613.46	21,097.03	20,663.99	433.04	48.719		

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:		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	
19,342.28	6,991.95	6,829.99	6,631.69	201.84	401.77	72.63	-365.55	-8,613.45	21,139.27	20,706.25	433.01	48.819	
19,400.00	6,991.97	6,829.28	6,630.98	202.76	401.68	72.59	-365.55	-8,613.44	21,196.93	20,763.96	432.98	48.956	
19,500.00	6,991.99	6,828.05	6,629.75	204.35	401.52	72.52	-365.55	-8,613.43	21,296.84	20,863.92	432.92	49.194	
19,542.28	6,992.00	6,827.53	6,629.23	205.03	401.45	72.49	-365.54	-8,613.42	21,339.07	20,906.18	432.89	49.294	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		497-MWD OWSG Rev5					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-74.53	2,323.34	-8,396.19	8,711.93					
100.00	100.00	38.00	38.00	0.25	1.20	-74.53	2,323.34	-8,396.19	8,711.71	8,710.25	1.45	5,988.842		
200.00	200.00	138.00	138.00	0.61	4.37	-74.53	2,323.34	-8,396.19	8,711.71	8,706.73	4.98	1,749.233		
300.00	300.00	238.00	238.00	0.97	7.54	-74.53	2,323.34	-8,396.19	8,711.71	8,703.20	8.51	1,024.190		
400.00	400.00	338.00	338.00	1.33	10.71	-74.53	2,323.34	-8,396.19	8,711.71	8,699.68	12.03	724.069		
500.00	500.00	438.00	438.00	1.68	13.87	-74.53	2,323.34	-8,396.19	8,711.71	8,696.15	15.56	559.978		
510.00	510.00	448.00	448.00	1.72	14.19	-74.53	2,323.34	-8,396.19	8,711.71	8,695.80	15.91	547.569	CC	
600.00	600.00	497.00	497.00	2.04	15.74	-74.53	2,323.34	-8,396.19	8,711.80	8,694.02	17.78	489.863		
700.00	700.00	546.42	546.42	2.40	15.79	-74.53	2,323.87	-8,396.39	8,712.52	8,694.35	18.18	479.342		
800.00	799.98	578.17	578.15	2.76	15.80	-44.53	2,324.54	-8,396.73	8,712.77	8,694.23	18.54	469.921		
900.00	899.92	622.90	622.87	3.12	15.82	-44.53	2,325.52	-8,397.46	8,712.44	8,693.53	18.91	460.819		
904.45	904.37	625.01	624.98	3.13	15.82	-44.53	2,325.57	-8,397.50	8,712.44	8,693.52	18.92	460.427	ES	
1,000.00	999.86	639.03	638.99	3.47	15.82	-44.53	2,325.89	-8,397.79	8,712.84	8,693.58	19.26	452.363		
1,100.00	1,099.80	670.04	669.98	3.83	15.83	-44.53	2,326.63	-8,398.84	8,714.20	8,694.58	19.62	444.153		
1,200.00	1,199.74	700.74	700.64	4.19	15.84	-44.53	2,327.32	-8,400.17	8,716.38	8,696.40	19.98	436.271		
1,300.00	1,299.68	715.00	714.88	4.55	15.84	-44.54	2,327.65	-8,400.85	8,719.36	8,699.03	20.33	428.837		
1,400.00	1,399.61	737.54	737.36	4.91	15.85	-44.54	2,328.26	-8,402.29	8,723.41	8,702.72	20.69	421.636		
1,500.00	1,499.55	793.71	793.39	5.27	15.87	-44.55	2,329.05	-8,406.23	8,728.07	8,707.00	21.07	414.264		
1,600.00	1,599.49	793.71	793.39	5.63	15.87	-44.55	2,329.05	-8,406.23	8,733.54	8,712.13	21.41	407.932		
1,700.00	1,699.43	811.59	811.19	5.99	15.88	-44.55	2,329.24	-8,407.85	8,740.06	8,718.30	21.76	401.662		
1,800.00	1,799.37	856.21	855.58	6.35	15.90	-44.57	2,329.53	-8,412.38	8,747.44	8,725.31	22.12	395.383		
1,900.00	1,899.31	887.61	886.80	6.71	15.91	-44.58	2,329.79	-8,415.68	8,755.40	8,732.92	22.48	389.523		
2,000.00	1,999.25	902.70	901.80	7.07	15.91	-44.58	2,330.01	-8,417.38	8,764.25	8,741.43	22.82	384.064		
2,100.00	2,099.19	918.16	917.14	7.42	15.92	-44.58	2,330.31	-8,419.29	8,774.09	8,750.93	23.16	378.845		
2,200.00	2,199.13	957.36	956.00	7.78	15.94	-44.59	2,330.85	-8,424.42	8,784.69	8,761.17	23.52	373.513		
2,300.00	2,299.07	1,011.83	1,009.93	8.14	15.97	-44.61	2,331.63	-8,431.99	8,795.97	8,772.08	23.89	368.127		
2,400.00	2,399.01	1,026.64	1,024.59	8.50	15.99	-44.62	2,331.79	-8,434.10	8,807.88	8,783.65	24.23	363.469		
2,500.00	2,498.94	1,043.02	1,040.75	8.86	16.00	-44.62	2,331.93	-8,436.75	8,820.87	8,796.30	24.57	358.995		
2,600.00	2,598.88	1,043.02	1,040.75	9.22	16.00	-44.62	2,331.93	-8,436.75	8,834.80	8,809.92	24.89	355.014		
2,700.00	2,698.82	1,043.02	1,040.75	9.58	16.00	-44.62	2,331.93	-8,436.75	8,849.84	8,824.65	25.20	351.229		
2,800.00	2,798.76	1,074.75	1,071.93	9.94	16.03	-44.64	2,332.33	-8,442.63	8,865.75	8,840.19	25.56	346.919		
2,900.00	2,898.70	1,074.75	1,071.93	10.30	16.03	-44.64	2,332.33	-8,442.63	8,882.63	8,856.77	25.86	343.489		
3,000.00	2,998.64	1,105.75	1,102.26	10.66	16.06	-44.65	2,332.90	-8,448.99	8,900.46	8,874.26	26.21	339.636		
3,100.00	3,098.58	1,105.75	1,102.26	11.02	16.06	-44.65	2,332.90	-8,448.99	8,919.19	8,892.68	26.50	336.529		
3,200.00	3,198.52	1,136.35	1,132.08	11.38	16.09	-44.66	2,333.72	-8,455.80	8,938.86	8,912.02	26.84	332.990		
3,300.00	3,298.46	1,145.80	1,141.27	11.75	16.10	-44.66	2,334.04	-8,458.00	8,959.39	8,932.24	27.15	329.999		
3,400.00	3,398.40	1,168.18	1,163.01	12.11	16.12	-44.67	2,334.68	-8,463.25	8,980.69	8,953.21	27.47	326.898		
3,500.00	3,498.34	1,199.00	1,192.87	12.47	16.15	-44.68	2,335.56	-8,470.83	9,002.83	8,975.02	27.81	323.752		
3,600.00	3,598.27	1,212.68	1,206.08	12.83	16.16	-44.69	2,335.94	-8,474.37	9,025.85	8,997.74	28.11	321.056		
3,700.00	3,698.21	1,261.54	1,253.19	13.19	16.21	-44.71	2,336.76	-8,487.31	9,049.52	9,021.04	28.48	317.769		
3,800.00	3,798.15	1,261.54	1,253.19	13.55	16.21	-44.71	2,336.76	-8,487.31	9,073.98	9,045.23	28.75	315.581		
3,900.00	3,898.09	1,292.54	1,282.93	13.91	16.24	-44.73	2,337.11	-8,496.06	9,099.27	9,070.19	29.09	312.830		
4,000.00	3,998.03	1,292.54	1,282.93	14.27	16.24	-44.73	2,337.11	-8,496.06	9,125.46	9,096.11	29.35	310.867		
4,100.00	4,097.97	1,323.84	1,312.75	14.63	16.28	-44.75	2,337.33	-8,505.57	9,152.58	9,122.89	29.69	308.276		
4,200.00	4,197.91	1,338.14	1,326.33	14.99	16.30	-44.76	2,337.43	-8,510.04	9,180.44	9,150.46	29.98	306.201		
4,300.00	4,297.85	1,370.39	1,356.90	15.35	16.34	-44.78	2,337.49	-8,520.31	9,209.01	9,178.70	30.31	303.816		
4,400.00	4,397.79	1,385.50	1,371.20	15.71	16.36	-44.79	2,337.56	-8,525.18	9,238.30	9,207.70	30.60	301.903		
4,500.00	4,497.73	1,414.27	1,398.31	16.07	16.39	-44.81	2,337.84	-8,534.80	9,268.47	9,237.54	30.92	299.746		
4,600.00	4,597.66	1,414.27	1,398.31	16.43	16.39	-44.81	2,337.84	-8,534.80	9,299.39	9,268.22	31.17	298.349		
4,700.00	4,697.60	1,443.67	1,425.89	16.79	16.43	-44.83	2,338.11	-8,545.00	9,331.07	9,299.58	31.49	296.327		
4,800.00	4,797.54	1,443.67	1,425.89	17.15	16.43	-44.83	2,338.11	-8,545.00	9,363.62	9,331.89	31.73	295.096		
4,900.00	4,897.48	1,475.04	1,455.07	17.51	16.48	-44.85	2,338.48	-8,556.49	9,397.03	9,364.98	32.06	293.134		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)					
5,000.00	4,997.42	1,475.04	1,455.07	17.87	16.48	-44.85	2,338.48	-8,556.49	9,431.17	9,398.88	32.29	292.056			
5,100.00	5,097.36	1,475.04	1,455.07	18.23	16.48	-44.85	2,338.48	-8,556.49	9,466.24	9,433.71	32.52	291.057			
5,200.00	5,197.30	1,488.82	1,467.77	18.59	16.51	-44.86	2,338.76	-8,561.83	9,502.15	9,469.36	32.80	289.741			
5,300.00	5,297.24	1,505.65	1,483.22	18.95	16.54	-44.87	2,339.22	-8,568.50	9,538.87	9,505.79	33.07	288.407			
5,402.82	5,400.00	1,522.26	1,498.41	19.32	16.56	-44.89	2,339.62	-8,575.22	9,577.40	9,544.05	33.35	287.146			
5,500.00	5,497.13	1,550.26	1,523.89	19.67	16.61	-45.05	2,339.80	-8,586.80	9,614.72	9,581.07	33.65	285.691			
5,600.00	5,597.11	1,567.98	1,539.96	20.03	16.64	-45.22	2,339.64	-8,594.27	9,654.30	9,620.37	33.93	284.566			
5,700.00	5,697.10	1,598.26	1,567.29	20.39	16.69	-45.40	2,339.29	-8,607.30	9,695.12	9,660.88	34.24	283.170			
5,802.82	5,799.92	1,598.26	1,567.29	20.75	16.69	-75.57	2,339.29	-8,607.30	9,738.41	9,703.96	34.45	282.669			
5,900.00	5,897.09	1,629.61	1,595.41	21.10	16.74	-75.60	2,339.22	-8,621.16	9,780.27	9,745.52	34.76	281.389			
6,000.00	5,997.09	1,646.64	1,610.62	21.45	16.77	-75.61	2,339.24	-8,628.82	9,823.99	9,788.97	35.02	280.540			
6,100.00	6,097.09	1,660.93	1,623.35	21.81	16.80	-75.62	2,339.18	-8,635.31	9,868.32	9,833.05	35.27	279.811			
6,200.00	6,197.09	1,700.27	1,658.29	22.16	16.88	-75.65	2,339.01	-8,653.38	9,913.16	9,877.55	35.61	278.343			
6,300.00	6,297.09	1,722.18	1,677.68	22.52	16.92	-75.66	2,338.99	-8,663.59	9,958.61	9,922.72	35.90	277.436			
6,354.91	6,352.00	1,738.49	1,692.08	22.72	16.96	-75.68	2,338.99	-8,671.25	9,983.81	9,947.74	36.06	276.834			
6,400.00	6,397.06	1,752.80	1,704.68	22.87	16.99	-153.70	2,339.00	-8,678.04	10,005.90	9,969.69	36.21	276.364 SF			
6,450.00	6,446.74	1,752.80	1,704.68	23.04	16.99	-152.35	2,339.00	-8,678.04	10,033.38	9,997.08	36.30	276.414			
6,500.00	6,495.84	1,752.80	1,704.68	23.20	16.99	-150.70	2,339.00	-8,678.04	10,063.86	10,027.47	36.39	276.564			
6,550.00	6,544.06	1,752.80	1,704.68	23.36	16.99	-148.68	2,339.00	-8,678.04	10,097.12	10,060.64	36.48	276.818			
6,600.00	6,591.08	1,752.80	1,704.68	23.51	16.99	-146.19	2,339.00	-8,678.04	10,132.93	10,096.37	36.56	277.170			
6,650.00	6,636.64	1,768.64	1,718.57	23.66	17.03	-143.18	2,339.10	-8,685.65	10,170.92	10,134.22	36.70	277.125			
6,700.00	6,680.44	1,784.13	1,732.06	23.82	17.06	-139.46	2,339.42	-8,693.26	10,211.12	10,174.28	36.84	277.180			
6,750.00	6,722.22	1,784.13	1,732.06	23.99	17.06	-134.77	2,339.42	-8,693.26	10,252.99	10,216.08	36.91	277.785			
6,800.00	6,761.71	1,784.13	1,732.06	24.16	17.06	-128.92	2,339.42	-8,693.26	10,296.36	10,259.38	36.98	278.458			
6,850.00	6,798.68	1,784.13	1,732.06	24.33	17.06	-121.68	2,339.42	-8,693.26	10,340.95	10,303.91	37.04	279.186			
6,900.00	6,832.89	1,784.13	1,732.06	24.50	17.06	-112.87	2,339.42	-8,693.26	10,386.48	10,349.38	37.10	279.955			
6,950.00	6,864.14	1,784.13	1,732.06	24.69	17.06	-102.57	2,339.42	-8,693.26	10,432.66	10,395.50	37.16	280.751			
7,000.00	6,892.23	1,784.13	1,732.06	24.88	17.06	-91.23	2,339.42	-8,693.26	10,479.18	10,441.96	37.22	281.557			
7,050.00	6,916.99	1,784.13	1,732.06	25.08	17.06	-79.74	2,339.42	-8,693.26	10,525.77	10,488.49	37.28	282.358			
7,100.00	6,938.27	1,784.13	1,732.06	25.29	17.06	-69.02	2,339.42	-8,693.26	10,572.13	10,534.79	37.34	283.134			
7,150.00	6,955.93	1,784.13	1,732.06	25.51	17.06	-59.69	2,339.42	-8,693.26	10,617.99	10,580.59	37.40	283.868			
7,200.00	6,969.87	1,784.13	1,732.06	25.75	17.06	-51.94	2,339.42	-8,693.26	10,663.07	10,625.60	37.47	284.541			
7,250.00	6,980.00	1,784.13	1,732.06	25.99	17.06	-45.64	2,339.42	-8,693.26	10,707.10	10,669.55	37.55	285.134			
7,300.00	6,986.25	1,784.13	1,732.06	26.25	17.06	-40.58	2,339.42	-8,693.26	10,749.84	10,712.20	37.64	285.630			
7,354.68	6,988.62	1,784.13	1,732.06	26.53	17.06	-36.17	2,339.42	-8,693.26	10,794.79	10,757.05	37.74	286.039			
7,400.00	6,988.64	1,784.13	1,732.06	26.78	17.06	-36.17	2,339.42	-8,693.26	10,831.22	10,793.38	37.83	286.290			
7,500.00	6,988.67	1,752.80	1,704.68	27.40	16.99	-36.00	2,339.00	-8,678.04	10,911.76	10,873.83	37.93	287.647			
7,600.00	6,988.71	1,752.80	1,704.68	28.08	16.99	-36.00	2,339.00	-8,678.04	10,992.57	10,954.40	38.18	287.949			
7,700.00	6,988.74	1,752.80	1,704.68	28.84	16.99	-36.00	2,339.00	-8,678.04	11,073.70	11,035.27	38.43	288.165			
7,800.00	6,988.78	1,752.80	1,704.68	29.67	16.99	-36.00	2,339.00	-8,678.04	11,155.13	11,116.44	38.69	288.304			
7,900.00	6,988.81	1,752.80	1,704.68	30.55	16.99	-36.00	2,339.00	-8,678.04	11,236.86	11,197.90	38.97	288.375			
8,000.00	6,988.85	1,722.18	1,677.68	31.49	16.92	-35.84	2,338.99	-8,663.59	11,318.81	11,279.67	39.14	289.205			
8,100.00	6,988.88	1,722.18	1,677.68	32.48	16.92	-35.84	2,338.99	-8,663.59	11,401.00	11,361.57	39.43	289.144			
8,200.00	6,988.91	1,722.18	1,677.68	33.51	16.92	-35.84	2,338.99	-8,663.59	11,483.47	11,443.74	39.73	289.038			
8,211.68	6,988.92	1,722.18	1,677.68	33.63	16.92	-35.84	2,338.99	-8,663.59	11,493.12	11,453.36	39.77	289.024			
8,300.00	6,988.95	1,695.34	1,653.92	34.58	16.87	-33.52	2,339.02	-8,651.10	11,566.53	11,526.60	39.94	289.624			
8,400.00	6,988.98	1,660.93	1,623.35	35.70	16.80	-30.70	2,339.18	-8,635.31	11,650.97	11,610.86	40.11	290.456			
8,500.00	6,989.01	1,660.93	1,623.35	36.84	16.80	-27.83	2,339.18	-8,635.31	11,736.40	11,696.00	40.40	290.500			
8,600.00	6,989.04	1,660.93	1,623.35	38.02	16.80	-24.75	2,339.18	-8,635.31	11,822.88	11,782.20	40.68	290.656			
8,700.00	6,989.07	1,647.31	1,611.21	39.22	16.77	-21.39	2,339.23	-8,629.13	11,910.26	11,869.36	40.90	291.232			
8,772.79	6,989.09	1,629.61	1,595.41	40.11	16.74	-18.80	2,339.22	-8,621.16	11,974.35	11,933.33	41.02	291.890			
8,800.00	6,989.10	1,629.61	1,595.41	40.44	16.74	-18.80	2,339.22	-8,621.16	11,998.38	11,957.29	41.09	292.000			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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 <th colspan="2">Rule Assigned:</th> <th colspan="5"></th> <th>Offset Well Error:</th> <td>0.00 usft</td>					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			
8,900.00	6,989.13	1,629.61	1,595.41	41.68	16.74	-18.80	2,339.22	-8,621.16	12,086.78	12,045.44	41.33	292.411			
9,000.00	6,989.15	1,629.61	1,595.41	42.95	16.74	-18.80	2,339.22	-8,621.16	12,175.36	12,133.78	41.58	292.819			
9,100.00	6,989.18	1,611.83	1,579.48	44.24	16.71	-18.75	2,339.22	-8,613.26	12,264.04	12,222.26	41.77	293.583			
9,200.00	6,989.21	1,598.26	1,567.29	45.55	16.69	-18.71	2,339.29	-8,607.30	12,352.90	12,310.92	41.98	294.248			
9,300.00	6,989.24	1,598.26	1,567.29	46.88	16.69	-18.71	2,339.29	-8,607.30	12,441.89	12,399.66	42.23	294.637			
9,400.00	6,989.26	1,598.26	1,567.29	48.23	16.69	-18.71	2,339.29	-8,607.30	12,531.04	12,488.57	42.47	295.027			
9,500.00	6,989.29	1,598.26	1,567.29	49.59	16.69	-18.71	2,339.29	-8,607.30	12,620.36	12,577.64	42.72	295.418			
9,600.00	6,989.32	1,567.98	1,539.96	50.96	16.64	-18.62	2,339.64	-8,594.27	12,709.78	12,666.90	42.89	296.342			
9,700.00	6,989.34	1,567.98	1,539.96	52.35	16.64	-18.62	2,339.64	-8,594.27	12,799.31	12,756.18	43.14	296.724			
9,800.00	6,989.37	1,567.98	1,539.96	53.75	16.64	-18.62	2,339.64	-8,594.27	12,889.00	12,845.62	43.38	297.111			
9,900.00	6,989.40	1,567.98	1,539.96	55.16	16.64	-18.62	2,339.64	-8,594.27	12,978.83	12,935.20	43.63	297.501			
10,000.00	6,989.42	1,537.35	1,512.16	56.58	16.59	-18.54	2,339.79	-8,581.43	13,068.78	13,024.98	43.80	298.374			
10,100.00	6,989.45	1,537.35	1,512.16	58.01	16.59	-18.54	2,339.79	-8,581.43	13,158.81	13,114.76	44.04	298.760			
10,200.00	6,989.48	1,537.35	1,512.16	59.45	16.59	-18.54	2,339.79	-8,581.43	13,248.98	13,204.69	44.29	299.151			
10,300.00	6,989.51	1,523.85	1,499.85	60.90	16.57	-18.50	2,339.65	-8,575.87	13,339.25	13,294.75	44.50	299.747			
10,400.00	6,989.53	1,505.65	1,483.22	62.35	16.54	-18.44	2,339.22	-8,568.50	13,429.67	13,384.97	44.70	300.409			
10,500.00	6,989.56	1,505.65	1,483.22	63.81	16.54	-18.44	2,339.22	-8,568.50	13,520.16	13,475.22	44.95	300.805			
10,600.00	6,989.59	1,505.65	1,483.22	65.28	16.54	-18.44	2,339.22	-8,568.50	13,610.79	13,565.60	45.19	301.207			
10,700.00	6,989.61	1,505.65	1,483.22	66.76	16.54	-18.44	2,339.22	-8,568.50	13,701.54	13,656.11	45.43	301.617			
10,800.00	6,989.64	1,505.65	1,483.22	68.24	16.54	-18.44	2,339.22	-8,568.50	13,792.42	13,746.75	45.67	302.032			
10,900.00	6,989.67	1,505.65	1,483.22	69.73	16.54	-18.44	2,339.22	-8,568.50	13,883.42	13,837.52	45.90	302.455			
11,000.00	6,989.70	1,475.04	1,455.07	71.22	16.48	-18.35	2,338.48	-8,556.49	13,974.51	13,928.43	46.07	303.303			
11,100.00	6,989.72	1,475.04	1,455.07	72.71	16.48	-18.35	2,338.48	-8,556.49	14,065.67	14,019.36	46.31	303.728			
11,200.00	6,989.75	1,475.04	1,455.07	74.22	16.48	-18.35	2,338.48	-8,556.49	14,156.96	14,110.41	46.54	304.160			
11,300.00	6,989.78	1,475.04	1,455.07	75.72	16.48	-18.35	2,338.48	-8,556.49	14,248.36	14,201.58	46.78	304.599			
11,400.00	6,989.80	1,475.04	1,455.07	77.23	16.48	-18.35	2,338.48	-8,556.49	14,339.87	14,292.86	47.01	305.044			
11,500.00	6,989.83	1,475.04	1,455.07	78.74	16.48	-18.35	2,338.48	-8,556.49	14,431.50	14,384.26	47.24	305.497			
11,600.00	6,989.86	1,475.04	1,455.07	80.26	16.48	-18.35	2,338.48	-8,556.49	14,523.24	14,475.77	47.47	305.957			
11,700.00	6,989.88	1,475.04	1,455.07	81.78	16.48	-18.35	2,338.48	-8,556.49	14,615.08	14,567.39	47.70	306.423			
11,800.00	6,989.91	1,475.04	1,455.07	83.30	16.48	-18.35	2,338.48	-8,556.49	14,707.04	14,659.12	47.92	306.896			
11,900.00	6,989.94	1,475.04	1,455.07	84.83	16.48	-18.35	2,338.48	-8,556.49	14,799.10	14,750.95	48.15	307.376			
12,000.00	6,989.97	1,475.04	1,455.07	86.36	16.48	-18.35	2,338.48	-8,556.49	14,891.26	14,842.89	48.37	307.862			
12,100.00	6,989.99	1,475.04	1,455.07	87.89	16.48	-18.35	2,338.48	-8,556.49	14,983.52	14,934.92	48.59	308.355			
12,200.00	6,990.02	1,458.66	1,439.88	89.42	16.46	-18.30	2,338.24	-8,550.35	15,075.70	15,026.91	48.79	308.991			
12,300.00	6,990.05	1,443.67	1,425.89	90.96	16.43	-18.25	2,338.11	-8,545.00	15,168.23	15,119.24	48.99	309.618			
12,400.00	6,990.07	1,443.67	1,425.89	92.50	16.43	-18.25	2,338.11	-8,545.00	15,260.70	15,211.49	49.21	310.120			
12,500.00	6,990.10	1,443.67	1,425.89	94.04	16.43	-18.25	2,338.11	-8,545.00	15,353.27	15,303.85	49.43	310.629			
12,600.00	6,990.13	1,443.67	1,425.89	95.58	16.43	-18.25	2,338.11	-8,545.00	15,445.94	15,396.30	49.64	311.144			
12,700.00	6,990.15	1,443.67	1,425.89	97.13	16.43	-18.25	2,338.11	-8,545.00	15,538.69	15,488.84	49.86	311.665			
12,800.00	6,990.18	1,443.67	1,425.89	98.68	16.43	-18.25	2,338.11	-8,545.00	15,631.54	15,581.47	50.07	312.192			
12,900.00	6,990.21	1,443.67	1,425.89	100.22	16.43	-18.25	2,338.11	-8,545.00	15,724.47	15,674.19	50.28	312.724			
13,000.00	6,990.24	1,443.67	1,425.89	101.78	16.43	-18.25	2,338.11	-8,545.00	15,817.49	15,766.99	50.49	313.262			
13,100.00	6,990.26	1,443.67	1,425.89	103.33	16.43	-18.25	2,338.11	-8,545.00	15,910.59	15,859.89	50.70	313.806			
13,200.00	6,990.29	1,423.93	1,407.38	104.88	16.41	-18.19	2,337.94	-8,538.14	16,003.74	15,952.85	50.89	314.453			
13,300.00	6,990.32	1,414.27	1,398.31	106.44	16.39	-18.16	2,337.84	-8,534.80	16,096.95	16,045.86	51.09	315.048			
13,400.00	6,990.34	1,414.27	1,398.31	107.99	16.39	-18.16	2,337.84	-8,534.80	16,190.24	16,138.94	51.30	315.600			
13,500.00	6,990.37	1,414.27	1,398.31	109.55	16.39	-18.16	2,337.84	-8,534.80	16,283.60	16,232.10	51.50	316.158			
13,600.00	6,990.40	1,414.27	1,398.31	111.11	16.39	-18.16	2,337.84	-8,534.80	16,377.05	16,325.34	51.71	316.720			
13,700.00	6,990.42	1,414.27	1,398.31	112.67	16.39	-18.16	2,337.84	-8,534.80	16,470.57	16,418.66	51.91	317.288			
13,800.00	6,990.45	1,414.27	1,398.31	114.23	16.39	-18.16	2,337.84	-8,534.80	16,564.16	16,512.05	52.11	317.860			
13,900.00	6,990.48	1,399.16	1,384.10	115.80	16.37	-18.12	2,337.67	-8,529.67	16,657.74	16,605.43	52.30	318.484			
14,000.00	6,990.51	1,385.50	1,371.20	117.36	16.36	-18.08	2,337.56	-8,525.18	16,751.50	16,699.01	52.50	319.104			

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
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	
14,100.00	6,990.53	1,385.50	1,371.20	118.93	16.36	-18.08	2,337.56	-8,525.18	16,845.26	16,792.57	52.69	319.684		
14,200.00	6,990.56	1,385.50	1,371.20	120.49	16.36	-18.08	2,337.56	-8,525.18	16,939.09	16,886.20	52.89	320.267		
14,300.00	6,990.59	1,385.50	1,371.20	122.06	16.36	-18.08	2,337.56	-8,525.18	17,032.99	16,979.91	53.09	320.856		
14,400.00	6,990.61	1,385.50	1,371.20	123.63	16.36	-18.08	2,337.56	-8,525.18	17,126.96	17,073.68	53.28	321.448		
14,500.00	6,990.64	1,385.50	1,371.20	125.20	16.36	-18.08	2,337.56	-8,525.18	17,221.00	17,167.53	53.47	322.044		
14,600.00	6,990.67	1,385.50	1,371.20	126.77	16.36	-18.08	2,337.56	-8,525.18	17,315.11	17,261.44	53.67	322.644		
14,700.00	6,990.70	1,371.00	1,357.47	128.34	16.34	-18.04	2,337.49	-8,520.50	17,409.25	17,355.40	53.85	323.264		
14,800.00	6,990.72	1,354.82	1,342.15	129.91	16.32	-17.99	2,337.46	-8,515.32	17,503.46	17,449.42	54.04	323.883		
14,900.00	6,990.75	1,354.82	1,342.15	131.48	16.32	-17.99	2,337.46	-8,515.32	17,597.70	17,543.47	54.23	324.488		
15,000.00	6,990.78	1,354.82	1,342.15	133.06	16.32	-17.99	2,337.46	-8,515.32	17,692.01	17,637.59	54.42	325.097		
15,100.00	6,990.80	1,354.82	1,342.15	134.63	16.32	-17.99	2,337.46	-8,515.32	17,786.38	17,731.77	54.61	325.709		
15,200.00	6,990.83	1,338.73	1,326.89	136.20	16.30	-17.94	2,337.43	-8,510.22	17,880.77	17,825.97	54.79	326.328		
15,300.00	6,990.86	1,323.84	1,312.75	137.78	16.28	-17.90	2,337.33	-8,505.57	17,975.24	17,920.26	54.98	326.946		
15,400.00	6,990.88	1,323.84	1,312.75	139.36	16.28	-17.90	2,337.33	-8,505.57	18,069.73	18,014.57	55.16	327.563		
15,500.00	6,990.91	1,323.84	1,312.75	140.93	16.28	-17.90	2,337.33	-8,505.57	18,164.29	18,108.94	55.35	328.182		
15,600.00	6,990.94	1,323.84	1,312.75	142.51	16.28	-17.90	2,337.33	-8,505.57	18,258.90	18,203.37	55.53	328.805		
15,700.00	6,990.97	1,323.84	1,312.75	144.09	16.28	-17.90	2,337.33	-8,505.57	18,353.57	18,297.86	55.71	329.431		
15,800.00	6,990.99	1,323.84	1,312.75	145.67	16.28	-17.90	2,337.33	-8,505.57	18,448.29	18,392.40	55.89	330.060		
15,900.00	6,991.02	1,309.42	1,299.03	147.24	16.27	-17.86	2,337.22	-8,501.14	18,543.02	18,486.95	56.07	330.691		
16,000.00	6,991.05	1,292.54	1,282.93	148.82	16.24	-17.81	2,337.11	-8,496.06	18,637.88	18,581.63	56.25	331.320		
16,100.00	6,991.07	1,292.54	1,282.93	150.40	16.24	-17.81	2,337.11	-8,496.06	18,732.72	18,676.29	56.43	331.952		
16,200.00	6,991.10	1,292.54	1,282.93	151.99	16.24	-17.81	2,337.11	-8,496.06	18,827.61	18,771.00	56.61	332.586		
16,300.00	6,991.13	1,292.54	1,282.93	153.57	16.24	-17.81	2,337.11	-8,496.06	18,922.56	18,865.77	56.79	333.223		
16,400.00	6,991.15	1,292.54	1,282.93	155.15	16.24	-17.81	2,337.11	-8,496.06	19,017.55	18,960.59	56.96	333.862		
16,500.00	6,991.18	1,292.54	1,282.93	156.73	16.24	-17.81	2,337.11	-8,496.06	19,112.60	19,055.46	57.14	334.503		
16,600.00	6,991.21	1,292.54	1,282.93	158.31	16.24	-17.81	2,337.11	-8,496.06	19,207.70	19,150.39	57.31	335.146		
16,700.00	6,991.24	1,292.54	1,282.93	159.90	16.24	-17.81	2,337.11	-8,496.06	19,302.85	19,245.36	57.48	335.792		
16,800.00	6,991.26	1,292.54	1,282.93	161.48	16.24	-17.81	2,337.11	-8,496.06	19,398.04	19,340.38	57.66	336.439		
16,900.00	6,991.29	1,292.54	1,282.93	163.06	16.24	-17.81	2,337.11	-8,496.06	19,493.29	19,435.46	57.83	337.088		
17,000.00	6,991.32	1,292.54	1,282.93	164.65	16.24	-17.81	2,337.11	-8,496.06	19,588.58	19,530.58	58.00	337.740		
17,100.00	6,991.34	1,292.54	1,282.93	166.23	16.24	-17.81	2,337.11	-8,496.06	19,683.92	19,625.75	58.17	338.393		
17,200.00	6,991.37	1,292.54	1,282.93	167.82	16.24	-17.81	2,337.11	-8,496.06	19,779.30	19,720.96	58.34	339.047		
17,300.00	6,991.40	1,292.54	1,282.93	169.40	16.24	-17.81	2,337.11	-8,496.06	19,874.73	19,816.22	58.51	339.704		
17,400.00	6,991.42	1,292.54	1,282.93	170.99	16.24	-17.81	2,337.11	-8,496.06	19,970.21	19,911.53	58.67	340.362		
17,500.00	6,991.45	1,277.34	1,268.38	172.57	16.23	-17.77	2,336.98	-8,491.65	20,065.60	20,006.76	58.85	340.977		
17,600.00	6,991.48	1,261.54	1,253.19	174.16	16.21	-17.72	2,336.76	-8,487.31	20,161.25	20,102.23	59.02	341.594		
17,700.00	6,991.51	1,261.54	1,253.19	175.75	16.21	-17.72	2,336.76	-8,487.31	20,256.81	20,197.63	59.19	342.252		
17,800.00	6,991.53	1,261.54	1,253.19	177.33	16.21	-17.72	2,336.76	-8,487.31	20,352.42	20,293.07	59.35	342.912		
17,900.00	6,991.56	1,261.54	1,253.19	178.92	16.21	-17.72	2,336.76	-8,487.31	20,448.07	20,388.55	59.52	343.573		
18,000.00	6,991.59	1,261.54	1,253.19	180.51	16.21	-17.72	2,336.76	-8,487.31	20,543.75	20,484.07	59.68	344.235		
18,100.00	6,991.61	1,261.54	1,253.19	182.10	16.21	-17.72	2,336.76	-8,487.31	20,639.48	20,579.64	59.84	344.899		
18,200.00	6,991.64	1,261.54	1,253.19	183.68	16.21	-17.72	2,336.76	-8,487.31	20,735.25	20,675.25	60.00	345.563		
18,300.00	6,991.67	1,261.54	1,253.19	185.27	16.21	-17.72	2,336.76	-8,487.31	20,831.06	20,770.90	60.17	346.229		
18,400.00	6,991.69	1,261.54	1,253.19	186.86	16.21	-17.72	2,336.76	-8,487.31	20,926.91	20,866.58	60.33	346.895		
18,500.00	6,991.72	1,261.54	1,253.19	188.45	16.21	-17.72	2,336.76	-8,487.31	21,022.80	20,962.31	60.49	347.562		
18,600.00	6,991.75	1,261.54	1,253.19	190.04	16.21	-17.72	2,336.76	-8,487.31	21,118.72	21,058.08	60.65	348.231		
18,700.00	6,991.78	1,261.54	1,253.19	191.63	16.21	-17.72	2,336.76	-8,487.31	21,214.69	21,153.88	60.80	348.900		
18,800.00	6,991.80	1,261.54	1,253.19	193.22	16.21	-17.72	2,336.76	-8,487.31	21,310.69	21,249.72	60.96	349.569		
18,900.00	6,991.83	1,242.21	1,234.56	194.81	16.19	-17.66	2,336.45	-8,482.17	21,406.70	21,345.57	61.14	350.145		
19,000.00	6,991.86	1,230.05	1,222.84	196.40	16.18	-17.63	2,336.27	-8,478.94	21,502.74	21,441.44	61.30	350.753		
19,100.00	6,991.88	1,230.05	1,222.84	197.99	16.18	-17.63	2,336.27	-8,478.94	21,598.81	21,537.35	61.46	351.421		
19,200.00	6,991.91	1,230.05	1,222.84	199.58	16.18	-17.63	2,336.27	-8,478.94	21,694.92	21,633.30	61.62	352.090		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,300.00	6,991.94	1,216.66	1,209.93	201.17	16.16	-17.59	2,336.03	-8,475.41	21,791.04	21,729.25	61.78	352.694		
19,342.28	6,991.95	1,214.79	1,208.11	201.84	16.16	-17.58	2,335.99	-8,474.92	21,831.68	21,769.83	61.85	352.967		
19,400.00	6,991.97	1,212.23	1,205.65	202.76	16.16	-17.58	2,335.93	-8,474.26	21,887.19	21,825.25	61.94	353.341		
19,500.00	6,991.99	1,199.00	1,192.87	204.35	16.15	-17.54	2,335.56	-8,470.83	21,983.39	21,921.28	62.11	353.944		
19,542.28	6,992.00	1,199.00	1,192.87	205.03	16.15	-17.54	2,335.56	-8,470.83	22,024.06	21,961.88	62.18	354.227		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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												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	-74.39	2,317.78	-8,295.84	8,613.78				
100.00	100.00	36.00	36.00	0.25	0.83	-74.39	2,317.78	-8,295.84	8,613.54	8,612.46	1.08	7,939.479	
200.00	200.00	136.00	136.00	0.61	3.15	-74.39	2,317.78	-8,295.84	8,613.54	8,609.78	3.76	2,291.202	
300.00	300.00	236.00	236.00	0.97	5.47	-74.39	2,317.78	-8,295.84	8,613.54	8,607.11	6.43	1,338.775	
400.00	400.00	336.00	336.00	1.33	7.78	-74.39	2,317.78	-8,295.84	8,613.54	8,604.43	9.11	945.671	
500.00	500.00	436.00	436.00	1.68	10.10	-74.39	2,317.78	-8,295.84	8,613.54	8,601.76	11.78	731.021	
600.00	600.00	536.04	536.00	2.04	12.42	-74.39	2,317.78	-8,295.84	8,613.54	8,599.08	14.46	595.748	
700.00	700.00	636.04	636.00	2.40	14.73	-74.39	2,317.78	-8,295.84	8,613.54	8,596.41	17.13	502.748	
800.00	799.98	736.02	735.98	2.76	17.05	-44.42	2,317.78	-8,295.84	8,612.29	8,592.49	19.81	434.841	
900.00	899.92	835.96	835.92	3.12	19.36	-44.43	2,317.78	-8,295.84	8,609.80	8,587.32	22.48	383.056	
1,000.00	999.86	935.90	935.86	3.47	21.68	-44.45	2,317.78	-8,295.84	8,607.31	8,582.16	25.15	342.270	
1,100.00	1,099.80	1,036.80	1,036.73	3.83	24.01	-44.45	2,320.41	-8,295.84	8,605.52	8,577.68	27.84	309.088	
1,200.00	1,199.74	1,142.25	1,142.17	4.19	26.46	-44.47	2,320.24	-8,295.84	8,602.99	8,572.35	30.64	280.765	
1,300.00	1,299.68	1,247.68	1,247.60	4.55	28.90	-44.49	2,319.82	-8,295.84	8,600.39	8,566.95	33.44	257.182	
1,400.00	1,399.61	1,353.11	1,353.01	4.91	31.34	-44.51	2,319.15	-8,295.84	8,597.73	8,561.49	36.24	237.241	
1,500.00	1,499.55	1,458.53	1,458.42	5.27	33.78	-44.53	2,318.23	-8,295.84	8,595.01	8,555.97	39.04	220.158	
1,600.00	1,599.49	1,535.76	1,535.49	5.63	35.64	-44.55	2,317.78	-8,295.84	8,592.37	8,551.11	41.26	208.270	
1,700.00	1,699.43	1,635.70	1,635.43	5.99	38.16	-44.56	2,317.78	-8,295.84	8,589.88	8,545.75	44.13	194.642	
1,800.00	1,799.37	1,735.64	1,735.37	6.35	40.67	-44.58	2,317.78	-8,295.84	8,587.39	8,540.39	47.01	182.681	
1,900.00	1,899.31	1,844.79	1,844.49	6.71	43.42	-44.59	2,318.96	-8,295.84	8,585.22	8,535.11	50.12	171.310	
2,000.00	1,999.25	1,955.77	1,955.46	7.07	46.22	-44.61	2,318.25	-8,295.84	8,582.57	8,529.30	53.27	161.117	
2,100.00	2,099.19	2,035.63	2,035.19	7.42	48.16	-44.63	2,317.78	-8,295.84	8,579.94	8,524.36	55.57	154.389	
2,200.00	2,199.13	2,135.57	2,135.13	7.78	50.48	-44.64	2,317.78	-8,295.84	8,577.45	8,519.21	58.25	147.261	
2,300.00	2,299.07	2,235.51	2,235.07	8.14	52.79	-44.66	2,317.78	-8,295.84	8,574.97	8,514.05	60.92	140.760	
2,400.00	2,399.01	2,349.11	2,348.62	8.50	55.42	-44.67	2,319.38	-8,295.84	8,572.92	8,509.01	63.91	134.145	
2,500.00	2,498.94	2,465.27	2,464.76	8.86	58.11	-44.69	2,318.27	-8,295.84	8,570.19	8,503.23	66.96	127.997	
2,600.00	2,598.88	2,535.45	2,534.88	9.22	59.60	-44.71	2,317.78	-8,295.84	8,567.52	8,498.72	68.80	124.525	
2,700.00	2,698.82	2,635.39	2,634.82	9.58	61.52	-44.73	2,317.78	-8,295.84	8,565.04	8,493.96	71.08	120.493	
2,800.00	2,798.76	2,735.33	2,734.76	9.94	63.44	-44.74	2,317.78	-8,295.84	8,562.56	8,489.20	73.36	116.713	
2,900.00	2,898.70	2,835.27	2,834.70	10.30	65.36	-44.76	2,317.78	-8,295.84	8,560.08	8,484.44	75.65	113.161	
3,000.00	2,998.64	2,935.21	2,934.64	10.66	67.29	-44.78	2,317.78	-8,295.84	8,557.60	8,479.68	77.93	109.816	
3,100.00	3,098.58	3,035.15	3,034.58	11.02	69.21	-44.79	2,317.78	-8,295.84	8,555.13	8,474.92	80.21	106.662	
3,200.00	3,198.52	3,137.33	3,136.75	11.38	71.17	-44.80	2,319.55	-8,295.84	8,553.11	8,470.58	82.53	103.633	
3,300.00	3,298.46	3,240.00	3,239.42	11.75	73.15	-44.82	2,319.38	-8,295.84	8,550.59	8,465.73	84.87	100.754	
3,400.00	3,398.40	3,342.67	3,342.08	12.11	75.12	-44.83	2,319.09	-8,295.84	8,548.04	8,460.84	87.20	98.028	
3,500.00	3,498.34	3,445.32	3,444.73	12.47	77.10	-44.85	2,318.68	-8,295.84	8,545.46	8,455.93	89.53	95.445	
3,600.00	3,598.27	3,547.97	3,547.37	12.83	79.07	-44.87	2,318.14	-8,295.84	8,542.85	8,450.98	91.87	92.992	
3,700.00	3,698.21	3,634.88	3,634.21	13.19	80.83	-44.89	2,317.78	-8,295.84	8,540.27	8,446.29	93.98	90.870	
3,800.00	3,798.15	3,734.82	3,734.15	13.55	83.05	-44.91	2,317.78	-8,295.84	8,537.80	8,441.24	96.56	88.420	
3,900.00	3,898.09	3,834.76	3,834.09	13.91	85.26	-44.92	2,317.78	-8,295.84	8,535.33	8,436.19	99.14	86.097	
4,000.00	3,998.03	3,939.35	3,938.68	14.27	87.58	-44.94	2,318.52	-8,295.84	8,533.05	8,431.24	101.82	83.808	
4,100.00	4,097.97	4,045.39	4,044.71	14.63	89.94	-44.96	2,318.15	-8,295.84	8,530.49	8,425.96	104.53	81.610	
4,200.00	4,197.91	4,134.67	4,133.91	14.99	92.08	-44.97	2,317.78	-8,295.84	8,527.92	8,420.89	107.03	79.679	
4,300.00	4,297.85	4,234.61	4,233.85	15.35	94.97	-44.99	2,317.78	-8,295.84	8,525.45	8,415.17	110.28	77.307	
4,400.00	4,397.79	4,334.55	4,333.79	15.71	97.86	-45.01	2,317.78	-8,295.84	8,522.98	8,409.45	113.53	75.071	
4,500.00	4,497.73	4,445.77	4,444.97	16.07	101.08	-45.02	2,319.12	-8,295.84	8,520.86	8,403.75	117.11	72.759	
4,600.00	4,597.66	4,559.33	4,558.52	16.43	104.37	-45.04	2,318.19	-8,295.84	8,518.19	8,397.43	120.76	70.541	
4,700.00	4,697.60	4,634.67	4,633.60	16.79	106.79	-45.06	2,317.78	-8,295.84	8,515.58	8,392.04	123.54	68.929	
4,800.00	4,797.54	4,734.61	4,733.54	17.15	110.27	-45.07	2,317.78	-8,295.84	8,513.11	8,385.73	127.38	66.833	
4,900.00	4,897.48	4,834.55	4,833.48	17.51	113.75	-45.09	2,317.78	-8,295.84	8,510.65	8,379.43	131.22	64.859	
5,000.00	4,997.42	4,934.49	4,933.42	17.87	117.23	-45.11	2,317.78	-8,295.84	8,508.18	8,373.13	135.06	62.997	
5,100.00	5,097.36	5,034.43	5,033.36	18.23	120.71	-45.12	2,317.78	-8,295.84	8,505.72	8,366.82	138.89	61.239	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164A - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		535-A027Ua_INC-ONLY						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
5,200.00	5,197.30	5,134.37	5,133.30	18.59	124.19	-45.14	2,317.78	-8,295.84	8,503.26	8,360.52	142.73	59.575		
5,300.00	5,297.24	5,234.30	5,233.24	18.95	127.67	-45.16	2,317.78	-8,295.84	8,500.79	8,354.22	146.57	57.998		
5,402.82	5,400.00	5,337.07	5,336.00	19.32	131.25	-45.17	2,317.78	-8,295.84	8,498.26	8,347.75	150.52	56.460		
5,500.00	5,497.13	5,434.20	5,433.13	19.67	134.63	-45.18	2,317.78	-8,295.84	8,496.16	8,341.91	154.25	55.081		
5,600.00	5,597.11	5,534.17	5,533.11	20.03	138.11	-45.19	2,317.78	-8,295.84	8,494.61	8,336.52	158.09	53.734		
5,700.00	5,697.10	5,634.16	5,633.10	20.39	141.59	-45.19	2,317.78	-8,295.84	8,493.67	8,331.74	161.93	52.454		
5,802.82	5,799.92	5,736.98	5,735.92	20.75	145.17	-75.19	2,317.78	-8,295.84	8,493.34	8,327.47	165.87	51.204		
5,900.00	5,897.09	5,834.16	5,833.09	21.10	148.55	-75.19	2,317.78	-8,295.84	8,493.34	8,323.74	169.60	50.079		
6,000.00	5,997.09	5,934.16	5,933.09	21.45	152.03	-75.19	2,317.78	-8,295.84	8,493.34	8,319.91	173.44	48.971		
6,100.00	6,097.09	6,034.16	6,033.09	21.81	155.51	-75.19	2,317.78	-8,295.84	8,493.34	8,316.07	177.27	47.911 CC		
6,200.00	6,197.09	6,060.00	6,057.39	22.16	156.41	-75.19	2,317.78	-8,295.84	8,493.68	8,315.15	178.52	47.577 ES		
6,300.00	6,297.09	6,060.00	6,057.39	22.52	156.41	-75.19	2,317.78	-8,295.84	8,495.16	8,316.31	178.85	47.498		
6,354.91	6,352.00	6,060.00	6,057.39	22.72	156.41	-75.19	2,317.78	-8,295.84	8,496.47	8,317.45	179.02	47.460		
6,400.00	6,397.06	6,060.00	6,057.39	22.87	156.41	-154.08	2,317.78	-8,295.84	8,499.25	8,320.10	179.16	47.441 SF		
6,450.00	6,446.74	6,060.00	6,057.39	23.04	156.41	-153.81	2,317.78	-8,295.84	8,505.95	8,326.66	179.29	47.442		
6,500.00	6,495.84	6,060.00	6,057.39	23.20	156.41	-153.38	2,317.78	-8,295.84	8,516.40	8,336.98	179.42	47.467		
6,550.00	6,544.06	6,060.00	6,057.39	23.36	156.41	-152.78	2,317.78	-8,295.84	8,530.53	8,350.99	179.54	47.514		
6,600.00	6,591.08	6,060.00	6,057.39	23.51	156.41	-151.99	2,317.78	-8,295.84	8,548.23	8,368.58	179.65	47.583		
6,650.00	6,636.64	6,060.00	6,057.39	23.66	156.41	-150.99	2,317.78	-8,295.84	8,569.37	8,389.62	179.75	47.673		
6,700.00	6,680.44	6,060.00	6,057.39	23.82	156.41	-149.74	2,317.78	-8,295.84	8,593.80	8,413.95	179.85	47.784		
6,750.00	6,722.22	6,060.00	6,057.39	23.99	156.41	-148.21	2,317.78	-8,295.84	8,621.33	8,441.40	179.93	47.914		
6,800.00	6,761.71	6,060.00	6,057.39	24.16	156.41	-146.35	2,317.78	-8,295.84	8,651.77	8,471.76	180.01	48.063		
6,850.00	6,798.68	6,060.00	6,057.39	24.33	156.41	-144.07	2,317.78	-8,295.84	8,684.91	8,504.82	180.08	48.228		
6,900.00	6,832.89	6,060.00	6,057.39	24.50	156.41	-141.31	2,317.78	-8,295.84	8,720.50	8,540.35	180.15	48.408		
6,950.00	6,864.14	6,060.00	6,057.39	24.69	156.41	-137.94	2,317.78	-8,295.84	8,758.30	8,578.09	180.21	48.601		
7,000.00	6,892.23	6,060.00	6,057.39	24.88	156.41	-133.83	2,317.78	-8,295.84	8,798.05	8,617.79	180.27	48.806		
7,050.00	6,916.99	6,060.00	6,057.39	25.08	156.41	-128.82	2,317.78	-8,295.84	8,839.48	8,659.16	180.32	49.021		
7,100.00	6,938.27	6,060.00	6,057.39	25.29	156.41	-122.76	2,317.78	-8,295.84	8,882.32	8,701.94	180.37	49.244		
7,150.00	6,955.93	6,060.00	6,057.39	25.51	156.41	-115.51	2,317.78	-8,295.84	8,926.27	8,745.84	180.43	49.473		
7,200.00	6,969.87	6,060.00	6,057.39	25.75	156.41	-107.06	2,317.78	-8,295.84	8,971.06	8,790.58	180.48	49.705		
7,250.00	6,980.00	6,060.00	6,057.39	25.99	156.41	-97.62	2,317.78	-8,295.84	9,016.40	8,835.86	180.54	49.940		
7,300.00	6,986.25	6,060.00	6,057.39	26.25	156.41	-87.63	2,317.78	-8,295.84	9,062.01	8,881.40	180.61	50.176		
7,354.68	6,988.62	6,060.00	6,057.39	26.53	156.41	-76.84	2,317.78	-8,295.84	9,111.85	8,931.17	180.68	50.431		
7,400.00	6,988.64	6,060.00	6,057.39	26.78	156.41	-76.84	2,317.78	-8,295.84	9,153.06	8,972.31	180.75	50.640		
7,500.00	6,988.67	6,060.00	6,057.39	27.40	156.41	-76.84	2,317.78	-8,295.84	9,244.14	9,063.24	180.90	51.100		
7,600.00	6,988.71	6,060.00	6,057.39	28.08	156.41	-76.84	2,317.78	-8,295.84	9,335.40	9,154.33	181.07	51.558		
7,700.00	6,988.74	6,060.00	6,057.39	28.84	156.41	-76.84	2,317.78	-8,295.84	9,426.84	9,245.60	181.24	52.012		
7,800.00	6,988.78	6,060.00	6,057.39	29.67	156.41	-76.84	2,317.78	-8,295.84	9,518.45	9,337.02	181.43	52.464		
7,900.00	6,988.81	6,060.00	6,057.39	30.55	156.41	-76.84	2,317.78	-8,295.84	9,610.23	9,428.61	181.62	52.913		
8,000.00	6,988.85	6,060.00	6,057.39	31.49	156.41	-76.84	2,317.78	-8,295.84	9,702.17	9,520.35	181.82	53.360		
8,100.00	6,988.88	6,060.00	6,057.39	32.48	156.41	-76.84	2,317.78	-8,295.84	9,794.27	9,612.24	182.03	53.805		
8,200.00	6,988.91	6,060.00	6,057.39	33.51	156.41	-76.84	2,317.78	-8,295.84	9,886.53	9,704.28	182.25	54.248		
8,211.68	6,988.92	6,060.00	6,057.39	33.63	156.41	-76.84	2,317.78	-8,295.84	9,897.31	9,715.04	182.27	54.300		
8,300.00	6,988.95	6,060.00	6,057.39	34.58	156.41	-75.79	2,317.78	-8,295.84	9,979.42	9,796.96	182.46	54.693		
8,400.00	6,988.98	6,060.00	6,057.39	35.70	156.41	-74.34	2,317.78	-8,295.84	10,073.62	9,890.96	182.66	55.148		
8,500.00	6,989.01	6,060.00	6,057.39	36.84	156.41	-72.53	2,317.78	-8,295.84	10,169.00	9,986.14	182.85	55.613		
8,600.00	6,989.04	6,060.00	6,057.39	38.02	156.41	-70.21	2,317.78	-8,295.84	10,265.39	10,082.36	183.03	56.087		
8,700.00	6,989.07	6,060.00	6,057.39	39.22	156.41	-67.15	2,317.78	-8,295.84	10,362.66	10,179.48	183.18	56.570		
8,772.79	6,989.09	6,060.00	6,057.39	40.11	156.41	-64.26	2,317.78	-8,295.84	10,433.93	10,250.65	183.28	56.928		
8,800.00	6,989.10	6,060.00	6,057.39	40.44	156.41	-64.26	2,317.78	-8,295.84	10,460.65	10,277.33	183.32	57.062		
8,900.00	6,989.13	6,060.00	6,057.39	41.68	156.41	-64.26	2,317.78	-8,295.84	10,558.83	10,375.38	183.45	57.557		
9,000.00	6,989.15	6,060.00	6,057.39	42.95	156.41	-64.26	2,317.78	-8,295.84	10,657.06	10,473.48	183.58	58.051		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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: Reference		535-A027Ua_INC-ONLY					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			
9,100.00	6,989.18	6,060.00	6,057.39	44.24	156.41	-64.26	2,317.78	-8,295.84	10,755.31	10,571.60	183.71	58.544				
9,200.00	6,989.21	6,060.00	6,057.39	45.55	156.41	-64.26	2,317.78	-8,295.84	10,853.60	10,669.75	183.84	59.037				
9,300.00	6,989.24	6,060.00	6,057.39	46.88	156.41	-64.26	2,317.78	-8,295.84	10,951.92	10,767.94	183.97	59.530				
9,400.00	6,989.26	6,060.00	6,057.39	48.23	156.41	-64.26	2,317.78	-8,295.84	11,050.26	10,866.16	184.10	60.022				
9,500.00	6,989.29	6,060.00	6,057.39	49.59	156.41	-64.26	2,317.78	-8,295.84	11,148.64	10,964.41	184.24	60.513				
9,600.00	6,989.32	6,060.00	6,057.39	50.96	156.41	-64.26	2,317.78	-8,295.84	11,247.05	11,062.68	184.37	61.004				
9,700.00	6,989.34	6,060.00	6,057.39	52.35	156.41	-64.26	2,317.78	-8,295.84	11,345.48	11,160.98	184.50	61.495				
9,800.00	6,989.37	6,060.00	6,057.39	53.75	156.41	-64.26	2,317.78	-8,295.84	11,443.94	11,259.32	184.63	61.985				
9,900.00	6,989.40	6,060.00	6,057.39	55.16	156.41	-64.26	2,317.78	-8,295.84	11,542.43	11,357.67	184.75	62.474				
10,000.00	6,989.42	6,060.00	6,057.39	56.58	156.41	-64.26	2,317.78	-8,295.84	11,640.94	11,456.06	184.88	62.963				
10,100.00	6,989.45	6,060.00	6,057.39	58.01	156.41	-64.26	2,317.78	-8,295.84	11,739.48	11,554.47	185.01	63.452				
10,200.00	6,989.48	6,060.00	6,057.39	59.45	156.41	-64.26	2,317.78	-8,295.84	11,838.04	11,652.90	185.14	63.940				
10,300.00	6,989.51	6,060.00	6,057.39	60.90	156.41	-64.26	2,317.78	-8,295.84	11,936.63	11,751.36	185.27	64.428				
10,400.00	6,989.53	6,060.00	6,057.39	62.35	156.41	-64.26	2,317.78	-8,295.84	12,035.24	11,849.84	185.40	64.915				
10,500.00	6,989.56	6,060.00	6,057.39	63.81	156.41	-64.26	2,317.78	-8,295.84	12,133.87	11,948.34	185.53	65.402				
10,600.00	6,989.59	6,060.00	6,057.39	65.28	156.41	-64.26	2,317.78	-8,295.84	12,232.53	12,046.87	185.65	65.889				
10,700.00	6,989.61	6,060.00	6,057.39	66.76	156.41	-64.26	2,317.78	-8,295.84	12,331.20	12,145.42	185.78	66.375				
10,800.00	6,989.64	6,060.00	6,057.39	68.24	156.41	-64.26	2,317.78	-8,295.84	12,429.90	12,243.99	185.91	66.860				
10,900.00	6,989.67	6,060.00	6,057.39	69.73	156.41	-64.26	2,317.78	-8,295.84	12,528.62	12,342.58	186.03	67.346				
11,000.00	6,989.70	6,060.00	6,057.39	71.22	156.41	-64.26	2,317.78	-8,295.84	12,627.36	12,441.20	186.16	67.830				
11,100.00	6,989.72	6,060.00	6,057.39	72.71	156.41	-64.26	2,317.78	-8,295.84	12,726.12	12,539.83	186.29	68.315				
11,200.00	6,989.75	6,060.00	6,057.39	74.22	156.41	-64.26	2,317.78	-8,295.84	12,824.89	12,638.48	186.41	68.798				
11,300.00	6,989.78	6,060.00	6,057.39	75.72	156.41	-64.26	2,317.78	-8,295.84	12,923.69	12,737.15	186.54	69.282				
11,400.00	6,989.80	6,060.00	6,057.39	77.23	156.41	-64.26	2,317.78	-8,295.84	13,022.50	12,835.84	186.66	69.765				
11,500.00	6,989.83	6,060.00	6,057.39	78.74	156.41	-64.26	2,317.78	-8,295.84	13,121.34	12,934.55	186.79	70.248				
11,600.00	6,989.86	6,060.00	6,057.39	80.26	156.41	-64.26	2,317.78	-8,295.84	13,220.19	13,033.28	186.91	70.730				
11,700.00	6,989.88	6,060.00	6,057.39	81.78	156.41	-64.26	2,317.78	-8,295.84	13,319.05	13,132.02	187.03	71.212				
11,800.00	6,989.91	6,060.00	6,057.39	83.30	156.41	-64.26	2,317.78	-8,295.84	13,417.94	13,230.78	187.16	71.693				
11,900.00	6,989.94	6,060.00	6,057.39	84.83	156.41	-64.26	2,317.78	-8,295.84	13,516.84	13,329.56	187.28	72.174				
12,000.00	6,989.97	6,060.00	6,057.39	86.36	156.41	-64.26	2,317.78	-8,295.84	13,615.76	13,428.35	187.40	72.654				
12,100.00	6,989.99	6,060.00	6,057.39	87.89	156.41	-64.26	2,317.78	-8,295.84	13,714.69	13,527.16	187.53	73.135				
12,200.00	6,990.02	6,060.00	6,057.39	89.42	156.41	-64.26	2,317.78	-8,295.84	13,813.64	13,625.99	187.65	73.614				
12,300.00	6,990.05	6,060.00	6,057.39	90.96	156.41	-64.26	2,317.78	-8,295.84	13,912.60	13,724.83	187.77	74.094				
12,400.00	6,990.07	6,060.00	6,057.39	92.50	156.41	-64.26	2,317.78	-8,295.84	14,011.58	13,823.68	187.89	74.572				
12,500.00	6,990.10	6,060.00	6,057.39	94.04	156.41	-64.26	2,317.78	-8,295.84	14,110.57	13,922.56	188.01	75.051				
12,600.00	6,990.13	6,060.00	6,057.39	95.58	156.41	-64.26	2,317.78	-8,295.84	14,209.57	14,021.44	188.13	75.529				
12,700.00	6,990.15	6,060.00	6,057.39	97.13	156.41	-64.26	2,317.78	-8,295.84	14,308.59	14,120.34	188.25	76.007				
12,800.00	6,990.18	6,060.00	6,057.39	98.68	156.41	-64.26	2,317.78	-8,295.84	14,407.63	14,219.25	188.38	76.484				
12,900.00	6,990.21	6,060.00	6,057.39	100.22	156.41	-64.26	2,317.78	-8,295.84	14,506.67	14,318.18	188.50	76.960				
13,000.00	6,990.24	6,060.00	6,057.39	101.78	156.41	-64.26	2,317.78	-8,295.84	14,605.73	14,417.12	188.61	77.437				
13,100.00	6,990.26	6,060.00	6,057.39	103.33	156.41	-64.26	2,317.78	-8,295.84	14,704.81	14,516.07	188.73	77.913				
13,200.00	6,990.29	6,060.00	6,057.39	104.88	156.41	-64.26	2,317.78	-8,295.84	14,803.89	14,615.04	188.85	78.388				
13,300.00	6,990.32	6,060.00	6,057.39	106.44	156.41	-64.26	2,317.78	-8,295.84	14,902.99	14,714.02	188.97	78.863				
13,400.00	6,990.34	6,060.00	6,057.39	107.99	156.41	-64.26	2,317.78	-8,295.84	15,002.10	14,813.01	189.09	79.338				
13,500.00	6,990.37	6,060.00	6,057.39	109.55	156.41	-64.26	2,317.78	-8,295.84	15,101.22	14,912.01	189.21	79.812				
13,600.00	6,990.40	6,060.00	6,057.39	111.11	156.41	-64.26	2,317.78	-8,295.84	15,200.35	15,011.02	189.33	80.286				
13,700.00	6,990.42	6,060.00	6,057.39	112.67	156.41	-64.26	2,317.78	-8,295.84	15,299.49	15,110.05	189.45	80.759				
13,800.00	6,990.45	6,060.00	6,057.39	114.23	156.41	-64.26	2,317.78	-8,295.84	15,398.65	15,209.09	189.56	81.232				
13,900.00	6,990.48	6,060.00	6,057.39	115.80	156.41	-64.26	2,317.78	-8,295.84	15,497.81	15,308.13	189.68	81.705				
14,000.00	6,990.51	6,060.00	6,057.39	117.36	156.41	-64.26	2,317.78	-8,295.84	15,596.99	15,407.19	189.80	82.177				
14,100.00	6,990.53	6,060.00	6,057.39	118.93	156.41	-64.26	2,317.78	-8,295.84	15,696.18	15,506.26	189.92	82.648				
14,200.00	6,990.56	6,060.00	6,057.39	120.49	156.41	-64.26	2,317.78	-8,295.84	15,795.37	15,605.34	190.03	83.119				

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
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		
14,300.00	6,990.59	6,060.00	6,057.39	122.06	156.41	-64.26	2,317.78	-8,295.84	15,894.58	15,704.43	190.15	83.590			
14,400.00	6,990.61	6,060.00	6,057.39	123.63	156.41	-64.26	2,317.78	-8,295.84	15,993.80	15,803.53	190.27	84.060			
14,500.00	6,990.64	6,060.00	6,057.39	125.20	156.41	-64.26	2,317.78	-8,295.84	16,093.03	15,902.64	190.38	84.530			
14,600.00	6,990.67	6,060.00	6,057.39	126.77	156.41	-64.26	2,317.78	-8,295.84	16,192.26	16,001.76	190.50	85.000			
14,700.00	6,990.70	6,060.00	6,057.39	128.34	156.41	-64.26	2,317.78	-8,295.84	16,291.51	16,100.89	190.61	85.469			
14,800.00	6,990.72	6,060.00	6,057.39	129.91	156.41	-64.26	2,317.78	-8,295.84	16,390.76	16,200.03	190.73	85.937			
14,900.00	6,990.75	6,060.00	6,057.39	131.48	156.41	-64.26	2,317.78	-8,295.84	16,490.02	16,299.18	190.84	86.405			
15,000.00	6,990.78	6,060.00	6,057.39	133.06	156.41	-64.26	2,317.78	-8,295.84	16,589.30	16,398.34	190.96	86.873			
15,100.00	6,990.80	6,060.00	6,057.39	134.63	156.41	-64.26	2,317.78	-8,295.84	16,688.58	16,497.50	191.08	87.340			
15,200.00	6,990.83	6,060.00	6,057.39	136.20	156.41	-64.26	2,317.78	-8,295.84	16,787.87	16,596.68	191.19	87.807			
15,300.00	6,990.86	6,060.00	6,057.39	137.78	156.41	-64.26	2,317.78	-8,295.84	16,887.17	16,695.86	191.31	88.273			
15,400.00	6,990.88	6,060.00	6,057.39	139.36	156.41	-64.26	2,317.78	-8,295.84	16,986.47	16,795.05	191.42	88.739			
15,500.00	6,990.91	6,060.00	6,057.39	140.93	156.41	-64.26	2,317.78	-8,295.84	17,085.79	16,894.25	191.54	89.204			
15,600.00	6,990.94	6,060.00	6,057.39	142.51	156.41	-64.26	2,317.78	-8,295.84	17,185.11	16,993.46	191.65	89.669			
15,700.00	6,990.97	6,060.00	6,057.39	144.09	156.41	-64.26	2,317.78	-8,295.84	17,284.44	17,092.68	191.76	90.134			
15,800.00	6,990.99	6,060.00	6,057.39	145.67	156.41	-64.26	2,317.78	-8,295.84	17,383.78	17,191.90	191.88	90.598			
15,900.00	6,991.02	6,060.00	6,057.39	147.24	156.41	-64.26	2,317.78	-8,295.84	17,483.12	17,291.13	191.99	91.061			
16,000.00	6,991.05	6,060.00	6,057.39	148.82	156.41	-64.26	2,317.78	-8,295.84	17,582.48	17,390.37	192.11	91.525			
16,100.00	6,991.07	6,060.00	6,057.39	150.40	156.41	-64.26	2,317.78	-8,295.84	17,681.84	17,489.61	192.22	91.987			
16,200.00	6,991.10	6,060.00	6,057.39	151.99	156.41	-64.26	2,317.78	-8,295.84	17,781.20	17,588.87	192.33	92.449			
16,300.00	6,991.13	6,060.00	6,057.39	153.57	156.41	-64.26	2,317.78	-8,295.84	17,880.58	17,688.13	192.45	92.911			
16,400.00	6,991.15	6,060.00	6,057.39	155.15	156.41	-64.26	2,317.78	-8,295.84	17,979.96	17,787.40	192.56	93.372			
16,500.00	6,991.18	6,060.00	6,057.39	156.73	156.41	-64.26	2,317.78	-8,295.84	18,079.35	17,886.67	192.68	93.833			
16,600.00	6,991.21	6,060.00	6,057.39	158.31	156.41	-64.26	2,317.78	-8,295.84	18,178.74	17,985.95	192.79	94.293			
16,700.00	6,991.24	6,060.00	6,057.39	159.90	156.41	-64.26	2,317.78	-8,295.84	18,278.14	18,085.24	192.90	94.753			
16,800.00	6,991.26	6,060.00	6,057.39	161.48	156.41	-64.26	2,317.78	-8,295.84	18,377.55	18,184.53	193.02	95.213			
16,900.00	6,991.29	6,060.00	6,057.39	163.06	156.41	-64.26	2,317.78	-8,295.84	18,476.96	18,283.84	193.13	95.671			
17,000.00	6,991.32	6,060.00	6,057.39	164.65	156.41	-64.26	2,317.78	-8,295.84	18,576.39	18,383.14	193.24	96.130			
17,100.00	6,991.34	6,060.00	6,057.39	166.23	156.41	-64.26	2,317.78	-8,295.84	18,675.81	18,482.46	193.36	96.588			
17,200.00	6,991.37	6,060.00	6,057.39	167.82	156.41	-64.26	2,317.78	-8,295.84	18,775.24	18,581.78	193.47	97.045			
17,300.00	6,991.40	6,060.00	6,057.39	169.40	156.41	-64.26	2,317.78	-8,295.84	18,874.68	18,681.10	193.58	97.502			
17,400.00	6,991.42	6,060.00	6,057.39	170.99	156.41	-64.26	2,317.78	-8,295.84	18,974.13	18,780.43	193.70	97.959			
17,500.00	6,991.45	6,060.00	6,057.39	172.57	156.41	-64.26	2,317.78	-8,295.84	19,073.58	18,879.77	193.81	98.415			
17,600.00	6,991.48	6,060.00	6,057.39	174.16	156.41	-64.26	2,317.78	-8,295.84	19,173.04	18,979.11	193.92	98.870			
17,700.00	6,991.51	6,060.00	6,057.39	175.75	156.41	-64.26	2,317.78	-8,295.84	19,272.50	19,078.46	194.03	99.325			
17,800.00	6,991.53	6,060.00	6,057.39	177.33	156.41	-64.26	2,317.78	-8,295.84	19,371.96	19,177.82	194.15	99.780			
17,900.00	6,991.56	6,060.00	6,057.39	178.92	156.41	-64.26	2,317.78	-8,295.84	19,471.44	19,277.18	194.26	100.234			
18,000.00	6,991.59	6,060.00	6,057.39	180.51	156.41	-64.26	2,317.78	-8,295.84	19,570.92	19,376.54	194.37	100.688			
18,100.00	6,991.61	6,060.00	6,057.39	182.10	156.41	-64.26	2,317.78	-8,295.84	19,670.40	19,475.91	194.49	101.141			
18,200.00	6,991.64	6,060.00	6,057.39	183.68	156.41	-64.26	2,317.78	-8,295.84	19,769.89	19,575.29	194.60	101.593			
18,300.00	6,991.67	6,060.00	6,057.39	185.27	156.41	-64.26	2,317.78	-8,295.84	19,869.38	19,674.67	194.71	102.046			
18,400.00	6,991.69	6,060.00	6,057.39	186.86	156.41	-64.26	2,317.78	-8,295.84	19,968.88	19,774.06	194.82	102.497			
18,500.00	6,991.72	6,060.00	6,057.39	188.45	156.41	-64.26	2,317.78	-8,295.84	20,068.38	19,873.45	194.94	102.948			
18,600.00	6,991.75	6,060.00	6,057.39	190.04	156.41	-64.26	2,317.78	-8,295.84	20,167.89	19,972.84	195.05	103.399			
18,700.00	6,991.78	6,060.00	6,057.39	191.63	156.41	-64.26	2,317.78	-8,295.84	20,267.41	20,072.25	195.16	103.849			
18,800.00	6,991.80	6,060.00	6,057.39	193.22	156.41	-64.26	2,317.78	-8,295.84	20,366.93	20,171.65	195.27	104.299			
18,900.00	6,991.83	6,060.00	6,057.39	194.81	156.41	-64.26	2,317.78	-8,295.84	20,466.45	20,271.06	195.39	104.748			
19,000.00	6,991.86	6,060.00	6,057.39	196.40	156.41	-64.26	2,317.78	-8,295.84	20,565.98	20,370.48	195.50	105.197			
19,100.00	6,991.88	6,060.00	6,057.39	197.99	156.41	-64.26	2,317.78	-8,295.84	20,665.51	20,469.90	195.61	105.645			
19,200.00	6,991.91	6,060.00	6,057.39	199.58	156.41	-64.26	2,317.78	-8,295.84	20,765.05	20,569.32	195.73	106.093			
19,300.00	6,991.94	6,060.00	6,057.39	201.17	156.41	-64.26	2,317.78	-8,295.84	20,864.59	20,668.75	195.84	106.540			
19,342.28	6,991.95	6,060.00	6,057.39	201.84	156.41	-64.26	2,317.78	-8,295.84	20,906.67	20,710.79	195.89	106.729			

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:		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		
19,400.00	6,991.97	6,060.00	6,057.39	202.76	156.41	-64.26	2,317.78	-8,295.84	20,964.13	20,768.18	195.95	106.986		
19,500.00	6,991.99	6,060.00	6,057.39	204.35	156.41	-64.26	2,317.78	-8,295.84	21,063.68	20,867.62	196.06	107.433		
19,542.28	6,992.00	6,060.00	6,057.39	205.03	156.41	-64.26	2,317.78	-8,295.84	21,105.77	20,909.66	196.11	107.621		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	-74.44	2,319.65	-8,329.92	8,647.08				
100.00	100.00	38.09	38.09	0.25	0.68	-74.44	2,319.63	-8,329.93	8,646.87	8,645.95	0.93	9,335.546	CC
200.00	200.00	133.33	133.33	0.61	2.37	-74.44	2,319.40	-8,330.04	8,646.92	8,643.95	2.97	2,909.026	
300.00	300.00	228.56	228.56	0.97	4.06	-74.44	2,318.92	-8,330.28	8,647.03	8,642.01	5.02	1,722.988	
400.00	400.00	323.79	323.78	1.33	5.75	-74.45	2,318.19	-8,330.64	8,647.19	8,640.12	7.06	1,223.994	
500.00	500.00	419.01	419.00	1.68	7.44	-74.46	2,317.21	-8,331.13	8,647.40	8,638.29	9.11	949.144	
600.00	600.00	514.23	514.21	2.04	9.13	-74.47	2,315.97	-8,331.74	8,647.67	8,636.52	11.16	775.116	
700.00	700.00	563.00	562.97	2.40	10.00	-74.47	2,315.24	-8,332.10	8,648.13	8,635.75	12.38	698.598	
800.00	799.98	612.67	612.63	2.76	10.18	-44.48	2,314.27	-8,332.84	8,647.93	8,635.05	12.88	671.311	
900.00	899.92	654.00	653.92	3.12	10.34	-44.50	2,313.15	-8,333.98	8,647.31	8,633.95	13.35	647.502	
929.27	929.17	654.00	653.92	3.22	10.34	-44.50	2,313.15	-8,333.98	8,647.26	8,633.80	13.46	642.517	ES
1,000.00	999.86	654.00	653.92	3.47	10.34	-44.50	2,313.15	-8,333.98	8,647.55	8,633.84	13.71	630.834	
1,100.00	1,099.80	654.00	653.92	3.83	10.34	-44.50	2,313.15	-8,333.98	8,648.94	8,634.88	14.06	615.132	
1,200.00	1,199.74	744.00	743.66	4.19	10.73	-44.55	2,309.04	-8,339.33	8,650.98	8,636.37	14.61	592.165	
1,300.00	1,299.68	744.00	743.66	4.55	10.73	-44.55	2,309.04	-8,339.33	8,653.65	8,638.69	14.96	578.448	
1,400.00	1,399.61	744.00	743.66	4.91	10.73	-44.55	2,309.04	-8,339.33	8,657.47	8,642.16	15.31	565.502	
1,500.00	1,499.55	800.13	799.45	5.27	10.95	-44.59	2,305.45	-8,344.38	8,662.05	8,646.28	15.77	549.106	
1,600.00	1,599.49	835.00	834.06	5.63	11.08	-44.62	2,303.03	-8,347.78	8,667.29	8,651.10	16.19	535.271	
1,700.00	1,699.43	884.92	883.54	5.99	11.22	-44.66	2,299.04	-8,353.14	8,673.18	8,656.56	16.62	521.920	
1,800.00	1,799.37	928.00	926.11	6.35	11.33	-44.70	2,294.93	-8,358.28	8,679.77	8,662.73	17.03	509.644	
1,900.00	1,899.31	960.63	958.27	6.71	11.45	-44.74	2,291.47	-8,362.50	8,687.07	8,669.62	17.44	498.063	
2,000.00	1,999.25	1,023.00	1,019.59	7.07	11.68	-44.81	2,284.22	-8,371.36	8,695.24	8,677.32	17.91	485.447	
2,100.00	2,099.19	1,023.00	1,019.59	7.42	11.68	-44.81	2,284.22	-8,371.36	8,703.92	8,685.67	18.25	476.871	
2,200.00	2,199.13	1,023.00	1,019.59	7.78	11.68	-44.81	2,284.22	-8,371.36	8,713.74	8,695.15	18.59	468.738	
2,300.00	2,299.07	1,075.10	1,070.60	8.14	11.86	-44.87	2,277.70	-8,379.72	8,724.05	8,705.00	19.05	457.924	
2,400.00	2,399.01	1,118.00	1,112.44	8.50	12.01	-44.93	2,272.17	-8,387.40	8,735.52	8,716.03	19.49	448.215	
2,500.00	2,498.94	1,118.00	1,112.44	8.86	12.01	-44.93	2,272.17	-8,387.40	8,747.68	8,727.86	19.82	441.324	
2,600.00	2,598.88	1,159.92	1,153.19	9.22	12.15	-44.98	2,266.52	-8,395.46	8,760.69	8,740.43	20.26	432.417	
2,700.00	2,698.82	1,210.00	1,201.68	9.58	12.31	-45.06	2,259.31	-8,405.66	8,774.46	8,753.75	20.72	423.501	
2,800.00	2,798.76	1,210.00	1,201.68	9.94	12.31	-45.06	2,259.31	-8,405.66	8,788.97	8,767.92	21.04	417.641	
2,900.00	2,898.70	1,262.73	1,252.48	10.30	12.51	-45.14	2,251.01	-8,417.12	8,804.12	8,782.60	21.52	409.024	
3,000.00	2,998.64	1,305.00	1,292.95	10.66	12.68	-45.21	2,243.72	-8,426.89	8,820.11	8,798.13	21.97	401.398	
3,100.00	3,098.58	1,305.00	1,292.95	11.02	12.68	-45.21	2,243.72	-8,426.89	8,836.90	8,814.61	22.29	396.408	
3,200.00	3,198.52	1,343.67	1,329.77	11.38	12.85	-45.27	2,236.65	-8,436.36	8,854.44	8,831.69	22.75	389.275	
3,300.00	3,298.46	1,395.00	1,378.32	11.75	13.07	-45.37	2,226.87	-8,449.84	8,873.08	8,849.84	23.24	381.727	
3,400.00	3,398.40	1,395.00	1,378.32	12.11	13.07	-45.37	2,226.87	-8,449.84	8,892.19	8,868.63	23.56	377.480	
3,500.00	3,498.34	1,395.00	1,378.32	12.47	13.07	-45.37	2,226.87	-8,449.84	8,912.38	8,888.51	23.87	373.446	
3,600.00	3,598.27	1,441.73	1,422.12	12.83	13.31	-45.46	2,217.23	-8,462.98	8,933.22	8,908.84	24.38	366.424	
3,700.00	3,698.21	1,487.00	1,464.08	13.19	13.55	-45.55	2,206.91	-8,476.45	8,954.99	8,930.10	24.89	359.809	
3,800.00	3,798.15	1,487.00	1,464.08	13.55	13.55	-45.55	2,206.91	-8,476.45	8,977.43	8,952.24	25.19	356.389	
3,900.00	3,898.09	1,487.00	1,464.08	13.91	13.55	-45.55	2,206.91	-8,476.45	9,000.92	8,975.43	25.49	353.142	
4,000.00	3,998.03	1,538.64	1,511.43	14.27	13.83	-45.66	2,194.24	-8,492.73	9,024.86	8,998.81	26.05	346.502	
4,100.00	4,097.97	1,578.00	1,547.14	14.63	14.04	-45.76	2,184.13	-8,505.80	9,049.87	9,023.33	26.54	340.968	
4,200.00	4,197.91	1,578.00	1,547.14	14.99	14.04	-45.76	2,184.13	-8,505.80	9,075.57	9,048.74	26.83	338.224	
4,300.00	4,297.85	1,578.00	1,547.14	15.35	14.04	-45.76	2,184.13	-8,505.80	9,102.29	9,075.17	27.12	335.625	
4,400.00	4,397.79	1,578.00	1,547.14	15.71	14.04	-45.76	2,184.13	-8,505.80	9,130.03	9,102.63	27.40	333.165	
4,500.00	4,497.73	1,629.79	1,593.57	16.07	14.31	-45.88	2,170.24	-8,524.06	9,157.97	9,129.98	27.98	327.267	
4,600.00	4,597.66	1,670.00	1,629.11	16.43	14.53	-45.98	2,159.03	-8,539.17	9,187.32	9,158.82	28.50	322.396	
4,700.00	4,697.60	1,670.00	1,629.11	16.79	14.53	-45.98	2,159.03	-8,539.17	9,217.17	9,188.40	28.77	320.333	
4,800.00	4,797.54	1,670.00	1,629.11	17.15	14.53	-45.98	2,159.03	-8,539.17	9,248.01	9,218.96	29.05	318.384	
4,900.00	4,897.48	1,670.00	1,629.11	17.51	14.53	-45.98	2,159.03	-8,539.17	9,279.82	9,250.51	29.32	316.547	
5,000.00	4,997.42	1,710.19	1,664.25	17.87	14.71	-46.08	2,147.67	-8,555.03	9,312.14	9,282.31	29.83	312.131	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #164B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		563-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
5,100.00	5,097.36	1,763.00	1,709.97	18.23	14.96	-46.22	2,132.86	-8,576.91	9,345.81	9,315.38	30.43	307.103		
5,200.00	5,197.30	1,763.00	1,709.97	18.59	14.96	-46.22	2,132.86	-8,576.91	9,379.63	9,348.93	30.69	305.583		
5,300.00	5,297.24	1,763.00	1,709.97	18.95	14.96	-46.22	2,132.86	-8,576.91	9,414.39	9,383.44	30.95	304.155		
5,402.82	5,400.00	1,763.00	1,709.97	19.32	14.96	-46.22	2,132.86	-8,576.91	9,451.10	9,419.89	31.21	302.780		
5,500.00	5,497.13	1,804.04	1,745.13	19.67	15.11	-46.46	2,121.24	-8,594.60	9,486.63	9,454.92	31.72	299.097		
5,600.00	5,597.11	1,859.00	1,791.69	20.03	15.32	-46.76	2,105.18	-8,618.99	9,524.69	9,492.38	32.31	294.755		
5,700.00	5,697.10	1,859.00	1,791.69	20.39	15.32	-46.91	2,105.18	-8,618.99	9,563.62	9,531.07	32.56	293.730		
5,802.82	5,799.92	1,859.00	1,791.69	20.75	15.32	-77.08	2,105.18	-8,618.99	9,605.14	9,572.34	32.81	292.788		
5,900.00	5,897.09	1,859.00	1,791.69	21.10	15.32	-77.08	2,105.18	-8,618.99	9,645.49	9,612.46	33.03	291.988		
6,000.00	5,997.09	1,897.68	1,823.92	21.45	15.53	-77.18	2,093.33	-8,636.78	9,687.42	9,653.84	33.58	288.504		
6,100.00	6,097.09	1,912.03	1,835.72	21.81	15.60	-77.22	2,088.75	-8,643.56	9,730.24	9,696.31	33.92	286.817		
6,200.00	6,197.09	1,952.00	1,868.09	22.16	15.81	-77.33	2,075.49	-8,662.90	9,773.97	9,739.49	34.48	283.467		
6,300.00	6,297.09	1,952.00	1,868.09	22.52	15.81	-77.33	2,075.49	-8,662.90	9,818.06	9,783.36	34.71	282.888		
6,354.91	6,352.00	1,952.00	1,868.09	22.72	15.81	-77.33	2,075.49	-8,662.90	9,842.62	9,807.79	34.83	282.593		
6,400.00	6,397.06	1,952.00	1,868.09	22.87	15.81	-155.42	2,075.49	-8,662.90	9,864.25	9,829.33	34.93	282.409		
6,450.00	6,446.74	1,952.00	1,868.09	23.04	15.81	-154.18	2,075.49	-8,662.90	9,891.34	9,856.30	35.04	282.318		
6,500.00	6,495.84	1,952.00	1,868.09	23.20	15.81	-152.66	2,075.49	-8,662.90	9,921.49	9,886.35	35.14	282.335		
6,550.00	6,544.06	1,952.00	1,868.09	23.36	15.81	-150.79	2,075.49	-8,662.90	9,954.49	9,919.25	35.24	282.466		
6,600.00	6,591.08	1,952.00	1,868.09	23.51	15.81	-148.48	2,075.49	-8,662.90	9,990.11	9,954.77	35.34	282.706		
6,650.00	6,636.64	1,952.00	1,868.09	23.66	15.81	-145.61	2,075.49	-8,662.90	10,028.11	9,992.68	35.43	283.052		
6,700.00	6,680.44	1,952.00	1,868.09	23.82	15.81	-142.04	2,075.49	-8,662.90	10,068.22	10,032.71	35.51	283.496		
6,750.00	6,722.22	1,992.90	1,900.58	23.99	16.03	-137.91	2,061.38	-8,683.33	10,109.77	10,073.79	35.98	281.021 SF		
6,800.00	6,761.71	1,995.64	1,902.74	24.16	16.05	-132.35	2,060.42	-8,684.72	10,153.23	10,117.16	36.08	281.430		
6,850.00	6,798.68	1,997.63	1,904.31	24.33	16.06	-125.33	2,059.73	-8,685.73	10,197.99	10,161.82	36.17	281.962		
6,900.00	6,832.89	1,998.86	1,905.28	24.50	16.07	-116.58	2,059.29	-8,686.35	10,243.75	10,207.50	36.25	282.602		
6,950.00	6,864.14	1,999.35	1,905.66	24.69	16.07	-106.04	2,059.12	-8,686.60	10,290.22	10,253.90	36.32	283.337		
7,000.00	6,892.23	1,999.09	1,905.46	24.88	16.07	-94.10	2,059.21	-8,686.47	10,337.11	10,300.73	36.38	284.150		
7,050.00	6,916.99	1,998.10	1,904.68	25.08	16.06	-81.69	2,059.56	-8,685.97	10,384.12	10,347.69	36.43	285.023		
7,100.00	6,938.27	1,996.40	1,903.34	25.29	16.05	-69.99	2,060.16	-8,685.10	10,430.97	10,394.49	36.48	285.937		
7,150.00	6,955.93	1,994.00	1,901.45	25.51	16.04	-59.84	2,061.00	-8,683.88	10,477.36	10,440.84	36.52	286.872		
7,200.00	6,969.87	1,990.92	1,899.02	25.75	16.02	-51.49	2,062.07	-8,682.33	10,523.02	10,486.45	36.56	287.806		
7,250.00	6,980.00	1,952.00	1,868.09	25.99	15.81	-44.64	2,075.49	-8,662.90	10,567.98	10,531.70	36.28	291.318		
7,300.00	6,986.25	1,952.00	1,868.09	26.25	15.81	-39.41	2,075.49	-8,662.90	10,611.28	10,574.93	36.36	291.862		
7,354.68	6,988.62	1,952.00	1,868.09	26.53	15.81	-34.92	2,075.49	-8,662.90	10,656.89	10,620.44	36.46	292.329		
7,400.00	6,988.64	1,952.00	1,868.09	26.78	15.81	-34.92	2,075.49	-8,662.90	10,693.88	10,657.34	36.54	292.629		
7,500.00	6,988.67	1,952.00	1,868.09	27.40	15.81	-34.92	2,075.49	-8,662.90	10,775.73	10,738.97	36.76	293.151		
7,600.00	6,988.71	1,952.00	1,868.09	28.08	15.81	-34.92	2,075.49	-8,662.90	10,857.88	10,820.89	36.98	293.582		
7,700.00	6,988.74	1,952.00	1,868.09	28.84	15.81	-34.92	2,075.49	-8,662.90	10,940.33	10,903.11	37.22	293.931		
7,800.00	6,988.78	1,952.00	1,868.09	29.67	15.81	-34.92	2,075.49	-8,662.90	11,023.06	10,985.60	37.47	294.205		
7,900.00	6,988.81	1,952.00	1,868.09	30.55	15.81	-34.92	2,075.49	-8,662.90	11,106.09	11,068.36	37.72	294.414		
8,000.00	6,988.85	1,952.00	1,868.09	31.49	15.81	-34.92	2,075.49	-8,662.90	11,189.39	11,151.40	37.99	294.563		
8,100.00	6,988.88	1,912.16	1,835.82	32.48	15.60	-34.82	2,088.71	-8,643.62	11,272.47	11,234.53	37.94	297.095		
8,200.00	6,988.91	1,904.54	1,829.57	33.51	15.56	-34.80	2,091.15	-8,640.01	11,356.11	11,317.95	38.16	297.571		
8,211.68	6,988.92	1,903.65	1,828.84	33.63	15.56	-34.79	2,091.43	-8,639.59	11,365.89	11,327.71	38.19	297.623		
8,300.00	6,988.95	1,859.00	1,791.69	34.58	15.32	-32.38	2,105.18	-8,618.99	11,440.82	11,402.73	38.09	300.359		
8,400.00	6,988.98	1,859.00	1,791.69	35.70	15.32	-29.57	2,105.18	-8,618.99	11,526.14	11,487.77	38.37	300.414		
8,500.00	6,989.01	1,859.00	1,791.69	36.84	15.32	-26.54	2,105.18	-8,618.99	11,612.56	11,573.93	38.63	300.585		
8,600.00	6,989.04	1,859.00	1,791.69	38.02	15.32	-23.28	2,105.18	-8,618.99	11,699.96	11,661.08	38.89	300.880		
8,700.00	6,989.07	1,859.00	1,791.69	39.22	15.32	-19.78	2,105.18	-8,618.99	11,788.22	11,749.10	39.12	301.305		
8,772.79	6,989.09	1,859.00	1,791.69	40.11	15.32	-17.10	2,105.18	-8,618.99	11,852.92	11,813.64	39.29	301.696		
8,800.00	6,989.10	1,859.00	1,791.69	40.44	15.32	-17.10	2,105.18	-8,618.99	11,877.19	11,837.84	39.35	301.855		
8,900.00	6,989.13	1,859.00	1,791.69	41.68	15.32	-17.10	2,105.18	-8,618.99	11,966.46	11,926.89	39.57	302.445		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)			
9,000.00	6,989.15	1,859.00	1,791.69	42.95	15.32	-17.10	2,105.18	-8,618.99	12,055.90	12,016.12	39.78	303.029	
9,100.00	6,989.18	1,859.00	1,791.69	44.24	15.32	-17.10	2,105.18	-8,618.99	12,145.51	12,105.50	40.00	303.608	
9,200.00	6,989.21	1,859.00	1,791.69	45.55	15.32	-17.10	2,105.18	-8,618.99	12,235.27	12,195.05	40.22	304.184	
9,300.00	6,989.24	1,817.34	1,756.46	46.88	15.16	-17.12	2,117.40	-8,600.43	12,324.87	12,284.65	40.22	306.470	
9,400.00	6,989.26	1,808.02	1,748.52	48.23	15.13	-17.12	2,120.09	-8,596.34	12,414.78	12,374.39	40.39	307.394	
9,500.00	6,989.29	1,763.00	1,709.97	49.59	14.96	-17.13	2,132.86	-8,576.91	12,505.06	12,464.69	40.37	309.771	
9,600.00	6,989.32	1,763.00	1,709.97	50.96	14.96	-17.13	2,132.86	-8,576.91	12,595.10	12,554.51	40.59	310.274	
9,700.00	6,989.34	1,763.00	1,709.97	52.35	14.96	-17.13	2,132.86	-8,576.91	12,685.30	12,644.48	40.82	310.778	
9,800.00	6,989.37	1,763.00	1,709.97	53.75	14.96	-17.13	2,132.86	-8,576.91	12,775.64	12,734.60	41.04	311.284	
9,900.00	6,989.40	1,763.00	1,709.97	55.16	14.96	-17.13	2,132.86	-8,576.91	12,866.12	12,824.86	41.26	311.793	
10,000.00	6,989.42	1,763.00	1,709.97	56.58	14.96	-17.13	2,132.86	-8,576.91	12,956.75	12,915.26	41.49	312.304	
10,100.00	6,989.45	1,763.00	1,709.97	58.01	14.96	-17.13	2,132.86	-8,576.91	13,047.51	13,005.80	41.71	312.818	
10,200.00	6,989.48	1,763.00	1,709.97	59.45	14.96	-17.13	2,132.86	-8,576.91	13,138.40	13,096.47	41.93	313.335	
10,300.00	6,989.51	1,763.00	1,709.97	60.90	14.96	-17.13	2,132.86	-8,576.91	13,229.43	13,187.28	42.15	313.856	
10,400.00	6,989.53	1,763.00	1,709.97	62.35	14.96	-17.13	2,132.86	-8,576.91	13,320.59	13,278.21	42.37	314.381	
10,500.00	6,989.56	1,763.00	1,709.97	63.81	14.96	-17.13	2,132.86	-8,576.91	13,411.87	13,369.28	42.59	314.910	
10,600.00	6,989.59	1,722.29	1,674.77	65.28	14.77	-17.14	2,144.27	-8,559.94	13,502.82	13,460.22	42.60	316.954	
10,700.00	6,989.61	1,716.75	1,669.96	66.76	14.74	-17.14	2,145.83	-8,557.68	13,594.22	13,551.43	42.79	317.672	
10,800.00	6,989.64	1,711.27	1,665.19	68.24	14.72	-17.14	2,147.37	-8,555.47	13,685.72	13,642.73	42.98	318.386	
10,900.00	6,989.67	1,670.00	1,629.11	69.73	14.53	-17.14	2,159.03	-8,539.17	13,777.67	13,734.67	43.00	320.399	
11,000.00	6,989.70	1,670.00	1,629.11	71.22	14.53	-17.14	2,159.03	-8,539.17	13,869.28	13,826.05	43.22	320.897	
11,100.00	6,989.72	1,670.00	1,629.11	72.71	14.53	-17.14	2,159.03	-8,539.17	13,961.00	13,917.56	43.44	321.402	
11,200.00	6,989.75	1,670.00	1,629.11	74.22	14.53	-17.14	2,159.03	-8,539.17	14,052.83	14,009.18	43.65	321.912	
11,300.00	6,989.78	1,670.00	1,629.11	75.72	14.53	-17.14	2,159.03	-8,539.17	14,144.78	14,100.91	43.87	322.428	
11,400.00	6,989.80	1,670.00	1,629.11	77.23	14.53	-17.14	2,159.03	-8,539.17	14,236.83	14,192.75	44.08	322.950	
11,500.00	6,989.83	1,670.00	1,629.11	78.74	14.53	-17.14	2,159.03	-8,539.17	14,328.99	14,284.70	44.30	323.478	
11,600.00	6,989.86	1,670.00	1,629.11	80.26	14.53	-17.14	2,159.03	-8,539.17	14,421.26	14,376.75	44.51	324.012	
11,700.00	6,989.88	1,670.00	1,629.11	81.78	14.53	-17.14	2,159.03	-8,539.17	14,513.63	14,468.91	44.72	324.552	
11,800.00	6,989.91	1,670.00	1,629.11	83.30	14.53	-17.14	2,159.03	-8,539.17	14,606.09	14,561.17	44.93	325.097	
11,900.00	6,989.94	1,670.00	1,629.11	84.83	14.53	-17.14	2,159.03	-8,539.17	14,698.66	14,653.52	45.14	325.649	
12,000.00	6,989.97	1,670.00	1,629.11	86.36	14.53	-17.14	2,159.03	-8,539.17	14,791.32	14,745.98	45.34	326.206	
12,100.00	6,989.99	1,670.00	1,629.11	87.89	14.53	-17.14	2,159.03	-8,539.17	14,884.08	14,838.53	45.55	326.769	
12,200.00	6,990.02	1,670.00	1,629.11	89.42	14.53	-17.14	2,159.03	-8,539.17	14,976.93	14,931.18	45.75	327.337	
12,300.00	6,990.05	1,670.00	1,629.11	90.96	14.53	-17.14	2,159.03	-8,539.17	15,069.88	15,023.92	45.96	327.911	
12,400.00	6,990.07	1,670.00	1,629.11	92.50	14.53	-17.14	2,159.03	-8,539.17	15,162.91	15,116.75	46.16	328.490	
12,500.00	6,990.10	1,670.00	1,629.11	94.04	14.53	-17.14	2,159.03	-8,539.17	15,256.03	15,209.67	46.36	329.074	
12,600.00	6,990.13	1,628.32	1,592.26	95.58	14.31	-17.15	2,170.64	-8,523.52	15,348.71	15,302.32	46.39	330.835	
12,700.00	6,990.15	1,624.42	1,588.80	97.13	14.29	-17.15	2,171.70	-8,522.11	15,441.90	15,395.33	46.58	331.521	
12,800.00	6,990.18	1,620.57	1,585.36	98.68	14.26	-17.15	2,172.75	-8,520.71	15,535.17	15,488.41	46.76	332.208	
12,900.00	6,990.21	1,578.00	1,547.14	100.22	14.04	-17.14	2,184.13	-8,505.80	15,628.96	15,582.17	46.80	333.970	
13,000.00	6,990.24	1,578.00	1,547.14	101.78	14.04	-17.14	2,184.13	-8,505.80	15,722.29	15,675.30	47.00	334.542	
13,100.00	6,990.26	1,578.00	1,547.14	103.33	14.04	-17.14	2,184.13	-8,505.80	15,815.70	15,768.51	47.19	335.119	
13,200.00	6,990.29	1,578.00	1,547.14	104.88	14.04	-17.14	2,184.13	-8,505.80	15,909.20	15,861.81	47.39	335.702	
13,300.00	6,990.32	1,578.00	1,547.14	106.44	14.04	-17.14	2,184.13	-8,505.80	16,002.77	15,955.18	47.59	336.289	
13,400.00	6,990.34	1,578.00	1,547.14	107.99	14.04	-17.14	2,184.13	-8,505.80	16,096.41	16,048.63	47.78	336.882	
13,500.00	6,990.37	1,578.00	1,547.14	109.55	14.04	-17.14	2,184.13	-8,505.80	16,190.14	16,142.16	47.97	337.479	
13,600.00	6,990.40	1,578.00	1,547.14	111.11	14.04	-17.14	2,184.13	-8,505.80	16,283.93	16,235.77	48.17	338.082	
13,700.00	6,990.42	1,578.00	1,547.14	112.67	14.04	-17.14	2,184.13	-8,505.80	16,377.81	16,329.45	48.36	338.689	
13,800.00	6,990.45	1,578.00	1,547.14	114.23	14.04	-17.14	2,184.13	-8,505.80	16,471.75	16,423.20	48.55	339.300	
13,900.00	6,990.48	1,578.00	1,547.14	115.80	14.04	-17.14	2,184.13	-8,505.80	16,565.76	16,517.03	48.73	339.916	
14,000.00	6,990.51	1,578.00	1,547.14	117.36	14.04	-17.14	2,184.13	-8,505.80	16,659.85	16,610.92	48.92	340.536	
14,100.00	6,990.53	1,578.00	1,547.14	118.93	14.04	-17.14	2,184.13	-8,505.80	16,754.00	16,704.89	49.11	341.160	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
14,200.00	6,990.56	1,578.00	1,547.14	120.49	14.04	-17.14	2,184.13	-8,505.80	16,848.22	16,798.92	49.29	341.788		
14,300.00	6,990.59	1,578.00	1,547.14	122.06	14.04	-17.14	2,184.13	-8,505.80	16,942.51	16,893.03	49.48	342.420		
14,400.00	6,990.61	1,578.00	1,547.14	123.63	14.04	-17.14	2,184.13	-8,505.80	17,036.86	16,987.19	49.66	343.056		
14,500.00	6,990.64	1,578.00	1,547.14	125.20	14.04	-17.14	2,184.13	-8,505.80	17,131.27	17,081.43	49.84	343.696		
14,600.00	6,990.67	1,578.00	1,547.14	126.77	14.04	-17.14	2,184.13	-8,505.80	17,225.75	17,175.72	50.03	344.339		
14,700.00	6,990.70	1,578.00	1,547.14	128.34	14.04	-17.14	2,184.13	-8,505.80	17,320.29	17,270.09	50.21	344.985		
14,800.00	6,990.72	1,578.00	1,547.14	129.91	14.04	-17.14	2,184.13	-8,505.80	17,414.89	17,364.51	50.39	345.635		
14,900.00	6,990.75	1,578.00	1,547.14	131.48	14.04	-17.14	2,184.13	-8,505.80	17,509.55	17,458.99	50.56	346.289		
15,000.00	6,990.78	1,534.32	1,507.48	133.06	13.80	-17.13	2,195.33	-8,491.32	17,603.85	17,553.23	50.62	347.776		
15,100.00	6,990.80	1,530.25	1,503.77	134.63	13.78	-17.13	2,196.35	-8,490.01	17,698.54	17,647.76	50.78	348.500		
15,200.00	6,990.83	1,487.00	1,464.08	136.20	13.55	-17.12	2,206.91	-8,476.45	17,793.63	17,742.79	50.84	349.972		
15,300.00	6,990.86	1,487.00	1,464.08	137.78	13.55	-17.12	2,206.91	-8,476.45	17,888.36	17,837.34	51.02	350.613		
15,400.00	6,990.88	1,487.00	1,464.08	139.36	13.55	-17.12	2,206.91	-8,476.45	17,983.15	17,931.95	51.20	351.257		
15,500.00	6,990.91	1,487.00	1,464.08	140.93	13.55	-17.12	2,206.91	-8,476.45	18,077.99	18,026.62	51.37	351.904		
15,600.00	6,990.94	1,487.00	1,464.08	142.51	13.55	-17.12	2,206.91	-8,476.45	18,172.89	18,121.34	51.55	352.553		
15,700.00	6,990.97	1,487.00	1,464.08	144.09	13.55	-17.12	2,206.91	-8,476.45	18,267.84	18,216.12	51.72	353.206		
15,800.00	6,990.99	1,487.00	1,464.08	145.67	13.55	-17.12	2,206.91	-8,476.45	18,362.85	18,310.96	51.89	353.861		
15,900.00	6,991.02	1,487.00	1,464.08	147.24	13.55	-17.12	2,206.91	-8,476.45	18,457.91	18,405.84	52.06	354.519		
16,000.00	6,991.05	1,487.00	1,464.08	148.82	13.55	-17.12	2,206.91	-8,476.45	18,553.02	18,500.78	52.24	355.180		
16,100.00	6,991.07	1,487.00	1,464.08	150.40	13.55	-17.12	2,206.91	-8,476.45	18,648.18	18,595.78	52.41	355.843		
16,200.00	6,991.10	1,487.00	1,464.08	151.99	13.55	-17.12	2,206.91	-8,476.45	18,743.40	18,690.82	52.57	356.508		
16,300.00	6,991.13	1,487.00	1,464.08	153.57	13.55	-17.12	2,206.91	-8,476.45	18,838.66	18,785.91	52.74	357.175		
16,400.00	6,991.15	1,487.00	1,464.08	155.15	13.55	-17.12	2,206.91	-8,476.45	18,933.97	18,881.06	52.91	357.845		
16,500.00	6,991.18	1,487.00	1,464.08	156.73	13.55	-17.12	2,206.91	-8,476.45	19,029.33	18,976.25	53.08	358.517		
16,600.00	6,991.21	1,487.00	1,464.08	158.31	13.55	-17.12	2,206.91	-8,476.45	19,124.73	19,071.49	53.24	359.190		
16,700.00	6,991.24	1,487.00	1,464.08	159.90	13.55	-17.12	2,206.91	-8,476.45	19,220.19	19,166.78	53.41	359.866		
16,800.00	6,991.26	1,487.00	1,464.08	161.48	13.55	-17.12	2,206.91	-8,476.45	19,315.69	19,262.11	53.57	360.543		
16,900.00	6,991.29	1,487.00	1,464.08	163.06	13.55	-17.12	2,206.91	-8,476.45	19,411.23	19,357.49	53.74	361.222		
17,000.00	6,991.32	1,487.00	1,464.08	164.65	13.55	-17.12	2,206.91	-8,476.45	19,506.82	19,452.92	53.90	361.903		
17,100.00	6,991.34	1,487.00	1,464.08	166.23	13.55	-17.12	2,206.91	-8,476.45	19,602.45	19,548.39	54.06	362.585		
17,200.00	6,991.37	1,487.00	1,464.08	167.82	13.55	-17.12	2,206.91	-8,476.45	19,698.13	19,643.91	54.22	363.269		
17,300.00	6,991.40	1,446.59	1,426.64	169.40	13.34	-17.10	2,216.17	-8,464.39	19,793.52	19,739.21	54.31	364.458		
17,400.00	6,991.42	1,443.02	1,423.32	170.99	13.32	-17.09	2,216.95	-8,463.36	19,889.22	19,834.75	54.46	365.182		
17,500.00	6,991.45	1,439.48	1,420.02	172.57	13.30	-17.09	2,217.72	-8,462.33	19,984.95	19,930.34	54.62	365.906		
17,600.00	6,991.48	1,435.97	1,416.74	174.16	13.28	-17.09	2,218.47	-8,461.32	20,080.73	20,025.96	54.77	366.630		
17,700.00	6,991.51	1,395.00	1,378.32	175.75	13.07	-17.06	2,226.87	-8,449.84	20,176.82	20,121.97	54.85	367.824		
17,800.00	6,991.53	1,395.00	1,378.32	177.33	13.07	-17.06	2,226.87	-8,449.84	20,272.62	20,217.60	55.01	368.499		
17,900.00	6,991.56	1,395.00	1,378.32	178.92	13.07	-17.06	2,226.87	-8,449.84	20,368.45	20,313.28	55.17	369.176		
18,000.00	6,991.59	1,395.00	1,378.32	180.51	13.07	-17.06	2,226.87	-8,449.84	20,464.33	20,409.00	55.33	369.853		
18,100.00	6,991.61	1,395.00	1,378.32	182.10	13.07	-17.06	2,226.87	-8,449.84	20,560.24	20,504.76	55.49	370.532		
18,200.00	6,991.64	1,395.00	1,378.32	183.68	13.07	-17.06	2,226.87	-8,449.84	20,656.20	20,600.55	55.65	371.212		
18,300.00	6,991.67	1,395.00	1,378.32	185.27	13.07	-17.06	2,226.87	-8,449.84	20,752.19	20,696.39	55.80	371.893		
18,400.00	6,991.69	1,395.00	1,378.32	186.86	13.07	-17.06	2,226.87	-8,449.84	20,848.22	20,792.26	55.96	372.574		
18,500.00	6,991.72	1,395.00	1,378.32	188.45	13.07	-17.06	2,226.87	-8,449.84	20,944.28	20,888.17	56.11	373.257		
18,600.00	6,991.75	1,395.00	1,378.32	190.04	13.07	-17.06	2,226.87	-8,449.84	21,040.39	20,984.12	56.27	373.940		
18,700.00	6,991.78	1,395.00	1,378.32	191.63	13.07	-17.06	2,226.87	-8,449.84	21,136.53	21,080.10	56.42	374.624		
18,800.00	6,991.80	1,395.00	1,378.32	193.22	13.07	-17.06	2,226.87	-8,449.84	21,232.70	21,176.13	56.57	375.309		
18,900.00	6,991.83	1,395.00	1,378.32	194.81	13.07	-17.06	2,226.87	-8,449.84	21,328.91	21,272.18	56.73	375.994		
19,000.00	6,991.86	1,395.00	1,378.32	196.40	13.07	-17.06	2,226.87	-8,449.84	21,425.15	21,368.28	56.88	376.680		
19,100.00	6,991.88	1,395.00	1,378.32	197.99	13.07	-17.06	2,226.87	-8,449.84	21,521.43	21,464.40	57.03	377.366		
19,200.00	6,991.91	1,395.00	1,378.32	199.58	13.07	-17.06	2,226.87	-8,449.84	21,617.75	21,560.56	57.18	378.053		
19,300.00	6,991.94	1,395.00	1,378.32	201.17	13.07	-17.06	2,226.87	-8,449.84	21,714.09	21,656.76	57.33	378.741		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,342.28	6,991.95	1,395.00	1,378.32	201.84	13.07	-17.06	2,226.87	-8,449.84	21,754.83	21,697.44	57.40	379.031		
19,400.00	6,991.97	1,395.00	1,378.32	202.76	13.07	-17.06	2,226.87	-8,449.84	21,810.47	21,752.99	57.48	379.428		
19,500.00	6,991.99	1,395.00	1,378.32	204.35	13.07	-17.06	2,226.87	-8,449.84	21,906.88	21,849.25	57.63	380.116		
19,542.28	6,992.00	1,395.00	1,378.32	205.03	13.07	-17.06	2,226.87	-8,449.84	21,947.65	21,889.96	57.70	380.407		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	-71.39	2,680.33	-7,959.48	8,398.68				
100.00	100.00	1,690.00	1,571.11	0.25	9.49	-74.63	2,188.28	-7,958.36	8,387.16	8,377.56	9.60	873.254	
200.00	200.00	1,736.24	1,609.34	0.61	9.91	-74.80	2,162.28	-7,958.45	8,369.74	8,359.48	10.26	815.918	
300.00	300.00	1,850.00	1,703.96	0.97	10.98	-75.22	2,099.12	-7,958.36	8,352.64	8,341.03	11.61	719.256	
400.00	400.00	1,881.00	1,729.73	1.33	11.27	-75.34	2,081.89	-7,958.40	8,336.03	8,323.79	12.24	680.915	
500.00	500.00	1,913.00	1,756.57	1.68	11.54	-75.46	2,064.47	-7,958.56	8,320.33	8,307.47	12.86	646.988	
600.00	600.00	1,974.48	1,808.20	2.04	12.12	-75.68	2,031.10	-7,959.11	8,305.35	8,291.56	13.79	602.188	
700.00	700.00	2,009.00	1,837.11	2.40	12.46	-75.81	2,012.23	-7,959.55	8,290.96	8,276.48	14.48	572.431	
800.00	799.98	2,166.00	1,968.29	2.76	13.97	-46.64	1,926.01	-7,961.57	8,275.64	8,259.31	16.33	506.880	
900.00	899.92	2,198.00	1,994.84	3.12	14.29	-46.77	1,908.15	-7,961.96	8,259.28	8,242.27	17.01	485.499	
1,000.00	999.86	2,339.22	2,111.76	3.47	15.65	-47.33	1,828.99	-7,964.17	8,243.48	8,224.77	18.71	440.534	
1,100.00	1,099.80	2,480.75	2,230.89	3.83	16.96	-47.88	1,752.59	-7,964.32	8,227.42	8,207.06	20.36	404.084	
1,200.00	1,199.74	2,601.40	2,332.57	4.19	18.11	-48.35	1,687.65	-7,963.98	8,211.52	8,189.67	21.85	375.734	
1,300.00	1,299.68	2,643.00	2,367.74	4.55	18.50	-48.51	1,665.44	-7,963.62	8,195.53	8,172.92	22.61	362.481	
1,400.00	1,399.61	2,916.00	2,596.67	4.91	21.16	-49.58	1,516.80	-7,960.30	8,179.62	8,154.05	25.57	319.953	
1,500.00	1,499.55	2,942.49	2,618.59	5.27	21.42	-49.69	1,501.93	-7,959.82	8,162.96	8,136.76	26.20	311.552	
1,600.00	1,599.49	3,058.00	2,716.73	5.63	22.44	-50.13	1,441.15	-7,956.90	8,146.84	8,119.28	27.57	295.509	
1,700.00	1,699.43	3,107.49	2,759.83	5.99	22.85	-50.30	1,416.90	-7,955.11	8,130.96	8,102.61	28.35	286.772	
1,800.00	1,799.37	3,122.00	2,772.57	6.35	22.97	-50.36	1,409.97	-7,954.62	8,115.96	8,087.10	28.86	281.228	
1,900.00	1,899.31	3,153.00	2,799.98	6.71	23.21	-50.46	1,395.53	-7,953.71	8,101.86	8,072.38	29.48	274.796	
2,000.00	1,999.25	3,197.16	2,839.36	7.07	23.55	-50.61	1,375.57	-7,952.68	8,088.66	8,058.47	30.20	267.854	
2,100.00	2,099.19	3,231.31	2,870.06	7.42	23.81	-50.72	1,360.62	-7,951.95	8,076.21	8,045.38	30.83	261.939	
2,200.00	2,199.13	3,247.00	2,884.26	7.78	23.92	-50.77	1,353.96	-7,951.69	8,064.73	8,033.40	31.33	257.409	
2,300.00	2,299.07	3,265.58	2,901.17	8.14	24.05	-50.82	1,346.28	-7,951.51	8,054.28	8,022.44	31.84	252.953	
2,400.00	2,399.01	3,279.00	2,913.47	8.50	24.15	-50.86	1,340.91	-7,951.49	8,044.90	8,012.59	32.31	248.959	
2,500.00	2,498.94	3,468.00	3,090.72	8.86	25.30	-51.36	1,275.59	-7,949.30	8,035.85	8,002.03	33.82	237.638	
2,600.00	2,598.88	3,468.00	3,090.72	9.22	25.30	-51.36	1,275.59	-7,949.30	8,026.69	7,992.49	34.20	234.714	
2,700.00	2,698.82	3,500.00	3,121.31	9.58	25.47	-51.43	1,266.23	-7,948.91	8,018.59	7,983.85	34.74	230.819	
2,800.00	2,798.76	3,500.00	3,121.31	9.94	25.47	-51.43	1,266.23	-7,948.91	8,011.53	7,976.42	35.12	228.148	
2,900.00	2,898.70	3,531.00	3,151.15	10.30	25.62	-51.50	1,257.83	-7,949.00	8,005.50	7,969.87	35.64	224.636	
3,000.00	2,998.64	3,657.00	3,273.43	10.66	26.19	-51.74	1,227.43	-7,948.85	7,999.51	7,962.95	36.57	218.759	
3,100.00	3,098.58	3,688.00	3,303.67	11.02	26.31	-51.79	1,220.63	-7,948.76	7,994.02	7,956.95	37.06	215.689	
3,200.00	3,198.52	3,763.77	3,378.08	11.38	26.58	-51.91	1,206.36	-7,948.92	7,989.31	7,951.61	37.70	211.919	
3,300.00	3,298.46	3,875.00	3,487.89	11.75	26.93	-52.05	1,188.68	-7,948.54	7,984.55	7,946.14	38.41	207.872	
3,400.00	3,398.40	3,907.00	3,519.62	12.11	27.02	-52.09	1,184.54	-7,948.38	7,980.17	7,941.31	38.86	205.351	
3,500.00	3,498.34	3,938.00	3,550.44	12.47	27.09	-52.12	1,181.20	-7,948.53	7,976.80	7,937.51	39.30	202.994	
3,600.00	3,598.27	3,938.00	3,550.44	12.83	27.09	-52.12	1,181.20	-7,948.53	7,974.40	7,934.74	39.66	201.092	
3,700.00	3,698.21	3,969.00	3,581.32	13.19	27.15	-52.14	1,178.55	-7,949.03	7,972.94	7,932.87	40.07	198.960	
3,800.00	3,798.15	4,033.33	3,645.53	13.55	27.24	-52.18	1,174.97	-7,950.48	7,972.26	7,931.73	40.53	196.714	
3,900.00	3,898.09	4,133.95	3,746.04	13.91	27.36	-52.23	1,170.96	-7,952.73	7,971.80	7,930.78	41.02	194.345	
4,000.00	3,998.03	4,235.33	3,847.32	14.27	27.49	-52.28	1,166.97	-7,954.96	7,971.32	7,929.81	41.51	192.013	
4,100.00	4,097.97	4,336.72	3,948.61	14.63	27.63	-52.33	1,163.03	-7,957.18	7,970.83	7,928.82	42.01	189.738	
4,200.00	4,197.91	4,438.12	4,049.91	14.99	27.76	-52.38	1,159.14	-7,959.36	7,970.33	7,927.82	42.50	187.517	
4,300.00	4,297.85	4,539.52	4,151.22	15.35	27.89	-52.43	1,155.29	-7,961.52	7,969.81	7,926.81	43.00	185.347	
4,400.00	4,397.79	4,640.93	4,252.53	15.71	28.02	-52.48	1,151.50	-7,963.65	7,969.27	7,925.78	43.49	183.228	
4,500.00	4,497.73	4,742.35	4,353.86	16.07	28.15	-52.53	1,147.75	-7,965.75	7,968.72	7,924.74	43.99	181.158	
4,600.00	4,597.66	4,843.77	4,455.19	16.43	28.28	-52.58	1,144.05	-7,967.83	7,968.16	7,923.68	44.48	179.134	
4,700.00	4,697.60	4,945.20	4,556.53	16.79	28.41	-52.63	1,140.40	-7,969.88	7,967.58	7,922.61	44.98	177.155	
4,800.00	4,797.54	5,046.64	4,657.89	17.15	28.54	-52.68	1,136.80	-7,971.90	7,966.99	7,921.52	45.47	175.220	
4,900.00	4,897.48	5,148.08	4,759.25	17.51	28.67	-52.72	1,133.25	-7,973.89	7,966.38	7,920.42	45.96	173.327	
5,000.00	4,997.42	5,249.53	4,860.62	17.87	28.80	-52.77	1,129.74	-7,975.86	7,965.75	7,919.30	46.45	171.474	
5,100.00	5,097.36	5,350.98	4,962.00	18.23	28.94	-52.82	1,126.29	-7,977.79	7,965.11	7,918.16	46.95	169.659	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)	Minimum Separation (usft)	Separation Factor
5,200.00	5,197.30	5,452.45	5,063.38	18.59	29.07	-52.86	1,122.88	-7,979.70	7,964.46	7,917.01	47.44	167.881
5,300.00	5,297.24	5,553.92	5,164.78	18.95	29.20	-52.91	1,119.52	-7,981.59	7,963.78	7,915.85	47.93	166.138
5,402.82	5,400.00	5,658.26	5,269.05	19.32	29.33	-52.96	1,116.12	-7,983.50	7,963.08	7,914.63	48.44	164.382
5,500.00	5,497.13	5,756.89	5,367.62	19.67	29.46	-53.00	1,112.95	-7,985.27	7,962.64	7,913.72	48.92	162.762
5,539.88	5,537.00	5,797.38	5,408.08	19.81	29.51	-53.01	1,111.67	-7,986.00	7,962.60	7,913.48	49.12	162.110 CC
5,600.00	5,597.11	5,858.44	5,469.10	20.03	29.59	-53.03	1,109.74	-7,987.08	7,962.69	7,913.27	49.41	161.139 ES
5,700.00	5,697.10	5,960.02	5,570.62	20.39	29.72	-53.07	1,106.58	-7,988.85	7,963.25	7,913.34	49.91	159.562
5,802.82	5,799.92	6,064.51	5,675.04	20.75	29.86	-83.10	1,103.37	-7,990.65	7,964.35	7,913.94	50.41	157.987
5,900.00	5,897.09	6,163.27	5,773.73	21.10	29.99	-83.12	1,100.39	-7,992.32	7,965.63	7,914.74	50.89	156.535
6,000.00	5,997.09	6,264.90	5,875.31	21.45	30.12	-83.15	1,097.37	-7,994.02	7,966.93	7,915.55	51.38	155.069
6,100.00	6,097.09	6,366.53	5,976.88	21.81	30.25	-83.17	1,094.40	-7,995.68	7,968.21	7,916.34	51.87	153.628
6,200.00	6,197.09	6,468.17	6,078.47	22.16	30.38	-83.19	1,091.48	-7,997.32	7,969.47	7,917.11	52.36	152.214
6,300.00	6,297.09	6,569.81	6,180.06	22.52	30.51	-83.21	1,088.61	-7,998.93	7,970.71	7,917.86	52.85	150.824
6,354.91	6,352.00	6,625.62	6,235.84	22.72	30.58	-83.22	1,087.06	-7,999.80	7,971.38	7,918.27	53.12	150.072
6,400.00	6,397.06	6,671.39	6,281.58	22.87	30.64	-162.18	1,085.79	-8,000.51	7,973.45	7,920.12	53.33	149.500
6,450.00	6,446.74	6,721.78	6,331.95	23.04	30.71	-162.04	1,084.41	-8,001.29	7,979.28	7,925.71	53.57	148.952
6,500.00	6,495.84	6,771.50	6,381.64	23.20	30.77	-161.80	1,083.06	-8,002.05	7,988.80	7,934.99	53.80	148.483
6,550.00	6,544.06	6,820.25	6,430.37	23.36	30.83	-161.46	1,081.75	-8,002.78	8,001.94	7,947.91	54.03	148.098
6,600.00	6,591.08	6,867.72	6,477.82	23.51	30.90	-160.99	1,080.48	-8,003.49	8,018.64	7,964.38	54.25	147.799
6,650.00	6,636.64	6,913.63	6,523.70	23.66	30.96	-160.39	1,079.27	-8,004.18	8,038.78	7,984.32	54.47	147.587
6,700.00	6,680.44	6,957.69	6,567.74	23.82	31.01	-159.64	1,078.11	-8,004.83	8,062.26	8,007.59	54.67	147.463
6,750.00	6,722.22	6,999.63	6,609.67	23.99	31.07	-158.71	1,077.01	-8,005.44	8,088.93	8,034.06	54.87	147.426 SF
6,800.00	6,761.71	7,039.20	6,649.22	24.16	31.12	-157.56	1,075.99	-8,006.01	8,118.62	8,063.57	55.05	147.475
6,850.00	6,798.68	7,076.15	6,686.16	24.33	31.17	-156.15	1,075.04	-8,006.55	8,151.16	8,095.94	55.22	147.609
6,900.00	6,832.89	7,110.26	6,720.25	24.50	31.21	-154.39	1,074.17	-8,007.03	8,186.36	8,130.98	55.38	147.824
6,950.00	6,864.14	7,141.31	6,751.28	24.69	31.25	-152.20	1,073.38	-8,007.48	8,223.99	8,168.47	55.52	148.117
7,000.00	6,892.23	7,169.11	6,779.07	24.88	31.29	-149.44	1,072.68	-8,007.87	8,263.83	8,208.18	55.65	148.486
7,050.00	6,916.99	7,193.49	6,803.44	25.08	31.32	-145.92	1,072.07	-8,008.21	8,305.64	8,249.87	55.77	148.925
7,100.00	6,938.27	7,214.29	6,824.24	25.29	31.34	-141.36	1,071.55	-8,008.50	8,349.16	8,293.29	55.87	149.430
7,150.00	6,955.93	7,231.40	6,841.34	25.51	31.37	-135.38	1,071.13	-8,008.74	8,394.12	8,338.16	55.96	149.994
7,200.00	6,969.87	7,244.69	6,854.62	25.75	31.38	-127.48	1,070.80	-8,008.93	8,440.26	8,384.22	56.04	150.613
7,250.00	6,980.00	7,254.09	6,864.02	25.99	31.40	-117.12	1,070.56	-8,009.06	8,487.28	8,431.17	56.10	151.278
7,300.00	6,986.25	7,259.54	6,869.47	26.25	31.40	-104.10	1,070.43	-8,009.13	8,534.90	8,478.74	56.16	151.982
7,354.68	6,988.62	7,260.93	6,870.86	26.53	31.41	-87.73	1,070.39	-8,009.15	8,587.31	8,531.11	56.20	152.788
7,400.00	6,988.64	7,260.10	6,870.03	26.78	31.40	-87.71	1,070.41	-8,009.14	8,630.80	8,574.56	56.24	153.467
7,500.00	6,988.67	7,258.26	6,868.19	27.40	31.40	-87.67	1,070.46	-8,009.12	8,726.83	8,670.51	56.32	154.952
7,600.00	6,988.71	7,256.43	6,866.36	28.08	31.40	-87.62	1,070.51	-8,009.09	8,822.95	8,766.54	56.41	156.419
7,700.00	6,988.74	7,254.59	6,864.52	28.84	31.40	-87.58	1,070.55	-8,009.07	8,919.15	8,862.65	56.50	157.870
7,800.00	6,988.78	7,252.75	6,862.69	29.67	31.39	-87.54	1,070.60	-8,009.04	9,015.44	8,958.84	56.59	159.305
7,900.00	6,988.81	7,250.92	6,860.85	30.55	31.39	-87.49	1,070.64	-8,009.02	9,111.80	9,055.11	56.69	160.725
8,000.00	6,988.85	7,249.07	6,859.01	31.49	31.39	-87.45	1,070.69	-8,008.99	9,208.24	9,151.45	56.80	162.130
8,100.00	6,988.88	7,247.23	6,857.17	32.48	31.39	-87.41	1,070.73	-8,008.96	9,304.76	9,247.86	56.90	163.521
8,200.00	6,988.91	7,245.39	6,855.32	33.51	31.39	-87.36	1,070.78	-8,008.94	9,401.35	9,344.34	57.01	164.899
8,211.68	6,988.92	7,245.17	6,855.11	33.63	31.38	-87.36	1,070.78	-8,008.94	9,412.64	9,355.62	57.03	165.059
8,300.00	6,988.95	7,243.57	6,853.51	34.58	31.38	-86.96	1,070.82	-8,008.91	9,498.35	9,441.22	57.12	166.282
8,400.00	6,988.98	7,241.84	6,851.77	35.70	31.38	-86.36	1,070.87	-8,008.89	9,596.17	9,538.95	57.22	167.705
8,500.00	6,989.01	7,240.18	6,850.11	36.84	31.38	-85.48	1,070.91	-8,008.87	9,694.69	9,637.39	57.31	169.172
8,600.00	6,989.04	7,238.60	6,848.54	38.02	31.38	-84.07	1,070.95	-8,008.84	9,793.77	9,736.39	57.38	170.684
8,700.00	6,989.07	7,237.10	6,847.04	39.22	31.37	-81.45	1,070.98	-8,008.82	9,893.27	9,835.83	57.44	172.242
8,772.79	6,989.09	7,236.07	6,846.01	40.11	31.37	-77.51	1,071.01	-8,008.81	9,965.88	9,908.41	57.47	173.404
8,800.00	6,989.10	7,235.69	6,845.63	40.44	31.37	-77.48	1,071.02	-8,008.80	9,993.05	9,935.57	57.48	173.842
8,900.00	6,989.13	7,234.30	6,844.24	41.68	31.37	-77.34	1,071.05	-8,008.78	10,092.89	10,035.37	57.52	175.454

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
									Minimum Separation (usft)	Separation Factor	
9,000.00	6,989.15	7,232.91	6,842.85	42.95	31.37	-77.20	1,071.09	-8,008.76	10,192.74	10,135.17	57.57 177.061
9,100.00	6,989.18	7,231.52	6,841.46	44.24	31.37	-77.06	1,071.12	-8,008.75	10,292.59	10,234.98	57.61 178.664
9,200.00	6,989.21	7,230.13	6,840.07	45.55	31.37	-76.93	1,071.16	-8,008.73	10,392.44	10,334.79	57.65 180.263
9,300.00	6,989.24	7,228.73	6,838.67	46.88	31.36	-76.79	1,071.19	-8,008.71	10,492.30	10,434.60	57.69 181.858
9,400.00	6,989.26	7,227.34	6,837.28	48.23	31.36	-76.65	1,071.23	-8,008.69	10,592.15	10,534.41	57.74 183.449
9,500.00	6,989.29	7,225.94	6,835.88	49.59	31.36	-76.52	1,071.26	-8,008.67	10,692.01	10,634.23	57.78 185.036
9,600.00	6,989.32	7,224.55	6,834.49	50.96	31.36	-76.38	1,071.30	-8,008.65	10,791.88	10,734.05	57.83 186.618
9,700.00	6,989.34	7,223.15	6,833.09	52.35	31.36	-76.24	1,071.33	-8,008.63	10,891.74	10,833.86	57.87 188.196
9,800.00	6,989.37	7,221.75	6,831.70	53.75	31.35	-76.10	1,071.37	-8,008.61	10,991.61	10,933.69	57.92 189.770
9,900.00	6,989.40	7,220.36	6,830.30	55.16	31.35	-75.97	1,071.40	-8,008.59	11,091.47	11,033.51	57.97 191.339
10,000.00	6,989.42	7,218.96	6,828.90	56.58	31.35	-75.83	1,071.44	-8,008.57	11,191.35	11,133.33	58.02 192.904
10,100.00	6,989.45	7,217.56	6,827.50	58.01	31.35	-75.70	1,071.47	-8,008.55	11,291.22	11,233.16	58.06 194.464
10,200.00	6,989.48	7,216.16	6,826.10	59.45	31.35	-75.56	1,071.51	-8,008.53	11,391.09	11,332.98	58.11 196.020
10,300.00	6,989.51	7,214.76	6,824.70	60.90	31.35	-75.42	1,071.54	-8,008.51	11,490.97	11,432.81	58.16 197.572
10,400.00	6,989.53	7,213.35	6,823.30	62.35	31.34	-75.29	1,071.58	-8,008.49	11,590.85	11,532.64	58.21 199.119
10,500.00	6,989.56	7,211.95	6,821.90	63.81	31.34	-75.15	1,071.61	-8,008.47	11,690.73	11,632.47	58.26 200.661
10,600.00	6,989.59	7,210.55	6,820.50	65.28	31.34	-75.02	1,071.65	-8,008.45	11,790.61	11,732.30	58.31 202.198
10,700.00	6,989.61	7,209.14	6,819.09	66.76	31.34	-74.88	1,071.68	-8,008.43	11,890.50	11,832.14	58.36 203.731
10,800.00	6,989.64	7,207.74	6,817.69	68.24	31.34	-74.74	1,071.72	-8,008.41	11,990.39	11,931.97	58.42 205.260
10,900.00	6,989.67	7,206.33	6,816.28	69.73	31.33	-74.61	1,071.75	-8,008.39	12,090.27	12,031.81	58.47 206.783
11,000.00	6,989.70	7,204.93	6,814.88	71.22	31.33	-74.47	1,071.79	-8,008.37	12,190.16	12,131.64	58.52 208.302
11,100.00	6,989.72	7,203.52	6,813.47	72.71	31.33	-74.34	1,071.82	-8,008.35	12,290.06	12,231.48	58.58 209.816
11,200.00	6,989.75	7,202.11	6,812.06	74.22	31.33	-74.20	1,071.86	-8,008.33	12,389.95	12,331.32	58.63 211.325
11,300.00	6,989.78	7,200.70	6,810.66	75.72	31.33	-74.07	1,071.89	-8,008.31	12,489.84	12,431.16	58.68 212.829
11,400.00	6,989.80	7,199.29	6,809.25	77.23	31.33	-73.93	1,071.93	-8,008.29	12,589.74	12,531.00	58.74 214.329
11,500.00	6,989.83	7,197.88	6,807.84	78.74	31.32	-73.80	1,071.96	-8,008.27	12,689.64	12,630.84	58.80 215.823
11,600.00	6,989.86	7,196.47	6,806.43	80.26	31.32	-73.66	1,072.00	-8,008.25	12,789.54	12,730.68	58.85 217.313
11,700.00	6,989.88	7,195.06	6,805.02	81.78	31.32	-73.53	1,072.03	-8,008.23	12,889.44	12,830.53	58.91 218.798
11,800.00	6,989.91	7,193.65	6,803.60	83.30	31.32	-73.39	1,072.07	-8,008.22	12,989.34	12,930.37	58.97 220.277
11,900.00	6,989.94	7,192.23	6,802.19	84.83	31.32	-73.26	1,072.10	-8,008.20	13,089.24	13,030.22	59.03 221.752
12,000.00	6,989.97	7,190.82	6,800.78	86.36	31.31	-73.13	1,072.14	-8,008.18	13,189.15	13,130.06	59.09 223.222
12,100.00	6,989.99	7,189.41	6,799.36	87.89	31.31	-72.99	1,072.17	-8,008.16	13,289.05	13,229.91	59.14 224.686
12,200.00	6,990.02	7,187.99	6,797.95	89.42	31.31	-72.86	1,072.21	-8,008.14	13,388.96	13,329.75	59.20 226.146
12,300.00	6,990.05	7,186.57	6,796.53	90.96	31.31	-72.72	1,072.25	-8,008.12	13,488.87	13,429.60	59.27 227.600
12,400.00	6,990.07	7,185.16	6,795.11	92.50	31.31	-72.59	1,072.28	-8,008.10	13,588.78	13,529.45	59.33 229.050
12,500.00	6,990.10	7,183.74	6,793.70	94.04	31.31	-72.46	1,072.32	-8,008.08	13,688.69	13,629.30	59.39 230.494
12,600.00	6,990.13	7,182.32	6,792.28	95.58	31.30	-72.32	1,072.35	-8,008.06	13,788.60	13,729.15	59.45 231.933
12,700.00	6,990.15	7,180.90	6,790.86	97.13	31.30	-72.19	1,072.39	-8,008.04	13,888.51	13,829.00	59.51 233.367
12,800.00	6,990.18	7,179.48	6,789.44	98.68	31.30	-72.06	1,072.42	-8,008.02	13,988.43	13,928.85	59.58 234.796
12,900.00	6,990.21	7,178.06	6,788.02	100.22	31.30	-71.93	1,072.46	-8,008.00	14,088.34	14,028.70	59.64 236.219
13,000.00	6,990.24	7,176.64	6,786.60	101.78	31.30	-71.79	1,072.49	-8,007.98	14,188.26	14,128.55	59.71 237.637
13,100.00	6,990.26	7,175.21	6,785.18	103.33	31.29	-71.66	1,072.53	-8,007.96	14,288.18	14,228.41	59.77 239.050
13,200.00	6,990.29	7,173.79	6,783.75	104.88	31.29	-71.53	1,072.57	-8,007.94	14,388.09	14,328.26	59.84 240.458
13,300.00	6,990.32	7,172.37	6,782.33	106.44	31.29	-71.40	1,072.60	-8,007.92	14,488.01	14,428.11	59.90 241.861
13,400.00	6,990.34	7,170.94	6,780.91	107.99	31.29	-71.26	1,072.64	-8,007.90	14,587.93	14,527.96	59.97 243.258
13,500.00	6,990.37	7,169.52	6,779.48	109.55	31.29	-71.13	1,072.67	-8,007.88	14,687.86	14,627.82	60.04 244.650
13,600.00	6,990.40	7,168.09	6,778.05	111.11	31.28	-71.00	1,072.71	-8,007.86	14,787.78	14,727.67	60.10 246.036
13,700.00	6,990.42	7,166.66	6,776.63	112.67	31.28	-70.87	1,072.75	-8,007.84	14,887.70	14,827.53	60.17 247.418
13,800.00	6,990.45	7,165.23	6,775.20	114.23	31.28	-70.74	1,072.78	-8,007.81	14,987.62	14,927.38	60.24 248.794
13,900.00	6,990.48	7,163.80	6,773.77	115.80	31.28	-70.61	1,072.82	-8,007.79	15,087.55	15,027.24	60.31 250.164
14,000.00	6,990.51	7,162.37	6,772.34	117.36	31.28	-70.47	1,072.85	-8,007.77	15,187.47	15,127.09	60.38 251.529
14,100.00	6,990.53	7,160.94	6,770.91	118.93	31.28	-70.34	1,072.89	-8,007.75	15,287.40	15,226.95	60.45 252.889

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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)				
14,200.00	6,990.56	7,159.51	6,769.48	120.49	31.27	-70.21	1,072.93	-8,007.73	15,387.33	15,326.81	60.52	254.244		
14,300.00	6,990.59	7,158.08	6,768.05	122.06	31.27	-70.08	1,072.96	-8,007.71	15,487.26	15,426.66	60.59	255.593		
14,400.00	6,990.61	7,156.65	6,766.62	123.63	31.27	-69.95	1,073.00	-8,007.69	15,587.19	15,526.52	60.67	256.937		
14,500.00	6,990.64	7,155.21	6,765.18	125.20	31.27	-69.82	1,073.03	-8,007.67	15,687.12	15,626.38	60.74	258.275		
14,600.00	6,990.67	7,153.78	6,763.75	126.77	31.27	-69.69	1,073.07	-8,007.65	15,787.05	15,726.24	60.81	259.608		
14,700.00	6,990.70	7,152.34	6,762.32	128.34	31.26	-69.56	1,073.11	-8,007.63	15,886.98	15,826.09	60.88	260.936		
14,800.00	6,990.72	7,150.91	6,760.88	129.91	31.26	-69.43	1,073.14	-8,007.61	15,986.91	15,925.95	60.96	262.258		
14,900.00	6,990.75	7,149.47	6,759.44	131.48	31.26	-69.30	1,073.18	-8,007.59	16,086.84	16,025.81	61.03	263.575		
15,000.00	6,990.78	7,148.03	6,758.01	133.06	31.26	-69.17	1,073.21	-8,007.57	16,186.78	16,125.67	61.11	264.887		
15,100.00	6,990.80	7,146.59	6,756.57	134.63	31.26	-69.04	1,073.25	-8,007.55	16,286.71	16,225.53	61.18	266.193		
15,200.00	6,990.83	7,145.16	6,755.13	136.20	31.26	-68.91	1,073.29	-8,007.53	16,386.64	16,325.38	61.26	267.493		
15,300.00	6,990.86	7,143.72	6,753.69	137.78	31.25	-68.78	1,073.32	-8,007.51	16,486.58	16,425.24	61.34	268.788		
15,400.00	6,990.88	7,142.27	6,752.25	139.36	31.25	-68.66	1,073.36	-8,007.49	16,586.52	16,525.10	61.41	270.078		
15,500.00	6,990.91	7,140.83	6,750.81	140.93	31.25	-68.53	1,073.40	-8,007.47	16,686.45	16,624.96	61.49	271.363		
15,600.00	6,990.94	7,139.39	6,749.37	142.51	31.25	-68.40	1,073.43	-8,007.45	16,786.39	16,724.82	61.57	272.642		
15,700.00	6,990.97	7,137.95	6,747.93	144.09	31.25	-68.27	1,073.47	-8,007.43	16,886.33	16,824.68	61.65	273.915		
15,800.00	6,990.99	7,136.50	6,746.48	145.67	31.24	-68.14	1,073.51	-8,007.41	16,986.27	16,924.54	61.73	275.183		
15,900.00	6,991.02	7,135.06	6,745.04	147.24	31.24	-68.01	1,073.54	-8,007.39	17,086.21	17,024.40	61.81	276.446		
16,000.00	6,991.05	7,133.61	6,743.59	148.82	31.24	-67.89	1,073.58	-8,007.37	17,186.15	17,124.26	61.89	277.703		
16,100.00	6,991.07	7,132.17	6,742.15	150.40	31.24	-67.76	1,073.62	-8,007.35	17,286.09	17,224.12	61.97	278.955		
16,200.00	6,991.10	7,130.72	6,740.70	151.99	31.24	-67.63	1,073.65	-8,007.33	17,386.03	17,323.98	62.05	280.202		
16,300.00	6,991.13	7,129.27	6,739.25	153.57	31.23	-67.50	1,073.69	-8,007.31	17,485.97	17,423.84	62.13	281.443		
16,400.00	6,991.15	7,127.82	6,737.80	155.15	31.23	-67.38	1,073.73	-8,007.28	17,585.91	17,523.70	62.21	282.679		
16,500.00	6,991.18	7,126.37	6,736.35	156.73	31.23	-67.25	1,073.76	-8,007.26	17,685.85	17,623.56	62.29	283.909		
16,600.00	6,991.21	7,124.92	6,734.91	158.31	31.23	-67.12	1,073.80	-8,007.24	17,785.80	17,723.42	62.38	285.135		
16,700.00	6,991.24	7,123.47	6,733.45	159.90	31.23	-67.00	1,073.84	-8,007.22	17,885.74	17,823.28	62.46	286.354		
16,800.00	6,991.26	7,122.02	6,732.00	161.48	31.23	-66.87	1,073.87	-8,007.20	17,985.69	17,923.14	62.54	287.569		
16,900.00	6,991.29	7,120.56	6,730.55	163.06	31.22	-66.74	1,073.91	-8,007.18	18,085.63	18,023.00	62.63	288.778		
17,000.00	6,991.32	7,119.11	6,729.10	164.65	31.22	-66.62	1,073.95	-8,007.16	18,185.58	18,122.86	62.71	289.981		
17,100.00	6,991.34	7,117.66	6,727.64	166.23	31.22	-66.49	1,073.98	-8,007.14	18,285.52	18,222.72	62.80	291.180		
17,200.00	6,991.37	7,116.20	6,726.19	167.82	31.22	-66.37	1,074.02	-8,007.12	18,385.47	18,322.58	62.88	292.373		
17,300.00	6,991.40	7,114.75	6,724.73	169.40	31.22	-66.24	1,074.06	-8,007.10	18,485.41	18,422.44	62.97	293.560		
17,400.00	6,991.42	7,113.29	6,723.28	170.99	31.21	-66.12	1,074.10	-8,007.08	18,585.36	18,522.30	63.06	294.743		
17,500.00	6,991.45	7,111.83	6,721.82	172.57	31.21	-65.99	1,074.13	-8,007.06	18,685.31	18,622.17	63.14	295.920		
17,600.00	6,991.48	7,110.37	6,720.36	174.16	31.21	-65.87	1,074.17	-8,007.04	18,785.26	18,722.03	63.23	297.091		
17,700.00	6,991.51	7,108.91	6,718.90	175.75	31.21	-65.74	1,074.21	-8,007.02	18,885.21	18,821.89	63.32	298.258		
17,800.00	6,991.53	7,107.45	6,717.44	177.33	31.21	-65.62	1,074.24	-8,006.99	18,985.15	18,921.75	63.41	299.419		
17,900.00	6,991.56	7,105.99	6,715.98	178.92	31.20	-65.49	1,074.28	-8,006.97	19,085.10	19,021.61	63.50	300.575		
18,000.00	6,991.59	7,104.53	6,714.52	180.51	31.20	-65.37	1,074.32	-8,006.95	19,185.05	19,121.47	63.58	301.726		
18,100.00	6,991.61	7,103.07	6,713.06	182.10	31.20	-65.24	1,074.36	-8,006.93	19,285.00	19,221.33	63.67	302.871		
18,200.00	6,991.64	7,101.60	6,711.60	183.68	31.20	-65.12	1,074.39	-8,006.91	19,384.95	19,321.19	63.76	304.012		
18,300.00	6,991.67	7,100.14	6,710.13	185.27	31.20	-65.00	1,074.43	-8,006.89	19,484.91	19,421.05	63.85	305.147		
18,400.00	6,991.69	7,098.67	6,708.67	186.86	31.20	-64.87	1,074.47	-8,006.87	19,584.86	19,520.91	63.94	306.277		
18,500.00	6,991.72	7,097.21	6,707.20	188.45	31.19	-64.75	1,074.50	-8,006.85	19,684.81	19,620.77	64.04	307.401		
18,600.00	6,991.75	7,095.74	6,705.74	190.04	31.19	-64.63	1,074.54	-8,006.83	19,784.76	19,720.63	64.13	308.521		
18,700.00	6,991.78	7,094.27	6,704.27	191.63	31.19	-64.50	1,074.58	-8,006.81	19,884.71	19,820.49	64.22	309.635		
18,800.00	6,991.80	7,092.80	6,702.80	193.22	31.19	-64.38	1,074.62	-8,006.79	19,984.67	19,920.35	64.31	310.745		
18,900.00	6,991.83	7,091.34	6,701.33	194.81	31.19	-64.26	1,074.65	-8,006.76	20,084.62	20,020.21	64.40	311.849		
19,000.00	6,991.86	7,089.87	6,699.86	196.40	31.18	-64.14	1,074.69	-8,006.74	20,184.57	20,120.07	64.50	312.948		
19,100.00	6,991.88	7,088.39	6,698.39	197.99	31.18	-64.02	1,074.73	-8,006.72	20,284.53	20,219.94	64.59	314.042		
19,200.00	6,991.91	7,086.92	6,696.92	199.58	31.18	-63.89	1,074.77	-8,006.70	20,384.48	20,319.80	64.69	315.131		
19,300.00	6,991.94	7,085.45	6,695.45	201.17	31.18	-63.77	1,074.80	-8,006.68	20,484.44	20,419.66	64.78	316.214		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:		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	
19,342.28	6,991.95	7,084.83	6,694.83	201.84	31.18	-63.72	1,074.82	-8,006.67	20,526.69	20,461.87	64.82	316.671	
19,400.00	6,991.97	7,083.98	6,693.98	202.76	31.18	-63.65	1,074.84	-8,006.66	20,584.39	20,519.52	64.87	317.293	
19,500.00	6,991.99	7,082.50	6,692.51	204.35	31.17	-63.53	1,074.88	-8,006.64	20,684.35	20,619.38	64.97	318.367	
19,542.28	6,992.00	7,081.88	6,691.88	205.03	31.17	-63.48	1,074.90	-8,006.63	20,726.60	20,661.59	65.01	318.819	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171 - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 95-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-102.49	-1,056.49	-4,768.47	4,885.38				
100.00	100.00	0.00	0.00	0.25	0.00	-102.49	-1,056.49	-4,768.47	4,884.11	4,883.86	0.25	N/A	
137.88	137.88	25.88	25.88	0.39	0.48	-102.49	-1,056.49	-4,768.47	4,884.10	4,883.23	0.87	5,644.789	
200.00	200.00	88.00	88.00	0.61	1.63	-102.49	-1,056.49	-4,768.47	4,884.10	4,881.86	2.24	2,184.173	
286.66	286.66	174.42	174.42	0.92	3.22	-102.49	-1,056.32	-4,768.47	4,884.06	4,879.92	4.14	1,178.496	
300.00	300.00	186.99	186.99	0.97	3.46	-102.49	-1,056.33	-4,768.47	4,884.07	4,879.64	4.42	1,103.861	
400.00	400.00	288.01	288.00	1.33	5.32	-102.49	-1,056.49	-4,768.47	4,884.10	4,877.45	6.65	734.421	
480.53	480.53	368.52	368.51	1.62	6.81	-102.49	-1,056.22	-4,768.47	4,884.04	4,875.61	8.43	579.551	
500.00	500.00	387.28	387.27	1.68	7.16	-102.49	-1,056.23	-4,768.47	4,884.04	4,875.20	8.84	552.255	
600.00	600.00	483.64	483.63	2.04	8.94	-102.49	-1,056.46	-4,768.47	4,884.10	4,873.11	10.98	444.672	
700.00	700.00	588.02	588.00	2.40	10.87	-102.49	-1,056.49	-4,768.47	4,884.10	4,870.83	13.27	368.015	
800.00	799.98	688.00	687.98	2.76	12.72	-72.52	-1,056.49	-4,768.47	4,883.57	4,868.10	15.48	315.546	
900.00	899.92	786.56	786.54	3.12	14.54	-72.56	-1,056.03	-4,768.47	4,882.43	4,864.77	17.65	276.550	
1,000.00	999.86	884.51	884.49	3.47	16.35	-72.60	-1,056.25	-4,768.47	4,881.43	4,861.61	19.82	246.259	
1,100.00	1,099.80	987.83	987.80	3.83	18.30	-72.64	-1,056.49	-4,768.47	4,880.44	4,858.30	22.13	220.497	
1,200.00	1,199.74	1,087.77	1,087.74	4.19	20.26	-72.68	-1,056.49	-4,768.47	4,879.40	4,854.95	24.45	199.593	
1,300.00	1,299.68	1,187.71	1,187.68	4.55	22.21	-72.72	-1,056.49	-4,768.47	4,878.36	4,851.60	26.76	182.300	
1,400.00	1,399.61	1,285.79	1,285.75	4.91	24.13	-72.75	-1,056.04	-4,768.47	4,877.23	4,848.19	29.04	167.965	
1,500.00	1,499.55	1,383.82	1,383.78	5.27	26.05	-72.79	-1,056.30	-4,768.47	4,876.25	4,844.94	31.31	155.723	
1,600.00	1,599.49	1,487.57	1,487.49	5.63	28.08	-72.83	-1,056.49	-4,768.47	4,875.26	4,841.55	33.71	144.640	
1,700.00	1,699.43	1,587.51	1,587.43	5.99	30.05	-72.87	-1,056.49	-4,768.47	4,874.23	4,838.20	36.03	135.292	
1,800.00	1,799.37	1,687.45	1,687.37	6.35	32.01	-72.91	-1,056.49	-4,768.47	4,873.20	4,834.85	38.35	127.075	
1,900.00	1,899.31	1,784.29	1,784.20	6.71	33.91	-72.94	-1,055.45	-4,768.47	4,871.95	4,831.34	40.61	119.970	
2,000.00	1,999.25	1,880.77	1,880.67	7.07	35.81	-72.98	-1,055.88	-4,768.47	4,871.02	4,828.16	42.86	113.641	
2,100.00	2,099.19	1,987.31	1,987.19	7.42	37.90	-73.03	-1,056.49	-4,768.47	4,870.13	4,824.82	45.32	107.472	
2,200.00	2,199.13	2,087.25	2,087.13	7.78	39.86	-73.07	-1,056.49	-4,768.47	4,869.12	4,821.48	47.64	102.207	
2,300.00	2,299.07	2,187.10	2,186.97	8.14	41.83	-73.10	-1,056.01	-4,768.47	4,867.99	4,818.03	49.96	97.433	
2,400.00	2,299.01	2,284.90	2,284.77	8.50	43.75	-73.14	-1,056.11	-4,768.47	4,867.00	4,814.76	52.24	93.158	
2,500.00	2,498.94	2,382.68	2,382.55	8.86	45.67	-73.19	-1,056.40	-4,768.47	4,866.06	4,811.53	54.53	89.241	
2,600.00	2,598.88	2,487.05	2,486.88	9.22	47.67	-73.23	-1,056.49	-4,768.47	4,865.07	4,808.18	56.89	85.523	
2,700.00	2,698.82	2,586.99	2,586.82	9.58	49.57	-73.27	-1,056.49	-4,768.47	4,864.06	4,804.91	59.15	82.235	
2,800.00	2,798.76	2,683.19	2,683.02	9.94	51.41	-73.30	-1,055.73	-4,768.47	4,862.88	4,801.54	61.34	79.278	
2,900.00	2,898.70	2,778.54	2,778.36	10.30	53.22	-73.34	-1,056.25	-4,768.47	4,862.01	4,798.49	63.51	76.549	
3,000.00	2,998.64	2,886.83	2,886.64	10.66	55.19	-73.38	-1,056.49	-4,768.47	4,861.05	4,795.21	65.84	73.831	
3,100.00	3,098.58	2,986.77	2,986.58	11.02	56.97	-73.42	-1,056.49	-4,768.47	4,860.06	4,792.08	67.98	71.492	
3,200.00	3,198.52	3,086.39	3,086.20	11.38	58.74	-73.46	-1,056.22	-4,768.47	4,859.00	4,788.88	70.12	69.300	
3,300.00	3,298.46	3,185.33	3,185.14	11.75	60.51	-73.50	-1,056.29	-4,768.47	4,858.02	4,785.78	72.24	67.249	
3,400.00	3,398.40	3,284.28	3,284.08	12.11	62.27	-73.54	-1,056.45	-4,768.47	4,857.07	4,782.71	74.36	65.317	
3,500.00	3,498.34	3,386.54	3,386.34	12.47	64.30	-73.58	-1,056.49	-4,768.47	4,856.09	4,779.33	76.76	63.267	
3,600.00	3,598.27	3,486.48	3,486.27	12.83	66.33	-73.62	-1,056.49	-4,768.47	4,855.10	4,775.96	79.14	61.345	
3,700.00	3,698.21	3,586.41	3,586.21	13.19	68.36	-73.66	-1,056.49	-4,768.47	4,854.12	4,772.59	81.53	59.536	
3,800.00	3,798.15	3,686.35	3,686.15	13.55	70.39	-73.70	-1,056.49	-4,768.47	4,853.14	4,769.22	83.92	57.830	
3,900.00	3,898.09	3,786.29	3,786.09	13.91	72.42	-73.74	-1,056.49	-4,768.47	4,852.16	4,765.85	86.31	56.219	
4,000.00	3,998.03	3,886.23	3,886.03	14.27	74.45	-73.78	-1,056.49	-4,768.47	4,851.18	4,762.49	88.70	54.694	
4,100.00	4,097.97	3,986.17	3,985.97	14.63	76.47	-73.82	-1,056.49	-4,768.47	4,850.21	4,759.12	91.09	53.249	
4,200.00	4,197.91	4,085.50	4,085.30	14.99	78.49	-73.84	-1,054.98	-4,768.47	4,848.88	4,755.42	93.46	51.881	
4,300.00	4,297.85	4,184.73	4,184.52	15.35	80.51	-73.88	-1,055.06	-4,768.47	4,847.93	4,752.09	95.84	50.586	
4,400.00	4,397.79	4,283.95	4,283.74	15.71	82.52	-73.92	-1,055.21	-4,768.47	4,846.99	4,748.78	98.21	49.354	
4,500.00	4,497.73	4,383.16	4,382.95	16.07	84.53	-73.96	-1,055.41	-4,768.47	4,846.08	4,745.50	100.58	48.180	
4,600.00	4,597.66	4,482.38	4,482.16	16.43	86.55	-74.01	-1,055.68	-4,768.47	4,845.18	4,742.22	102.96	47.061	
4,700.00	4,697.60	4,581.59	4,581.37	16.79	88.56	-74.05	-1,056.01	-4,768.47	4,844.30	4,738.97	105.33	45.992	
4,800.00	4,797.54	4,680.79	4,680.58	17.15	90.57	-74.09	-1,056.40	-4,768.47	4,843.44	4,735.73	107.70	44.970	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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			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	4,897.48	4,785.86	4,785.48	17.51	92.83	-74.14	-1,056.49	-4,768.47	4,842.50	4,732.18	110.32	43.895	
5,000.00	4,997.42	4,885.80	4,885.42	17.87	95.01	-74.18	-1,056.49	-4,768.47	4,841.55	4,728.69	112.86	42.899	
5,100.00	5,097.36	4,985.73	4,985.36	18.23	97.19	-74.22	-1,056.49	-4,768.47	4,840.60	4,725.20	115.40	41.948	
5,200.00	5,197.30	5,085.67	5,085.30	18.59	99.36	-74.26	-1,056.49	-4,768.47	4,839.65	4,721.71	117.93	41.037	
5,300.00	5,297.24	5,185.61	5,185.24	18.95	101.54	-74.30	-1,056.49	-4,768.47	4,838.70	4,718.23	120.47	40.165	
5,402.82	5,400.00	5,288.37	5,288.00	19.32	103.78	-74.34	-1,056.49	-4,768.47	4,837.73	4,714.65	123.08	39.306	
5,500.00	5,497.13	5,385.50	5,385.13	19.67	105.90	-74.37	-1,056.49	-4,768.47	4,836.93	4,711.38	125.55	38.527	
5,600.00	5,597.11	5,485.48	5,485.11	20.03	108.08	-74.39	-1,056.49	-4,768.47	4,836.33	4,708.25	128.08	37.759	
5,700.00	5,697.10	5,585.47	5,585.10	20.39	110.25	-74.40	-1,056.49	-4,768.47	4,835.97	4,705.35	130.62	37.024	
5,802.82	5,799.92	5,688.29	5,687.92	20.75	112.49	-104.41	-1,056.49	-4,768.47	4,835.85	4,702.62	133.23	36.298	
5,900.00	5,897.09	5,785.47	5,785.09	21.10	114.61	-104.41	-1,056.49	-4,768.47	4,835.85	4,700.16	135.69	35.640	
6,000.00	5,997.09	5,885.47	5,885.09	21.45	116.79	-104.41	-1,056.49	-4,768.47	4,835.85	4,697.63	138.22	34.986	
6,100.00	6,097.09	5,985.47	5,985.09	21.81	118.97	-104.41	-1,056.49	-4,768.47	4,835.85	4,695.09	140.76	34.356	
6,110.00	6,107.09	5,995.47	5,995.09	21.84	119.19	-104.41	-1,056.49	-4,768.47	4,835.85	4,694.84	141.01	34.295 CC	
6,200.00	6,197.09	6,028.00	6,027.37	22.16	119.90	-104.41	-1,056.49	-4,768.47	4,836.19	4,694.16	142.03	34.051 ES	
6,300.00	6,297.09	6,028.00	6,027.37	22.52	119.90	-104.41	-1,056.49	-4,768.47	4,838.42	4,696.09	142.33	33.995	
6,354.91	6,352.00	6,028.00	6,027.37	22.72	119.90	-104.41	-1,056.49	-4,768.47	4,840.52	4,698.06	142.46	33.977 SF	
6,400.00	6,397.06	6,028.00	6,027.37	22.87	119.90	176.57	-1,056.49	-4,768.47	4,844.30	4,701.74	142.56	33.981	
6,450.00	6,446.74	6,028.00	6,027.37	23.04	119.90	176.53	-1,056.49	-4,768.47	4,852.67	4,710.02	142.65	34.019	
6,500.00	6,495.84	6,028.00	6,027.37	23.20	119.90	176.45	-1,056.49	-4,768.47	4,865.36	4,722.64	142.72	34.090	
6,550.00	6,544.06	6,028.00	6,027.37	23.36	119.90	176.35	-1,056.49	-4,768.47	4,882.26	4,739.48	142.78	34.195	
6,600.00	6,591.08	6,028.00	6,027.37	23.51	119.90	176.22	-1,056.49	-4,768.47	4,903.22	4,760.40	142.82	34.332	
6,650.00	6,636.64	6,028.00	6,027.37	23.66	119.90	176.04	-1,056.49	-4,768.47	4,928.06	4,785.22	142.84	34.499	
6,700.00	6,680.44	6,028.00	6,027.37	23.82	119.90	175.82	-1,056.49	-4,768.47	4,956.58	4,813.72	142.86	34.696	
6,750.00	6,722.22	6,028.00	6,027.37	23.99	119.90	175.54	-1,056.49	-4,768.47	4,988.53	4,845.66	142.86	34.919	
6,800.00	6,761.71	6,028.00	6,027.37	24.16	119.90	175.18	-1,056.49	-4,768.47	5,023.65	4,880.79	142.85	35.166	
6,850.00	6,798.68	6,028.00	6,027.37	24.33	119.90	174.72	-1,056.49	-4,768.47	5,061.67	4,918.83	142.84	35.436	
6,900.00	6,832.89	6,028.00	6,027.37	24.50	119.90	174.11	-1,056.49	-4,768.47	5,102.28	4,959.46	142.82	35.725	
6,950.00	6,864.14	6,028.00	6,027.37	24.69	119.90	173.28	-1,056.49	-4,768.47	5,145.18	5,002.38	142.80	36.031	
7,000.00	6,892.23	6,028.00	6,027.37	24.88	119.90	172.11	-1,056.49	-4,768.47	5,190.06	5,047.28	142.78	36.351	
7,050.00	6,916.99	6,028.00	6,027.37	25.08	119.90	170.37	-1,056.49	-4,768.47	5,236.58	5,093.82	142.75	36.682	
7,100.00	6,938.27	6,028.00	6,027.37	25.29	119.90	167.51	-1,056.49	-4,768.47	5,284.42	5,141.69	142.74	37.022	
7,150.00	6,955.93	6,028.00	6,027.37	25.51	119.90	162.11	-1,056.49	-4,768.47	5,333.26	5,190.54	142.72	37.368	
7,200.00	6,969.87	6,028.00	6,027.37	25.75	119.90	148.75	-1,056.49	-4,768.47	5,382.76	5,240.05	142.72	37.717	
7,250.00	6,980.00	6,028.00	6,027.37	25.99	119.90	99.86	-1,056.49	-4,768.47	5,432.62	5,289.90	142.72	38.065	
7,300.00	6,986.25	6,028.00	6,027.37	26.25	119.90	37.26	-1,056.49	-4,768.47	5,482.52	5,339.79	142.73	38.412	
7,354.68	6,988.62	6,028.00	6,027.37	26.53	119.90	18.73	-1,056.49	-4,768.47	5,536.77	5,394.01	142.76	38.785	
7,400.00	6,988.64	6,028.00	6,027.37	26.78	119.90	18.73	-1,056.49	-4,768.47	5,581.50	5,438.71	142.79	39.090	
7,500.00	6,988.67	6,028.00	6,027.37	27.40	119.90	18.73	-1,056.49	-4,768.47	5,680.23	5,537.37	142.85	39.763	
7,600.00	6,988.71	6,028.00	6,027.37	28.08	119.90	18.73	-1,056.49	-4,768.47	5,779.00	5,636.08	142.92	40.437	
7,700.00	6,988.74	6,028.00	6,027.37	28.84	119.90	18.73	-1,056.49	-4,768.47	5,877.81	5,734.84	142.98	41.110	
7,800.00	6,988.78	6,028.00	6,027.37	29.67	119.90	18.73	-1,056.49	-4,768.47	5,976.67	5,833.63	143.04	41.783	
7,900.00	6,988.81	6,028.00	6,027.37	30.55	119.90	18.73	-1,056.49	-4,768.47	6,075.56	5,932.46	143.10	42.457	
8,000.00	6,988.85	6,028.00	6,027.37	31.49	119.90	18.73	-1,056.49	-4,768.47	6,174.49	6,031.33	143.16	43.130	
8,100.00	6,988.88	6,028.00	6,027.37	32.48	119.90	18.73	-1,056.49	-4,768.47	6,273.45	6,130.23	143.22	43.803	
8,200.00	6,988.91	6,028.00	6,027.37	33.51	119.90	18.73	-1,056.49	-4,768.47	6,372.44	6,229.16	143.28	44.476	
8,211.68	6,988.92	6,028.00	6,027.37	33.63	119.90	18.73	-1,056.49	-4,768.47	6,384.01	6,240.72	143.29	44.554	
8,300.00	6,988.95	6,028.00	6,027.37	34.58	119.90	29.70	-1,056.49	-4,768.47	6,471.39	6,328.06	143.34	45.148	
8,400.00	6,988.98	6,028.00	6,027.37	35.70	119.90	39.88	-1,056.49	-4,768.47	6,570.12	6,426.73	143.39	45.819	
8,500.00	6,989.01	6,028.00	6,027.37	36.84	119.90	47.82	-1,056.49	-4,768.47	6,668.51	6,525.06	143.45	46.487	
8,600.00	6,989.04	6,028.00	6,027.37	38.02	119.90	53.96	-1,056.49	-4,768.47	6,766.47	6,622.97	143.50	47.152	
8,700.00	6,989.07	6,028.00	6,027.37	39.22	119.90	58.74	-1,056.49	-4,768.47	6,863.89	6,720.33	143.56	47.813	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
									Minimum Separation (usft)	Separation Factor	
8,772.79	6,989.09	6,028.00	6,027.37	40.11	119.90	61.58	-1,056.49	-4,768.47	6,934.41	6,790.81	143.60 48.290
8,800.00	6,989.10	6,028.00	6,027.37	40.44	119.90	61.58	-1,056.49	-4,768.47	6,960.72	6,817.10	143.62 48.468
8,900.00	6,989.13	6,028.00	6,027.37	41.68	119.90	61.58	-1,056.49	-4,768.47	7,057.43	6,913.76	143.68 49.120
9,000.00	6,989.15	6,028.00	6,027.37	42.95	119.90	61.58	-1,056.49	-4,768.47	7,154.24	7,010.50	143.74 49.772
9,100.00	6,989.18	6,028.00	6,027.37	44.24	119.90	61.58	-1,056.49	-4,768.47	7,251.13	7,107.33	143.80 50.423
9,200.00	6,989.21	6,028.00	6,027.37	45.55	119.90	61.58	-1,056.49	-4,768.47	7,348.11	7,204.24	143.87 51.074
9,300.00	6,989.24	6,028.00	6,027.37	46.88	119.90	61.58	-1,056.49	-4,768.47	7,445.16	7,301.22	143.94 51.724
9,400.00	6,989.26	6,028.00	6,027.37	48.23	119.90	61.58	-1,056.49	-4,768.47	7,542.30	7,398.29	144.01 52.373
9,500.00	6,989.29	6,028.00	6,027.37	49.59	119.90	61.58	-1,056.49	-4,768.47	7,639.50	7,495.42	144.08 53.021
9,600.00	6,989.32	6,028.00	6,027.37	50.96	119.90	61.58	-1,056.49	-4,768.47	7,736.78	7,592.63	144.16 53.669
9,700.00	6,989.34	6,028.00	6,027.37	52.35	119.90	61.58	-1,056.49	-4,768.47	7,834.13	7,689.90	144.23 54.316
9,800.00	6,989.37	6,028.00	6,027.37	53.75	119.90	61.58	-1,056.49	-4,768.47	7,931.54	7,787.24	144.31 54.963
9,900.00	6,989.40	6,028.00	6,027.37	55.16	119.90	61.58	-1,056.49	-4,768.47	8,029.02	7,884.63	144.38 55.609
10,000.00	6,989.42	6,028.00	6,027.37	56.58	119.90	61.58	-1,056.49	-4,768.47	8,126.56	7,982.09	144.46 56.254
10,100.00	6,989.45	6,028.00	6,027.37	58.01	119.90	61.58	-1,056.49	-4,768.47	8,224.15	8,079.61	144.54 56.898
10,200.00	6,989.48	6,028.00	6,027.37	59.45	119.90	61.58	-1,056.49	-4,768.47	8,321.81	8,177.19	144.62 57.542
10,300.00	6,989.51	6,028.00	6,027.37	60.90	119.90	61.58	-1,056.49	-4,768.47	8,419.52	8,274.82	144.70 58.185
10,400.00	6,989.53	6,028.00	6,027.37	62.35	119.90	61.58	-1,056.49	-4,768.47	8,517.28	8,372.50	144.78 58.828
10,500.00	6,989.56	6,028.00	6,027.37	63.81	119.90	61.58	-1,056.49	-4,768.47	8,615.09	8,470.23	144.87 59.470
10,600.00	6,989.59	6,028.00	6,027.37	65.28	119.90	61.58	-1,056.49	-4,768.47	8,712.96	8,568.01	144.95 60.111
10,700.00	6,989.61	6,028.00	6,027.37	66.76	119.90	61.58	-1,056.49	-4,768.47	8,810.87	8,665.84	145.03 60.751
10,800.00	6,989.64	6,028.00	6,027.37	68.24	119.90	61.58	-1,056.49	-4,768.47	8,908.82	8,763.71	145.12 61.391
10,900.00	6,989.67	6,028.00	6,027.37	69.73	119.90	61.58	-1,056.49	-4,768.47	9,006.83	8,861.63	145.20 62.030
11,000.00	6,989.70	6,028.00	6,027.37	71.22	119.90	61.58	-1,056.49	-4,768.47	9,104.87	8,959.59	145.29 62.668
11,100.00	6,989.72	6,028.00	6,027.37	72.71	119.90	61.58	-1,056.49	-4,768.47	9,202.96	9,057.59	145.37 63.306
11,200.00	6,989.75	6,028.00	6,027.37	74.22	119.90	61.58	-1,056.49	-4,768.47	9,301.09	9,155.63	145.46 63.943
11,300.00	6,989.78	6,028.00	6,027.37	75.72	119.90	61.58	-1,056.49	-4,768.47	9,399.26	9,253.71	145.55 64.580
11,400.00	6,989.80	6,028.00	6,027.37	77.23	119.90	61.58	-1,056.49	-4,768.47	9,497.46	9,351.83	145.63 65.215
11,500.00	6,989.83	6,028.00	6,027.37	78.74	119.90	61.58	-1,056.49	-4,768.47	9,595.71	9,449.99	145.72 65.850
11,600.00	6,989.86	6,028.00	6,027.37	80.26	119.90	61.58	-1,056.49	-4,768.47	9,693.99	9,548.18	145.81 66.484
11,700.00	6,989.88	6,028.00	6,027.37	81.78	119.90	61.58	-1,056.49	-4,768.47	9,792.30	9,646.41	145.90 67.118
11,800.00	6,989.91	6,028.00	6,027.37	83.30	119.90	61.58	-1,056.49	-4,768.47	9,890.65	9,744.66	145.99 67.751
11,900.00	6,989.94	6,028.00	6,027.37	84.83	119.90	61.58	-1,056.49	-4,768.47	9,989.03	9,842.96	146.07 68.383
12,000.00	6,989.97	6,028.00	6,027.37	86.36	119.90	61.58	-1,056.49	-4,768.47	10,087.44	9,941.28	146.16 69.014
12,100.00	6,989.99	6,028.00	6,027.37	87.89	119.90	61.58	-1,056.49	-4,768.47	10,185.89	10,039.63	146.25 69.645
12,200.00	6,990.02	6,028.00	6,027.37	89.42	119.90	61.58	-1,056.49	-4,768.47	10,284.36	10,138.02	146.34 70.275
12,300.00	6,990.05	6,028.00	6,027.37	90.96	119.90	61.58	-1,056.49	-4,768.47	10,382.86	10,236.43	146.43 70.904
12,400.00	6,990.07	6,028.00	6,027.37	92.50	119.90	61.58	-1,056.49	-4,768.47	10,481.39	10,334.87	146.53 71.533
12,500.00	6,990.10	6,028.00	6,027.37	94.04	119.90	61.58	-1,056.49	-4,768.47	10,579.95	10,433.34	146.62 72.161
12,600.00	6,990.13	6,028.00	6,027.37	95.58	119.90	61.58	-1,056.49	-4,768.47	10,678.54	10,531.83	146.71 72.788
12,700.00	6,990.15	6,028.00	6,027.37	97.13	119.90	61.58	-1,056.49	-4,768.47	10,777.15	10,630.35	146.80 73.414
12,800.00	6,990.18	6,028.00	6,027.37	98.68	119.90	61.58	-1,056.49	-4,768.47	10,875.79	10,728.90	146.89 74.040
12,900.00	6,990.21	6,028.00	6,027.37	100.22	119.90	61.58	-1,056.49	-4,768.47	10,974.45	10,827.47	146.98 74.664
13,000.00	6,990.24	6,028.00	6,027.37	101.78	119.90	61.58	-1,056.49	-4,768.47	11,073.13	10,926.06	147.08 75.289
13,100.00	6,990.26	6,028.00	6,027.37	103.33	119.90	61.58	-1,056.49	-4,768.47	11,171.84	11,024.67	147.17 75.912
13,200.00	6,990.29	6,028.00	6,027.37	104.88	119.90	61.58	-1,056.49	-4,768.47	11,270.58	11,123.31	147.26 76.534
13,300.00	6,990.32	6,028.00	6,027.37	106.44	119.90	61.58	-1,056.49	-4,768.47	11,369.33	11,221.97	147.35 77.156
13,400.00	6,990.34	6,028.00	6,027.37	107.99	119.90	61.58	-1,056.49	-4,768.47	11,468.10	11,320.66	147.45 77.777
13,500.00	6,990.37	6,028.00	6,027.37	109.55	119.90	61.58	-1,056.49	-4,768.47	11,566.90	11,419.36	147.54 78.397
13,600.00	6,990.40	6,028.00	6,027.37	111.11	119.90	61.58	-1,056.49	-4,768.47	11,665.72	11,518.08	147.64 79.017
13,700.00	6,990.42	6,028.00	6,027.37	112.67	119.90	61.58	-1,056.49	-4,768.47	11,764.56	11,616.83	147.73 79.636
13,800.00	6,990.45	6,028.00	6,027.37	114.23	119.90	61.58	-1,056.49	-4,768.47	11,863.41	11,715.59	147.82 80.253

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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			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	6,990.48	6,028.00	6,027.37	115.80	119.90	61.58	-1,056.49	-4,768.47	11,962.29	11,814.37	147.92	80.871		
14,000.00	6,990.51	6,028.00	6,027.37	117.36	119.90	61.58	-1,056.49	-4,768.47	12,061.18	11,913.17	148.01	81.487		
14,100.00	6,990.53	6,028.00	6,027.37	118.93	119.90	61.58	-1,056.49	-4,768.47	12,160.09	12,011.98	148.11	82.102		
14,200.00	6,990.56	6,028.00	6,027.37	120.49	119.90	61.58	-1,056.49	-4,768.47	12,259.02	12,110.82	148.20	82.717		
14,300.00	6,990.59	6,028.00	6,027.37	122.06	119.90	61.58	-1,056.49	-4,768.47	12,357.97	12,209.67	148.30	83.331		
14,400.00	6,990.61	6,028.00	6,027.37	123.63	119.90	61.58	-1,056.49	-4,768.47	12,456.93	12,308.54	148.40	83.944		
14,500.00	6,990.64	6,028.00	6,027.37	125.20	119.90	61.58	-1,056.49	-4,768.47	12,555.91	12,407.42	148.49	84.556		
14,600.00	6,990.67	6,028.00	6,027.37	126.77	119.90	61.58	-1,056.49	-4,768.47	12,654.91	12,506.32	148.59	85.168		
14,700.00	6,990.70	6,028.00	6,027.37	128.34	119.90	61.58	-1,056.49	-4,768.47	12,753.92	12,605.24	148.68	85.779		
14,800.00	6,990.72	6,028.00	6,027.37	129.91	119.90	61.58	-1,056.49	-4,768.47	12,852.95	12,704.17	148.78	86.388		
14,900.00	6,990.75	6,028.00	6,027.37	131.48	119.90	61.58	-1,056.49	-4,768.47	12,951.99	12,803.11	148.88	86.998		
15,000.00	6,990.78	6,028.00	6,027.37	133.06	119.90	61.58	-1,056.49	-4,768.47	13,051.05	12,902.07	148.97	87.606		
15,100.00	6,990.80	6,028.00	6,027.37	134.63	119.90	61.58	-1,056.49	-4,768.47	13,150.12	13,001.05	149.07	88.213		
15,200.00	6,990.83	6,028.00	6,027.37	136.20	119.90	61.58	-1,056.49	-4,768.47	13,249.21	13,100.04	149.17	88.820		
15,300.00	6,990.86	6,028.00	6,027.37	137.78	119.90	61.58	-1,056.49	-4,768.47	13,348.30	13,199.04	149.27	89.425		
15,400.00	6,990.88	6,028.00	6,027.37	139.36	119.90	61.58	-1,056.49	-4,768.47	13,447.42	13,298.05	149.37	90.030		
15,500.00	6,990.91	6,028.00	6,027.37	140.93	119.90	61.58	-1,056.49	-4,768.47	13,546.54	13,397.08	149.46	90.634		
15,600.00	6,990.94	6,028.00	6,027.37	142.51	119.90	61.58	-1,056.49	-4,768.47	13,645.68	13,496.12	149.56	91.237		
15,700.00	6,990.97	6,028.00	6,027.37	144.09	119.90	61.58	-1,056.49	-4,768.47	13,744.83	13,595.17	149.66	91.840		
15,800.00	6,990.99	6,028.00	6,027.37	145.67	119.90	61.58	-1,056.49	-4,768.47	13,843.99	13,694.23	149.76	92.441		
15,900.00	6,991.02	6,028.00	6,027.37	147.24	119.90	61.58	-1,056.49	-4,768.47	13,943.17	13,793.31	149.86	93.042		
16,000.00	6,991.05	6,028.00	6,027.37	148.82	119.90	61.58	-1,056.49	-4,768.47	14,042.35	13,892.39	149.96	93.641		
16,100.00	6,991.07	6,028.00	6,027.37	150.40	119.90	61.58	-1,056.49	-4,768.47	14,141.55	13,991.49	150.06	94.240		
16,200.00	6,991.10	6,028.00	6,027.37	151.99	119.90	61.58	-1,056.49	-4,768.47	14,240.76	14,090.60	150.16	94.838		
16,300.00	6,991.13	6,028.00	6,027.37	153.57	119.90	61.58	-1,056.49	-4,768.47	14,339.98	14,189.72	150.26	95.436		
16,400.00	6,991.15	6,028.00	6,027.37	155.15	119.90	61.58	-1,056.49	-4,768.47	14,439.21	14,288.85	150.36	96.032		
16,500.00	6,991.18	6,028.00	6,027.37	156.73	119.90	61.58	-1,056.49	-4,768.47	14,538.45	14,387.99	150.46	96.627		
16,600.00	6,991.21	6,028.00	6,027.37	158.31	119.90	61.58	-1,056.49	-4,768.47	14,637.70	14,487.14	150.56	97.222		
16,700.00	6,991.24	6,028.00	6,027.37	159.90	119.90	61.58	-1,056.49	-4,768.47	14,736.97	14,586.30	150.66	97.815		
16,800.00	6,991.26	6,028.00	6,027.37	161.48	119.90	61.58	-1,056.49	-4,768.47	14,836.24	14,685.47	150.76	98.408		
16,900.00	6,991.29	6,028.00	6,027.37	163.06	119.90	61.58	-1,056.49	-4,768.47	14,935.52	14,784.65	150.86	99.000		
17,000.00	6,991.32	6,028.00	6,027.37	164.65	119.90	61.58	-1,056.49	-4,768.47	15,034.81	14,883.84	150.97	99.591		
17,100.00	6,991.34	6,028.00	6,027.37	166.23	119.90	61.58	-1,056.49	-4,768.47	15,134.11	14,983.04	151.07	100.181		
17,200.00	6,991.37	6,028.00	6,027.37	167.82	119.90	61.58	-1,056.49	-4,768.47	15,233.42	15,082.25	151.17	100.771		
17,300.00	6,991.40	6,028.00	6,027.37	169.40	119.90	61.58	-1,056.49	-4,768.47	15,332.74	15,181.47	151.27	101.359		
17,400.00	6,991.42	6,028.00	6,027.37	170.99	119.90	61.58	-1,056.49	-4,768.47	15,432.06	15,280.69	151.37	101.946		
17,500.00	6,991.45	6,028.00	6,027.37	172.57	119.90	61.58	-1,056.49	-4,768.47	15,531.40	15,379.92	151.48	102.533		
17,600.00	6,991.48	6,028.00	6,027.37	174.16	119.90	61.58	-1,056.49	-4,768.47	15,630.74	15,479.16	151.58	103.119		
17,700.00	6,991.51	6,028.00	6,027.37	175.75	119.90	61.58	-1,056.49	-4,768.47	15,730.10	15,578.41	151.68	103.703		
17,800.00	6,991.53	6,028.00	6,027.37	177.33	119.90	61.58	-1,056.49	-4,768.47	15,829.46	15,677.67	151.79	104.287		
17,900.00	6,991.56	6,028.00	6,027.37	178.92	119.90	61.58	-1,056.49	-4,768.47	15,928.83	15,776.94	151.89	104.870		
18,000.00	6,991.59	6,028.00	6,027.37	180.51	119.90	61.58	-1,056.49	-4,768.47	16,028.20	15,876.21	151.99	105.452		
18,100.00	6,991.61	6,028.00	6,027.37	182.10	119.90	61.58	-1,056.49	-4,768.47	16,127.59	15,975.49	152.10	106.034		
18,200.00	6,991.64	6,028.00	6,027.37	183.68	119.90	61.58	-1,056.49	-4,768.47	16,226.98	16,074.78	152.20	106.614		
18,300.00	6,991.67	6,028.00	6,027.37	185.27	119.90	61.58	-1,056.49	-4,768.47	16,326.38	16,174.07	152.31	107.193		
18,400.00	6,991.69	6,028.00	6,027.37	186.86	119.90	61.58	-1,056.49	-4,768.47	16,425.78	16,273.37	152.41	107.772		
18,500.00	6,991.72	6,028.00	6,027.37	188.45	119.90	61.58	-1,056.49	-4,768.47	16,525.20	16,372.68	152.52	108.349		
18,600.00	6,991.75	6,028.00	6,027.37	190.04	119.90	61.58	-1,056.49	-4,768.47	16,624.62	16,472.00	152.62	108.926		
18,700.00	6,991.78	6,028.00	6,027.37	191.63	119.90	61.58	-1,056.49	-4,768.47	16,724.05	16,571.32	152.73	109.502		
18,800.00	6,991.80	6,028.00	6,027.37	193.22	119.90	61.58	-1,056.49	-4,768.47	16,823.48	16,670.65	152.83	110.076		
18,900.00	6,991.83	6,028.00	6,027.37	194.81	119.90	61.58	-1,056.49	-4,768.47	16,922.92	16,769.98	152.94	110.650		
19,000.00	6,991.86	6,028.00	6,027.37	196.40	119.90	61.58	-1,056.49	-4,768.47	17,022.37	16,869.32	153.05	111.223		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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
19,100.00	6,991.88	6,028.00	6,027.37	197.99	119.90	61.58	-1,056.49	-4,768.47	17,121.82	16,968.67		153.15	111.795
19,200.00	6,991.91	6,028.00	6,027.37	199.58	119.90	61.58	-1,056.49	-4,768.47	17,221.28	17,068.02		153.26	112.367
19,300.00	6,991.94	6,028.00	6,027.37	201.17	119.90	61.58	-1,056.49	-4,768.47	17,320.75	17,167.38		153.37	112.937
19,342.28	6,991.95	6,028.00	6,027.37	201.84	119.90	61.58	-1,056.49	-4,768.47	17,362.80	17,209.39		153.41	113.178
19,400.00	6,991.97	6,028.00	6,027.37	202.76	119.90	61.58	-1,056.49	-4,768.47	17,420.22	17,266.75		153.47	113.506
19,500.00	6,991.99	6,028.00	6,027.37	204.35	119.90	61.58	-1,056.49	-4,768.47	17,519.70	17,366.12		153.58	114.075
19,542.28	6,992.00	6,028.00	6,027.37	205.03	119.90	61.58	-1,056.49	-4,768.47	17,561.76	17,408.13		153.63	114.315

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	-102.35	-1,060.66	-4,844.30	4,960.30				
100.00	100.00	0.00	0.00	0.25	0.00	-102.35	-1,060.66	-4,844.30	4,959.07	4,958.82	0.25	N/A	
111.00	111.00	0.00	0.00	0.29	0.00	-102.35	-1,060.66	-4,844.30	4,959.05	4,958.76	0.29	N/A CC, ES	
200.00	200.00	0.00	0.00	0.61	0.00	-102.35	-1,060.66	-4,844.30	4,959.85	4,959.24	0.61	8,118.807	
300.00	300.00	0.00	0.00	0.97	0.00	-102.35	-1,060.66	-4,844.30	4,962.65	4,961.68	0.97	5,108.753	
400.00	400.00	0.00	0.00	1.33	0.00	-102.35	-1,060.66	-4,844.30	4,967.47	4,966.14	1.33	3,731.352	
500.00	500.00	0.00	0.00	1.68	0.00	-102.35	-1,060.66	-4,844.30	4,974.29	4,972.60	1.69	2,943.364	
576.38	576.38	175.93	175.83	1.96	10.92	-102.34	-1,060.90	-4,849.49	4,972.61	4,959.77	12.84	387.196	
600.00	600.00	184.84	184.72	2.04	11.48	-102.34	-1,060.92	-4,850.03	4,974.03	4,960.54	13.48	368.922	
700.00	700.00	222.51	222.30	2.40	13.82	-102.33	-1,061.04	-4,852.60	4,980.77	4,964.57	16.19	307.601	
800.00	799.98	260.13	259.80	2.76	16.15	-72.19	-1,061.17	-4,855.65	4,988.22	4,969.32	18.90	263.934	
900.00	899.92	297.69	297.19	3.12	18.48	-72.20	-1,061.33	-4,859.16	4,996.38	4,974.78	21.60	231.273	
1,000.00	999.86	335.17	334.46	3.47	20.81	-72.21	-1,061.51	-4,863.13	5,005.79	4,981.48	24.31	205.951	
1,100.00	1,099.80	372.55	371.58	3.83	23.13	-72.21	-1,061.71	-4,867.56	5,016.42	4,989.42	27.00	185.777	
1,200.00	1,199.74	561.00	557.68	4.19	34.83	-72.23	-1,063.04	-4,896.96	5,034.34	4,995.29	39.05	128.931	
1,300.00	1,299.68	561.00	557.68	4.55	34.83	-72.23	-1,063.04	-4,896.96	5,044.81	5,005.37	39.44	127.895	
1,400.00	1,399.61	561.00	557.68	4.91	34.83	-72.23	-1,063.04	-4,896.96	5,057.25	5,017.42	39.83	126.981	
1,500.00	1,499.55	561.00	557.68	5.27	34.83	-72.23	-1,063.04	-4,896.96	5,071.62	5,031.43	40.19	126.184	
1,600.00	1,599.49	561.00	557.68	5.63	34.83	-72.23	-1,063.04	-4,896.96	5,087.92	5,047.38	40.54	125.500	
1,700.00	1,699.43	660.87	655.78	5.99	34.92	-72.23	-1,064.02	-4,915.67	5,105.39	5,064.42	40.98	124.593	
1,800.00	1,799.37	694.24	688.53	6.35	34.93	-72.23	-1,063.97	-4,922.05	5,123.17	5,081.84	41.33	123.964	
1,900.00	1,899.31	712.00	705.89	6.71	34.94	-72.22	-1,063.66	-4,925.79	5,142.40	5,100.74	41.66	123.432	
2,000.00	1,999.25	736.50	729.74	7.07	34.96	-72.21	-1,062.99	-4,931.36	5,163.09	5,121.09	42.00	122.920	
2,100.00	2,099.19	773.00	765.06	7.42	34.99	-72.19	-1,061.65	-4,940.46	5,185.30	5,142.94	42.36	122.424	
2,200.00	2,199.13	803.00	794.00	7.78	35.01	-72.17	-1,060.57	-4,948.30	5,208.68	5,166.00	42.68	122.050	
2,300.00	2,299.07	834.00	823.86	8.14	35.02	-72.15	-1,059.63	-4,956.55	5,233.10	5,190.12	42.99	121.732	
2,400.00	2,399.01	864.00	852.63	8.50	35.03	-72.12	-1,058.44	-4,964.99	5,258.77	5,215.48	43.29	121.468	
2,500.00	2,498.94	894.00	881.22	8.86	35.05	-72.10	-1,056.82	-4,973.91	5,285.70	5,242.11	43.59	121.254	
2,600.00	2,598.88	934.48	919.65	9.22	35.07	-72.05	-1,054.31	-4,986.39	5,313.68	5,269.77	43.90	121.037	
2,700.00	2,698.82	955.00	939.07	9.58	35.08	-72.03	-1,053.08	-4,992.91	5,342.80	5,298.63	44.17	120.967	
2,800.00	2,798.76	989.94	971.99	9.94	35.11	-71.99	-1,051.01	-5,004.44	5,373.10	5,328.64	44.46	120.850	
2,900.00	2,898.70	1,017.00	997.34	10.30	35.13	-71.96	-1,049.38	-5,013.74	5,404.63	5,359.90	44.73	120.828	
3,000.00	2,998.64	1,017.00	997.34	10.66	35.13	-71.96	-1,049.38	-5,013.74	5,437.58	5,392.65	44.92	121.041	
3,100.00	3,098.58	1,109.00	1,082.76	11.02	35.24	-71.86	-1,043.87	-5,047.46	5,471.37	5,425.98	45.39	120.547	
3,200.00	3,198.52	1,109.00	1,082.76	11.38	35.24	-71.86	-1,043.87	-5,047.46	5,505.98	5,460.42	45.57	120.835	
3,300.00	3,298.46	1,185.94	1,153.58	11.75	35.31	-71.76	-1,038.82	-5,077.09	5,541.56	5,495.59	45.97	120.553	
3,400.00	3,398.40	1,203.00	1,169.26	12.11	35.33	-71.74	-1,037.56	-5,083.71	5,577.79	5,531.61	46.18	120.776	
3,500.00	3,498.34	1,247.62	1,210.02	12.47	35.39	-71.68	-1,034.03	-5,101.52	5,614.89	5,568.39	46.49	120.766	
3,600.00	3,598.27	1,297.00	1,254.58	12.83	35.45	-71.60	-1,029.67	-5,122.34	5,653.43	5,606.61	46.82	120.751	
3,700.00	3,698.21	1,297.00	1,254.58	13.19	35.45	-71.60	-1,029.67	-5,122.34	5,692.68	5,645.72	46.96	121.234	
3,800.00	3,798.15	1,435.79	1,380.37	13.55	35.66	-71.46	-1,024.29	-5,180.58	5,732.15	5,684.49	47.66	120.268	
3,900.00	3,898.09	1,514.37	1,451.96	13.91	35.75	-71.41	-1,023.55	-5,212.97	5,771.44	5,723.36	48.08	120.043	
4,000.00	3,998.03	1,575.00	1,507.08	14.27	35.82	-71.37	-1,022.86	-5,238.24	5,811.14	5,762.71	48.42	120.003	
4,100.00	4,097.97	1,623.66	1,551.15	14.63	35.87	-71.33	-1,022.05	-5,258.85	5,851.42	5,802.69	48.74	120.065	
4,200.00	4,197.91	1,670.00	1,592.93	14.99	35.93	-71.29	-1,020.89	-5,278.86	5,892.40	5,843.36	49.04	120.167	
4,300.00	4,297.85	1,731.90	1,648.51	15.35	36.01	-71.23	-1,018.76	-5,306.04	5,933.95	5,884.55	49.40	120.121	
4,400.00	4,397.79	1,792.29	1,702.51	15.71	36.09	-71.17	-1,016.01	-5,332.94	5,975.96	5,926.20	49.76	120.098	
4,500.00	4,497.73	1,856.00	1,759.21	16.07	36.17	-71.09	-1,012.27	-5,361.74	6,018.45	5,968.31	50.13	120.050	
4,600.00	4,597.66	1,889.16	1,788.55	16.43	36.22	-71.05	-1,009.87	-5,377.00	6,061.55	6,011.16	50.39	120.291	
4,700.00	4,697.60	1,949.00	1,840.98	16.79	36.32	-70.95	-1,004.41	-5,405.32	6,105.61	6,054.84	50.77	120.261	
4,800.00	4,797.54	1,972.65	1,861.56	17.15	36.36	-70.91	-1,001.97	-5,416.70	6,150.19	6,099.21	50.98	120.641	
4,900.00	4,897.48	2,059.40	1,937.07	17.51	36.50	-70.76	-993.10	-5,458.49	6,195.17	6,143.68	51.49	120.317	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)		Separation Factor	
5,000.00	4,997.42	2,387.88	2,226.02	17.87	37.07	-70.22	-957.52	-5,610.49	6,237.63	6,184.46	53.17	117.321		
5,100.00	5,097.36	2,506.00	2,331.56	18.23	37.30	-70.06	-946.87	-5,662.43	6,278.54	6,224.68	53.86	116.579		
5,200.00	5,197.30	2,555.04	2,375.52	18.59	37.42	-70.00	-943.27	-5,683.84	6,319.75	6,265.51	54.25	116.501		
5,300.00	5,297.24	3,337.00	3,088.56	18.95	39.41	-69.12	-879.64	-5,993.48	6,356.98	6,298.72	58.26	109.111 SF		
5,402.82	5,400.00	3,337.00	3,088.56	19.32	39.41	-69.12	-879.64	-5,993.48	6,390.46	6,331.99	58.47	109.296		
5,500.00	5,497.13	3,337.00	3,088.56	19.67	39.41	-69.28	-879.64	-5,993.48	6,423.59	6,364.94	58.65	109.519		
5,600.00	5,597.11	3,337.00	3,088.56	20.03	39.41	-69.46	-879.64	-5,993.48	6,459.32	6,400.49	58.83	109.798		
5,700.00	5,697.10	3,337.00	3,088.56	20.39	39.41	-69.65	-879.64	-5,993.48	6,496.67	6,437.68	58.99	110.126		
5,802.82	5,799.92	3,337.00	3,088.56	20.75	39.41	-99.85	-879.64	-5,993.48	6,536.75	6,477.60	59.15	110.514		
5,900.00	5,897.09	3,337.00	3,088.56	21.10	39.41	-99.85	-879.64	-5,993.48	6,576.01	6,516.72	59.28	110.924		
6,000.00	5,997.09	3,337.00	3,088.56	21.45	39.41	-99.85	-879.64	-5,993.48	6,617.66	6,558.24	59.41	111.384		
6,100.00	6,097.09	3,337.00	3,088.56	21.81	39.41	-99.85	-879.64	-5,993.48	6,660.55	6,601.02	59.53	111.882		
6,200.00	6,197.09	3,337.00	3,088.56	22.16	39.41	-99.85	-879.64	-5,993.48	6,704.66	6,645.01	59.64	112.417		
6,300.00	6,297.09	3,337.00	3,088.56	22.52	39.41	-99.85	-879.64	-5,993.48	6,749.96	6,690.21	59.74	112.986		
6,354.91	6,352.00	3,337.00	3,088.56	22.72	39.41	-99.85	-879.64	-5,993.48	6,775.33	6,715.54	59.79	113.313		
6,400.00	6,397.06	3,337.00	3,088.56	22.87	39.41	-178.81	-879.64	-5,993.48	6,797.82	6,737.98	59.83	113.613		
6,450.00	6,446.74	3,337.00	3,088.56	23.04	39.41	-178.74	-879.64	-5,993.48	6,826.16	6,766.28	59.88	114.005		
6,500.00	6,495.84	3,337.00	3,088.56	23.20	39.41	-178.66	-879.64	-5,993.48	6,857.87	6,797.95	59.92	114.456		
6,550.00	6,544.06	3,337.00	3,088.56	23.36	39.41	-178.55	-879.64	-5,993.48	6,892.71	6,832.75	59.96	114.964		
6,600.00	6,591.08	3,337.00	3,088.56	23.51	39.41	-178.41	-879.64	-5,993.48	6,930.41	6,870.42	59.99	115.525		
6,650.00	6,636.64	3,337.00	3,088.56	23.66	39.41	-178.23	-879.64	-5,993.48	6,970.71	6,910.69	60.02	116.134		
6,700.00	6,680.44	3,337.00	3,088.56	23.82	39.41	-177.99	-879.64	-5,993.48	7,013.31	6,953.26	60.05	116.786		
6,750.00	6,722.22	3,337.00	3,088.56	23.99	39.41	-177.65	-879.64	-5,993.48	7,057.91	6,997.83	60.08	117.475		
6,800.00	6,761.71	3,337.00	3,088.56	24.16	39.41	-177.15	-879.64	-5,993.48	7,104.19	7,044.09	60.11	118.195		
6,850.00	6,798.68	3,337.00	3,088.56	24.33	39.41	-176.34	-879.64	-5,993.48	7,151.85	7,091.72	60.13	118.940		
6,900.00	6,832.89	3,337.00	3,088.56	24.50	39.41	-174.84	-879.64	-5,993.48	7,200.56	7,140.41	60.15	119.703		
6,950.00	6,864.14	3,337.00	3,088.56	24.69	39.41	-171.11	-879.64	-5,993.48	7,250.01	7,189.84	60.18	120.477		
7,000.00	6,892.23	3,337.00	3,088.56	24.88	39.41	-148.69	-879.64	-5,993.48	7,299.88	7,239.68	60.20	121.255		
7,050.00	6,916.99	3,337.00	3,088.56	25.08	39.41	-17.62	-879.64	-5,993.48	7,349.86	7,289.63	60.23	122.029		
7,100.00	6,938.27	3,337.00	3,088.56	25.29	39.41	-7.17	-879.64	-5,993.48	7,399.64	7,339.37	60.26	122.792		
7,150.00	6,955.93	3,337.00	3,088.56	25.51	39.41	-4.49	-879.64	-5,993.48	7,448.91	7,388.61	60.30	123.534		
7,200.00	6,969.87	3,337.00	3,088.56	25.75	39.41	-3.27	-879.64	-5,993.48	7,497.40	7,437.06	60.34	124.249		
7,250.00	6,980.00	3,337.00	3,088.56	25.99	39.41	-2.58	-879.64	-5,993.48	7,544.81	7,484.42	60.39	124.927		
7,300.00	6,986.25	3,337.00	3,088.56	26.25	39.41	-2.14	-879.64	-5,993.48	7,590.88	7,530.43	60.46	125.560		
7,354.68	6,988.62	3,337.00	3,088.56	26.53	39.41	-1.82	-879.64	-5,993.48	7,639.43	7,578.89	60.54	126.192		
7,400.00	6,988.64	3,337.00	3,088.56	26.78	39.41	-1.82	-879.64	-5,993.48	7,678.82	7,618.20	60.62	126.682		
7,500.00	6,988.67	3,337.00	3,088.56	27.40	39.41	-1.82	-879.64	-5,993.48	7,765.95	7,705.16	60.79	127.741		
7,600.00	6,988.71	3,337.00	3,088.56	28.08	39.41	-1.82	-879.64	-5,993.48	7,853.40	7,792.42	60.97	128.799		
7,700.00	6,988.74	3,337.00	3,088.56	28.84	39.41	-1.82	-879.64	-5,993.48	7,941.14	7,879.99	61.15	129.856		
7,800.00	6,988.78	3,337.00	3,088.56	29.67	39.41	-1.82	-879.64	-5,993.48	8,029.17	7,967.83	61.33	130.910		
7,900.00	6,988.81	3,337.00	3,088.56	30.55	39.41	-1.82	-879.64	-5,993.48	8,117.47	8,055.96	61.51	131.964		
8,000.00	6,988.85	3,337.00	3,088.56	31.49	39.41	-1.82	-879.64	-5,993.48	8,206.04	8,144.35	61.69	133.016		
8,100.00	6,988.88	3,337.00	3,088.56	32.48	39.41	-1.82	-879.64	-5,993.48	8,294.88	8,233.01	61.87	134.067		
8,200.00	6,988.91	3,337.00	3,088.56	33.51	39.41	-1.82	-879.64	-5,993.48	8,383.96	8,321.91	62.05	135.118		
8,211.68	6,988.92	3,337.00	3,088.56	33.63	39.41	-1.82	-879.64	-5,993.48	8,394.38	8,332.31	62.07	135.240		
8,300.00	6,988.95	3,337.00	3,088.56	34.58	39.41	1.70	-879.64	-5,993.48	8,473.29	8,411.07	62.23	136.169		
8,400.00	6,988.98	3,337.00	3,088.56	35.70	39.41	5.71	-879.64	-5,993.48	8,562.82	8,500.42	62.40	137.223		
8,500.00	6,989.01	3,337.00	3,088.56	36.84	39.41	9.70	-879.64	-5,993.48	8,652.42	8,589.84	62.57	138.278		
8,600.00	6,989.04	3,337.00	3,088.56	38.02	39.41	13.65	-879.64	-5,993.48	8,741.98	8,679.24	62.74	139.332		
8,700.00	6,989.07	3,337.00	3,088.56	39.22	39.41	17.49	-879.64	-5,993.48	8,831.41	8,768.50	62.91	140.383		
8,772.79	6,989.09	3,337.00	3,088.56	40.11	39.41	20.21	-879.64	-5,993.48	8,896.35	8,833.32	63.03	141.145		
8,800.00	6,989.10	3,337.00	3,088.56	40.44	39.41	20.21	-879.64	-5,993.48	8,920.61	8,857.54	63.07	141.429		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	6,989.13	3,337.00	3,088.56	41.68	39.41	20.21	-879.64	-5,993.48	9,009.91	8,946.66	63.24	142.467		
9,000.00	6,989.15	3,337.00	3,088.56	42.95	39.41	20.21	-879.64	-5,993.48	9,099.42	9,036.01	63.41	143.503		
9,100.00	6,989.18	3,337.00	3,088.56	44.24	39.41	20.21	-879.64	-5,993.48	9,189.15	9,125.58	63.58	144.535		
9,200.00	6,989.21	3,337.00	3,088.56	45.55	39.41	20.21	-879.64	-5,993.48	9,279.10	9,215.35	63.75	145.565		
9,300.00	6,989.24	3,337.00	3,088.56	46.88	39.41	20.21	-879.64	-5,993.48	9,369.24	9,305.33	63.91	146.593		
9,400.00	6,989.26	3,337.00	3,088.56	48.23	39.41	20.21	-879.64	-5,993.48	9,459.59	9,395.50	64.08	147.618		
9,500.00	6,989.29	3,337.00	3,088.56	49.59	39.41	20.21	-879.64	-5,993.48	9,550.12	9,485.87	64.25	148.641		
9,600.00	6,989.32	3,337.00	3,088.56	50.96	39.41	20.21	-879.64	-5,993.48	9,640.85	9,576.43	64.42	149.662		
9,700.00	6,989.34	3,337.00	3,088.56	52.35	39.41	20.21	-879.64	-5,993.48	9,731.75	9,667.17	64.58	150.681		
9,800.00	6,989.37	3,337.00	3,088.56	53.75	39.41	20.21	-879.64	-5,993.48	9,822.83	9,758.08	64.75	151.699		
9,900.00	6,989.40	3,337.00	3,088.56	55.16	39.41	20.21	-879.64	-5,993.48	9,914.09	9,849.17	64.92	152.715		
10,000.00	6,989.42	3,337.00	3,088.56	56.58	39.41	20.21	-879.64	-5,993.48	10,005.51	9,940.42	65.09	153.729		
10,100.00	6,989.45	3,337.00	3,088.56	58.01	39.41	20.21	-879.64	-5,993.48	10,097.09	10,031.84	65.25	154.742		
10,200.00	6,989.48	3,337.00	3,088.56	59.45	39.41	20.21	-879.64	-5,993.48	10,188.84	10,123.42	65.42	155.754		
10,300.00	6,989.51	3,337.00	3,088.56	60.90	39.41	20.21	-879.64	-5,993.48	10,280.73	10,215.15	65.58	156.765		
10,400.00	6,989.53	3,337.00	3,088.56	62.35	39.41	20.21	-879.64	-5,993.48	10,372.78	10,307.03	65.74	157.774		
10,500.00	6,989.56	3,337.00	3,088.56	63.81	39.41	20.21	-879.64	-5,993.48	10,464.97	10,399.06	65.91	158.782		
10,600.00	6,989.59	3,337.00	3,088.56	65.28	39.41	20.21	-879.64	-5,993.48	10,557.30	10,491.23	66.07	159.789		
10,700.00	6,989.61	3,337.00	3,088.56	66.76	39.41	20.21	-879.64	-5,993.48	10,649.78	10,583.54	66.23	160.795		
10,800.00	6,989.64	1,972.96	1,861.83	68.24	36.36	16.81	-1,001.94	-5,416.85	10,742.24	10,679.69	62.55	171.744		
10,900.00	6,989.67	1,949.00	1,840.98	69.73	36.32	16.77	-1,004.41	-5,405.32	10,829.57	10,766.82	62.75	172.575		
11,000.00	6,989.70	1,949.00	1,840.98	71.22	36.32	16.77	-1,004.41	-5,405.32	10,917.10	10,854.09	63.01	173.251		
11,100.00	6,989.72	1,949.00	1,840.98	72.71	36.32	16.77	-1,004.41	-5,405.32	11,004.84	10,941.57	63.27	173.932		
11,200.00	6,989.75	1,908.00	1,805.13	74.22	36.25	16.70	-1,008.30	-5,385.81	11,092.48	11,029.03	63.44	174.839		
11,300.00	6,989.78	1,896.55	1,795.06	75.72	36.24	16.67	-1,009.27	-5,380.44	11,180.43	11,116.75	63.68	175.579		
11,400.00	6,989.80	1,856.00	1,759.21	77.23	36.17	16.59	-1,012.27	-5,361.74	11,268.70	11,204.84	63.86	176.473		
11,500.00	6,989.83	1,856.00	1,759.21	78.74	36.17	16.59	-1,012.27	-5,361.74	11,356.86	11,292.75	64.11	177.148		
11,600.00	6,989.86	1,856.00	1,759.21	80.26	36.17	16.59	-1,012.27	-5,361.74	11,445.21	11,380.85	64.36	177.829		
11,700.00	6,989.88	1,856.00	1,759.21	81.78	36.17	16.59	-1,012.27	-5,361.74	11,533.76	11,469.15	64.61	178.514		
11,800.00	6,989.91	1,827.32	1,733.71	83.30	36.13	16.53	-1,014.06	-5,348.72	11,622.42	11,557.59	64.82	179.300		
11,900.00	6,989.94	1,806.25	1,714.95	84.83	36.11	16.49	-1,015.27	-5,339.21	11,711.18	11,646.14	65.04	180.056		
12,000.00	6,989.97	1,763.00	1,676.34	86.36	36.05	16.39	-1,017.43	-5,319.84	11,800.09	11,734.85	65.24	180.878		
12,100.00	6,989.99	1,763.00	1,676.34	87.89	36.05	16.39	-1,017.43	-5,319.84	11,889.00	11,823.52	65.48	181.560		
12,200.00	6,990.02	1,763.00	1,676.34	89.42	36.05	16.39	-1,017.43	-5,319.84	11,978.09	11,912.37	65.72	182.246		
12,300.00	6,990.05	1,723.48	1,640.95	90.96	36.00	16.31	-1,019.09	-5,302.32	12,067.21	12,001.28	65.93	183.034		
12,400.00	6,990.07	1,703.12	1,622.69	92.50	35.97	16.26	-1,019.83	-5,293.35	12,156.46	12,090.31	66.15	183.769		
12,500.00	6,990.10	1,670.00	1,592.93	94.04	35.93	16.18	-1,020.89	-5,278.86	12,245.82	12,179.45	66.36	184.529		
12,600.00	6,990.13	1,670.00	1,592.93	95.58	35.93	16.18	-1,020.89	-5,278.86	12,335.24	12,268.64	66.60	185.213		
12,700.00	6,990.15	1,670.00	1,592.93	97.13	35.93	16.18	-1,020.89	-5,278.86	12,424.83	12,357.99	66.84	185.902		
12,800.00	6,990.18	1,670.00	1,592.93	98.68	35.93	16.18	-1,020.89	-5,278.86	12,514.57	12,447.50	67.07	186.595		
12,900.00	6,990.21	1,624.03	1,551.49	100.22	35.87	16.07	-1,022.04	-5,259.01	12,604.20	12,536.92	67.28	187.351		
13,000.00	6,990.24	1,610.65	1,539.38	101.78	35.86	16.04	-1,022.31	-5,253.30	12,694.07	12,626.57	67.50	188.059		
13,100.00	6,990.26	1,575.00	1,507.08	103.33	35.82	15.95	-1,022.86	-5,238.24	12,784.11	12,716.40	67.71	188.793		
13,200.00	6,990.29	1,575.00	1,507.08	104.88	35.82	15.95	-1,022.86	-5,238.24	12,874.14	12,806.20	67.94	189.484		
13,300.00	6,990.32	1,575.00	1,507.08	106.44	35.82	15.95	-1,022.86	-5,238.24	12,964.32	12,896.15	68.17	190.179		
13,400.00	6,990.34	1,549.79	1,484.18	107.99	35.79	15.89	-1,023.17	-5,227.70	13,054.58	12,986.19	68.39	190.883		
13,500.00	6,990.37	1,530.31	1,466.47	109.55	35.77	15.84	-1,023.38	-5,219.59	13,144.93	13,076.32	68.61	191.582		
13,600.00	6,990.40	1,510.97	1,448.88	111.11	35.75	15.80	-1,023.58	-5,211.57	13,235.36	13,166.52	68.83	192.280		
13,700.00	6,990.42	1,481.00	1,421.57	112.67	35.72	15.72	-1,023.86	-5,199.20	13,325.87	13,256.81	69.06	192.973		
13,800.00	6,990.45	1,459.18	1,401.69	114.23	35.69	15.67	-1,024.06	-5,190.22	13,416.43	13,347.16	69.27	193.672		
13,900.00	6,990.48	1,301.68	1,258.81	115.80	35.46	15.34	-1,029.43	-5,124.32	13,506.73	13,437.29	69.44	194.514		
14,000.00	6,990.51	1,297.00	1,254.58	117.36	35.45	15.33	-1,029.67	-5,122.34	13,597.00	13,527.34	69.66	195.195		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)				
14,100.00	6,990.53	1,297.00	1,254.58	118.93	35.45	15.33	-1,029.67	-5,122.34	13,687.42	13,617.54	69.88	195.871		
14,200.00	6,990.56	1,297.00	1,254.58	120.49	35.45	15.33	-1,029.67	-5,122.34	13,777.96	13,707.86	70.10	196.551		
14,300.00	6,990.59	1,297.00	1,254.58	122.06	35.45	15.33	-1,029.67	-5,122.34	13,868.63	13,798.32	70.32	197.234		
14,400.00	6,990.61	1,297.00	1,254.58	123.63	35.45	15.33	-1,029.67	-5,122.34	13,959.44	13,888.91	70.53	197.921		
14,500.00	6,990.64	1,252.85	1,214.76	125.20	35.39	15.27	-1,033.59	-5,103.67	14,049.80	13,979.04	70.76	198.568		
14,600.00	6,990.67	1,247.80	1,210.18	126.77	35.39	15.26	-1,034.01	-5,101.59	14,140.71	14,069.74	70.97	199.250		
14,700.00	6,990.70	1,203.00	1,169.26	128.34	35.33	15.19	-1,037.56	-5,083.71	14,232.19	14,160.99	71.20	199.901		
14,800.00	6,990.72	1,203.00	1,169.26	129.91	35.33	15.19	-1,037.56	-5,083.71	14,323.21	14,251.80	71.41	200.587		
14,900.00	6,990.75	1,203.00	1,169.26	131.48	35.33	15.19	-1,037.56	-5,083.71	14,414.35	14,342.73	71.62	201.275		
15,000.00	6,990.78	1,203.00	1,169.26	133.06	35.33	15.19	-1,037.56	-5,083.71	14,505.60	14,433.78	71.82	201.967		
15,100.00	6,990.80	1,203.00	1,169.26	134.63	35.33	15.19	-1,037.56	-5,083.71	14,596.97	14,524.95	72.03	202.662		
15,200.00	6,990.83	1,203.00	1,169.26	136.20	35.33	15.19	-1,037.56	-5,083.71	14,688.46	14,616.23	72.23	203.359		
15,300.00	6,990.86	1,203.00	1,169.26	137.78	35.33	15.19	-1,037.56	-5,083.71	14,780.05	14,707.62	72.43	204.059		
15,400.00	6,990.88	1,203.00	1,169.26	139.36	35.33	15.19	-1,037.56	-5,083.71	14,871.75	14,799.12	72.63	204.762		
15,500.00	6,990.91	1,203.00	1,169.26	140.93	35.33	15.19	-1,037.56	-5,083.71	14,963.56	14,890.73	72.83	205.467		
15,600.00	6,990.94	1,203.00	1,169.26	142.51	35.33	15.19	-1,037.56	-5,083.71	15,055.47	14,982.45	73.02	206.175		
15,700.00	6,990.97	1,168.43	1,137.49	144.09	35.30	15.13	-1,040.05	-5,070.32	15,147.41	15,074.16	73.25	206.780		
15,800.00	6,990.99	1,146.67	1,117.47	145.67	35.27	15.09	-1,041.52	-5,061.93	15,239.41	15,165.94	73.47	207.420		
15,900.00	6,991.02	1,109.00	1,082.76	147.24	35.24	15.03	-1,043.87	-5,047.46	15,331.47	15,257.77	73.71	208.008		
16,000.00	6,991.05	1,109.00	1,082.76	148.82	35.24	15.03	-1,043.87	-5,047.46	15,423.55	15,349.65	73.90	208.713		
16,100.00	6,991.07	1,109.00	1,082.76	150.40	35.24	15.03	-1,043.87	-5,047.46	15,515.73	15,441.64	74.09	209.419		
16,200.00	6,991.10	1,109.00	1,082.76	151.99	35.24	15.03	-1,043.87	-5,047.46	15,608.00	15,533.72	74.28	210.128		
16,300.00	6,991.13	1,109.00	1,082.76	153.57	35.24	15.03	-1,043.87	-5,047.46	15,700.37	15,625.90	74.47	210.839		
16,400.00	6,991.15	1,109.00	1,082.76	155.15	35.24	15.03	-1,043.87	-5,047.46	15,792.83	15,718.18	74.65	211.552		
16,500.00	6,991.18	1,109.00	1,082.76	156.73	35.24	15.03	-1,043.87	-5,047.46	15,885.38	15,810.54	74.84	212.266		
16,600.00	6,991.21	1,109.00	1,082.76	158.31	35.24	15.03	-1,043.87	-5,047.46	15,978.02	15,903.00	75.02	212.982		
16,700.00	6,991.24	1,109.00	1,082.76	159.90	35.24	15.03	-1,043.87	-5,047.46	16,070.75	15,995.55	75.20	213.700		
16,800.00	6,991.26	1,065.26	1,042.30	161.48	35.18	14.95	-1,046.48	-5,031.05	16,163.14	16,087.70	75.43	214.267		
16,900.00	6,991.29	1,060.21	1,037.61	163.06	35.18	14.94	-1,046.78	-5,029.20	16,255.93	16,180.31	75.62	214.966		
17,000.00	6,991.32	1,017.00	997.34	164.65	35.13	14.87	-1,049.38	-5,013.74	16,349.13	16,273.28	75.85	215.535		
17,100.00	6,991.34	1,017.00	997.34	166.23	35.13	14.87	-1,049.38	-5,013.74	16,441.99	16,365.96	76.03	216.249		
17,200.00	6,991.37	1,017.00	997.34	167.82	35.13	14.87	-1,049.38	-5,013.74	16,534.94	16,458.73	76.21	216.964		
17,300.00	6,991.40	1,017.00	997.34	169.40	35.13	14.87	-1,049.38	-5,013.74	16,627.97	16,551.58	76.39	217.680		
17,400.00	6,991.42	1,017.00	997.34	170.99	35.13	14.87	-1,049.38	-5,013.74	16,721.08	16,644.52	76.56	218.398		
17,500.00	6,991.45	1,017.00	997.34	172.57	35.13	14.87	-1,049.38	-5,013.74	16,814.27	16,737.53	76.74	219.117		
17,600.00	6,991.48	1,017.00	997.34	174.16	35.13	14.87	-1,049.38	-5,013.74	16,907.53	16,830.63	76.91	219.838		
17,700.00	6,991.51	1,017.00	997.34	175.75	35.13	14.87	-1,049.38	-5,013.74	17,000.88	16,923.80	77.08	220.559		
17,800.00	6,991.53	1,017.00	997.34	177.33	35.13	14.87	-1,049.38	-5,013.74	17,094.30	17,017.04	77.25	221.282		
17,900.00	6,991.56	1,017.00	997.34	178.92	35.13	14.87	-1,049.38	-5,013.74	17,187.79	17,110.37	77.42	222.005		
18,000.00	6,991.59	1,017.00	997.34	180.51	35.13	14.87	-1,049.38	-5,013.74	17,281.35	17,203.76	77.59	222.730		
18,100.00	6,991.61	1,017.00	997.34	182.10	35.13	14.87	-1,049.38	-5,013.74	17,374.99	17,297.23	77.76	223.455		
18,200.00	6,991.64	1,017.00	997.34	183.68	35.13	14.87	-1,049.38	-5,013.74	17,468.70	17,390.78	77.92	224.181		
18,300.00	6,991.67	1,017.00	997.34	185.27	35.13	14.87	-1,049.38	-5,013.74	17,562.47	17,484.39	78.09	224.908		
18,400.00	6,991.69	1,017.00	997.34	186.86	35.13	14.87	-1,049.38	-5,013.74	17,656.32	17,578.07	78.25	225.636		
18,500.00	6,991.72	1,017.00	997.34	188.45	35.13	14.87	-1,049.38	-5,013.74	17,750.23	17,671.82	78.41	226.365		
18,600.00	6,991.75	987.37	969.57	190.04	35.11	14.82	-1,051.16	-5,003.57	17,843.98	17,765.34	78.64	226.906		
18,700.00	6,991.78	983.84	966.25	191.63	35.10	14.81	-1,051.37	-5,002.39	17,937.96	17,859.15	78.81	227.611		
18,800.00	6,991.80	955.00	939.07	193.22	35.08	14.76	-1,053.08	-4,992.91	18,032.18	17,953.14	79.03	228.157		
18,900.00	6,991.83	955.00	939.07	194.81	35.08	14.76	-1,053.08	-4,992.91	18,126.23	18,047.04	79.19	228.882		
19,000.00	6,991.86	955.00	939.07	196.40	35.08	14.76	-1,053.08	-4,992.91	18,220.35	18,141.00	79.35	229.608		
19,100.00	6,991.88	955.00	939.07	197.99	35.08	14.76	-1,053.08	-4,992.91	18,314.53	18,235.02	79.51	230.334		
19,200.00	6,991.91	955.00	939.07	199.58	35.08	14.76	-1,053.08	-4,992.91	18,408.78	18,329.11	79.67	231.061		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,300.00	6,991.94	955.00	939.07	201.17	35.08	14.76	-1,053.08	-4,992.91	18,503.08	18,423.25	79.83	231.787		
19,342.28	6,991.95	955.00	939.07	201.84	35.08	14.76	-1,053.08	-4,992.91	18,542.97	18,463.08	79.89	232.095		
19,400.00	6,991.97	955.00	939.07	202.76	35.08	14.76	-1,053.08	-4,992.91	18,597.45	18,517.46	79.98	232.515		
19,500.00	6,991.99	955.00	939.07	204.35	35.08	14.76	-1,053.08	-4,992.91	18,691.87	18,611.73	80.14	233.242		
19,542.28	6,992.00	955.00	939.07	205.03	35.08	14.76	-1,053.08	-4,992.91	18,731.81	18,651.60	80.20	233.550		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	37.10	37.10	0.00	0.41	-71.70	1,491.93	-4,511.57	4,751.85				
100.00	100.00	132.23	132.23	0.25	1.47	-71.70	1,491.95	-4,511.65	4,751.94	4,750.22	1.72	2,765.089	
200.00	200.00	227.37	227.37	0.61	2.52	-71.70	1,492.01	-4,511.83	4,752.14	4,749.00	3.13	1,516.942	
300.00	300.00	324.00	324.00	0.97	3.60	-71.70	1,492.09	-4,512.10	4,752.43	4,747.87	4.56	1,041.392	
400.00	400.00	413.19	413.19	1.33	3.76	-71.70	1,492.37	-4,512.39	4,752.84	4,747.76	5.08	935.169 ES	
500.00	500.00	497.82	497.82	1.68	3.86	-71.70	1,492.39	-4,513.03	4,753.56	4,748.01	5.55	856.821	
600.00	600.00	565.00	564.97	2.04	3.98	-71.72	1,491.20	-4,514.41	4,754.90	4,748.89	6.01	790.874	
700.00	700.00	604.61	604.50	2.40	4.44	-71.75	1,489.40	-4,516.02	4,757.19	4,750.60	6.59	722.354	
800.00	799.98	655.00	654.64	2.76	5.23	-41.78	1,485.42	-4,519.09	4,759.23	4,752.14	7.09	671.662	
900.00	899.92	727.00	725.91	3.12	6.33	-41.92	1,477.05	-4,524.95	4,760.80	4,753.06	7.74	615.333	
1,000.00	999.86	795.58	793.40	3.47	6.93	-42.08	1,466.93	-4,531.64	4,763.01	4,754.73	8.29	574.819	
1,100.00	1,099.80	866.75	863.14	3.83	7.27	-42.26	1,455.13	-4,539.46	4,765.92	4,757.11	8.82	540.599	
1,200.00	1,199.74	926.00	921.17	4.19	7.44	-42.42	1,445.22	-4,546.25	4,769.43	4,760.12	9.31	512.270	
1,300.00	1,299.68	998.21	991.68	4.55	7.66	-42.62	1,432.52	-4,555.21	4,773.65	4,763.79	9.86	484.154	
1,400.00	1,399.61	1,057.42	1,049.21	4.91	7.89	-42.79	1,421.15	-4,563.39	4,778.81	4,768.42	10.39	459.865	
1,500.00	1,499.55	1,113.00	1,103.02	5.27	8.12	-42.97	1,409.94	-4,571.66	4,784.85	4,773.92	10.92	438.069	
1,600.00	1,599.49	1,181.81	1,169.32	5.63	8.39	-43.19	1,395.16	-4,582.64	4,791.71	4,780.19	11.52	416.039	
1,700.00	1,699.43	1,265.49	1,249.45	5.99	8.72	-43.49	1,375.70	-4,596.89	4,799.25	4,787.07	12.18	394.011	
1,800.00	1,799.37	1,340.59	1,320.99	6.35	9.01	-43.77	1,357.07	-4,610.09	4,807.14	4,794.31	12.83	374.656	
1,900.00	1,899.31	1,406.29	1,383.16	6.71	9.26	-44.03	1,339.72	-4,622.33	4,815.80	4,802.34	13.46	357.824	
2,000.00	1,999.25	1,486.00	1,458.14	7.07	9.58	-44.35	1,317.53	-4,637.79	4,825.09	4,810.92	14.17	340.498	
2,100.00	2,099.19	1,547.49	1,515.66	7.42	9.82	-44.61	1,299.68	-4,650.17	4,835.07	4,820.25	14.82	326.302	
2,200.00	2,199.13	1,619.78	1,582.91	7.78	10.09	-44.93	1,277.95	-4,665.35	4,845.86	4,830.33	15.53	312.063	
2,300.00	2,299.07	1,670.00	1,629.48	8.14	10.27	-45.15	1,262.48	-4,676.07	4,857.29	4,841.16	16.13	301.121	
2,400.00	2,399.01	1,736.90	1,691.08	8.50	10.56	-45.46	1,241.07	-4,690.97	4,869.57	4,852.71	16.86	288.906	
2,500.00	2,498.94	1,788.02	1,737.72	8.86	10.78	-45.71	1,223.96	-4,703.05	4,883.04	4,865.55	17.50	279.080	
2,600.00	2,598.88	1,858.00	1,801.24	9.22	11.09	-46.05	1,200.14	-4,720.21	4,897.54	4,879.27	18.27	268.131	
2,700.00	2,698.82	1,892.52	1,832.47	9.58	11.22	-46.22	1,188.31	-4,728.96	4,912.99	4,894.17	18.83	260.964	
2,800.00	2,798.76	1,938.14	1,873.64	9.94	11.40	-46.45	1,172.69	-4,740.87	4,929.62	4,910.16	19.46	253.363	
2,900.00	2,898.70	1,984.45	1,915.32	10.30	11.59	-46.67	1,156.84	-4,753.37	4,947.39	4,927.30	20.09	246.309	
3,000.00	2,998.64	2,300.29	2,202.56	10.66	12.93	-48.16	1,052.03	-4,832.22	4,963.68	4,941.15	22.53	220.359	
3,100.00	3,098.58	2,367.76	2,264.30	11.02	13.21	-48.47	1,029.68	-4,847.76	4,978.60	4,955.31	23.30	213.718	
3,200.00	3,198.52	2,481.65	2,368.95	11.38	13.71	-48.98	993.15	-4,873.92	4,993.93	4,969.57	24.36	205.046	
3,300.00	3,298.46	2,703.70	2,574.66	11.75	14.73	-49.93	923.65	-4,920.33	5,007.22	4,981.10	26.13	191.664	
3,400.00	3,398.40	2,757.84	2,624.63	12.11	14.99	-50.17	905.97	-4,931.35	5,020.65	4,993.84	26.81	187.271	
3,500.00	3,498.34	2,821.00	2,682.72	12.47	15.30	-50.45	885.26	-4,944.99	5,035.32	5,007.77	27.55	182.775	
3,600.00	3,598.27	2,961.70	2,812.85	12.83	16.04	-51.05	840.54	-4,974.32	5,049.78	5,020.99	28.79	175.387	
3,700.00	3,698.21	3,075.22	2,918.40	13.19	16.65	-51.52	805.70	-4,997.37	5,064.17	5,034.34	29.83	169.773	
3,800.00	3,798.15	3,158.43	2,996.13	13.55	17.11	-51.85	780.89	-5,013.75	5,078.24	5,047.57	30.67	165.583	
3,900.00	3,898.09	3,266.49	3,096.63	13.91	17.74	-52.29	747.55	-5,035.27	5,092.67	5,060.99	31.68	160.745	
4,000.00	3,998.03	3,348.33	3,172.56	14.27	18.26	-52.63	721.60	-5,051.35	5,107.08	5,074.52	32.57	156.822	
4,100.00	4,097.97	3,422.58	3,241.81	14.63	18.73	-52.92	699.44	-5,066.36	5,122.33	5,088.95	33.38	153.444	
4,200.00	4,197.91	3,718.06	3,520.02	14.99	20.39	-54.02	615.49	-5,119.38	5,135.23	5,099.76	35.47	144.764	
4,300.00	4,297.85	3,759.00	3,558.99	15.35	20.60	-54.16	604.82	-5,126.03	5,147.57	5,111.54	36.03	142.862	
4,400.00	4,397.79	3,852.00	3,647.64	15.71	21.09	-54.46	581.66	-5,141.93	5,160.76	5,123.88	36.88	139.946	
4,500.00	4,497.73	4,249.54	4,035.24	16.07	23.05	-55.39	513.65	-5,193.99	5,168.54	5,129.27	39.27	131.607	
4,600.00	4,597.66	4,315.58	4,100.54	16.43	23.56	-55.50	506.79	-5,201.12	5,176.60	5,136.62	39.98	129.481	
4,700.00	4,697.60	4,359.00	4,143.48	16.79	24.00	-55.56	502.61	-5,206.01	5,185.39	5,144.84	40.56	127.855	
4,800.00	4,797.54	4,359.00	4,143.48	17.15	24.00	-55.56	502.61	-5,206.01	5,195.83	5,154.92	40.91	127.010	
4,900.00	4,897.48	4,408.97	4,192.87	17.51	24.21	-55.62	498.74	-5,212.56	5,207.05	5,165.60	41.45	125.627	
5,000.00	4,997.42	4,451.00	4,234.30	17.87	24.38	-55.67	496.72	-5,219.32	5,220.32	5,178.36	41.95	124.436	
5,100.00	5,097.36	4,451.00	4,234.30	18.23	24.38	-55.67	496.72	-5,219.32	5,234.68	5,192.40	42.28	123.824	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		324-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:		0.00 usft	
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,200.00	5,197.30	4,451.00	4,234.30	18.59	24.38	-55.67	496.72	-5,219.32	5,250.90	5,208.32	42.58	123.307		
5,300.00	5,297.24	4,564.08	4,345.41	18.95	25.38	-55.76	492.87	-5,239.97	5,266.84	5,223.03	43.80	120.239		
5,402.82	5,400.00	4,621.27	4,401.47	19.32	26.06	-55.81	490.97	-5,251.11	5,284.63	5,240.05	44.57	118.559		
5,500.00	5,497.13	4,675.14	4,454.20	19.67	26.77	-55.93	489.21	-5,262.03	5,302.44	5,257.15	45.30	117.062		
5,600.00	5,597.11	4,730.39	4,508.18	20.03	27.53	-56.05	487.43	-5,273.65	5,322.04	5,276.01	46.03	115.614		
5,700.00	5,697.10	4,821.00	4,596.51	20.39	28.78	-56.19	484.58	-5,293.64	5,343.11	5,296.06	47.05	113.558		
5,802.82	5,799.92	4,956.32	4,728.56	20.75	29.29	-86.34	481.98	-5,323.07	5,365.26	5,317.16	48.10	111.536		
5,900.00	5,897.09	5,296.79	5,063.13	21.10	30.36	-86.32	487.52	-5,385.65	5,383.17	5,333.11	50.06	107.527		
6,000.00	5,997.09	5,591.22	5,354.38	21.45	31.21	-86.24	497.51	-5,427.46	5,397.51	5,345.79	51.72	104.356		
6,100.00	6,097.09	5,733.88	5,495.99	21.81	31.63	-86.22	501.15	-5,444.33	5,409.36	5,356.67	52.69	102.666		
6,200.00	6,197.09	5,817.34	5,578.84	22.16	31.87	-86.20	502.95	-5,454.22	5,421.34	5,367.94	53.39	101.533		
6,300.00	6,297.09	5,900.74	5,661.61	22.52	32.12	-86.19	504.53	-5,464.37	5,433.61	5,379.51	54.10	100.436		
6,354.91	6,352.00	5,954.00	5,714.45	22.72	32.28	-86.19	505.42	-5,470.99	5,440.47	5,385.95	54.52	99.792		
6,400.00	6,397.06	6,035.39	5,795.24	22.87	32.59	-165.02	506.99	-5,480.82	5,447.52	5,392.44	55.08	98.898		
6,450.00	6,446.74	6,147.14	5,906.26	23.04	33.03	-164.77	510.05	-5,493.15	5,458.36	5,402.56	55.80	97.812		
6,500.00	6,495.84	6,257.38	6,015.89	23.20	33.48	-164.45	514.11	-5,503.97	5,472.31	5,415.80	56.51	96.839		
6,550.00	6,544.06	6,365.72	6,123.71	23.36	33.94	-164.05	519.10	-5,513.32	5,489.32	5,432.13	57.19	95.977 SF		
6,600.00	6,591.08	6,388.00	6,145.89	23.51	33.90	-163.50	520.13	-5,515.10	5,509.60	5,452.26	57.35	96.076		
6,650.00	6,636.64	6,388.00	6,145.89	23.66	33.90	-162.79	520.13	-5,515.10	5,533.60	5,476.09	57.51	96.218		
6,700.00	6,680.44	6,388.00	6,145.89	23.82	33.90	-161.88	520.13	-5,515.10	5,561.13	5,503.47	57.66	96.441		
6,750.00	6,722.22	6,388.00	6,145.89	23.99	33.90	-160.75	520.13	-5,515.10	5,591.99	5,534.19	57.80	96.742		
6,800.00	6,761.71	6,388.00	6,145.89	24.16	33.90	-159.33	520.13	-5,515.10	5,625.93	5,568.00	57.93	97.115		
6,850.00	6,798.68	6,388.00	6,145.89	24.33	33.90	-157.54	520.13	-5,515.10	5,662.68	5,604.64	58.04	97.558		
6,900.00	6,832.89	6,388.00	6,145.89	24.50	33.90	-155.24	520.13	-5,515.10	5,701.97	5,643.83	58.15	98.063		
6,950.00	6,864.14	6,388.00	6,145.89	24.69	33.90	-152.27	520.13	-5,515.10	5,743.51	5,685.27	58.24	98.625		
7,000.00	6,892.23	6,388.00	6,145.89	24.88	33.90	-148.34	520.13	-5,515.10	5,786.99	5,728.67	58.31	99.238		
7,050.00	6,916.99	6,388.00	6,145.89	25.08	33.90	-143.02	520.13	-5,515.10	5,832.10	5,773.72	58.38	99.895		
7,100.00	6,938.27	6,388.00	6,145.89	25.29	33.90	-135.67	520.13	-5,515.10	5,878.54	5,820.10	58.44	100.590		
7,150.00	6,955.93	6,388.00	6,145.89	25.51	33.90	-125.38	520.13	-5,515.10	5,925.99	5,867.50	58.49	101.315		
7,200.00	6,969.87	6,388.00	6,145.89	25.75	33.90	-111.27	520.13	-5,515.10	5,974.13	5,915.60	58.53	102.062		
7,250.00	6,980.00	6,388.00	6,145.89	25.99	33.90	-93.62	520.13	-5,515.10	6,022.66	5,964.09	58.57	102.825		
7,300.00	6,986.25	6,388.00	6,145.89	26.25	33.90	-75.11	520.13	-5,515.10	6,071.27	6,012.66	58.61	103.595		
7,354.68	6,988.62	6,388.00	6,145.89	26.53	33.90	-57.91	520.13	-5,515.10	6,124.17	6,065.53	58.64	104.437		
7,400.00	6,988.64	6,388.00	6,145.89	26.78	33.90	-57.91	520.13	-5,515.10	6,167.81	6,109.15	58.67	105.129		
7,500.00	6,988.67	6,388.00	6,145.89	27.40	33.90	-57.91	520.13	-5,515.10	6,264.20	6,205.46	58.74	106.648		
7,600.00	6,988.71	6,388.00	6,145.89	28.08	33.90	-57.91	520.13	-5,515.10	6,360.70	6,301.89	58.81	108.160		
7,700.00	6,988.74	6,388.00	6,145.89	28.84	33.90	-57.91	520.13	-5,515.10	6,457.30	6,398.42	58.88	109.665		
7,800.00	6,988.78	6,388.00	6,145.89	29.67	33.90	-57.91	520.13	-5,515.10	6,554.01	6,495.05	58.96	111.163		
7,900.00	6,988.81	6,388.00	6,145.89	30.55	33.90	-57.91	520.13	-5,515.10	6,650.81	6,591.78	59.04	112.655		
8,000.00	6,988.85	6,388.00	6,145.89	31.49	33.90	-57.91	520.13	-5,515.10	6,747.71	6,688.59	59.12	114.141		
8,100.00	6,988.88	6,388.00	6,145.89	32.48	33.90	-57.91	520.13	-5,515.10	6,844.70	6,785.50	59.20	115.621		
8,200.00	6,988.91	6,388.00	6,145.89	33.51	33.90	-57.91	520.13	-5,515.10	6,941.77	6,882.49	59.28	117.095		
8,211.68	6,988.92	6,388.00	6,145.89	33.63	33.90	-57.91	520.13	-5,515.10	6,953.12	6,893.82	59.29	117.267		
8,300.00	6,988.95	6,388.00	6,145.89	34.58	33.90	-53.59	520.13	-5,515.10	7,039.18	6,979.82	59.36	118.575		
8,400.00	6,988.98	6,388.00	6,145.89	35.70	33.90	-47.20	520.13	-5,515.10	7,137.24	7,077.81	59.44	120.081		
8,500.00	6,989.01	6,388.00	6,145.89	36.84	33.90	-38.61	520.13	-5,515.10	7,235.82	7,176.32	59.50	121.614		
8,600.00	6,989.04	6,388.00	6,145.89	38.02	33.90	-27.14	520.13	-5,515.10	7,334.76	7,275.21	59.55	123.172		
8,700.00	6,989.07	6,388.00	6,145.89	39.22	33.90	-12.52	520.13	-5,515.10	7,433.95	7,374.36	59.59	124.756		
8,772.79	6,989.09	6,388.00	6,145.89	40.11	33.90	-0.46	520.13	-5,515.10	7,506.22	7,446.61	59.61	125.923		
8,800.00	6,989.10	6,388.00	6,145.89	40.44	33.90	-0.46	520.13	-5,515.10	7,533.24	7,473.63	59.62	126.362		
8,900.00	6,989.13	6,388.00	6,145.89	41.68	33.90	-0.46	520.13	-5,515.10	7,632.57	7,572.93	59.64	127.972		
9,000.00	6,989.15	6,388.00	6,145.89	42.95	33.90	-0.46	520.13	-5,515.10	7,731.91	7,672.24	59.67	129.579		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		324-MWD OWSG Rev5					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
9,100.00	6,989.18	6,388.00	6,145.89	44.24	33.90	-0.46	520.13	-5,515.10	7,831.27	7,771.57	59.70	131.184		
9,200.00	6,989.21	6,388.00	6,145.89	45.55	33.90	-0.46	520.13	-5,515.10	7,930.64	7,870.92	59.73	132.785		
9,300.00	6,989.24	6,388.00	6,145.89	46.88	33.90	-0.46	520.13	-5,515.10	8,030.03	7,970.28	59.75	134.384		
9,400.00	6,989.26	6,388.00	6,145.89	48.23	33.90	-0.46	520.13	-5,515.10	8,129.44	8,069.65	59.78	135.979		
9,500.00	6,989.29	6,388.00	6,145.89	49.59	33.90	-0.46	520.13	-5,515.10	8,228.86	8,169.04	59.82	137.571		
9,600.00	6,989.32	6,388.00	6,145.89	50.96	33.90	-0.46	520.13	-5,515.10	8,328.29	8,268.44	59.85	139.160		
9,700.00	6,989.34	6,388.00	6,145.89	52.35	33.90	-0.46	520.13	-5,515.10	8,427.74	8,367.86	59.88	140.746		
9,800.00	6,989.37	6,388.00	6,145.89	53.75	33.90	-0.46	520.13	-5,515.10	8,527.20	8,467.28	59.91	142.328		
9,900.00	6,989.40	6,388.00	6,145.89	55.16	33.90	-0.46	520.13	-5,515.10	8,626.67	8,566.72	59.95	143.906		
10,000.00	6,989.42	6,388.00	6,145.89	56.58	33.90	-0.46	520.13	-5,515.10	8,726.15	8,666.17	59.98	145.482		
10,100.00	6,989.45	6,388.00	6,145.89	58.01	33.90	-0.46	520.13	-5,515.10	8,825.65	8,765.63	60.02	147.053		
10,200.00	6,989.48	6,388.00	6,145.89	59.45	33.90	-0.46	520.13	-5,515.10	8,925.15	8,865.10	60.05	148.621		
10,300.00	6,989.51	6,388.00	6,145.89	60.90	33.90	-0.46	520.13	-5,515.10	9,024.67	8,964.58	60.09	150.186		
10,400.00	6,989.53	6,388.00	6,145.89	62.35	33.90	-0.46	520.13	-5,515.10	9,124.20	9,064.07	60.13	151.747		
10,500.00	6,989.56	6,388.00	6,145.89	63.81	33.90	-0.46	520.13	-5,515.10	9,223.74	9,163.57	60.17	153.304		
10,600.00	6,989.59	6,388.00	6,145.89	65.28	33.90	-0.46	520.13	-5,515.10	9,323.29	9,263.08	60.21	154.857		
10,700.00	6,989.61	6,388.00	6,145.89	66.76	33.90	-0.46	520.13	-5,515.10	9,422.85	9,362.60	60.25	156.406		
10,800.00	6,989.64	6,388.00	6,145.89	68.24	33.90	-0.46	520.13	-5,515.10	9,522.41	9,462.13	60.29	157.951		
10,900.00	6,989.67	6,388.00	6,145.89	69.73	33.90	-0.46	520.13	-5,515.10	9,621.99	9,561.66	60.33	159.492		
11,000.00	6,989.70	6,388.00	6,145.89	71.22	33.90	-0.46	520.13	-5,515.10	9,721.57	9,661.20	60.37	161.030		
11,100.00	6,989.72	6,388.00	6,145.89	72.71	33.90	-0.46	520.13	-5,515.10	9,821.17	9,760.75	60.41	162.563		
11,200.00	6,989.75	6,388.00	6,145.89	74.22	33.90	-0.46	520.13	-5,515.10	9,920.77	9,860.31	60.46	164.092		
11,300.00	6,989.78	6,388.00	6,145.89	75.72	33.90	-0.46	520.13	-5,515.10	10,020.38	9,959.88	60.50	165.617		
11,400.00	6,989.80	6,388.00	6,145.89	77.23	33.90	-0.46	520.13	-5,515.10	10,120.00	10,059.45	60.55	167.138		
11,500.00	6,989.83	6,207.35	5,966.27	78.74	33.27	-0.03	513.64	-5,497.28	10,218.96	10,159.05	59.90	170.592		
11,600.00	6,989.86	6,196.99	5,955.97	80.26	33.23	-0.01	513.31	-5,496.21	10,318.42	10,258.51	59.91	172.245		
11,700.00	6,989.88	6,186.62	5,945.66	81.78	33.18	0.00	512.97	-5,495.13	10,417.88	10,357.97	59.91	173.895		
11,800.00	6,989.91	6,176.25	5,935.36	83.30	33.14	0.02	512.63	-5,494.06	10,517.34	10,457.43	59.91	175.542		
11,900.00	6,989.94	6,165.89	5,925.05	84.83	33.10	0.04	512.30	-5,492.98	10,616.80	10,556.88	59.92	177.186		
12,000.00	6,989.97	6,155.52	5,914.75	86.36	33.06	0.06	511.96	-5,491.90	10,716.26	10,656.34	59.93	178.826		
12,100.00	6,989.99	6,145.15	5,904.45	87.89	33.02	0.07	511.62	-5,490.83	10,815.72	10,755.79	59.93	180.463		
12,200.00	6,990.02	6,134.78	5,894.14	89.42	32.98	0.09	511.29	-5,489.75	10,915.18	10,855.24	59.94	182.097		
12,300.00	6,990.05	6,124.42	5,883.84	90.96	32.94	0.10	510.95	-5,488.68	11,014.64	10,954.69	59.95	183.727		
12,400.00	6,990.07	6,114.05	5,873.53	92.50	32.89	0.12	510.62	-5,487.60	11,114.10	11,054.14	59.96	185.354		
12,500.00	6,990.10	5,889.86	5,650.82	94.04	32.09	0.36	504.34	-5,463.04	11,214.30	11,155.21	59.09	189.772		
12,600.00	6,990.13	5,881.22	5,642.24	95.58	32.06	0.36	504.18	-5,461.98	11,313.55	11,254.43	59.12	191.351		
12,700.00	6,990.15	5,872.63	5,633.72	97.13	32.03	0.37	504.02	-5,460.92	11,412.80	11,353.65	59.16	192.925		
12,800.00	6,990.18	5,864.08	5,625.23	98.68	32.01	0.37	503.86	-5,459.88	11,512.06	11,452.87	59.19	194.495		
12,900.00	6,990.21	5,855.57	5,616.79	100.22	31.98	0.37	503.70	-5,458.85	11,611.32	11,552.09	59.22	196.059		
13,000.00	6,990.24	5,847.11	5,608.39	101.78	31.96	0.38	503.54	-5,457.82	11,710.58	11,651.32	59.26	197.618		
13,100.00	6,990.26	5,838.69	5,600.04	103.33	31.93	0.38	503.38	-5,456.80	11,809.85	11,750.55	59.29	199.172		
13,200.00	6,990.29	5,830.32	5,591.73	104.88	31.91	0.39	503.21	-5,455.79	11,909.12	11,849.78	59.33	200.721		
13,300.00	6,990.32	4,821.00	4,596.51	106.44	28.78	0.65	484.58	-5,293.64	12,008.85	11,952.97	55.89	214.883		
13,400.00	6,990.34	4,703.14	4,481.57	107.99	27.15	0.54	488.31	-5,267.86	12,105.22	12,049.96	55.26	219.062		
13,500.00	6,990.37	4,695.56	4,474.15	109.55	27.05	0.53	488.55	-5,266.27	12,203.00	12,147.69	55.31	220.649		
13,600.00	6,990.40	4,688.04	4,466.81	111.11	26.95	0.52	488.79	-5,264.70	12,300.80	12,245.45	55.35	222.229		
13,700.00	6,990.42	4,680.61	4,459.54	112.67	26.84	0.52	489.03	-5,263.16	12,398.62	12,343.22	55.40	223.804		
13,800.00	6,990.45	4,673.25	4,452.35	114.23	26.75	0.51	489.27	-5,261.64	12,496.47	12,441.02	55.45	225.373		
13,900.00	6,990.48	4,665.97	4,445.22	115.80	26.65	0.50	489.51	-5,260.14	12,594.33	12,538.84	55.50	226.936		
14,000.00	6,990.51	4,658.75	4,438.16	117.36	26.55	0.50	489.75	-5,258.66	12,692.22	12,636.67	55.55	228.492		
14,100.00	6,990.53	4,651.61	4,431.18	118.93	26.46	0.49	489.98	-5,257.21	12,790.13	12,734.53	55.60	230.043		
14,200.00	6,990.56	4,644.54	4,424.26	120.49	26.36	0.48	490.21	-5,255.77	12,888.06	12,832.41	55.65	231.588		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
14,300.00	6,990.59	4,637.54	4,417.41	122.06	26.27	0.48	490.44	-5,254.36	12,986.01	12,930.31	55.70	233.127
14,400.00	6,990.61	4,630.61	4,410.62	123.63	26.18	0.47	490.67	-5,252.97	13,083.98	13,028.23	55.76	234.661
14,500.00	6,990.64	4,623.75	4,403.90	125.20	26.09	0.46	490.89	-5,251.60	13,181.97	13,126.16	55.81	236.188
14,600.00	6,990.67	4,616.95	4,397.24	126.77	26.01	0.46	491.12	-5,250.25	13,279.99	13,224.12	55.87	237.709
14,700.00	6,990.70	4,610.22	4,390.64	128.34	25.92	0.45	491.34	-5,248.92	13,378.02	13,322.09	55.92	239.225
14,800.00	6,990.72	4,603.55	4,384.11	129.91	25.84	0.45	491.56	-5,247.61	13,476.07	13,420.09	55.98	240.734
14,900.00	6,990.75	4,596.95	4,377.64	131.48	25.76	0.44	491.78	-5,246.32	13,574.13	13,518.10	56.04	242.237
15,000.00	6,990.78	4,590.41	4,371.23	133.06	25.68	0.43	492.00	-5,245.04	13,672.22	13,616.13	56.09	243.735
15,100.00	6,990.80	4,583.93	4,364.88	134.63	25.60	0.43	492.21	-5,243.79	13,770.33	13,714.17	56.15	245.227
15,200.00	6,990.83	4,577.52	4,358.59	136.20	25.53	0.42	492.42	-5,242.55	13,868.45	13,812.24	56.21	246.713
15,300.00	6,990.86	4,451.00	4,234.30	137.78	24.38	0.31	496.72	-5,219.32	13,968.16	13,912.55	55.61	251.200
15,400.00	6,990.88	4,451.00	4,234.30	139.36	24.38	0.31	496.72	-5,219.32	14,066.15	14,010.45	55.70	252.516
15,500.00	6,990.91	4,451.00	4,234.30	140.93	24.38	0.31	496.72	-5,219.32	14,164.18	14,108.37	55.80	253.828
15,600.00	6,990.94	4,451.00	4,234.30	142.51	24.38	0.31	496.72	-5,219.32	14,262.23	14,206.33	55.90	255.135
15,700.00	6,990.97	4,451.00	4,234.30	144.09	24.38	0.31	496.72	-5,219.32	14,360.31	14,304.31	56.00	256.438
15,800.00	6,990.99	4,451.00	4,234.30	145.67	24.38	0.31	496.72	-5,219.32	14,458.41	14,402.31	56.10	257.736
15,900.00	6,991.02	4,451.00	4,234.30	147.24	24.38	0.31	496.72	-5,219.32	14,556.54	14,500.35	56.20	259.030
16,000.00	6,991.05	4,451.00	4,234.30	148.82	24.38	0.31	496.72	-5,219.32	14,654.70	14,598.40	56.30	260.320
16,100.00	6,991.07	4,451.00	4,234.30	150.40	24.38	0.31	496.72	-5,219.32	14,752.88	14,696.48	56.39	261.605
16,200.00	6,991.10	4,451.00	4,234.30	151.99	24.38	0.31	496.72	-5,219.32	14,851.08	14,794.59	56.49	262.885
16,300.00	6,991.13	4,451.00	4,234.30	153.57	24.38	0.31	496.72	-5,219.32	14,949.31	14,892.72	56.59	264.161
16,400.00	6,991.15	4,451.00	4,234.30	155.15	24.38	0.31	496.72	-5,219.32	15,047.56	14,990.87	56.69	265.433
16,500.00	6,991.18	4,451.00	4,234.30	156.73	24.38	0.31	496.72	-5,219.32	15,145.84	15,089.05	56.79	266.700
16,600.00	6,991.21	4,451.00	4,234.30	158.31	24.38	0.31	496.72	-5,219.32	15,244.14	15,187.25	56.89	267.962
16,700.00	6,991.24	4,451.00	4,234.30	159.90	24.38	0.31	496.72	-5,219.32	15,342.46	15,285.47	56.99	269.220
16,800.00	6,991.26	4,451.00	4,234.30	161.48	24.38	0.31	496.72	-5,219.32	15,440.80	15,383.71	57.09	270.473
16,900.00	6,991.29	4,451.00	4,234.30	163.06	24.38	0.31	496.72	-5,219.32	15,539.16	15,481.97	57.19	271.722
17,000.00	6,991.32	4,451.00	4,234.30	164.65	24.38	0.31	496.72	-5,219.32	15,637.54	15,580.26	57.29	272.966
17,100.00	6,991.34	4,451.00	4,234.30	166.23	24.38	0.31	496.72	-5,219.32	15,735.95	15,678.56	57.39	274.206
17,200.00	6,991.37	4,451.00	4,234.30	167.82	24.38	0.31	496.72	-5,219.32	15,834.37	15,776.88	57.49	275.441
17,300.00	6,991.40	4,451.00	4,234.30	169.40	24.38	0.31	496.72	-5,219.32	15,932.81	15,875.23	57.59	276.672
17,400.00	6,991.42	4,451.00	4,234.30	170.99	24.38	0.31	496.72	-5,219.32	16,031.28	15,973.59	57.69	277.897
17,500.00	6,991.45	4,451.00	4,234.30	172.57	24.38	0.31	496.72	-5,219.32	16,129.76	16,071.97	57.79	279.119
17,600.00	6,991.48	4,451.00	4,234.30	174.16	24.38	0.31	496.72	-5,219.32	16,228.26	16,170.37	57.89	280.335
17,700.00	6,991.51	4,451.00	4,234.30	175.75	24.38	0.31	496.72	-5,219.32	16,326.77	16,268.79	57.99	281.547
17,800.00	6,991.53	4,451.00	4,234.30	177.33	24.38	0.31	496.72	-5,219.32	16,425.31	16,367.22	58.09	282.754
17,900.00	6,991.56	4,451.00	4,234.30	178.92	24.38	0.31	496.72	-5,219.32	16,523.86	16,465.67	58.19	283.957
18,000.00	6,991.59	4,451.00	4,234.30	180.51	24.38	0.31	496.72	-5,219.32	16,622.44	16,564.14	58.29	285.155
18,100.00	6,991.61	4,451.00	4,234.30	182.10	24.38	0.31	496.72	-5,219.32	16,721.02	16,662.63	58.39	286.349
18,200.00	6,991.64	4,451.00	4,234.30	183.68	24.38	0.31	496.72	-5,219.32	16,819.63	16,761.13	58.50	287.537
18,300.00	6,991.67	4,451.00	4,234.30	185.27	24.38	0.31	496.72	-5,219.32	16,918.25	16,859.65	58.60	288.721
18,400.00	6,991.69	4,451.00	4,234.30	186.86	24.38	0.31	496.72	-5,219.32	17,016.89	16,958.19	58.70	289.901
18,500.00	6,991.72	4,451.00	4,234.30	188.45	24.38	0.31	496.72	-5,219.32	17,115.54	17,056.74	58.80	291.076
18,600.00	6,991.75	4,451.00	4,234.30	190.04	24.38	0.31	496.72	-5,219.32	17,214.21	17,155.30	58.90	292.246
18,700.00	6,991.78	4,451.00	4,234.30	191.63	24.38	0.31	496.72	-5,219.32	17,312.89	17,253.88	59.01	293.412
18,800.00	6,991.80	4,451.00	4,234.30	193.22	24.38	0.31	496.72	-5,219.32	17,411.59	17,352.48	59.11	294.573
18,900.00	6,991.83	4,451.00	4,234.30	194.81	24.38	0.31	496.72	-5,219.32	17,510.30	17,451.09	59.21	295.729
19,000.00	6,991.86	4,451.00	4,234.30	196.40	24.38	0.31	496.72	-5,219.32	17,609.03	17,549.72	59.31	296.880
19,100.00	6,991.88	4,451.00	4,234.30	197.99	24.38	0.31	496.72	-5,219.32	17,707.77	17,648.36	59.42	298.027
19,200.00	6,991.91	4,451.00	4,234.30	199.58	24.38	0.31	496.72	-5,219.32	17,806.53	17,747.01	59.52	299.170
19,300.00	6,991.94	4,451.00	4,234.30	201.17	24.38	0.31	496.72	-5,219.32	17,905.30	17,845.68	59.62	300.308
19,342.28	6,991.95	4,451.00	4,234.30	201.84	24.38	0.31	496.72	-5,219.32	17,947.06	17,887.39	59.67	300.787

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		Distance		Rule Assigned:								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
19,400.00	6,991.97	4,451.00	4,234.30	202.76	24.38	0.31	496.72	-5,219.32	18,004.08	17,944.36	59.73	301.441		
19,500.00	6,991.99	4,451.00	4,234.30	204.35	24.38	0.31	496.72	-5,219.32	18,102.88	18,043.05	59.83	302.569		
19,542.28	6,992.00	4,451.00	4,234.30	205.03	24.38	0.31	496.72	-5,219.32	18,144.65	18,084.78	59.87	303.045		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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 (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	39.00	39.00	0.00	0.79	-71.86	1,487.78	-4,540.56	4,778.09				
100.00	100.00	139.00	139.00	0.25	2.82	-71.86	1,487.78	-4,540.56	4,778.09	4,775.02	3.07	1,558.416	
200.00	200.00	239.00	239.00	0.61	4.84	-71.86	1,487.78	-4,540.56	4,778.09	4,772.64	5.45	876.787	
210.00	210.00	249.00	249.00	0.65	5.04	-71.86	1,487.78	-4,540.56	4,778.09	4,772.40	5.69	840.045 CC	
300.00	300.00	311.37	311.37	0.97	5.85	-71.86	1,487.83	-4,540.61	4,778.24	4,771.42	6.81	701.150 ES	
400.00	400.00	386.65	386.65	1.33	5.97	-71.86	1,487.97	-4,541.30	4,779.14	4,771.85	7.29	655.651	
500.00	500.00	460.75	460.73	1.68	6.10	-71.87	1,487.48	-4,542.46	4,780.44	4,772.68	7.76	615.793	
600.00	600.00	517.70	517.66	2.04	6.15	-71.88	1,486.76	-4,543.95	4,782.54	4,774.36	8.18	584.877	
700.00	700.00	562.00	561.92	2.40	6.18	-71.90	1,485.78	-4,545.60	4,785.54	4,776.96	8.58	557.974	
800.00	799.98	622.00	621.80	2.76	6.28	-41.91	1,483.78	-4,548.85	4,788.36	4,779.36	9.01	531.693	
900.00	899.92	647.17	646.88	3.12	6.35	-41.93	1,482.73	-4,550.67	4,791.15	4,781.75	9.40	509.672	
1,000.00	999.86	682.00	681.54	3.47	6.45	-41.97	1,481.08	-4,553.69	4,795.34	4,785.54	9.81	488.939	
1,100.00	1,099.80	720.31	719.58	3.83	6.57	-42.02	1,478.90	-4,557.65	4,800.86	4,790.63	10.23	469.101	
1,200.00	1,199.74	742.00	741.07	4.19	6.65	-42.05	1,477.47	-4,560.17	4,807.72	4,797.10	10.62	452.684	
1,300.00	1,299.68	803.00	801.31	4.55	6.87	-42.15	1,472.92	-4,568.62	4,816.04	4,804.93	11.11	433.332	
1,400.00	1,399.61	803.00	801.31	4.91	6.87	-42.15	1,472.92	-4,568.62	4,825.65	4,814.20	11.45	421.481	
1,500.00	1,499.55	863.00	860.20	5.27	7.11	-42.26	1,467.81	-4,578.91	4,836.87	4,824.92	11.95	404.598	
1,600.00	1,599.49	863.00	860.20	5.63	7.11	-42.26	1,467.81	-4,578.91	4,849.36	4,837.08	12.28	394.812	
1,700.00	1,699.43	900.67	896.94	5.99	7.26	-42.34	1,464.27	-4,586.39	4,863.34	4,850.61	12.73	381.986	
1,800.00	1,799.37	924.00	919.61	6.35	7.36	-42.39	1,461.96	-4,591.44	4,878.84	4,865.71	13.13	371.583	
1,900.00	1,899.31	967.19	961.36	6.71	7.54	-42.49	1,457.32	-4,601.47	4,895.65	4,882.05	13.60	359.965	
2,000.00	1,999.25	986.00	979.46	7.07	7.61	-42.54	1,455.12	-4,606.07	4,913.79	4,899.81	13.98	351.491	
2,100.00	2,099.19	1,049.00	1,039.66	7.42	7.88	-42.71	1,446.99	-4,622.77	4,933.25	4,918.71	14.54	339.348	
2,200.00	2,199.13	1,049.00	1,039.66	7.78	7.88	-42.71	1,446.99	-4,622.77	4,953.98	4,939.14	14.84	333.834	
2,300.00	2,299.07	1,086.63	1,075.25	8.14	8.06	-42.82	1,441.65	-4,633.76	4,976.14	4,960.84	15.31	325.119	
2,400.00	2,399.01	1,110.00	1,097.21	8.50	8.16	-42.89	1,438.21	-4,640.97	4,999.74	4,984.04	15.70	318.365	
2,500.00	2,498.94	1,134.78	1,120.35	8.86	8.29	-42.96	1,434.45	-4,648.99	5,024.77	5,008.65	16.12	311.663	
2,600.00	2,598.88	1,173.00	1,155.72	9.22	8.48	-43.09	1,428.41	-4,662.16	5,051.37	5,034.76	16.61	304.100	
2,700.00	2,698.82	1,173.00	1,155.72	9.58	8.48	-43.09	1,428.41	-4,662.16	5,079.19	5,062.30	16.89	300.784	
2,800.00	2,798.76	1,197.69	1,178.33	9.94	8.62	-43.17	1,424.39	-4,671.20	5,108.54	5,091.22	17.31	295.080	
2,900.00	2,898.70	1,235.00	1,212.15	10.30	8.82	-43.30	1,418.16	-4,685.68	5,139.46	5,121.64	17.82	288.444	
3,000.00	2,998.64	1,235.00	1,212.15	10.66	8.82	-43.30	1,418.16	-4,685.68	5,171.51	5,153.44	18.08	286.094	
3,100.00	3,098.58	1,259.59	1,234.19	11.02	8.96	-43.39	1,413.89	-4,695.73	5,205.05	5,186.56	18.50	281.364	
3,200.00	3,198.52	1,297.00	1,267.29	11.38	9.17	-43.53	1,406.97	-4,711.72	5,240.01	5,221.00	19.01	275.628	
3,300.00	3,298.46	1,297.00	1,267.29	11.75	9.17	-43.53	1,406.97	-4,711.72	5,276.09	5,256.84	19.25	274.047	
3,400.00	3,398.40	1,297.00	1,267.29	12.11	9.17	-43.53	1,406.97	-4,711.72	5,313.81	5,294.33	19.49	272.692	
3,500.00	3,498.34	1,359.00	1,321.01	12.47	9.50	-43.77	1,394.90	-4,740.21	5,352.55	5,332.37	20.19	265.170	
3,600.00	3,598.27	1,359.00	1,321.01	12.83	9.50	-43.77	1,394.90	-4,740.21	5,392.45	5,372.04	20.41	264.204	
3,700.00	3,698.21	1,359.00	1,321.01	13.19	9.50	-43.77	1,394.90	-4,740.21	5,433.90	5,413.27	20.63	263.426	
3,800.00	3,798.15	1,421.00	1,373.27	13.55	9.81	-44.03	1,381.91	-4,770.94	5,476.40	5,455.08	21.32	256.807	
3,900.00	3,898.09	1,421.00	1,373.27	13.91	9.81	-44.03	1,381.91	-4,770.94	5,519.89	5,498.36	21.53	256.338	
4,000.00	3,998.03	1,421.00	1,373.27	14.27	9.81	-44.03	1,381.91	-4,770.94	5,564.84	5,543.10	21.74	256.023	
4,100.00	4,097.97	1,454.67	1,400.97	14.63	9.98	-44.17	1,374.33	-4,788.50	5,610.68	5,588.46	22.22	252.516	
4,200.00	4,197.91	1,482.00	1,423.04	14.99	10.11	-44.30	1,367.98	-4,803.31	5,657.90	5,635.26	22.65	249.839	
4,300.00	4,297.85	1,482.00	1,423.04	15.35	10.11	-44.30	1,367.98	-4,803.31	5,706.15	5,683.31	22.83	249.898	
4,400.00	4,397.79	1,482.00	1,423.04	15.71	10.11	-44.30	1,367.98	-4,803.31	5,755.72	5,732.71	23.02	250.078	
4,500.00	4,497.73	1,516.32	1,450.22	16.07	10.29	-44.46	1,359.72	-4,822.58	5,806.06	5,782.54	23.52	246.859	
4,600.00	4,597.66	1,543.00	1,470.91	16.43	10.43	-44.58	1,353.09	-4,838.06	5,857.71	5,833.76	23.95	244.591	
4,700.00	4,697.60	1,543.00	1,470.91	16.79	10.43	-44.58	1,353.09	-4,838.06	5,910.28	5,886.16	24.12	245.051	
4,800.00	4,797.54	1,543.00	1,470.91	17.15	10.43	-44.58	1,353.09	-4,838.06	5,964.06	5,939.78	24.28	245.604	
4,900.00	4,897.48	1,604.00	1,516.87	17.51	10.72	-44.88	1,336.94	-4,874.76	6,018.63	5,993.60	25.03	240.437	
5,000.00	4,997.42	1,604.00	1,516.87	17.87	10.72	-44.88	1,336.94	-4,874.76	6,073.99	6,048.80	25.19	241.121	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		288-MWD OWSG Rev5							Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			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	5,097.36	1,635.98	1,540.37	18.23	10.83	-45.05	1,327.88	-4,894.46	6,130.33	6,104.70	25.63	239.204		
5,200.00	5,197.30	1,667.00	1,562.95	18.59	10.95	-45.21	1,318.72	-4,913.66	6,187.31	6,161.26	26.05	237.513		
5,300.00	5,297.24	1,709.50	1,593.53	18.95	11.08	-45.44	1,305.69	-4,940.14	6,244.94	6,218.38	26.56	235.125		
5,402.82	5,400.00	1,749.62	1,622.07	19.32	11.23	-45.65	1,292.99	-4,965.32	6,304.89	6,277.85	27.03	233.216		
5,500.00	5,497.13	1,791.00	1,651.31	19.67	11.70	-46.13	1,279.71	-4,991.41	6,362.31	6,334.78	27.53	231.116		
5,600.00	5,597.11	1,826.76	1,676.43	20.03	12.13	-46.60	1,268.11	-5,014.08	6,422.46	6,394.48	27.97	229.582		
5,700.00	5,697.10	2,216.36	1,955.66	20.39	17.06	-48.83	1,141.07	-5,254.09	6,481.24	6,449.52	31.72	204.355		
5,802.82	5,799.92	2,259.00	1,986.92	20.75	17.60	-79.31	1,127.38	-5,279.66	6,541.21	6,508.95	32.27	202.731		
5,900.00	5,897.09	2,308.97	2,023.40	21.10	18.25	-79.54	1,111.29	-5,309.77	6,598.58	6,565.71	32.87	200.735		
6,000.00	5,997.09	2,354.00	2,056.17	21.45	18.84	-79.75	1,096.91	-5,337.11	6,658.13	6,624.70	33.43	199.147		
6,100.00	6,097.09	2,397.71	2,087.91	21.81	19.42	-79.94	1,083.07	-5,363.80	6,718.16	6,684.18	33.98	197.687		
6,200.00	6,197.09	2,446.00	2,122.91	22.16	20.05	-80.15	1,067.97	-5,393.44	6,778.64	6,744.07	34.58	196.046		
6,300.00	6,297.09	2,487.83	2,153.12	22.52	20.62	-80.34	1,054.90	-5,419.25	6,839.57	6,804.46	35.11	194.800		
6,354.91	6,352.00	2,511.60	2,170.22	22.72	20.94	-80.44	1,047.41	-5,433.96	6,873.22	6,837.81	35.41	194.099		
6,400.00	6,397.06	2,540.00	2,190.58	22.87	21.32	-158.36	1,038.41	-5,451.60	6,902.12	6,866.38	35.74	193.097		
6,450.00	6,446.74	2,561.15	2,205.73	23.04	21.61	-156.82	1,031.70	-5,464.75	6,936.81	6,900.80	36.01	192.613		
6,500.00	6,495.84	2,600.04	2,233.65	23.20	22.14	-155.01	1,019.47	-5,488.90	6,974.03	6,937.57	36.46	191.295		
6,550.00	6,544.06	2,634.92	2,258.76	23.36	22.61	-152.70	1,008.60	-5,510.54	7,013.52	6,976.66	36.86	190.290		
6,600.00	6,591.08	2,632.00	2,256.65	23.51	22.57	-149.40	1,009.50	-5,508.72	7,055.12	7,018.24	36.88	191.286		
6,650.00	6,636.64	2,632.00	2,256.65	23.66	22.57	-145.12	1,009.50	-5,508.72	7,098.59	7,061.65	36.93	192.197		
6,700.00	6,680.44	6,762.84	5,882.07	23.82	68.98	-162.37	553.95	-7,064.21	7,129.20	7,046.78	82.42	86.497		
6,750.00	6,722.22	6,801.53	5,920.42	23.99	69.80	-161.29	556.42	-7,068.61	7,160.55	7,077.03	83.51	85.741		
6,800.00	6,761.71	6,837.63	5,956.21	24.16	70.57	-159.95	558.72	-7,072.73	7,194.70	7,110.17	84.53	85.116		
6,850.00	6,798.68	6,870.92	5,989.22	24.33	71.29	-158.28	560.84	-7,076.52	7,231.45	7,145.99	85.46	84.619		
6,900.00	6,832.89	6,901.21	6,019.25	24.50	71.94	-156.17	562.77	-7,079.97	7,270.58	7,184.28	86.30	84.246		
6,950.00	6,864.14	6,928.30	6,046.11	24.69	72.52	-153.48	564.49	-7,083.06	7,311.85	7,224.80	87.05	83.995		
7,000.00	6,892.23	6,952.03	6,069.64	24.88	73.04	-149.95	566.01	-7,085.76	7,355.01	7,267.30	87.70	83.862		
7,050.00	6,916.99	6,972.25	6,089.68	25.08	73.48	-145.24	567.29	-7,088.06	7,399.79	7,311.53	88.25	83.846 SF		
7,100.00	6,938.27	6,988.84	6,106.13	25.29	73.84	-138.78	568.35	-7,089.95	7,445.91	7,357.21	88.70	83.941		
7,150.00	6,955.93	6,990.00	6,107.28	25.51	73.87	-129.55	568.42	-7,090.09	7,493.12	7,404.36	88.76	84.422		
7,200.00	6,969.87	6,990.00	6,107.28	25.75	73.87	-116.66	568.42	-7,090.09	7,541.11	7,452.34	88.77	84.949		
7,250.00	6,980.00	6,990.00	6,107.28	25.99	73.87	-99.81	568.42	-7,090.09	7,589.58	7,500.80	88.78	85.489		
7,300.00	6,986.25	6,990.00	6,107.28	26.25	73.87	-80.94	568.42	-7,090.09	7,638.23	7,549.45	88.78	86.039		
7,354.68	6,988.62	6,990.00	6,107.28	26.53	73.87	-62.34	568.42	-7,090.09	7,691.28	7,602.51	88.77	86.645		
7,400.00	6,988.64	6,990.00	6,107.28	26.78	73.87	-62.34	568.42	-7,090.09	7,735.08	7,646.32	88.76	87.146		
7,500.00	6,988.67	6,990.00	6,107.28	27.40	73.87	-62.34	568.42	-7,090.09	7,831.81	7,743.06	88.75	88.247		
7,600.00	6,988.71	2,446.00	2,122.91	28.08	20.05	-21.36	1,067.97	-5,393.44	7,921.22	7,884.60	36.62	216.282		
7,700.00	6,988.74	2,396.49	2,087.02	28.84	19.40	-21.31	1,083.46	-5,363.05	7,995.97	7,959.51	36.45	219.340		
7,800.00	6,988.78	2,354.00	2,056.17	29.67	18.84	-21.27	1,096.91	-5,337.11	8,070.94	8,034.58	36.36	221.952		
7,900.00	6,988.81	2,320.62	2,031.89	30.55	18.40	-21.25	1,107.56	-5,316.83	8,146.14	8,109.77	36.37	223.981		
8,000.00	6,988.85	2,285.45	2,006.24	31.49	17.95	-21.22	1,118.85	-5,295.57	8,221.59	8,185.22	36.37	226.041		
8,100.00	6,988.88	2,259.00	1,986.92	32.48	17.60	-21.20	1,127.38	-5,279.66	8,297.29	8,260.83	36.46	227.572		
8,200.00	6,988.91	1,791.00	1,651.31	33.51	11.70	-20.86	1,279.71	-4,991.41	8,372.33	8,339.34	33.00	253.736		
8,211.68	6,988.92	1,791.00	1,651.31	33.63	11.70	-20.86	1,279.71	-4,991.41	8,380.83	8,347.79	33.04	253.662		
8,300.00	6,988.95	1,791.00	1,651.31	34.58	11.70	-19.07	1,279.71	-4,991.41	8,445.60	8,412.24	33.36	253.134		
8,400.00	6,988.98	1,729.00	1,607.44	35.70	11.15	-16.96	1,299.55	-4,952.36	8,519.93	8,486.64	33.29	255.952		
8,500.00	6,989.01	1,729.00	1,607.44	36.84	11.15	-14.76	1,299.55	-4,952.36	8,595.20	8,561.55	33.65	255.447		
8,600.00	6,989.04	1,690.84	1,580.16	38.02	11.01	-12.51	1,311.46	-4,928.49	8,671.31	8,637.57	33.74	257.021		
8,700.00	6,989.07	1,667.00	1,562.95	39.22	10.95	-10.18	1,318.72	-4,913.66	8,748.25	8,714.33	33.92	257.940		
8,772.79	6,989.09	1,667.00	1,562.95	40.11	10.95	-8.41	1,318.72	-4,913.66	8,804.73	8,770.57	34.16	257.747		
8,800.00	6,989.10	1,643.82	1,546.11	40.44	10.86	-8.46	1,325.59	-4,899.31	8,825.86	8,791.78	34.08	258.955		
8,900.00	6,989.13	1,604.00	1,516.87	41.68	10.72	-8.53	1,336.94	-4,874.76	8,903.88	8,869.75	34.13	260.909		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		288-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
9,000.00	6,989.15	1,604.00	1,516.87	42.95	10.72	-8.53	1,336.94	-4,874.76	8,982.10	8,947.64	34.46	260.652	
9,100.00	6,989.18	1,604.00	1,516.87	44.24	10.72	-8.53	1,336.94	-4,874.76	9,060.76	9,025.97	34.79	260.430	
9,200.00	6,989.21	1,604.00	1,516.87	45.55	10.72	-8.53	1,336.94	-4,874.76	9,139.83	9,104.71	35.12	260.241	
9,300.00	6,989.24	1,572.46	1,493.34	46.88	10.57	-8.58	1,345.48	-4,855.58	9,218.96	9,183.76	35.19	261.943	
9,400.00	6,989.26	1,543.00	1,470.91	48.23	10.43	-8.62	1,353.09	-4,838.06	9,298.74	9,263.45	35.29	263.513	
9,500.00	6,989.29	1,543.00	1,470.91	49.59	10.43	-8.62	1,353.09	-4,838.06	9,378.62	9,343.00	35.61	263.338	
9,600.00	6,989.32	1,543.00	1,470.91	50.96	10.43	-8.62	1,353.09	-4,838.06	9,458.87	9,422.93	35.94	263.199	
9,700.00	6,989.34	1,543.00	1,470.91	52.35	10.43	-8.62	1,353.09	-4,838.06	9,539.50	9,503.24	36.26	263.095	
9,800.00	6,989.37	1,543.00	1,470.91	53.75	10.43	-8.62	1,353.09	-4,838.06	9,620.49	9,583.92	36.58	263.025	
9,900.00	6,989.40	1,543.00	1,470.91	55.16	10.43	-8.62	1,353.09	-4,838.06	9,701.84	9,664.95	36.89	262.990	
10,000.00	6,989.42	1,543.00	1,470.91	56.58	10.43	-8.62	1,353.09	-4,838.06	9,783.53	9,746.33	37.20	262.987	
10,100.00	6,989.45	1,511.15	1,446.17	58.01	10.27	-8.67	1,360.99	-4,819.63	9,865.11	9,827.85	37.27	264.707	
10,200.00	6,989.48	1,482.00	1,423.04	59.45	10.11	-8.70	1,367.98	-4,803.31	9,947.50	9,910.14	37.36	266.282	
10,300.00	6,989.51	1,482.00	1,423.04	60.90	10.11	-8.70	1,367.98	-4,803.31	10,029.84	9,992.18	37.66	266.303	
10,400.00	6,989.53	1,482.00	1,423.04	62.35	10.11	-8.70	1,367.98	-4,803.31	10,112.50	10,074.53	37.97	266.356	
10,500.00	6,989.56	1,482.00	1,423.04	63.81	10.11	-8.70	1,367.98	-4,803.31	10,195.46	10,157.20	38.27	266.441	
10,600.00	6,989.59	1,482.00	1,423.04	65.28	10.11	-8.70	1,367.98	-4,803.31	10,278.73	10,240.17	38.56	266.555	
10,700.00	6,989.61	1,482.00	1,423.04	66.76	10.11	-8.70	1,367.98	-4,803.31	10,362.30	10,323.44	38.85	266.699	
10,800.00	6,989.64	1,482.00	1,423.04	68.24	10.11	-8.70	1,367.98	-4,803.31	10,446.15	10,407.01	39.14	266.872	
10,900.00	6,989.67	1,482.00	1,423.04	69.73	10.11	-8.70	1,367.98	-4,803.31	10,530.29	10,490.86	39.43	267.072	
11,000.00	6,989.70	1,482.00	1,423.04	71.22	10.11	-8.70	1,367.98	-4,803.31	10,614.70	10,574.99	39.71	267.298	
11,100.00	6,989.72	1,451.03	1,398.00	72.71	9.96	-8.74	1,375.17	-4,786.57	10,698.95	10,659.15	39.80	268.811	
11,200.00	6,989.75	1,421.00	1,373.27	74.22	9.81	-8.77	1,381.91	-4,770.94	10,784.00	10,744.10	39.90	270.289	
11,300.00	6,989.78	1,421.00	1,373.27	75.72	9.81	-8.77	1,381.91	-4,770.94	10,868.90	10,828.73	40.17	270.539	
11,400.00	6,989.80	1,421.00	1,373.27	77.23	9.81	-8.77	1,381.91	-4,770.94	10,954.06	10,913.61	40.45	270.814	
11,500.00	6,989.83	1,421.00	1,373.27	78.74	9.81	-8.77	1,381.91	-4,770.94	11,039.47	10,998.75	40.72	271.114	
11,600.00	6,989.86	1,421.00	1,373.27	80.26	9.81	-8.77	1,381.91	-4,770.94	11,125.12	11,084.13	40.99	271.436	
11,700.00	6,989.88	1,421.00	1,373.27	81.78	9.81	-8.77	1,381.91	-4,770.94	11,211.01	11,169.76	41.25	271.781	
11,800.00	6,989.91	1,421.00	1,373.27	83.30	9.81	-8.77	1,381.91	-4,770.94	11,297.13	11,255.62	41.51	272.148	
11,900.00	6,989.94	1,421.00	1,373.27	84.83	9.81	-8.77	1,381.91	-4,770.94	11,383.48	11,341.71	41.77	272.535	
12,000.00	6,989.97	1,421.00	1,373.27	86.36	9.81	-8.77	1,381.91	-4,770.94	11,470.05	11,428.02	42.02	272.943	
12,100.00	6,989.99	1,391.92	1,348.94	87.89	9.66	-8.79	1,388.18	-4,756.29	11,556.55	11,514.42	42.13	274.315	
12,200.00	6,990.02	1,359.00	1,321.01	89.42	9.50	-8.82	1,394.90	-4,740.21	11,643.65	11,601.43	42.22	275.816	
12,300.00	6,990.05	1,359.00	1,321.01	90.96	9.50	-8.82	1,394.90	-4,740.21	11,730.59	11,688.13	42.47	276.241	
12,400.00	6,990.07	1,359.00	1,321.01	92.50	9.50	-8.82	1,394.90	-4,740.21	11,817.75	11,775.03	42.71	276.685	
12,500.00	6,990.10	1,359.00	1,321.01	94.04	9.50	-8.82	1,394.90	-4,740.21	11,905.10	11,862.15	42.96	277.147	
12,600.00	6,990.13	1,359.00	1,321.01	95.58	9.50	-8.82	1,394.90	-4,740.21	11,992.65	11,949.46	43.20	277.626	
12,700.00	6,990.15	1,359.00	1,321.01	97.13	9.50	-8.82	1,394.90	-4,740.21	12,080.40	12,036.96	43.44	278.121	
12,800.00	6,990.18	1,359.00	1,321.01	98.68	9.50	-8.82	1,394.90	-4,740.21	12,168.33	12,124.66	43.67	278.633	
12,900.00	6,990.21	1,359.00	1,321.01	100.22	9.50	-8.82	1,394.90	-4,740.21	12,256.45	12,212.55	43.90	279.160	
13,000.00	6,990.24	1,359.00	1,321.01	101.78	9.50	-8.82	1,394.90	-4,740.21	12,344.75	12,300.62	44.14	279.702	
13,100.00	6,990.26	1,359.00	1,321.01	103.33	9.50	-8.82	1,394.90	-4,740.21	12,433.23	12,388.87	44.36	280.258	
13,200.00	6,990.29	1,359.00	1,321.01	104.88	9.50	-8.82	1,394.90	-4,740.21	12,521.88	12,477.29	44.59	280.828	
13,300.00	6,990.32	1,328.65	1,294.89	106.44	9.34	-8.83	1,400.86	-4,725.94	12,610.31	12,565.64	44.67	282.281	
13,400.00	6,990.34	1,297.00	1,267.29	107.99	9.17	-8.85	1,406.97	-4,711.72	12,699.50	12,654.74	44.75	283.772	
13,500.00	6,990.37	1,297.00	1,267.29	109.55	9.17	-8.85	1,406.97	-4,711.72	12,788.43	12,743.45	44.97	284.352	
13,600.00	6,990.40	1,297.00	1,267.29	111.11	9.17	-8.85	1,406.97	-4,711.72	12,877.52	12,832.32	45.19	284.944	
13,700.00	6,990.42	1,297.00	1,267.29	112.67	9.17	-8.85	1,406.97	-4,711.72	12,966.77	12,921.36	45.41	285.549	
13,800.00	6,990.45	1,297.00	1,267.29	114.23	9.17	-8.85	1,406.97	-4,711.72	13,056.17	13,010.55	45.62	286.166	
13,900.00	6,990.48	1,297.00	1,267.29	115.80	9.17	-8.85	1,406.97	-4,711.72	13,145.73	13,099.89	45.84	286.794	
14,000.00	6,990.51	1,297.00	1,267.29	117.36	9.17	-8.85	1,406.97	-4,711.72	13,235.44	13,189.39	46.05	287.432	
14,100.00	6,990.53	1,297.00	1,267.29	118.93	9.17	-8.85	1,406.97	-4,711.72	13,325.29	13,279.04	46.26	288.082	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #171C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		288-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
14,200.00	6,990.56	1,297.00	1,267.29	120.49	9.17	-8.85	1,406.97	-4,711.72	13,415.29	13,368.83	46.46	288.742	
14,300.00	6,990.59	1,297.00	1,267.29	122.06	9.17	-8.85	1,406.97	-4,711.72	13,505.43	13,458.77	46.67	289.411	
14,400.00	6,990.61	1,297.00	1,267.29	123.63	9.17	-8.85	1,406.97	-4,711.72	13,595.71	13,548.84	46.87	290.090	
14,500.00	6,990.64	1,297.00	1,267.29	125.20	9.17	-8.85	1,406.97	-4,711.72	13,686.12	13,639.05	47.07	290.778	
14,600.00	6,990.67	1,297.00	1,267.29	126.77	9.17	-8.85	1,406.97	-4,711.72	13,776.66	13,729.40	47.27	291.474	
14,700.00	6,990.70	1,297.00	1,267.29	128.34	9.17	-8.85	1,406.97	-4,711.72	13,867.34	13,819.88	47.46	292.179	
14,800.00	6,990.72	1,266.28	1,240.14	129.91	9.00	-8.87	1,412.69	-4,698.52	13,957.79	13,910.25	47.54	293.607	
14,900.00	6,990.75	1,235.00	1,212.15	131.48	8.82	-8.88	1,418.16	-4,685.68	14,048.89	14,001.28	47.62	295.051	
15,000.00	6,990.78	1,235.00	1,212.15	133.06	8.82	-8.88	1,418.16	-4,685.68	14,139.76	14,091.95	47.81	295.759	
15,100.00	6,990.80	1,235.00	1,212.15	134.63	8.82	-8.88	1,418.16	-4,685.68	14,230.75	14,182.75	48.00	296.475	
15,200.00	6,990.83	1,235.00	1,212.15	136.20	8.82	-8.88	1,418.16	-4,685.68	14,321.86	14,273.67	48.19	297.198	
15,300.00	6,990.86	1,235.00	1,212.15	137.78	8.82	-8.88	1,418.16	-4,685.68	14,413.09	14,364.71	48.38	297.928	
15,400.00	6,990.88	1,235.00	1,212.15	139.36	8.82	-8.88	1,418.16	-4,685.68	14,504.43	14,455.87	48.56	298.665	
15,500.00	6,990.91	1,235.00	1,212.15	140.93	8.82	-8.88	1,418.16	-4,685.68	14,595.89	14,547.14	48.75	299.408	
15,600.00	6,990.94	1,235.00	1,212.15	142.51	8.82	-8.88	1,418.16	-4,685.68	14,687.45	14,638.52	48.93	300.158	
15,700.00	6,990.97	1,235.00	1,212.15	144.09	8.82	-8.88	1,418.16	-4,685.68	14,779.13	14,730.02	49.11	300.914	
15,800.00	6,990.99	1,235.00	1,212.15	145.67	8.82	-8.88	1,418.16	-4,685.68	14,870.92	14,821.62	49.29	301.676	
15,900.00	6,991.02	1,235.00	1,212.15	147.24	8.82	-8.88	1,418.16	-4,685.68	14,962.81	14,913.33	49.47	302.443	
16,000.00	6,991.05	1,235.00	1,212.15	148.82	8.82	-8.88	1,418.16	-4,685.68	15,054.80	15,005.15	49.65	303.216	
16,100.00	6,991.07	1,235.00	1,212.15	150.40	8.82	-8.88	1,418.16	-4,685.68	15,146.89	15,097.07	49.83	303.994	
16,200.00	6,991.10	1,235.00	1,212.15	151.99	8.82	-8.88	1,418.16	-4,685.68	15,239.09	15,189.09	50.00	304.776	
16,300.00	6,991.13	1,235.00	1,212.15	153.57	8.82	-8.88	1,418.16	-4,685.68	15,331.38	15,281.20	50.17	305.564	
16,400.00	6,991.15	1,235.00	1,212.15	155.15	8.82	-8.88	1,418.16	-4,685.68	15,423.77	15,373.42	50.35	306.356	
16,500.00	6,991.18	1,235.00	1,212.15	156.73	8.82	-8.88	1,418.16	-4,685.68	15,516.25	15,465.73	50.52	307.152	
16,600.00	6,991.21	1,204.31	1,184.37	158.31	8.65	-8.89	1,423.30	-4,673.70	15,608.44	15,557.84	50.59	308.509	
16,700.00	6,991.24	1,173.00	1,155.72	159.90	8.48	-8.89	1,428.41	-4,662.16	15,701.36	15,650.69	50.67	309.877	
16,800.00	6,991.26	1,173.00	1,155.72	161.48	8.48	-8.89	1,428.41	-4,662.16	15,793.96	15,743.13	50.84	310.672	
16,900.00	6,991.29	1,173.00	1,155.72	163.06	8.48	-8.89	1,428.41	-4,662.16	15,886.66	15,835.66	51.01	311.470	
17,000.00	6,991.32	1,173.00	1,155.72	164.65	8.48	-8.89	1,428.41	-4,662.16	15,979.45	15,928.28	51.17	312.272	
17,100.00	6,991.34	1,173.00	1,155.72	166.23	8.48	-8.89	1,428.41	-4,662.16	16,072.32	16,020.98	51.34	313.077	
17,200.00	6,991.37	1,173.00	1,155.72	167.82	8.48	-8.89	1,428.41	-4,662.16	16,165.28	16,113.78	51.50	313.886	
17,300.00	6,991.40	1,173.00	1,155.72	169.40	8.48	-8.89	1,428.41	-4,662.16	16,258.32	16,206.65	51.66	314.699	
17,400.00	6,991.42	1,173.00	1,155.72	170.99	8.48	-8.89	1,428.41	-4,662.16	16,351.44	16,299.62	51.82	315.514	
17,500.00	6,991.45	1,173.00	1,155.72	172.57	8.48	-8.89	1,428.41	-4,662.16	16,444.64	16,392.66	51.99	316.332	
17,600.00	6,991.48	1,173.00	1,155.72	174.16	8.48	-8.89	1,428.41	-4,662.16	16,537.93	16,485.78	52.14	317.153	
17,700.00	6,991.51	1,173.00	1,155.72	175.75	8.48	-8.89	1,428.41	-4,662.16	16,631.29	16,578.99	52.30	317.977	
17,800.00	6,991.53	1,173.00	1,155.72	177.33	8.48	-8.89	1,428.41	-4,662.16	16,724.73	16,672.27	52.46	318.803	
17,900.00	6,991.56	1,173.00	1,155.72	178.92	8.48	-8.89	1,428.41	-4,662.16	16,818.24	16,765.62	52.62	319.632	
18,000.00	6,991.59	1,173.00	1,155.72	180.51	8.48	-8.89	1,428.41	-4,662.16	16,911.83	16,859.05	52.77	320.463	
18,100.00	6,991.61	1,173.00	1,155.72	182.10	8.48	-8.89	1,428.41	-4,662.16	17,005.49	16,952.56	52.93	321.296	
18,200.00	6,991.64	1,173.00	1,155.72	183.68	8.48	-8.89	1,428.41	-4,662.16	17,099.22	17,046.14	53.08	322.131	
18,300.00	6,991.67	1,173.00	1,155.72	185.27	8.48	-8.89	1,428.41	-4,662.16	17,193.02	17,139.79	53.23	322.968	
18,400.00	6,991.69	1,173.00	1,155.72	186.86	8.48	-8.89	1,428.41	-4,662.16	17,286.90	17,233.51	53.39	323.807	
18,500.00	6,991.72	1,173.00	1,155.72	188.45	8.48	-8.89	1,428.41	-4,662.16	17,380.84	17,327.30	53.54	324.647	
18,600.00	6,991.75	1,173.00	1,155.72	190.04	8.48	-8.89	1,428.41	-4,662.16	17,474.85	17,421.16	53.69	325.490	
18,700.00	6,991.78	1,173.00	1,155.72	191.63	8.48	-8.89	1,428.41	-4,662.16	17,568.92	17,515.08	53.84	326.333	
18,800.00	6,991.80	1,173.00	1,155.72	193.22	8.48	-8.89	1,428.41	-4,662.16	17,663.06	17,609.07	53.99	327.178	
18,900.00	6,991.83	1,142.57	1,127.59	194.81	8.33	-8.90	1,433.24	-4,651.59	17,756.90	17,702.82	54.08	328.331	
19,000.00	6,991.86	1,140.14	1,125.34	196.40	8.31	-8.90	1,433.62	-4,650.78	17,851.11	17,796.88	54.23	329.198	
19,100.00	6,991.88	1,110.00	1,097.21	197.99	8.16	-8.90	1,438.21	-4,640.97	17,945.67	17,891.35	54.32	330.348	
19,200.00	6,991.91	1,110.00	1,097.21	199.58	8.16	-8.90	1,438.21	-4,640.97	18,039.95	17,985.48	54.47	331.188	
19,300.00	6,991.94	1,110.00	1,097.21	201.17	8.16	-8.90	1,438.21	-4,640.97	18,134.28	18,079.67	54.62	332.030	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,342.28	6,991.95	1,110.00	1,097.21	201.84	8.16	-8.90	1,438.21	-4,640.97	18,174.18	18,119.50	54.68	332.386		
19,400.00	6,991.97	1,110.00	1,097.21	202.76	8.16	-8.90	1,438.21	-4,640.97	18,228.68	18,173.92	54.76	332.872		
19,500.00	6,991.99	1,110.00	1,097.21	204.35	8.16	-8.90	1,438.21	-4,640.97	18,323.13	18,268.23	54.91	333.715		
19,542.28	6,992.00	1,110.00	1,097.21	205.03	8.16	-8.90	1,438.21	-4,640.97	18,363.08	18,308.11	54.97	334.072		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-96.62	-1,019.43	-8,789.74	8,849.57				
100.00	100.00	0.00	0.00	0.25	0.00	-96.62	-1,019.43	-8,789.74	8,848.70	8,848.45	0.25	N/A	
145.66	145.66	18.66	18.66	0.41	0.33	-96.62	-1,019.43	-8,789.74	8,848.66	8,847.91	0.75	N/A	
200.00	200.00	73.00	73.00	0.61	1.29	-96.62	-1,019.43	-8,789.74	8,848.66	8,846.75	1.90	4,650.079	
300.00	300.00	173.00	173.00	0.97	3.07	-96.62	-1,019.43	-8,789.74	8,848.66	8,844.62	4.03	2,194.051	
400.00	400.00	273.00	273.00	1.33	4.84	-96.62	-1,019.43	-8,789.74	8,848.66	8,842.49	6.16	1,435.738	
500.00	500.00	373.00	373.00	1.68	6.61	-96.62	-1,019.43	-8,789.74	8,848.66	8,840.36	8.29	1,066.970	
600.00	600.00	473.00	473.00	2.04	8.40	-96.62	-1,019.43	-8,789.74	8,848.66	8,838.21	10.44	847.294	
700.00	700.00	573.00	573.00	2.40	10.20	-96.62	-1,019.43	-8,789.74	8,848.66	8,836.05	12.60	702.082	
800.00	799.98	672.98	672.98	2.76	12.00	-66.64	-1,019.43	-8,789.74	8,847.96	8,833.20	14.76	599.391	
900.00	899.92	772.30	772.30	3.12	13.79	-66.66	-1,019.14	-8,789.74	8,846.55	8,829.64	16.91	523.245	
1,000.00	999.86	871.46	871.46	3.47	15.58	-66.68	-1,019.24	-8,789.74	8,845.17	8,826.12	19.05	464.305	
1,100.00	1,099.80	970.62	970.62	3.83	17.37	-66.70	-1,019.41	-8,789.74	8,843.81	8,822.62	21.19	417.277	
1,200.00	1,199.74	1,072.75	1,072.74	4.19	19.32	-66.72	-1,019.43	-8,789.74	8,842.43	8,818.93	23.51	376.144	
1,300.00	1,299.68	1,172.69	1,172.68	4.55	21.25	-66.74	-1,019.43	-8,789.74	8,841.06	8,815.26	25.79	342.782	
1,400.00	1,399.61	1,271.79	1,271.78	4.91	23.16	-66.76	-1,018.91	-8,789.74	8,839.62	8,811.56	28.06	315.024	
1,500.00	1,499.55	1,369.92	1,369.90	5.27	25.05	-66.78	-1,019.07	-8,789.74	8,838.26	8,807.95	30.31	291.599	
1,600.00	1,599.49	1,468.04	1,468.02	5.63	26.94	-66.80	-1,019.41	-8,789.74	8,836.92	8,804.36	32.56	271.412	
1,700.00	1,699.43	1,572.49	1,572.43	5.99	29.09	-66.83	-1,019.43	-8,789.74	8,835.55	8,800.48	35.07	251.961	
1,800.00	1,799.37	1,672.43	1,672.37	6.35	31.15	-66.85	-1,019.43	-8,789.74	8,834.18	8,796.69	37.49	235.647	
1,900.00	1,899.31	1,771.72	1,771.65	6.71	33.20	-66.86	-1,018.22	-8,789.74	8,832.66	8,792.76	39.90	221.384	
2,000.00	1,999.25	1,868.47	1,868.39	7.07	35.20	-66.88	-1,018.42	-8,789.74	8,831.31	8,789.06	42.25	209.007	
2,100.00	2,099.19	1,965.21	1,965.13	7.42	37.19	-66.90	-1,018.92	-8,789.74	8,830.00	8,785.39	44.61	197.939	
2,200.00	2,199.13	2,072.27	2,072.13	7.78	39.44	-66.93	-1,019.43	-8,789.74	8,828.69	8,781.47	47.22	186.974	
2,300.00	2,299.07	2,172.21	2,172.07	8.14	41.60	-66.95	-1,019.43	-8,789.74	8,827.33	8,777.59	49.74	177.478	
2,400.00	2,399.01	2,272.15	2,272.01	8.50	43.76	-66.97	-1,019.43	-8,789.74	8,825.96	8,773.70	52.26	168.897	
2,500.00	2,498.94	2,369.36	2,369.21	8.86	45.86	-66.98	-1,018.38	-8,789.74	8,824.47	8,769.75	54.72	161.276	
2,600.00	2,598.88	2,465.86	2,465.69	9.22	47.95	-67.01	-1,018.78	-8,789.74	8,823.15	8,765.99	57.16	154.357	
2,700.00	2,698.82	2,572.07	2,571.82	9.58	50.25	-67.03	-1,019.43	-8,789.74	8,821.87	8,762.05	59.82	147.476	
2,800.00	2,798.76	2,672.01	2,671.76	9.94	52.43	-67.05	-1,019.43	-8,789.74	8,820.50	8,758.14	62.36	141.444	
2,900.00	2,898.70	2,771.94	2,771.70	10.30	54.61	-67.08	-1,019.43	-8,789.74	8,819.14	8,754.24	64.90	135.884	
3,000.00	2,998.64	2,871.88	2,871.64	10.66	56.79	-67.10	-1,019.43	-8,789.74	8,817.78	8,750.34	67.44	130.743	
3,100.00	3,098.58	2,971.82	2,971.58	11.02	58.98	-67.12	-1,019.43	-8,789.74	8,816.43	8,746.44	69.98	125.976	
3,200.00	3,198.52	3,071.76	3,071.52	11.38	61.16	-67.14	-1,019.43	-8,789.74	8,815.07	8,742.54	72.53	121.543	
3,300.00	3,298.46	3,135.00	3,134.64	11.75	62.54	-67.15	-1,019.43	-8,789.74	8,813.79	8,739.52	74.27	118.678	
3,382.67	3,381.08	3,135.00	3,134.64	12.04	62.54	-67.15	-1,019.43	-8,789.74	8,813.40	8,738.84	74.56	118.207 CC	
3,400.00	3,398.40	3,135.00	3,134.64	12.11	62.54	-67.15	-1,019.43	-8,789.74	8,813.42	8,738.80	74.62	118.112 ES	
3,500.00	3,498.34	3,135.00	3,134.64	12.47	62.54	-67.15	-1,019.43	-8,789.74	8,814.18	8,739.22	74.96	117.580	
3,600.00	3,598.27	3,135.00	3,134.64	12.83	62.54	-67.15	-1,019.43	-8,789.74	8,816.08	8,740.78	75.30	117.084	
3,700.00	3,698.21	3,135.00	3,134.64	13.19	62.54	-67.15	-1,019.43	-8,789.74	8,819.11	8,743.49	75.62	116.620	
3,800.00	3,798.15	3,135.00	3,134.64	13.55	62.54	-67.15	-1,019.43	-8,789.74	8,823.28	8,747.34	75.94	116.191	
3,900.00	3,898.09	3,135.00	3,134.64	13.91	62.54	-67.15	-1,019.43	-8,789.74	8,828.57	8,752.33	76.24	115.794	
4,000.00	3,998.03	3,135.00	3,134.64	14.27	62.54	-67.15	-1,019.43	-8,789.74	8,835.00	8,758.46	76.54	115.429	
4,100.00	4,097.97	3,135.00	3,134.64	14.63	62.54	-67.15	-1,019.43	-8,789.74	8,842.55	8,765.72	76.83	115.096	
4,200.00	4,197.91	3,135.00	3,134.64	14.99	62.54	-67.15	-1,019.43	-8,789.74	8,851.22	8,774.11	77.10	114.795	
4,300.00	4,297.85	3,135.00	3,134.64	15.35	62.54	-67.15	-1,019.43	-8,789.74	8,861.01	8,783.64	77.37	114.525	
4,400.00	4,397.79	3,135.00	3,134.64	15.71	62.54	-67.15	-1,019.43	-8,789.74	8,871.92	8,794.29	77.63	114.285	
4,500.00	4,497.73	3,135.00	3,134.64	16.07	62.54	-67.15	-1,019.43	-8,789.74	8,883.95	8,806.07	77.88	114.075	
4,600.00	4,597.66	3,135.00	3,134.64	16.43	62.54	-67.15	-1,019.43	-8,789.74	8,897.08	8,818.96	78.12	113.895	
4,700.00	4,697.60	3,135.00	3,134.64	16.79	62.54	-67.15	-1,019.43	-8,789.74	8,911.31	8,832.96	78.35	113.744	
4,800.00	4,797.54	3,135.00	3,134.64	17.15	62.54	-67.15	-1,019.43	-8,789.74	8,926.64	8,848.07	78.56	113.621	
4,900.00	4,897.48	3,135.00	3,134.64	17.51	62.54	-67.15	-1,019.43	-8,789.74	8,943.06	8,864.29	78.77	113.527	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	4,997.42	3,135.00	3,134.64	17.87	62.54	-67.15	-1,019.43	-8,789.74	8,960.57	8,881.59	78.97	113.461			
5,100.00	5,097.36	3,135.00	3,134.64	18.23	62.54	-67.15	-1,019.43	-8,789.74	8,979.16	8,899.99	79.17	113.422			
5,200.00	5,197.30	3,135.00	3,134.64	18.59	62.54	-67.15	-1,019.43	-8,789.74	8,998.82	8,919.47	79.35	113.411	SF		
5,300.00	5,297.24	3,135.00	3,134.64	18.95	62.54	-67.15	-1,019.43	-8,789.74	9,019.55	8,940.03	79.52	113.425			
5,402.82	5,400.00	3,135.00	3,134.64	19.32	62.54	-67.15	-1,019.43	-8,789.74	9,041.96	8,962.27	79.69	113.468			
5,500.00	5,497.13	3,135.00	3,134.64	19.67	62.54	-67.26	-1,019.43	-8,789.74	9,064.32	8,984.49	79.84	113.535			
5,600.00	5,597.11	3,135.00	3,134.64	20.03	62.54	-67.37	-1,019.43	-8,789.74	9,088.68	9,008.70	79.98	113.635			
5,700.00	5,697.10	3,135.00	3,134.64	20.39	62.54	-67.50	-1,019.43	-8,789.74	9,114.40	9,034.28	80.12	113.764			
5,802.82	5,799.92	3,135.00	3,134.64	20.75	62.54	-97.63	-1,019.43	-8,789.74	9,142.24	9,062.00	80.24	113.929			
5,900.00	5,897.09	3,135.00	3,134.64	21.10	62.54	-97.63	-1,019.43	-8,789.74	9,169.70	9,089.34	80.36	114.112			
6,000.00	5,997.09	3,135.00	3,134.64	21.45	62.54	-97.63	-1,019.43	-8,789.74	9,198.94	9,118.48	80.46	114.323			
6,100.00	6,097.09	3,135.00	3,134.64	21.81	62.54	-97.63	-1,019.43	-8,789.74	9,229.17	9,148.61	80.56	114.557			
6,200.00	6,197.09	3,135.00	3,134.64	22.16	62.54	-97.63	-1,019.43	-8,789.74	9,260.38	9,179.73	80.66	114.814			
6,300.00	6,297.09	3,135.00	3,134.64	22.52	62.54	-97.63	-1,019.43	-8,789.74	9,292.56	9,211.82	80.74	115.093			
6,354.91	6,352.00	3,135.00	3,134.64	22.72	62.54	-97.63	-1,019.43	-8,789.74	9,310.64	9,229.86	80.78	115.255			
6,400.00	6,397.06	3,135.00	3,134.64	22.87	62.54	-176.53	-1,019.43	-8,789.74	9,327.20	9,246.38	80.82	115.413			
6,450.00	6,446.74	3,135.00	3,134.64	23.04	62.54	-176.40	-1,019.43	-8,789.74	9,349.17	9,268.32	80.85	115.637			
6,500.00	6,495.84	3,135.00	3,134.64	23.20	62.54	-176.23	-1,019.43	-8,789.74	9,374.80	9,293.91	80.88	115.909			
6,550.00	6,544.06	3,135.00	3,134.64	23.36	62.54	-176.01	-1,019.43	-8,789.74	9,403.88	9,322.97	80.91	116.226			
6,600.00	6,591.08	3,135.00	3,134.64	23.51	62.54	-175.73	-1,019.43	-8,789.74	9,436.22	9,355.29	80.94	116.588			
6,650.00	6,636.64	3,135.00	3,134.64	23.66	62.54	-175.38	-1,019.43	-8,789.74	9,471.58	9,390.62	80.96	116.990			
6,700.00	6,680.44	3,135.00	3,134.64	23.82	62.54	-174.93	-1,019.43	-8,789.74	9,509.71	9,428.73	80.98	117.431			
6,750.00	6,722.22	3,135.00	3,134.64	23.99	62.54	-174.35	-1,019.43	-8,789.74	9,550.35	9,469.35	81.00	117.906			
6,800.00	6,761.71	3,135.00	3,134.64	24.16	62.54	-173.56	-1,019.43	-8,789.74	9,593.21	9,512.19	81.02	118.411			
6,850.00	6,798.68	3,135.00	3,134.64	24.33	62.54	-172.45	-1,019.43	-8,789.74	9,637.99	9,556.96	81.03	118.943			
6,900.00	6,832.89	3,135.00	3,134.64	24.50	62.54	-170.81	-1,019.43	-8,789.74	9,684.41	9,603.37	81.04	119.495			
6,950.00	6,864.14	3,135.00	3,134.64	24.69	62.54	-168.16	-1,019.43	-8,789.74	9,732.15	9,651.10	81.06	120.065			
7,000.00	6,892.23	3,135.00	3,134.64	24.88	62.54	-163.26	-1,019.43	-8,789.74	9,780.91	9,699.84	81.07	120.645			
7,050.00	6,916.99	3,135.00	3,134.64	25.08	62.54	-151.59	-1,019.43	-8,789.74	9,830.36	9,749.27	81.09	121.231			
7,100.00	6,938.27	3,135.00	3,134.64	25.29	62.54	-109.53	-1,019.43	-8,789.74	9,880.19	9,799.09	81.11	121.817			
7,150.00	6,955.93	3,135.00	3,134.64	25.51	62.54	-41.03	-1,019.43	-8,789.74	9,930.10	9,848.97	81.13	122.397			
7,200.00	6,969.87	3,135.00	3,134.64	25.75	62.54	-20.65	-1,019.43	-8,789.74	9,979.78	9,898.62	81.16	122.965			
7,250.00	6,980.00	3,135.00	3,134.64	25.99	62.54	-13.55	-1,019.43	-8,789.74	10,028.92	9,947.72	81.20	123.514			
7,300.00	6,986.25	3,135.00	3,134.64	26.25	62.54	-10.08	-1,019.43	-8,789.74	10,077.24	9,995.99	81.24	124.038			
7,354.68	6,988.62	3,135.00	3,134.64	26.53	62.54	-7.89	-1,019.43	-8,789.74	10,128.80	10,047.49	81.31	124.575			
7,400.00	6,988.64	3,135.00	3,134.64	26.78	62.54	-7.89	-1,019.43	-8,789.74	10,170.89	10,089.52	81.37	124.999			
7,500.00	6,988.67	3,135.00	3,134.64	27.40	62.54	-7.89	-1,019.43	-8,789.74	10,263.88	10,182.37	81.51	125.923			
7,600.00	6,988.71	3,135.00	3,134.64	28.08	62.54	-7.89	-1,019.43	-8,789.74	10,356.99	10,275.34	81.65	126.844			
7,700.00	6,988.74	3,135.00	3,134.64	28.84	62.54	-7.89	-1,019.43	-8,789.74	10,450.23	10,368.44	81.79	127.762			
7,800.00	6,988.78	3,135.00	3,134.64	29.67	62.54	-7.89	-1,019.43	-8,789.74	10,543.60	10,461.66	81.94	128.677			
7,900.00	6,988.81	3,135.00	3,134.64	30.55	62.54	-7.89	-1,019.43	-8,789.74	10,637.09	10,555.01	82.08	129.590			
8,000.00	6,988.85	3,135.00	3,134.64	31.49	62.54	-7.89	-1,019.43	-8,789.74	10,730.69	10,648.47	82.23	130.500			
8,100.00	6,988.88	3,135.00	3,134.64	32.48	62.54	-7.89	-1,019.43	-8,789.74	10,824.41	10,742.04	82.37	131.408			
8,200.00	6,988.91	3,135.00	3,134.64	33.51	62.54	-7.89	-1,019.43	-8,789.74	10,918.24	10,835.73	82.52	132.313			
8,211.68	6,988.92	3,135.00	3,134.64	33.63	62.54	-7.89	-1,019.43	-8,789.74	10,929.21	10,846.68	82.54	132.419			
8,300.00	6,988.95	3,135.00	3,134.64	34.58	62.54	-3.05	-1,019.43	-8,789.74	11,012.23	10,929.57	82.66	133.220			
8,400.00	6,988.98	3,135.00	3,134.64	35.70	62.54	2.54	-1,019.43	-8,789.74	11,106.39	11,023.59	82.80	134.132			
8,500.00	6,989.01	3,135.00	3,134.64	36.84	62.54	8.13	-1,019.43	-8,789.74	11,200.59	11,117.66	82.94	135.049			
8,600.00	6,989.04	3,135.00	3,134.64	38.02	62.54	13.60	-1,019.43	-8,789.74	11,294.73	11,211.67	83.07	135.971			
8,700.00	6,989.07	3,135.00	3,134.64	39.22	62.54	18.87	-1,019.43	-8,789.74	11,388.70	11,305.50	83.19	136.894			
8,772.79	6,989.09	3,135.00	3,134.64	40.11	62.54	22.53	-1,019.43	-8,789.74	11,456.91	11,373.63	83.28	137.566			
8,800.00	6,989.10	3,135.00	3,134.64	40.44	62.54	22.53	-1,019.43	-8,789.74	11,482.39	11,399.07	83.32	137.817			

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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				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	6,989.13	3,135.00	3,134.64	41.68	62.54	22.53	-1,019.43	-8,789.74	11,576.08	11,492.63	83.44	138.735			
9,000.00	6,989.15	3,135.00	3,134.64	42.95	62.54	22.53	-1,019.43	-8,789.74	11,669.86	11,586.30	83.57	139.648			
9,100.00	6,989.18	3,135.00	3,134.64	44.24	62.54	22.53	-1,019.43	-8,789.74	11,763.76	11,680.06	83.69	140.558			
9,200.00	6,989.21	3,135.00	3,134.64	45.55	62.54	22.53	-1,019.43	-8,789.74	11,857.75	11,773.92	83.82	141.464			
9,300.00	6,989.24	3,135.00	3,134.64	46.88	62.54	22.53	-1,019.43	-8,789.74	11,951.84	11,867.88	83.95	142.366			
9,400.00	6,989.26	3,135.00	3,134.64	48.23	62.54	22.53	-1,019.43	-8,789.74	12,046.02	11,961.94	84.08	143.265			
9,500.00	6,989.29	3,135.00	3,134.64	49.59	62.54	22.53	-1,019.43	-8,789.74	12,140.30	12,056.08	84.21	144.160			
9,600.00	6,989.32	3,135.00	3,134.64	50.96	62.54	22.53	-1,019.43	-8,789.74	12,234.66	12,150.32	84.35	145.051			
9,700.00	6,989.34	3,135.00	3,134.64	52.35	62.54	22.53	-1,019.43	-8,789.74	12,329.12	12,244.64	84.48	145.940			
9,800.00	6,989.37	3,135.00	3,134.64	53.75	62.54	22.53	-1,019.43	-8,789.74	12,423.66	12,339.05	84.62	146.825			
9,900.00	6,989.40	3,135.00	3,134.64	55.16	62.54	22.53	-1,019.43	-8,789.74	12,518.29	12,433.54	84.75	147.707			
10,000.00	6,989.42	3,135.00	3,134.64	56.58	62.54	22.53	-1,019.43	-8,789.74	12,613.00	12,528.12	84.89	148.585			
10,100.00	6,989.45	3,135.00	3,134.64	58.01	62.54	22.53	-1,019.43	-8,789.74	12,707.80	12,622.77	85.02	149.461			
10,200.00	6,989.48	3,135.00	3,134.64	59.45	62.54	22.53	-1,019.43	-8,789.74	12,802.67	12,717.51	85.16	150.334			
10,300.00	6,989.51	3,135.00	3,134.64	60.90	62.54	22.53	-1,019.43	-8,789.74	12,897.62	12,812.32	85.30	151.204			
10,400.00	6,989.53	3,135.00	3,134.64	62.35	62.54	22.53	-1,019.43	-8,789.74	12,992.64	12,907.20	85.44	152.071			
10,500.00	6,989.56	3,135.00	3,134.64	63.81	62.54	22.53	-1,019.43	-8,789.74	13,087.74	13,002.16	85.58	152.936			
10,600.00	6,989.59	3,135.00	3,134.64	65.28	62.54	22.53	-1,019.43	-8,789.74	13,182.91	13,097.19	85.72	153.797			
10,700.00	6,989.61	3,135.00	3,134.64	66.76	62.54	22.53	-1,019.43	-8,789.74	13,278.15	13,192.30	85.86	154.657			
10,800.00	6,989.64	3,135.00	3,134.64	68.24	62.54	22.53	-1,019.43	-8,789.74	13,373.46	13,287.47	86.00	155.513			
10,900.00	6,989.67	3,135.00	3,134.64	69.73	62.54	22.53	-1,019.43	-8,789.74	13,468.84	13,382.71	86.14	156.368			
11,000.00	6,989.70	3,135.00	3,134.64	71.22	62.54	22.53	-1,019.43	-8,789.74	13,564.29	13,478.01	86.28	157.219			
11,100.00	6,989.72	3,135.00	3,134.64	72.71	62.54	22.53	-1,019.43	-8,789.74	13,659.80	13,573.38	86.42	158.069			
11,200.00	6,989.75	3,135.00	3,134.64	74.22	62.54	22.53	-1,019.43	-8,789.74	13,755.38	13,668.82	86.56	158.916			
11,300.00	6,989.78	3,135.00	3,134.64	75.72	62.54	22.53	-1,019.43	-8,789.74	13,851.01	13,764.32	86.70	159.760			
11,400.00	6,989.80	3,135.00	3,134.64	77.23	62.54	22.53	-1,019.43	-8,789.74	13,946.71	13,859.87	86.84	160.603			
11,500.00	6,989.83	3,135.00	3,134.64	78.74	62.54	22.53	-1,019.43	-8,789.74	14,042.47	13,955.49	86.98	161.443			
11,600.00	6,989.86	3,135.00	3,134.64	80.26	62.54	22.53	-1,019.43	-8,789.74	14,138.29	14,051.17	87.12	162.281			
11,700.00	6,989.88	3,135.00	3,134.64	81.78	62.54	22.53	-1,019.43	-8,789.74	14,234.16	14,146.90	87.26	163.117			
11,800.00	6,989.91	3,135.00	3,134.64	83.30	62.54	22.53	-1,019.43	-8,789.74	14,330.10	14,242.69	87.40	163.951			
11,900.00	6,989.94	3,135.00	3,134.64	84.83	62.54	22.53	-1,019.43	-8,789.74	14,426.08	14,338.54	87.55	164.783			
12,000.00	6,989.97	3,135.00	3,134.64	86.36	62.54	22.53	-1,019.43	-8,789.74	14,522.12	14,434.44	87.69	165.612			
12,100.00	6,989.99	3,135.00	3,134.64	87.89	62.54	22.53	-1,019.43	-8,789.74	14,618.22	14,530.39	87.83	166.440			
12,200.00	6,990.02	3,135.00	3,134.64	89.42	62.54	22.53	-1,019.43	-8,789.74	14,714.36	14,626.39	87.97	167.266			
12,300.00	6,990.05	3,135.00	3,134.64	90.96	62.54	22.53	-1,019.43	-8,789.74	14,810.56	14,722.45	88.11	168.089			
12,400.00	6,990.07	3,135.00	3,134.64	92.50	62.54	22.53	-1,019.43	-8,789.74	14,906.81	14,818.56	88.25	168.911			
12,500.00	6,990.10	3,135.00	3,134.64	94.04	62.54	22.53	-1,019.43	-8,789.74	15,003.10	14,914.71	88.39	169.731			
12,600.00	6,990.13	3,135.00	3,134.64	95.58	62.54	22.53	-1,019.43	-8,789.74	15,099.45	15,010.91	88.53	170.549			
12,700.00	6,990.15	3,135.00	3,134.64	97.13	62.54	22.53	-1,019.43	-8,789.74	15,195.84	15,107.17	88.68	171.365			
12,800.00	6,990.18	3,135.00	3,134.64	98.68	62.54	22.53	-1,019.43	-8,789.74	15,292.28	15,203.46	88.82	172.180			
12,900.00	6,990.21	3,135.00	3,134.64	100.22	62.54	22.53	-1,019.43	-8,789.74	15,388.76	15,299.81	88.96	172.992			
13,000.00	6,990.24	3,135.00	3,134.64	101.78	62.54	22.53	-1,019.43	-8,789.74	15,485.29	15,396.19	89.10	173.803			
13,100.00	6,990.26	3,135.00	3,134.64	103.33	62.54	22.53	-1,019.43	-8,789.74	15,581.86	15,492.62	89.24	174.612			
13,200.00	6,990.29	3,135.00	3,134.64	104.88	62.54	22.53	-1,019.43	-8,789.74	15,678.48	15,589.10	89.38	175.419			
13,300.00	6,990.32	3,135.00	3,134.64	106.44	62.54	22.53	-1,019.43	-8,789.74	15,775.13	15,685.62	89.52	176.224			
13,400.00	6,990.34	3,135.00	3,134.64	107.99	62.54	22.53	-1,019.43	-8,789.74	15,871.83	15,782.17	89.66	177.028			
13,500.00	6,990.37	3,135.00	3,134.64	109.55	62.54	22.53	-1,019.43	-8,789.74	15,968.57	15,878.77	89.80	177.830			
13,600.00	6,990.40	3,135.00	3,134.64	111.11	62.54	22.53	-1,019.43	-8,789.74	16,065.35	15,975.41	89.94	178.630			
13,700.00	6,990.42	3,135.00	3,134.64	112.67	62.54	22.53	-1,019.43	-8,789.74	16,162.17	16,072.09	90.08	179.429			
13,800.00	6,990.45	3,135.00	3,134.64	114.23	62.54	22.53	-1,019.43	-8,789.74	16,259.03	16,168.81	90.21	180.225			
13,900.00	6,990.48	3,135.00	3,134.64	115.80	62.54	22.53	-1,019.43	-8,789.74	16,355.92	16,265.57	90.35	181.020			
14,000.00	6,990.51	3,135.00	3,134.64	117.36	62.54	22.53	-1,019.43	-8,789.74	16,452.85	16,362.36	90.49	181.814			

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)	
14,100.00	6,990.53	3,135.00	3,134.64	118.93	62.54	22.53	-1,019.43	-8,789.74	16,549.82	16,459.19	90.63	182.606		
14,200.00	6,990.56	3,135.00	3,134.64	120.49	62.54	22.53	-1,019.43	-8,789.74	16,646.82	16,556.05	90.77	183.396		
14,300.00	6,990.59	3,135.00	3,134.64	122.06	62.54	22.53	-1,019.43	-8,789.74	16,743.86	16,652.95	90.91	184.184		
14,400.00	6,990.61	3,135.00	3,134.64	123.63	62.54	22.53	-1,019.43	-8,789.74	16,840.94	16,749.89	91.05	184.971		
14,500.00	6,990.64	3,135.00	3,134.64	125.20	62.54	22.53	-1,019.43	-8,789.74	16,938.05	16,846.86	91.18	185.756		
14,600.00	6,990.67	3,135.00	3,134.64	126.77	62.54	22.53	-1,019.43	-8,789.74	17,035.19	16,943.86	91.32	186.540		
14,700.00	6,990.70	3,135.00	3,134.64	128.34	62.54	22.53	-1,019.43	-8,789.74	17,132.36	17,040.90	91.46	187.321		
14,800.00	6,990.72	3,135.00	3,134.64	129.91	62.54	22.53	-1,019.43	-8,789.74	17,229.57	17,137.97	91.60	188.102		
14,900.00	6,990.75	3,135.00	3,134.64	131.48	62.54	22.53	-1,019.43	-8,789.74	17,326.81	17,235.07	91.73	188.880		
15,000.00	6,990.78	3,135.00	3,134.64	133.06	62.54	22.53	-1,019.43	-8,789.74	17,424.08	17,332.21	91.87	189.657		
15,100.00	6,990.80	3,135.00	3,134.64	134.63	62.54	22.53	-1,019.43	-8,789.74	17,521.38	17,429.37	92.01	190.433		
15,200.00	6,990.83	3,135.00	3,134.64	136.20	62.54	22.53	-1,019.43	-8,789.74	17,618.71	17,526.56	92.14	191.207		
15,300.00	6,990.86	3,135.00	3,134.64	137.78	62.54	22.53	-1,019.43	-8,789.74	17,716.07	17,623.79	92.28	191.979		
15,400.00	6,990.88	3,135.00	3,134.64	139.36	62.54	22.53	-1,019.43	-8,789.74	17,813.46	17,721.04	92.42	192.749		
15,500.00	6,990.91	3,135.00	3,134.64	140.93	62.54	22.53	-1,019.43	-8,789.74	17,910.88	17,818.32	92.55	193.518		
15,600.00	6,990.94	3,135.00	3,134.64	142.51	62.54	22.53	-1,019.43	-8,789.74	18,008.32	17,915.63	92.69	194.286		
15,700.00	6,990.97	3,135.00	3,134.64	144.09	62.54	22.53	-1,019.43	-8,789.74	18,105.80	18,012.97	92.83	195.052		
15,800.00	6,990.99	3,135.00	3,134.64	145.67	62.54	22.53	-1,019.43	-8,789.74	18,203.30	18,110.34	92.96	195.816		
15,900.00	6,991.02	3,135.00	3,134.64	147.24	62.54	22.53	-1,019.43	-8,789.74	18,300.83	18,207.73	93.10	196.579		
16,000.00	6,991.05	3,135.00	3,134.64	148.82	62.54	22.53	-1,019.43	-8,789.74	18,398.38	18,305.15	93.23	197.340		
16,100.00	6,991.07	3,135.00	3,134.64	150.40	62.54	22.53	-1,019.43	-8,789.74	18,495.97	18,402.60	93.37	198.099		
16,200.00	6,991.10	3,135.00	3,134.64	151.99	62.54	22.53	-1,019.43	-8,789.74	18,593.57	18,500.07	93.50	198.857		
16,300.00	6,991.13	3,135.00	3,134.64	153.57	62.54	22.53	-1,019.43	-8,789.74	18,691.21	18,597.57	93.64	199.614		
16,400.00	6,991.15	3,135.00	3,134.64	155.15	62.54	22.53	-1,019.43	-8,789.74	18,788.86	18,695.09	93.77	200.368		
16,500.00	6,991.18	3,135.00	3,134.64	156.73	62.54	22.53	-1,019.43	-8,789.74	18,886.55	18,792.64	93.91	201.122		
16,600.00	6,991.21	3,135.00	3,134.64	158.31	62.54	22.53	-1,019.43	-8,789.74	18,984.25	18,890.21	94.04	201.873		
16,700.00	6,991.24	3,135.00	3,134.64	159.90	62.54	22.53	-1,019.43	-8,789.74	19,081.98	18,987.81	94.17	202.623		
16,800.00	6,991.26	3,135.00	3,134.64	161.48	62.54	22.53	-1,019.43	-8,789.74	19,179.74	19,085.43	94.31	203.372		
16,900.00	6,991.29	3,135.00	3,134.64	163.06	62.54	22.53	-1,019.43	-8,789.74	19,277.51	19,183.07	94.44	204.119		
17,000.00	6,991.32	3,135.00	3,134.64	164.65	62.54	22.53	-1,019.43	-8,789.74	19,375.31	19,280.73	94.58	204.864		
17,100.00	6,991.34	3,135.00	3,134.64	166.23	62.54	22.53	-1,019.43	-8,789.74	19,473.13	19,378.42	94.71	205.608		
17,200.00	6,991.37	3,135.00	3,134.64	167.82	62.54	22.53	-1,019.43	-8,789.74	19,570.98	19,476.13	94.84	206.350		
17,300.00	6,991.40	3,135.00	3,134.64	169.40	62.54	22.53	-1,019.43	-8,789.74	19,668.84	19,573.86	94.98	207.091		
17,400.00	6,991.42	3,135.00	3,134.64	170.99	62.54	22.53	-1,019.43	-8,789.74	19,766.73	19,671.62	95.11	207.830		
17,500.00	6,991.45	3,135.00	3,134.64	172.57	62.54	22.53	-1,019.43	-8,789.74	19,864.64	19,769.39	95.24	208.568		
17,600.00	6,991.48	3,135.00	3,134.64	174.16	62.54	22.53	-1,019.43	-8,789.74	19,962.56	19,867.19	95.38	209.304		
17,700.00	6,991.51	3,135.00	3,134.64	175.75	62.54	22.53	-1,019.43	-8,789.74	20,060.51	19,965.00	95.51	210.038		
17,800.00	6,991.53	3,135.00	3,134.64	177.33	62.54	22.53	-1,019.43	-8,789.74	20,158.48	20,062.84	95.64	210.771		
17,900.00	6,991.56	3,135.00	3,134.64	178.92	62.54	22.53	-1,019.43	-8,789.74	20,256.47	20,160.70	95.77	211.502		
18,000.00	6,991.59	3,135.00	3,134.64	180.51	62.54	22.53	-1,019.43	-8,789.74	20,354.48	20,258.57	95.91	212.232		
18,100.00	6,991.61	3,135.00	3,134.64	182.10	62.54	22.53	-1,019.43	-8,789.74	20,452.51	20,356.47	96.04	212.960		
18,200.00	6,991.64	3,135.00	3,134.64	183.68	62.54	22.53	-1,019.43	-8,789.74	20,550.55	20,454.38	96.17	213.687		
18,300.00	6,991.67	3,135.00	3,134.64	185.27	62.54	22.53	-1,019.43	-8,789.74	20,648.62	20,552.31	96.30	214.412		
18,400.00	6,991.69	3,135.00	3,134.64	186.86	62.54	22.53	-1,019.43	-8,789.74	20,746.70	20,650.27	96.44	215.136		
18,500.00	6,991.72	3,135.00	3,134.64	188.45	62.54	22.53	-1,019.43	-8,789.74	20,844.80	20,748.24	96.57	215.857		
18,600.00	6,991.75	3,135.00	3,134.64	190.04	62.54	22.53	-1,019.43	-8,789.74	20,942.92	20,846.22	96.70	216.578		
18,700.00	6,991.78	3,135.00	3,134.64	191.63	62.54	22.53	-1,019.43	-8,789.74	21,041.06	20,944.23	96.83	217.297		
18,800.00	6,991.80	3,135.00	3,134.64	193.22	62.54	22.53	-1,019.43	-8,789.74	21,139.22	21,042.25	96.96	218.014		
18,900.00	6,991.83	3,135.00	3,134.64	194.81	62.54	22.53	-1,019.43	-8,789.74	21,237.39	21,140.29	97.09	218.730		
19,000.00	6,991.86	3,135.00	3,134.64	196.40	62.54	22.53	-1,019.43	-8,789.74	21,335.58	21,238.35	97.23	219.444		
19,100.00	6,991.88	3,135.00	3,134.64	197.99	62.54	22.53	-1,019.43	-8,789.74	21,433.78	21,336.43	97.36	220.156		
19,200.00	6,991.91	3,135.00	3,134.64	199.58	62.54	22.53	-1,019.43	-8,789.74	21,532.01	21,434.52	97.49	220.867		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,300.00	6,991.94	3,135.00	3,134.64	201.17	62.54	22.53	-1,019.43	-8,789.74	21,630.25	21,532.63	97.62	221.577		
19,342.28	6,991.95	3,135.00	3,134.64	201.84	62.54	22.53	-1,019.43	-8,789.74	21,671.78	21,574.11	97.68	221.876		
19,400.00	6,991.97	3,135.00	3,134.64	202.76	62.54	22.53	-1,019.43	-8,789.74	21,728.50	21,630.75	97.75	222.285		
19,500.00	6,991.99	3,135.00	3,134.64	204.35	62.54	22.53	-1,019.43	-8,789.74	21,826.77	21,728.89	97.88	222.991		
19,542.28	6,992.00	3,135.00	3,134.64	205.03	62.54	22.53	-1,019.43	-8,789.74	21,868.32	21,770.39	97.94	223.289		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	5,392.00	3,078.35	0.00	62.35	-86.10	568.98	-8,337.81	8,918.98				
100.00	100.00	5,392.00	3,078.35	0.25	62.35	-86.10	568.98	-8,337.81	8,884.54	8,852.81	31.73	279.962	
200.00	200.00	5,392.00	3,078.35	0.61	62.35	-86.10	568.98	-8,337.81	8,851.10	8,819.17	31.93	277.210	
300.00	300.00	5,392.00	3,078.35	0.97	62.35	-86.10	568.98	-8,337.81	8,818.67	8,786.46	32.21	273.784	
400.00	400.00	5,392.00	3,078.35	1.33	62.35	-86.10	568.98	-8,337.81	8,787.26	8,754.72	32.54	270.053	
500.00	500.00	5,392.00	3,078.35	1.68	62.35	-86.10	568.98	-8,337.81	8,756.87	8,723.98	32.89	266.219	
600.00	600.00	5,392.00	3,078.35	2.04	62.35	-86.10	568.98	-8,337.81	8,727.53	8,694.27	33.26	262.379	
700.00	700.00	5,392.00	3,078.35	2.40	62.35	-86.10	568.98	-8,337.81	8,699.23	8,665.59	33.64	258.586	
800.00	799.98	5,392.00	3,078.35	2.76	62.35	-56.58	568.98	-8,337.81	8,671.07	8,637.05	34.02	254.877	
900.00	899.92	5,392.00	3,078.35	3.12	62.35	-56.58	568.98	-8,337.81	8,643.04	8,608.65	34.39	251.305	
1,000.00	999.86	5,392.00	3,078.35	3.47	62.35	-56.58	568.98	-8,337.81	8,616.08	8,581.32	34.76	247.851	
1,100.00	1,099.80	5,392.00	3,078.35	3.83	62.35	-56.58	568.98	-8,337.81	8,590.20	8,555.06	35.14	244.484	
1,200.00	1,199.74	5,392.00	3,078.35	4.19	62.35	-56.58	568.98	-8,337.81	8,565.41	8,529.90	35.51	241.208	
1,300.00	1,299.68	5,392.00	3,078.35	4.55	62.35	-56.58	568.98	-8,337.81	8,541.71	8,505.83	35.89	238.025	
1,400.00	1,399.61	5,392.00	3,078.35	4.91	62.35	-56.58	568.98	-8,337.81	8,519.13	8,482.87	36.26	234.935	
1,500.00	1,499.55	5,392.00	3,078.35	5.27	62.35	-56.58	568.98	-8,337.81	8,497.66	8,461.02	36.64	231.939	
1,600.00	1,599.49	5,392.00	3,078.35	5.63	62.35	-56.58	568.98	-8,337.81	8,477.32	8,440.30	37.01	229.036	
1,700.00	1,699.43	5,392.00	3,078.35	5.99	62.35	-56.58	568.98	-8,337.81	8,458.11	8,420.72	37.39	226.226	
1,800.00	1,799.37	5,392.00	3,078.35	6.35	62.35	-56.58	568.98	-8,337.81	8,440.04	8,402.28	37.76	223.506	
1,900.00	1,899.31	5,392.00	3,078.35	6.71	62.35	-56.58	568.98	-8,337.81	8,423.12	8,384.99	38.13	220.877	
2,000.00	1,999.25	5,392.00	3,078.35	7.07	62.35	-56.58	568.98	-8,337.81	8,407.36	8,368.85	38.51	218.337	
2,100.00	2,099.19	5,392.00	3,078.35	7.42	62.35	-56.58	568.98	-8,337.81	8,392.75	8,353.88	38.88	215.884	
2,200.00	2,199.13	5,392.00	3,078.35	7.78	62.35	-56.58	568.98	-8,337.81	8,379.32	8,340.08	39.24	213.517	
2,300.00	2,299.07	5,392.00	3,078.35	8.14	62.35	-56.58	568.98	-8,337.81	8,367.06	8,327.45	39.61	211.234	
2,400.00	2,399.01	5,392.00	3,078.35	8.50	62.35	-56.58	568.98	-8,337.81	8,355.98	8,316.00	39.97	209.035	
2,500.00	2,498.94	5,392.00	3,078.35	8.86	62.35	-56.58	568.98	-8,337.81	8,346.08	8,305.74	40.34	206.917	
2,600.00	2,598.88	5,392.00	3,078.35	9.22	62.35	-56.58	568.98	-8,337.81	8,337.37	8,296.68	40.69	204.879	
2,700.00	2,698.82	5,392.00	3,078.35	9.58	62.35	-56.58	568.98	-8,337.81	8,329.85	8,288.80	41.05	202.919	
2,800.00	2,798.76	5,392.00	3,078.35	9.94	62.35	-56.58	568.98	-8,337.81	8,323.53	8,282.12	41.40	201.036	
2,900.00	2,898.70	5,392.00	3,078.35	10.30	62.35	-56.58	568.98	-8,337.81	8,318.40	8,276.65	41.75	199.228	
3,000.00	2,998.64	5,392.00	3,078.35	10.66	62.35	-56.58	568.98	-8,337.81	8,314.47	8,272.37	42.10	197.495	
3,100.00	3,098.58	5,392.00	3,078.35	11.02	62.35	-56.58	568.98	-8,337.81	8,311.75	8,269.30	42.44	195.833	
3,200.00	3,198.52	5,392.00	3,078.35	11.38	62.35	-56.58	568.98	-8,337.81	8,310.22	8,267.44	42.78	194.243	
3,276.59	3,275.06	5,392.00	3,078.35	11.66	62.35	-56.58	568.98	-8,337.81	8,309.87	8,266.83	43.04	193.072 CC	
3,300.00	3,298.46	5,392.00	3,078.35	11.75	62.35	-56.58	568.98	-8,337.81	8,309.90	8,266.79	43.12	192.722 ES	
3,400.00	3,398.40	5,392.00	3,078.35	12.11	62.35	-56.58	568.98	-8,337.81	8,310.79	8,267.34	43.45	191.269	
3,500.00	3,498.34	5,392.00	3,078.35	12.47	62.35	-56.58	568.98	-8,337.81	8,312.87	8,269.09	43.78	189.882	
3,600.00	3,598.27	5,392.00	3,078.35	12.83	62.35	-56.58	568.98	-8,337.81	8,316.16	8,272.06	44.10	188.561	
3,700.00	3,698.21	5,392.00	3,078.35	13.19	62.35	-56.58	568.98	-8,337.81	8,320.65	8,276.23	44.42	187.303	
3,800.00	3,798.15	5,392.00	3,078.35	13.55	62.35	-56.58	568.98	-8,337.81	8,326.34	8,281.60	44.74	186.108	
3,900.00	3,898.09	5,392.00	3,078.35	13.91	62.35	-56.58	568.98	-8,337.81	8,333.22	8,288.17	45.05	184.974	
4,000.00	3,998.03	5,392.00	3,078.35	14.27	62.35	-56.58	568.98	-8,337.81	8,341.30	8,295.94	45.36	183.899	
4,100.00	4,097.97	5,392.00	3,078.35	14.63	62.35	-56.58	568.98	-8,337.81	8,350.57	8,304.91	45.66	182.883	
4,200.00	4,197.91	5,392.00	3,078.35	14.99	62.35	-56.58	568.98	-8,337.81	8,361.02	8,315.06	45.96	181.924	
4,300.00	4,297.85	5,392.00	3,078.35	15.35	62.35	-56.58	568.98	-8,337.81	8,372.65	8,326.40	46.25	181.021	
4,400.00	4,397.79	5,392.00	3,078.35	15.71	62.35	-56.58	568.98	-8,337.81	8,385.46	8,338.92	46.54	180.173	
4,500.00	4,497.73	5,392.00	3,078.35	16.07	62.35	-56.58	568.98	-8,337.81	8,399.45	8,352.62	46.83	179.377	
4,600.00	4,597.66	5,392.00	3,078.35	16.43	62.35	-56.58	568.98	-8,337.81	8,414.59	8,367.49	47.11	178.634	
4,700.00	4,697.60	5,392.00	3,078.35	16.79	62.35	-56.58	568.98	-8,337.81	8,430.90	8,383.52	47.38	177.942	
4,800.00	4,797.54	5,392.00	3,078.35	17.15	62.35	-56.58	568.98	-8,337.81	8,448.36	8,400.71	47.65	177.299	
4,900.00	4,897.48	5,392.00	3,078.35	17.51	62.35	-56.58	568.98	-8,337.81	8,466.96	8,419.04	47.92	176.705	
5,000.00	4,997.42	5,392.00	3,078.35	17.87	62.35	-56.58	568.98	-8,337.81	8,486.70	8,438.52	48.18	176.158	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)								
5,100.00	5,097.36	5,392.00	3,078.35	18.23	62.35	-56.58	568.98	-8,337.81	8,507.57	8,459.14	48.43	175.657							
5,200.00	5,197.30	5,392.00	3,078.35	18.59	62.35	-56.58	568.98	-8,337.81	8,529.56	8,480.88	48.68	175.201							
5,300.00	5,297.24	5,392.00	3,078.35	18.95	62.35	-56.58	568.98	-8,337.81	8,552.67	8,503.74	48.93	174.790							
5,402.82	5,400.00	5,392.00	3,078.35	19.32	62.35	-56.58	568.98	-8,337.81	8,577.58	8,528.40	49.18	174.411							
5,500.00	5,497.13	5,392.00	3,078.35	19.67	62.35	-56.69	568.98	-8,337.81	8,602.40	8,552.99	49.41	174.092							
5,600.00	5,597.11	5,392.00	3,078.35	20.03	62.35	-56.81	568.98	-8,337.81	8,629.47	8,579.81	49.65	173.802							
5,700.00	5,697.10	5,392.00	3,078.35	20.39	62.35	-56.93	568.98	-8,337.81	8,658.06	8,608.17	49.89	173.551							
5,802.82	5,799.92	5,392.00	3,078.35	20.75	62.35	-87.07	568.98	-8,337.81	8,689.04	8,638.91	50.13	173.334							
5,900.00	5,897.09	5,392.00	3,078.35	21.10	62.35	-87.07	568.98	-8,337.81	8,719.55	8,669.20	50.35	173.168							
6,000.00	5,997.09	5,392.00	3,078.35	21.45	62.35	-87.07	568.98	-8,337.81	8,751.97	8,701.39	50.58	173.034							
6,100.00	6,097.09	5,392.00	3,078.35	21.81	62.35	-87.07	568.98	-8,337.81	8,785.40	8,734.60	50.80	172.935							
6,200.00	6,197.09	5,392.00	3,078.35	22.16	62.35	-87.07	568.98	-8,337.81	8,819.84	8,768.82	51.02	172.870							
6,300.00	6,297.09	5,392.00	3,078.35	22.52	62.35	-87.07	568.98	-8,337.81	8,855.28	8,804.04	51.23	172.838							
6,354.91	6,352.00	5,392.00	3,078.35	22.72	62.35	-87.07	568.98	-8,337.81	8,875.15	8,823.80	51.35	172.835 SF							
6,400.00	6,397.06	5,392.00	3,078.35	22.87	62.35	-165.64	568.98	-8,337.81	8,893.12	8,841.68	51.44	172.880							
6,450.00	6,446.74	5,392.00	3,078.35	23.04	62.35	-165.04	568.98	-8,337.81	8,916.52	8,864.99	51.53	173.025							
6,500.00	6,495.84	5,392.00	3,078.35	23.20	62.35	-164.28	568.98	-8,337.81	8,943.41	8,891.79	51.62	173.264							
6,550.00	6,544.06	5,392.00	3,078.35	23.36	62.35	-163.32	568.98	-8,337.81	8,973.58	8,921.89	51.69	173.596							
6,600.00	6,591.08	5,392.00	3,078.35	23.51	62.35	-162.13	568.98	-8,337.81	9,006.83	8,955.07	51.76	174.020							
6,650.00	6,636.64	5,392.00	3,078.35	23.66	62.35	-160.64	568.98	-8,337.81	9,042.90	8,991.09	51.81	174.532							
6,700.00	6,680.44	5,392.00	3,078.35	23.82	62.35	-158.73	568.98	-8,337.81	9,081.56	9,029.70	51.86	175.126							
6,750.00	6,722.22	5,392.00	3,078.35	23.99	62.35	-156.26	568.98	-8,337.81	9,122.52	9,070.63	51.89	175.797							
6,800.00	6,761.71	5,392.00	3,078.35	24.16	62.35	-153.01	568.98	-8,337.81	9,165.52	9,113.60	51.92	176.539							
6,850.00	6,798.68	5,392.00	3,078.35	24.33	62.35	-148.62	568.98	-8,337.81	9,210.24	9,158.31	51.93	177.344							
6,900.00	6,832.89	5,392.00	3,078.35	24.50	62.35	-142.49	568.98	-8,337.81	9,256.41	9,204.47	51.94	178.205							
6,950.00	6,864.14	5,392.00	3,078.35	24.69	62.35	-133.72	568.98	-8,337.81	9,303.71	9,251.76	51.94	179.112							
7,000.00	6,892.23	5,392.00	3,078.35	24.88	62.35	-121.04	568.98	-8,337.81	9,351.83	9,299.89	51.94	180.055							
7,050.00	6,916.99	5,392.00	3,078.35	25.08	62.35	-103.58	568.98	-8,337.81	9,400.47	9,348.54	51.93	181.025							
7,100.00	6,938.27	5,392.00	3,078.35	25.29	62.35	-83.05	568.98	-8,337.81	9,449.33	9,397.41	51.92	182.009							
7,150.00	6,955.93	5,392.00	3,078.35	25.51	62.35	-64.04	568.98	-8,337.81	9,498.10	9,446.19	51.90	182.997							
7,200.00	6,969.87	5,392.00	3,078.35	25.75	62.35	-49.62	568.98	-8,337.81	9,546.48	9,494.59	51.89	183.976							
7,250.00	6,980.00	5,392.00	3,078.35	25.99	62.35	-39.55	568.98	-8,337.81	9,594.19	9,542.31	51.88	184.933							
7,300.00	6,986.25	5,392.00	3,078.35	26.25	62.35	-32.56	568.98	-8,337.81	9,640.94	9,589.06	51.87	185.856							
7,354.68	6,988.62	5,392.00	3,078.35	26.53	62.35	-27.20	568.98	-8,337.81	9,690.65	9,638.77	51.87	186.808							
7,400.00	6,988.64	5,392.00	3,078.35	26.78	62.35	-27.20	568.98	-8,337.81	9,731.16	9,679.28	51.88	187.560							
7,500.00	6,988.67	5,392.00	3,078.35	27.40	62.35	-27.20	568.98	-8,337.81	9,820.71	9,768.79	51.91	189.175							
7,600.00	6,988.71	5,392.00	3,078.35	28.08	62.35	-27.20	568.98	-8,337.81	9,910.45	9,858.50	51.95	190.767							
7,700.00	6,988.74	5,392.00	3,078.35	28.84	62.35	-27.20	568.98	-8,337.81	10,000.39	9,948.40	51.99	192.336							
7,800.00	6,988.78	5,392.00	3,078.35	29.67	62.35	-27.20	568.98	-8,337.81	10,090.52	10,038.48	52.04	193.883							
7,900.00	6,988.81	5,392.00	3,078.35	30.55	62.35	-27.20	568.98	-8,337.81	10,180.84	10,128.74	52.10	195.409							
8,000.00	6,988.85	5,392.00	3,078.35	31.49	62.35	-27.20	568.98	-8,337.81	10,271.33	10,219.17	52.16	196.916							
8,100.00	6,988.88	5,392.00	3,078.35	32.48	62.35	-27.20	568.98	-8,337.81	10,362.00	10,309.77	52.23	198.403							
8,200.00	6,988.91	5,392.00	3,078.35	33.51	62.35	-27.20	568.98	-8,337.81	10,452.84	10,400.54	52.30	199.872							
8,211.68	6,988.92	5,392.00	3,078.35	33.63	62.35	-27.20	568.98	-8,337.81	10,463.46	10,411.16	52.31	200.043							
8,300.00	6,988.95	5,392.00	3,078.35	34.58	62.35	-23.64	568.98	-8,337.81	10,544.09	10,491.71	52.38	201.319							
8,400.00	6,988.98	5,392.00	3,078.35	35.70	62.35	-19.28	568.98	-8,337.81	10,636.04	10,583.58	52.46	202.740							
8,500.00	6,989.01	5,392.00	3,078.35	36.84	62.35	-14.61	568.98	-8,337.81	10,728.58	10,676.03	52.56	204.140							
8,600.00	6,989.04	5,392.00	3,078.35	38.02	62.35	-9.66	568.98	-8,337.81	10,821.58	10,768.93	52.65	205.521							
8,700.00	6,989.07	5,392.00	3,078.35	39.22	62.35	-4.51	568.98	-8,337.81	10,914.91	10,862.16	52.76	206.884							
8,772.79	6,989.09	5,392.00	3,078.35	40.11	62.35	-0.66	568.98	-8,337.81	10,982.99	10,930.15	52.84	207.864							
8,800.00	6,989.10	5,392.00	3,078.35	40.44	62.35	-0.66	568.98	-8,337.81	11,008.46	10,955.59	52.87	208.228							
8,900.00	6,989.13	5,392.00	3,078.35	41.68	62.35	-0.66	568.98	-8,337.81	11,102.13	11,049.15	52.98	209.562							

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)				
9,000.00	6,989.15	5,392.00	3,078.35	42.95	62.35	-0.66	568.98	-8,337.81	11,195.91	11,142.82	53.09	210.890			
9,100.00	6,989.18	5,392.00	3,078.35	44.24	62.35	-0.66	568.98	-8,337.81	11,289.79	11,236.59	53.20	212.211			
9,200.00	6,989.21	5,392.00	3,078.35	45.55	62.35	-0.66	568.98	-8,337.81	11,383.78	11,330.47	53.31	213.527			
9,300.00	6,989.24	5,392.00	3,078.35	46.88	62.35	-0.66	568.98	-8,337.81	11,477.87	11,424.44	53.43	214.836			
9,400.00	6,989.26	5,392.00	3,078.35	48.23	62.35	-0.66	568.98	-8,337.81	11,572.06	11,518.52	53.54	216.139			
9,500.00	6,989.29	5,392.00	3,078.35	49.59	62.35	-0.66	568.98	-8,337.81	11,666.35	11,612.69	53.65	217.436			
9,600.00	6,989.32	5,392.00	3,078.35	50.96	62.35	-0.66	568.98	-8,337.81	11,760.73	11,706.96	53.77	218.728			
9,700.00	6,989.34	5,392.00	3,078.35	52.35	62.35	-0.66	568.98	-8,337.81	11,855.20	11,801.32	53.88	220.015			
9,800.00	6,989.37	5,392.00	3,078.35	53.75	62.35	-0.66	568.98	-8,337.81	11,949.76	11,895.76	54.00	221.296			
9,900.00	6,989.40	5,392.00	3,078.35	55.16	62.35	-0.66	568.98	-8,337.81	12,044.41	11,990.30	54.11	222.572			
10,000.00	6,989.42	5,392.00	3,078.35	56.58	62.35	-0.66	568.98	-8,337.81	12,139.15	12,084.92	54.23	223.843			
10,100.00	6,989.45	5,392.00	3,078.35	58.01	62.35	-0.66	568.98	-8,337.81	12,233.97	12,179.62	54.35	225.109			
10,200.00	6,989.48	5,392.00	3,078.35	59.45	62.35	-0.66	568.98	-8,337.81	12,328.87	12,274.41	54.46	226.369			
10,300.00	6,989.51	5,392.00	3,078.35	60.90	62.35	-0.66	568.98	-8,337.81	12,423.85	12,369.27	54.58	227.626			
10,400.00	6,989.53	5,392.00	3,078.35	62.35	62.35	-0.66	568.98	-8,337.81	12,518.91	12,464.22	54.70	228.877			
10,500.00	6,989.56	5,392.00	3,078.35	63.81	62.35	-0.66	568.98	-8,337.81	12,614.05	12,559.24	54.81	230.124			
10,600.00	6,989.59	5,392.00	3,078.35	65.28	62.35	-0.66	568.98	-8,337.81	12,709.26	12,654.33	54.93	231.366			
10,700.00	6,989.61	5,392.00	3,078.35	66.76	62.35	-0.66	568.98	-8,337.81	12,804.55	12,749.50	55.05	232.604			
10,800.00	6,989.64	5,392.00	3,078.35	68.24	62.35	-0.66	568.98	-8,337.81	12,899.90	12,844.74	55.17	233.837			
10,900.00	6,989.67	5,392.00	3,078.35	69.73	62.35	-0.66	568.98	-8,337.81	12,995.33	12,940.04	55.28	235.067			
11,000.00	6,989.70	5,392.00	3,078.35	71.22	62.35	-0.66	568.98	-8,337.81	13,090.82	13,035.42	55.40	236.291			
11,100.00	6,989.72	5,392.00	3,078.35	72.71	62.35	-0.66	568.98	-8,337.81	13,186.38	13,130.86	55.52	237.512			
11,200.00	6,989.75	5,392.00	3,078.35	74.22	62.35	-0.66	568.98	-8,337.81	13,282.01	13,226.37	55.64	238.728			
11,300.00	6,989.78	5,392.00	3,078.35	75.72	62.35	-0.66	568.98	-8,337.81	13,377.70	13,321.94	55.75	239.941			
11,400.00	6,989.80	5,392.00	3,078.35	77.23	62.35	-0.66	568.98	-8,337.81	13,473.45	13,417.58	55.87	241.149			
11,500.00	6,989.83	5,392.00	3,078.35	78.74	62.35	-0.66	568.98	-8,337.81	13,569.27	13,513.28	55.99	242.353			
11,600.00	6,989.86	5,392.00	3,078.35	80.26	62.35	-0.66	568.98	-8,337.81	13,665.14	13,609.03	56.11	243.554			
11,700.00	6,989.88	5,392.00	3,078.35	81.78	62.35	-0.66	568.98	-8,337.81	13,761.07	13,704.85	56.22	244.750			
11,800.00	6,989.91	5,392.00	3,078.35	83.30	62.35	-0.66	568.98	-8,337.81	13,857.06	13,800.72	56.34	245.943			
11,900.00	6,989.94	5,392.00	3,078.35	84.83	62.35	-0.66	568.98	-8,337.81	13,953.11	13,896.65	56.46	247.131			
12,000.00	6,989.97	5,392.00	3,078.35	86.36	62.35	-0.66	568.98	-8,337.81	14,049.21	13,992.63	56.58	248.316			
12,100.00	6,989.99	5,392.00	3,078.35	87.89	62.35	-0.66	568.98	-8,337.81	14,145.36	14,088.67	56.70	249.497			
12,200.00	6,990.02	5,392.00	3,078.35	89.42	62.35	-0.66	568.98	-8,337.81	14,241.57	14,184.76	56.81	250.674			
12,300.00	6,990.05	5,392.00	3,078.35	90.96	62.35	-0.66	568.98	-8,337.81	14,337.83	14,280.90	56.93	251.848			
12,400.00	6,990.07	5,392.00	3,078.35	92.50	62.35	-0.66	568.98	-8,337.81	14,434.15	14,377.10	57.05	253.017			
12,500.00	6,990.10	5,392.00	3,078.35	94.04	62.35	-0.66	568.98	-8,337.81	14,530.51	14,473.34	57.17	254.183			
12,600.00	6,990.13	5,392.00	3,078.35	95.58	62.35	-0.66	568.98	-8,337.81	14,626.92	14,569.63	57.28	255.346			
12,700.00	6,990.15	5,392.00	3,078.35	97.13	62.35	-0.66	568.98	-8,337.81	14,723.37	14,665.97	57.40	256.504			
12,800.00	6,990.18	5,392.00	3,078.35	98.68	62.35	-0.66	568.98	-8,337.81	14,819.88	14,762.36	57.52	257.659			
12,900.00	6,990.21	5,392.00	3,078.35	100.22	62.35	-0.66	568.98	-8,337.81	14,916.43	14,858.80	57.63	258.811			
13,000.00	6,990.24	5,392.00	3,078.35	101.78	62.35	-0.66	568.98	-8,337.81	15,013.03	14,955.27	57.75	259.958			
13,100.00	6,990.26	5,392.00	3,078.35	103.33	62.35	-0.66	568.98	-8,337.81	15,109.67	15,051.80	57.87	261.103			
13,200.00	6,990.29	5,392.00	3,078.35	104.88	62.35	-0.66	568.98	-8,337.81	15,206.35	15,148.36	57.99	262.243			
13,300.00	6,990.32	5,392.00	3,078.35	106.44	62.35	-0.66	568.98	-8,337.81	15,303.08	15,244.97	58.10	263.380			
13,400.00	6,990.34	5,392.00	3,078.35	107.99	62.35	-0.66	568.98	-8,337.81	15,399.84	15,341.62	58.22	264.513			
13,500.00	6,990.37	5,392.00	3,078.35	109.55	62.35	-0.66	568.98	-8,337.81	15,496.65	15,438.32	58.34	265.643			
13,600.00	6,990.40	5,392.00	3,078.35	111.11	62.35	-0.66	568.98	-8,337.81	15,593.50	15,535.05	58.45	266.770			
13,700.00	6,990.42	5,392.00	3,078.35	112.67	62.35	-0.66	568.98	-8,337.81	15,690.39	15,631.82	58.57	267.892			
13,800.00	6,990.45	5,392.00	3,078.35	114.23	62.35	-0.66	568.98	-8,337.81	15,787.32	15,728.63	58.69	269.012			
13,900.00	6,990.48	5,392.00	3,078.35	115.80	62.35	-0.66	568.98	-8,337.81	15,884.29	15,825.48	58.80	270.127			
14,000.00	6,990.51	5,392.00	3,078.35	117.36	62.35	-0.66	568.98	-8,337.81	15,981.29	15,922.37	58.92	271.239			
14,100.00	6,990.53	5,392.00	3,078.35	118.93	62.35	-0.66	568.98	-8,337.81	16,078.33	16,019.29	59.04	272.348			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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				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							
14,200.00	6,990.56	5,392.00	3,078.35	120.49	62.35	-0.66	568.98	-8,337.81	16,175.40	16,116.25	59.15	273.453							
14,300.00	6,990.59	5,392.00	3,078.35	122.06	62.35	-0.66	568.98	-8,337.81	16,272.52	16,213.25	59.27	274.555							
14,400.00	6,990.61	5,392.00	3,078.35	123.63	62.35	-0.66	568.98	-8,337.81	16,369.66	16,310.28	59.39	275.653							
14,500.00	6,990.64	5,392.00	3,078.35	125.20	62.35	-0.66	568.98	-8,337.81	16,466.84	16,407.34	59.50	276.748							
14,600.00	6,990.67	5,392.00	3,078.35	126.77	62.35	-0.66	568.98	-8,337.81	16,564.06	16,504.44	59.62	277.839							
14,700.00	6,990.70	5,392.00	3,078.35	128.34	62.35	-0.66	568.98	-8,337.81	16,661.30	16,601.57	59.73	278.927							
14,800.00	6,990.72	5,392.00	3,078.35	129.91	62.35	-0.66	568.98	-8,337.81	16,758.58	16,698.73	59.85	280.011							
14,900.00	6,990.75	5,392.00	3,078.35	131.48	62.35	-0.66	568.98	-8,337.81	16,855.89	16,795.93	59.97	281.092							
15,000.00	6,990.78	5,392.00	3,078.35	133.06	62.35	-0.66	568.98	-8,337.81	16,953.24	16,893.16	60.08	282.169							
15,100.00	6,990.80	5,392.00	3,078.35	134.63	62.35	-0.66	568.98	-8,337.81	17,050.61	16,990.41	60.20	283.243							
15,200.00	6,990.83	5,392.00	3,078.35	136.20	62.35	-0.66	568.98	-8,337.81	17,148.01	17,087.70	60.31	284.313							
15,300.00	6,990.86	5,392.00	3,078.35	137.78	62.35	-0.66	568.98	-8,337.81	17,245.45	17,185.02	60.43	285.380							
15,400.00	6,990.88	5,392.00	3,078.35	139.36	62.35	-0.66	568.98	-8,337.81	17,342.91	17,282.36	60.55	286.443							
15,500.00	6,990.91	5,392.00	3,078.35	140.93	62.35	-0.66	568.98	-8,337.81	17,440.40	17,379.74	60.66	287.503							
15,600.00	6,990.94	5,392.00	3,078.35	142.51	62.35	-0.66	568.98	-8,337.81	17,537.92	17,477.14	60.78	288.560							
15,700.00	6,990.97	5,392.00	3,078.35	144.09	62.35	-0.66	568.98	-8,337.81	17,635.47	17,574.57	60.89	289.613							
15,800.00	6,990.99	5,392.00	3,078.35	145.67	62.35	-0.66	568.98	-8,337.81	17,733.04	17,672.03	61.01	290.662							
15,900.00	6,991.02	5,392.00	3,078.35	147.24	62.35	-0.66	568.98	-8,337.81	17,830.64	17,769.52	61.12	291.709							
16,000.00	6,991.05	5,392.00	3,078.35	148.82	62.35	-0.66	568.98	-8,337.81	17,928.27	17,867.03	61.24	292.751							
16,100.00	6,991.07	5,392.00	3,078.35	150.40	62.35	-0.66	568.98	-8,337.81	18,025.93	17,964.57	61.36	293.791							
16,200.00	6,991.10	5,392.00	3,078.35	151.99	62.35	-0.66	568.98	-8,337.81	18,123.60	18,062.13	61.47	294.826							
16,300.00	6,991.13	5,392.00	3,078.35	153.57	62.35	-0.66	568.98	-8,337.81	18,221.31	18,159.72	61.59	295.859							
16,400.00	6,991.15	5,392.00	3,078.35	155.15	62.35	-0.66	568.98	-8,337.81	18,319.04	18,257.33	61.70	296.888							
16,500.00	6,991.18	5,392.00	3,078.35	156.73	62.35	-0.66	568.98	-8,337.81	18,416.79	18,354.97	61.82	297.913							
16,600.00	6,991.21	5,392.00	3,078.35	158.31	62.35	-0.66	568.98	-8,337.81	18,514.57	18,452.63	61.94	298.935							
16,700.00	6,991.24	5,392.00	3,078.35	159.90	62.35	-0.66	568.98	-8,337.81	18,612.37	18,550.32	62.05	299.954							
16,800.00	6,991.26	5,392.00	3,078.35	161.48	62.35	-0.66	568.98	-8,337.81	18,710.20	18,648.03	62.17	300.969							
16,900.00	6,991.29	5,392.00	3,078.35	163.06	62.35	-0.66	568.98	-8,337.81	18,808.04	18,745.76	62.28	301.981							
17,000.00	6,991.32	5,392.00	3,078.35	164.65	62.35	-0.66	568.98	-8,337.81	18,905.91	18,843.52	62.40	302.989							
17,100.00	6,991.34	5,392.00	3,078.35	166.23	62.35	-0.66	568.98	-8,337.81	19,003.81	18,941.29	62.51	303.994							
17,200.00	6,991.37	5,392.00	3,078.35	167.82	62.35	-0.66	568.98	-8,337.81	19,101.72	19,039.09	62.63	304.995							
17,300.00	6,991.40	5,392.00	3,078.35	169.40	62.35	-0.66	568.98	-8,337.81	19,199.66	19,136.91	62.75	305.994							
17,400.00	6,991.42	5,392.00	3,078.35	170.99	62.35	-0.66	568.98	-8,337.81	19,297.61	19,234.75	62.86	306.988							
17,500.00	6,991.45	5,392.00	3,078.35	172.57	62.35	-0.66	568.98	-8,337.81	19,395.59	19,332.61	62.98	307.979							
17,600.00	6,991.48	5,392.00	3,078.35	174.16	62.35	-0.66	568.98	-8,337.81	19,493.59	19,430.49	63.09	308.967							
17,700.00	6,991.51	5,392.00	3,078.35	175.75	62.35	-0.66	568.98	-8,337.81	19,591.61	19,528.40	63.21	309.952							
17,800.00	6,991.53	5,392.00	3,078.35	177.33	62.35	-0.66	568.98	-8,337.81	19,689.64	19,626.32	63.32	310.933							
17,900.00	6,991.56	5,392.00	3,078.35	178.92	62.35	-0.66	568.98	-8,337.81	19,787.70	19,724.26	63.44	311.910							
18,000.00	6,991.59	5,392.00	3,078.35	180.51	62.35	-0.66	568.98	-8,337.81	19,885.78	19,822.22	63.56	312.885							
18,100.00	6,991.61	5,392.00	3,078.35	182.10	62.35	-0.66	568.98	-8,337.81	19,983.88	19,920.20	63.67	313.855							
18,200.00	6,991.64	5,392.00	3,078.35	183.68	62.35	-0.66	568.98	-8,337.81	20,081.99	20,018.20	63.79	314.823							
18,300.00	6,991.67	5,392.00	3,078.35	185.27	62.35	-0.66	568.98	-8,337.81	20,180.12	20,116.22	63.90	315.787							
18,400.00	6,991.69	5,392.00	3,078.35	186.86	62.35	-0.66	568.98	-8,337.81	20,278.28	20,214.26	64.02	316.747							
18,500.00	6,991.72	5,392.00	3,078.35	188.45	62.35	-0.66	568.98	-8,337.81	20,376.45	20,312.31	64.14	317.705							
18,600.00	6,991.75	5,392.00	3,078.35	190.04	62.35	-0.66	568.98	-8,337.81	20,474.63	20,410.38	64.25	318.659							
18,700.00	6,991.78	5,392.00	3,078.35	191.63	62.35	-0.66	568.98	-8,337.81	20,572.84	20,508.47	64.37	319.609							
18,800.00	6,991.80	5,392.00	3,078.35	193.22	62.35	-0.66	568.98	-8,337.81	20,671.06	20,606.58	64.48	320.556							
18,900.00	6,991.83	5,392.00	3,078.35	194.81	62.35	-0.66	568.98	-8,337.81	20,769.30	20,704.70	64.60	321.500							
19,000.00	6,991.86	5,392.00	3,078.35	196.40	62.35	-0.66	568.98	-8,337.81	20,867.56	20,802.84	64.72	322.440							
19,100.00	6,991.88	5,392.00	3,078.35	197.99	62.35	-0.66	568.98	-8,337.81	20,965.83	20,900.99	64.83	323.378							
19,200.00	6,991.91	5,392.00	3,078.35	199.58	62.35	-0.66	568.98	-8,337.81	21,064.12	20,999.17	64.95	324.311							
19,300.00	6,991.94	5,392.00	3,078.35	201.17	62.35	-0.66	568.98	-8,337.81	21,162.42	21,097.35	65.07	325.242							

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
19,342.28	6,991.95	5,392.00	3,078.35	201.84	62.35	-0.66	568.98	-8,337.81	21,203.99	21,138.87	65.12	325.634	
19,400.00	6,991.97	5,392.00	3,078.35	202.76	62.35	-0.66	568.98	-8,337.81	21,260.74	21,195.56	65.18	326.169	
19,500.00	6,991.99	5,392.00	3,078.35	204.35	62.35	-0.66	568.98	-8,337.81	21,359.08	21,293.78	65.30	327.092	
19,542.28	6,992.00	5,392.00	3,078.35	205.03	62.35	-0.66	568.98	-8,337.81	21,400.66	21,335.31	65.35	327.482	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	-105.33	-1,395.31	-5,089.69	5,278.71				
100.00	100.00	0.00	0.00	0.25	0.00	-105.33	-1,395.31	-5,089.69	5,277.50	5,277.25	0.25	N/A	
200.00	200.00	92.43	92.43	0.61	1.10	-105.33	-1,395.40	-5,089.60	5,277.43	5,275.72	1.70	3,100.016	
300.00	300.00	199.90	199.90	0.97	2.37	-105.34	-1,395.74	-5,089.29	5,277.23	5,273.90	3.33	1,584.028	
400.00	400.00	307.36	307.36	1.33	3.65	-105.34	-1,396.33	-5,088.76	5,276.90	5,271.94	4.96	1,063.758	
497.00	497.00	383.00	382.99	1.67	4.21	-105.35	-1,396.85	-5,088.34	5,276.59	5,270.72	5.87	899.625 CC	
500.00	500.00	383.00	382.99	1.68	4.21	-105.35	-1,396.85	-5,088.34	5,276.59	5,270.71	5.88	897.978 ES	
600.00	600.00	434.94	434.93	2.04	4.23	-105.35	-1,396.73	-5,088.62	5,277.07	5,270.82	6.26	843.627	
700.00	700.00	474.00	473.98	2.40	4.25	-105.34	-1,396.01	-5,089.37	5,278.55	5,271.92	6.63	796.179	
800.00	799.98	505.00	504.94	2.76	4.28	-75.29	-1,394.95	-5,090.51	5,280.84	5,273.84	7.00	754.141	
900.00	899.92	549.61	549.43	3.12	4.32	-75.27	-1,392.76	-5,092.85	5,283.83	5,276.44	7.38	715.737	
1,000.00	999.86	579.78	579.45	3.47	4.35	-75.25	-1,390.67	-5,095.05	5,288.10	5,280.34	7.76	681.878	
1,100.00	1,099.80	616.23	615.62	3.83	4.40	-75.23	-1,387.61	-5,098.29	5,293.61	5,285.47	8.13	650.854	
1,200.00	1,199.74	657.00	655.94	4.19	4.46	-75.19	-1,383.41	-5,102.62	5,300.28	5,291.76	8.52	622.386	
1,300.00	1,299.68	688.00	686.49	4.55	4.50	-75.15	-1,379.70	-5,106.34	5,308.07	5,299.18	8.89	596.933	
1,400.00	1,399.61	730.57	728.25	4.91	4.58	-75.08	-1,373.84	-5,112.17	5,317.04	5,307.76	9.29	572.555	
1,500.00	1,499.55	768.59	765.34	5.27	4.66	-75.02	-1,367.94	-5,118.06	5,327.22	5,317.54	9.68	550.375	
1,600.00	1,599.49	811.00	806.44	5.63	4.75	-74.94	-1,360.48	-5,125.40	5,338.58	5,328.49	10.09	529.320	
1,700.00	1,699.43	842.00	836.27	5.99	4.83	-74.87	-1,354.42	-5,131.28	5,351.12	5,340.64	10.48	510.594	
1,800.00	1,799.37	874.00	866.86	6.35	4.91	-74.79	-1,347.67	-5,137.81	5,364.87	5,353.99	10.88	493.017	
1,900.00	1,899.31	905.00	896.29	6.71	4.99	-74.71	-1,340.70	-5,144.60	5,379.88	5,368.59	11.29	476.698	
2,000.00	1,999.25	936.00	925.52	7.07	5.08	-74.62	-1,333.33	-5,151.82	5,396.11	5,384.41	11.69	461.433	
2,100.00	2,099.19	980.75	967.47	7.42	5.20	-74.49	-1,322.26	-5,162.80	5,413.46	5,401.31	12.15	445.543	
2,200.00	2,199.13	1,031.00	1,014.04	7.78	5.35	-74.33	-1,308.68	-5,175.90	5,431.87	5,419.23	12.64	429.628	
2,300.00	2,299.07	1,061.00	1,041.61	8.14	5.44	-74.23	-1,300.16	-5,184.12	5,451.36	5,438.28	13.07	416.978	
2,400.00	2,399.01	1,093.00	1,070.71	8.50	5.55	-74.12	-1,290.55	-5,193.30	5,472.05	5,458.53	13.52	404.599	
2,500.00	2,498.94	1,124.00	1,098.63	8.86	5.66	-74.01	-1,280.81	-5,202.62	5,493.98	5,480.00	13.98	392.998	
2,600.00	2,598.88	1,155.00	1,126.30	9.22	5.76	-73.89	-1,270.75	-5,212.32	5,517.12	5,502.68	14.44	382.063	
2,700.00	2,698.82	1,199.78	1,165.72	9.58	5.99	-73.70	-1,255.25	-5,226.82	5,541.30	5,526.27	15.03	368.743	
2,800.00	2,798.76	1,248.00	1,207.61	9.94	6.20	-73.49	-1,237.57	-5,242.90	5,566.41	5,550.78	15.63	356.214	
2,900.00	2,898.70	1,289.85	1,243.55	10.30	6.34	-73.31	-1,221.61	-5,257.20	5,592.45	5,576.26	16.19	345.355	
3,000.00	2,998.64	1,311.00	1,261.52	10.66	6.43	-73.21	-1,213.28	-5,264.62	5,619.66	5,603.04	16.62	338.071	
3,100.00	3,098.58	1,347.57	1,292.31	11.02	6.68	-73.04	-1,198.64	-5,277.84	5,648.03	5,630.85	17.18	328.775	
3,200.00	3,198.52	1,374.00	1,314.38	11.38	6.92	-72.91	-1,187.96	-5,287.71	5,677.64	5,659.96	17.68	321.148	
3,300.00	3,298.46	1,405.00	1,340.10	11.75	7.17	-72.76	-1,175.28	-5,299.49	5,708.33	5,690.13	18.19	313.737	
3,400.00	3,398.40	1,436.00	1,365.60	12.11	7.43	-72.61	-1,162.38	-5,311.52	5,740.09	5,721.38	18.71	306.761	
3,500.00	3,498.34	1,463.85	1,388.33	12.47	7.70	-72.47	-1,150.76	-5,322.65	5,773.09	5,753.87	19.22	300.359	
3,600.00	3,598.27	1,498.00	1,416.09	12.83	8.03	-72.31	-1,136.70	-5,336.72	5,807.33	5,787.54	19.78	293.541	
3,700.00	3,698.21	1,513.50	1,428.63	13.19	8.17	-72.23	-1,130.37	-5,343.25	5,842.66	5,822.49	20.17	289.648	
3,800.00	3,798.15	1,551.85	1,459.55	13.55	8.55	-72.05	-1,114.69	-5,359.66	5,879.09	5,858.33	20.76	283.230	
3,900.00	3,898.09	1,592.00	1,491.75	13.91	8.94	-71.85	-1,098.16	-5,377.04	5,916.37	5,895.01	21.36	276.981	
4,000.00	3,998.03	1,655.00	1,541.73	14.27	9.60	-71.54	-1,071.53	-5,404.64	5,954.42	5,932.22	22.20	268.192	
4,100.00	4,097.97	3,253.00	2,925.31	14.63	22.92	-65.91	-537.92	-5,916.91	5,987.55	5,952.58	34.97	171.218	
4,200.00	4,197.91	3,253.00	2,925.31	14.99	22.92	-65.91	-537.92	-5,916.91	6,004.65	5,969.36	35.29	170.149	
4,300.00	4,297.85	3,253.00	2,925.31	15.35	22.92	-65.91	-537.92	-5,916.91	6,023.35	5,987.75	35.60	169.190	
4,400.00	4,397.79	3,253.00	2,925.31	15.71	22.92	-65.91	-537.92	-5,916.91	6,043.66	6,007.76	35.90	168.337	
4,500.00	4,497.73	3,253.00	2,925.31	16.07	22.92	-65.91	-537.92	-5,916.91	6,065.55	6,029.35	36.19	167.585	
4,600.00	4,597.66	3,253.00	2,925.31	16.43	22.92	-65.91	-537.92	-5,916.91	6,089.00	6,052.52	36.48	166.932	
4,700.00	4,697.60	3,253.00	2,925.31	16.79	22.92	-65.91	-537.92	-5,916.91	6,113.99	6,077.24	36.75	166.374	
4,800.00	4,797.54	3,253.00	2,925.31	17.15	22.92	-65.91	-537.92	-5,916.91	6,140.51	6,103.50	37.01	165.907	
4,900.00	4,897.48	3,253.00	2,925.31	17.51	22.92	-65.91	-537.92	-5,916.91	6,168.54	6,131.28	37.27	165.528	
5,000.00	4,997.42	3,253.00	2,925.31	17.87	22.92	-65.91	-537.92	-5,916.91	6,198.06	6,160.55	37.51	165.233	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #228A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		352-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
5,100.00	5,097.36	3,253.00	2,925.31	18.23	22.92	-65.91	-537.92	-5,916.91	6,229.04	6,191.29	37.75	165.019		
5,200.00	5,197.30	3,253.00	2,925.31	18.59	22.92	-65.91	-537.92	-5,916.91	6,261.47	6,223.49	37.97	164.884		
5,300.00	5,297.24	3,253.00	2,925.31	18.95	22.92	-65.91	-537.92	-5,916.91	6,295.32	6,257.12	38.19	164.825 SF		
5,402.82	5,400.00	3,253.00	2,925.31	19.32	22.92	-65.91	-537.92	-5,916.91	6,331.58	6,293.17	38.41	164.839		
5,500.00	5,497.13	3,253.00	2,925.31	19.67	22.92	-66.09	-537.92	-5,916.91	6,367.34	6,328.73	38.61	164.927		
5,600.00	5,597.11	3,253.00	2,925.31	20.03	22.92	-66.28	-537.92	-5,916.91	6,405.79	6,366.99	38.80	165.097		
5,700.00	5,697.10	3,253.00	2,925.31	20.39	22.92	-66.48	-537.92	-5,916.91	6,445.89	6,406.91	38.98	165.345		
5,802.82	5,799.92	3,253.00	2,925.31	20.75	22.92	-96.69	-537.92	-5,916.91	6,488.80	6,449.63	39.16	165.682		
5,900.00	5,897.09	3,253.00	2,925.31	21.10	22.92	-96.69	-537.92	-5,916.91	6,530.73	6,491.41	39.33	166.067		
6,000.00	5,997.09	3,253.00	2,925.31	21.45	22.92	-96.69	-537.92	-5,916.91	6,575.11	6,535.62	39.49	166.517		
6,100.00	6,097.09	3,253.00	2,925.31	21.81	22.92	-96.69	-537.92	-5,916.91	6,620.69	6,581.05	39.64	167.020		
6,200.00	6,197.09	3,253.00	2,925.31	22.16	22.92	-96.69	-537.92	-5,916.91	6,667.47	6,627.68	39.79	167.573		
6,300.00	6,297.09	3,253.00	2,925.31	22.52	22.92	-96.69	-537.92	-5,916.91	6,715.41	6,675.48	39.93	168.174		
6,354.91	6,352.00	3,253.00	2,925.31	22.72	22.92	-96.69	-537.92	-5,916.91	6,742.21	6,702.21	40.01	168.523		
6,400.00	6,397.06	3,253.00	2,925.31	22.87	22.92	-175.50	-537.92	-5,916.91	6,765.85	6,725.78	40.07	168.855		
6,450.00	6,446.74	3,253.00	2,925.31	23.04	22.92	-175.24	-537.92	-5,916.91	6,795.38	6,755.25	40.14	169.312		
6,500.00	6,495.84	3,253.00	2,925.31	23.20	22.92	-174.90	-537.92	-5,916.91	6,828.19	6,787.99	40.20	169.858		
6,550.00	6,544.06	3,253.00	2,925.31	23.36	22.92	-174.47	-537.92	-5,916.91	6,864.04	6,823.78	40.26	170.493		
6,600.00	6,591.08	3,253.00	2,925.31	23.51	22.92	-173.92	-537.92	-5,916.91	6,902.65	6,862.33	40.32	171.210		
6,650.00	6,636.64	3,253.00	2,925.31	23.66	22.92	-173.19	-537.92	-5,916.91	6,943.74	6,903.37	40.37	172.004		
6,700.00	6,680.44	3,253.00	2,925.31	23.82	22.92	-172.19	-537.92	-5,916.91	6,987.03	6,946.61	40.42	172.867		
6,750.00	6,722.22	3,253.00	2,925.31	23.99	22.92	-170.79	-537.92	-5,916.91	7,032.19	6,991.73	40.46	173.792		
6,800.00	6,761.71	3,253.00	2,925.31	24.16	22.92	-168.67	-537.92	-5,916.91	7,078.93	7,038.43	40.50	174.770		
6,850.00	6,798.68	3,253.00	2,925.31	24.33	22.92	-165.17	-537.92	-5,916.91	7,126.93	7,086.39	40.54	175.791		
6,900.00	6,832.89	3,253.00	2,925.31	24.50	22.92	-158.43	-537.92	-5,916.91	7,175.86	7,135.29	40.58	176.844		
6,950.00	6,864.14	3,253.00	2,925.31	24.69	22.92	-141.53	-537.92	-5,916.91	7,225.42	7,184.81	40.61	177.918		
7,000.00	6,892.23	3,253.00	2,925.31	24.88	22.92	-88.32	-537.92	-5,916.91	7,275.28	7,234.63	40.64	179.001		
7,050.00	6,916.99	3,253.00	2,925.31	25.08	22.92	-37.02	-537.92	-5,916.91	7,325.13	7,284.45	40.68	180.080		
7,100.00	6,938.27	3,253.00	2,925.31	25.29	22.92	-20.86	-537.92	-5,916.91	7,374.68	7,333.96	40.71	181.142		
7,150.00	6,955.93	3,253.00	2,925.31	25.51	22.92	-14.33	-537.92	-5,916.91	7,423.61	7,382.86	40.75	182.171		
7,200.00	6,969.87	3,253.00	2,925.31	25.75	22.92	-10.91	-537.92	-5,916.91	7,471.66	7,430.87	40.79	183.154		
7,250.00	6,980.00	3,253.00	2,925.31	25.99	22.92	-8.82	-537.92	-5,916.91	7,518.54	7,477.69	40.84	184.075		
7,300.00	6,986.25	3,253.00	2,925.31	26.25	22.92	-7.44	-537.92	-5,916.91	7,563.98	7,523.08	40.90	184.920		
7,354.68	6,988.62	3,253.00	2,925.31	26.53	22.92	-6.37	-537.92	-5,916.91	7,611.75	7,570.77	40.98	185.737		
7,400.00	6,988.64	3,253.00	2,925.31	26.78	22.92	-6.37	-537.92	-5,916.91	7,650.44	7,609.39	41.05	186.352		
7,500.00	6,988.67	3,253.00	2,925.31	27.40	22.92	-6.37	-537.92	-5,916.91	7,736.09	7,694.86	41.23	187.655		
7,600.00	6,988.71	3,253.00	2,925.31	28.08	22.92	-6.37	-537.92	-5,916.91	7,822.07	7,780.67	41.40	188.945		
7,700.00	6,988.74	3,253.00	2,925.31	28.84	22.92	-6.37	-537.92	-5,916.91	7,908.38	7,866.81	41.57	190.224		
7,800.00	6,988.78	3,253.00	2,925.31	29.67	22.92	-6.37	-537.92	-5,916.91	7,995.02	7,953.27	41.75	191.493		
7,900.00	6,988.81	3,253.00	2,925.31	30.55	22.92	-6.37	-537.92	-5,916.91	8,081.96	8,040.03	41.93	192.753		
8,000.00	6,988.85	3,253.00	2,925.31	31.49	22.92	-6.37	-537.92	-5,916.91	8,169.20	8,127.09	42.11	194.004		
8,100.00	6,988.88	3,253.00	2,925.31	32.48	22.92	-6.37	-537.92	-5,916.91	8,256.73	8,214.44	42.29	195.248		
8,200.00	6,988.91	3,253.00	2,925.31	33.51	22.92	-6.37	-537.92	-5,916.91	8,344.54	8,302.07	42.47	196.486		
8,211.68	6,988.92	3,253.00	2,925.31	33.63	22.92	-6.37	-537.92	-5,916.91	8,354.82	8,312.33	42.49	196.630		
8,300.00	6,988.95	3,253.00	2,925.31	34.58	22.92	-3.09	-537.92	-5,916.91	8,432.68	8,390.03	42.65	197.729		
8,400.00	6,988.98	3,253.00	2,925.31	35.70	22.92	0.71	-537.92	-5,916.91	8,521.17	8,478.35	42.82	198.997		
8,500.00	6,989.01	3,253.00	2,925.31	36.84	22.92	4.55	-537.92	-5,916.91	8,609.89	8,566.90	42.99	200.288		
8,600.00	6,989.04	3,253.00	2,925.31	38.02	22.92	8.40	-537.92	-5,916.91	8,698.72	8,655.57	43.15	201.601		
8,700.00	6,989.07	3,253.00	2,925.31	39.22	22.92	12.20	-537.92	-5,916.91	8,787.57	8,744.26	43.30	202.932		
8,772.79	6,989.09	3,253.00	2,925.31	40.11	22.92	14.93	-537.92	-5,916.91	8,852.18	8,808.76	43.41	203.911		
8,800.00	6,989.10	3,253.00	2,925.31	40.44	22.92	14.93	-537.92	-5,916.91	8,876.33	8,832.88	43.45	204.278		
8,900.00	6,989.13	3,253.00	2,925.31	41.68	22.92	14.93	-537.92	-5,916.91	8,965.22	8,921.62	43.60	205.616		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #228A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		352-MWD OWSG Rev5						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
9,000.00	6,989.15	3,253.00	2,925.31	42.95	22.92	14.93	-537.92	-5,916.91	9,054.35	9,010.60	43.75	206.947		
9,100.00	6,989.18	3,253.00	2,925.31	44.24	22.92	14.93	-537.92	-5,916.91	9,143.70	9,099.80	43.90	208.270		
9,200.00	6,989.21	3,253.00	2,925.31	45.55	22.92	14.93	-537.92	-5,916.91	9,233.27	9,189.22	44.05	209.587		
9,300.00	6,989.24	3,253.00	2,925.31	46.88	22.92	14.93	-537.92	-5,916.91	9,323.06	9,278.85	44.21	210.898		
9,400.00	6,989.26	3,253.00	2,925.31	48.23	22.92	14.93	-537.92	-5,916.91	9,413.04	9,368.69	44.36	212.203		
9,500.00	6,989.29	3,253.00	2,925.31	49.59	22.92	14.93	-537.92	-5,916.91	9,503.23	9,458.72	44.51	213.503		
9,600.00	6,989.32	3,253.00	2,925.31	50.96	22.92	14.93	-537.92	-5,916.91	9,593.62	9,548.95	44.66	214.798		
9,700.00	6,989.34	3,253.00	2,925.31	52.35	22.92	14.93	-537.92	-5,916.91	9,684.19	9,639.37	44.82	216.089		
9,800.00	6,989.37	3,253.00	2,925.31	53.75	22.92	14.93	-537.92	-5,916.91	9,774.94	9,729.98	44.97	217.375		
9,900.00	6,989.40	3,253.00	2,925.31	55.16	22.92	14.93	-537.92	-5,916.91	9,865.88	9,820.76	45.12	218.657		
10,000.00	6,989.42	3,253.00	2,925.31	56.58	22.92	14.93	-537.92	-5,916.91	9,956.99	9,911.72	45.27	219.935		
10,100.00	6,989.45	3,253.00	2,925.31	58.01	22.92	14.93	-537.92	-5,916.91	10,048.27	10,002.84	45.42	221.210		
10,200.00	6,989.48	3,253.00	2,925.31	59.45	22.92	14.93	-537.92	-5,916.91	10,139.71	10,094.13	45.58	222.481		
10,300.00	6,989.51	3,253.00	2,925.31	60.90	22.92	14.93	-537.92	-5,916.91	10,231.31	10,185.58	45.73	223.750		
10,400.00	6,989.53	3,253.00	2,925.31	62.35	22.92	14.93	-537.92	-5,916.91	10,323.07	10,277.19	45.88	225.015		
10,500.00	6,989.56	3,253.00	2,925.31	63.81	22.92	14.93	-537.92	-5,916.91	10,414.98	10,368.95	46.03	226.277		
10,600.00	6,989.59	3,253.00	2,925.31	65.28	22.92	14.93	-537.92	-5,916.91	10,507.04	10,460.86	46.18	227.537		
10,700.00	6,989.61	3,253.00	2,925.31	66.76	22.92	14.93	-537.92	-5,916.91	10,599.24	10,552.91	46.33	228.794		
10,800.00	6,989.64	3,253.00	2,925.31	68.24	22.92	14.93	-537.92	-5,916.91	10,691.58	10,645.11	46.48	230.049		
10,900.00	6,989.67	3,253.00	2,925.31	69.73	22.92	14.93	-537.92	-5,916.91	10,784.06	10,737.44	46.62	231.301		
11,000.00	6,989.70	3,253.00	2,925.31	71.22	22.92	14.93	-537.92	-5,916.91	10,876.67	10,829.90	46.77	232.551		
11,100.00	6,989.72	3,253.00	2,925.31	72.71	22.92	14.93	-537.92	-5,916.91	10,969.41	10,922.49	46.92	233.799		
11,200.00	6,989.75	3,253.00	2,925.31	74.22	22.92	14.93	-537.92	-5,916.91	11,062.28	11,015.22	47.06	235.045		
11,300.00	6,989.78	3,253.00	2,925.31	75.72	22.92	14.93	-537.92	-5,916.91	11,155.27	11,108.06	47.21	236.288		
11,400.00	6,989.80	3,253.00	2,925.31	77.23	22.92	14.93	-537.92	-5,916.91	11,248.38	11,201.03	47.36	237.530		
11,500.00	6,989.83	3,253.00	2,925.31	78.74	22.92	14.93	-537.92	-5,916.91	11,341.61	11,294.11	47.50	238.769		
11,600.00	6,989.86	3,253.00	2,925.31	80.26	22.92	14.93	-537.92	-5,916.91	11,434.95	11,387.31	47.64	240.006		
11,700.00	6,989.88	3,253.00	2,925.31	81.78	22.92	14.93	-537.92	-5,916.91	11,528.41	11,480.62	47.79	241.242		
11,800.00	6,989.91	3,253.00	2,925.31	83.30	22.92	14.93	-537.92	-5,916.91	11,621.97	11,574.04	47.93	242.475		
11,900.00	6,989.94	3,253.00	2,925.31	84.83	22.92	14.93	-537.92	-5,916.91	11,715.64	11,667.57	48.07	243.707		
12,000.00	6,989.97	3,253.00	2,925.31	86.36	22.92	14.93	-537.92	-5,916.91	11,809.42	11,761.20	48.21	244.936		
12,100.00	6,989.99	3,253.00	2,925.31	87.89	22.92	14.93	-537.92	-5,916.91	11,903.29	11,854.94	48.36	246.164		
12,200.00	6,990.02	3,253.00	2,925.31	89.42	22.92	14.93	-537.92	-5,916.91	11,997.27	11,948.77	48.50	247.390		
12,300.00	6,990.05	3,253.00	2,925.31	90.96	22.92	14.93	-537.92	-5,916.91	12,091.34	12,042.70	48.64	248.613		
12,400.00	6,990.07	3,253.00	2,925.31	92.50	22.92	14.93	-537.92	-5,916.91	12,185.50	12,136.73	48.77	249.835		
12,500.00	6,990.10	3,253.00	2,925.31	94.04	22.92	14.93	-537.92	-5,916.91	12,279.76	12,230.85	48.91	251.055		
12,600.00	6,990.13	3,253.00	2,925.31	95.58	22.92	14.93	-537.92	-5,916.91	12,374.11	12,325.06	49.05	252.272		
12,700.00	6,990.15	3,253.00	2,925.31	97.13	22.92	14.93	-537.92	-5,916.91	12,468.54	12,419.36	49.19	253.488		
12,800.00	6,990.18	3,253.00	2,925.31	98.68	22.92	14.93	-537.92	-5,916.91	12,563.07	12,513.74	49.32	254.702		
12,900.00	6,990.21	3,253.00	2,925.31	100.22	22.92	14.93	-537.92	-5,916.91	12,657.67	12,608.21	49.46	255.914		
13,000.00	6,990.24	3,253.00	2,925.31	101.78	22.92	14.93	-537.92	-5,916.91	12,752.36	12,702.76	49.60	257.123		
13,100.00	6,990.26	3,253.00	2,925.31	103.33	22.92	14.93	-537.92	-5,916.91	12,847.13	12,797.40	49.73	258.331		
13,200.00	6,990.29	3,253.00	2,925.31	104.88	22.92	14.93	-537.92	-5,916.91	12,941.98	12,892.11	49.87	259.536		
13,300.00	6,990.32	3,253.00	2,925.31	106.44	22.92	14.93	-537.92	-5,916.91	13,036.90	12,986.90	50.00	260.740		
13,400.00	6,990.34	3,253.00	2,925.31	107.99	22.92	14.93	-537.92	-5,916.91	13,131.90	13,081.77	50.13	261.941		
13,500.00	6,990.37	3,253.00	2,925.31	109.55	22.92	14.93	-537.92	-5,916.91	13,226.98	13,176.71	50.27	263.140		
13,600.00	6,990.40	3,253.00	2,925.31	111.11	22.92	14.93	-537.92	-5,916.91	13,322.12	13,271.72	50.40	264.337		
13,700.00	6,990.42	3,253.00	2,925.31	112.67	22.92	14.93	-537.92	-5,916.91	13,417.34	13,366.81	50.53	265.531		
13,800.00	6,990.45	3,253.00	2,925.31	114.23	22.92	14.93	-537.92	-5,916.91	13,512.62	13,461.96	50.66	266.723		
13,900.00	6,990.48	3,253.00	2,925.31	115.80	22.92	14.93	-537.92	-5,916.91	13,607.98	13,557.18	50.79	267.913		
14,000.00	6,990.51	3,253.00	2,925.31	117.36	22.92	14.93	-537.92	-5,916.91	13,703.40	13,652.47	50.92	269.101		
14,100.00	6,990.53	3,253.00	2,925.31	118.93	22.92	14.93	-537.92	-5,916.91	13,798.88	13,747.83	51.05	270.286		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
14,200.00	6,990.56	3,253.00	2,925.31	120.49	22.92	14.93	-537.92	-5,916.91	13,894.43	13,843.25	51.18	271.469		
14,300.00	6,990.59	3,253.00	2,925.31	122.06	22.92	14.93	-537.92	-5,916.91	13,990.04	13,938.73	51.31	272.650		
14,400.00	6,990.61	3,253.00	2,925.31	123.63	22.92	14.93	-537.92	-5,916.91	14,085.71	14,034.27	51.44	273.828		
14,500.00	6,990.64	3,253.00	2,925.31	125.20	22.92	14.93	-537.92	-5,916.91	14,181.44	14,129.87	51.57	275.003		
14,600.00	6,990.67	3,253.00	2,925.31	126.77	22.92	14.93	-537.92	-5,916.91	14,277.23	14,225.53	51.70	276.176		
14,700.00	6,990.70	3,253.00	2,925.31	128.34	22.92	14.93	-537.92	-5,916.91	14,373.08	14,321.25	51.82	277.347		
14,800.00	6,990.72	1,436.00	1,365.60	129.91	7.43	16.91	-1,162.38	-5,311.52	14,467.36	14,424.33	43.03	336.191		
14,900.00	6,990.75	1,436.00	1,365.60	131.48	7.43	16.91	-1,162.38	-5,311.52	14,559.16	14,515.94	43.22	336.874		
15,000.00	6,990.78	1,420.00	1,352.47	133.06	7.30	16.94	-1,169.07	-5,305.26	14,651.00	14,607.66	43.34	338.086		
15,100.00	6,990.80	1,405.00	1,340.10	134.63	7.17	16.96	-1,175.28	-5,299.49	14,742.99	14,699.53	43.46	339.259		
15,200.00	6,990.83	1,405.00	1,340.10	136.20	7.17	16.96	-1,175.28	-5,299.49	14,835.02	14,791.38	43.64	339.950		
15,300.00	6,990.86	1,405.00	1,340.10	137.78	7.17	16.96	-1,175.28	-5,299.49	14,927.15	14,883.33	43.82	340.648		
15,400.00	6,990.88	1,391.86	1,329.22	139.36	7.06	16.98	-1,180.68	-5,294.49	15,019.37	14,975.42	43.95	341.749		
15,500.00	6,990.91	1,374.00	1,314.38	140.93	6.92	17.01	-1,187.96	-5,287.71	15,111.66	15,067.60	44.06	342.983		
15,600.00	6,990.94	1,374.00	1,314.38	142.51	6.92	17.01	-1,187.96	-5,287.71	15,204.02	15,159.78	44.24	343.688		
15,700.00	6,990.97	1,374.00	1,314.38	144.09	6.92	17.01	-1,187.96	-5,287.71	15,296.47	15,252.05	44.41	344.399		
15,800.00	6,990.99	1,374.00	1,314.38	145.67	6.92	17.01	-1,187.96	-5,287.71	15,389.01	15,344.42	44.59	345.115		
15,900.00	6,991.02	1,374.00	1,314.38	147.24	6.92	17.01	-1,187.96	-5,287.71	15,481.65	15,436.88	44.77	345.837		
16,000.00	6,991.05	1,374.00	1,314.38	148.82	6.92	17.01	-1,187.96	-5,287.71	15,574.38	15,529.44	44.94	346.564		
16,100.00	6,991.07	1,345.99	1,290.99	150.40	6.66	17.05	-1,199.27	-5,277.26	15,667.00	15,622.01	45.00	348.178		
16,200.00	6,991.10	1,341.17	1,286.95	151.99	6.63	17.05	-1,201.21	-5,275.49	15,759.84	15,714.69	45.15	349.048		
16,300.00	6,991.13	1,311.00	1,261.52	153.57	6.43	17.09	-1,213.28	-5,264.62	15,852.91	15,807.69	45.21	350.615		
16,400.00	6,991.15	1,311.00	1,261.52	155.15	6.43	17.09	-1,213.28	-5,264.62	15,945.84	15,900.45	45.39	351.341		
16,500.00	6,991.18	1,311.00	1,261.52	156.73	6.43	17.09	-1,213.28	-5,264.62	16,038.86	15,993.30	45.56	352.072		
16,600.00	6,991.21	1,311.00	1,261.52	158.31	6.43	17.09	-1,213.28	-5,264.62	16,131.96	16,086.23	45.72	352.807		
16,700.00	6,991.24	1,311.00	1,261.52	159.90	6.43	17.09	-1,213.28	-5,264.62	16,225.14	16,179.25	45.89	353.547		
16,800.00	6,991.26	1,311.00	1,261.52	161.48	6.43	17.09	-1,213.28	-5,264.62	16,318.41	16,272.35	46.06	354.290		
16,900.00	6,991.29	1,311.00	1,261.52	163.06	6.43	17.09	-1,213.28	-5,264.62	16,411.75	16,365.52	46.23	355.038		
17,000.00	6,991.32	1,311.00	1,261.52	164.65	6.43	17.09	-1,213.28	-5,264.62	16,505.17	16,458.78	46.39	355.789		
17,100.00	6,991.34	1,311.00	1,261.52	166.23	6.43	17.09	-1,213.28	-5,264.62	16,598.67	16,552.11	46.55	356.544		
17,200.00	6,991.37	1,293.09	1,246.31	167.82	6.35	17.11	-1,220.35	-5,258.33	16,692.18	16,645.50	46.67	357.636		
17,300.00	6,991.40	1,279.00	1,234.28	169.40	6.30	17.13	-1,225.81	-5,253.44	16,785.80	16,739.00	46.80	358.674		
17,400.00	6,991.42	1,279.00	1,234.28	170.99	6.30	17.13	-1,225.81	-5,253.44	16,879.45	16,832.49	46.96	359.431		
17,500.00	6,991.45	1,279.00	1,234.28	172.57	6.30	17.13	-1,225.81	-5,253.44	16,973.18	16,926.06	47.12	360.191		
17,600.00	6,991.48	1,279.00	1,234.28	174.16	6.30	17.13	-1,225.81	-5,253.44	17,066.98	17,019.69	47.28	360.954		
17,700.00	6,991.51	1,279.00	1,234.28	175.75	6.30	17.13	-1,225.81	-5,253.44	17,160.84	17,113.40	47.44	361.720		
17,800.00	6,991.53	1,261.82	1,219.53	177.33	6.24	17.15	-1,232.37	-5,247.57	17,254.73	17,207.16	47.57	362.743		
17,900.00	6,991.56	1,248.00	1,207.61	178.92	6.20	17.16	-1,237.57	-5,242.90	17,348.71	17,301.01	47.70	363.718		
18,000.00	6,991.59	1,248.00	1,207.61	180.51	6.20	17.16	-1,237.57	-5,242.90	17,442.72	17,394.86	47.86	364.485		
18,100.00	6,991.61	1,248.00	1,207.61	182.10	6.20	17.16	-1,237.57	-5,242.90	17,536.80	17,488.78	48.01	365.255		
18,200.00	6,991.64	1,230.70	1,192.63	183.68	6.13	17.18	-1,244.00	-5,237.10	17,630.92	17,582.78	48.14	366.261		
18,300.00	6,991.67	1,217.00	1,180.74	185.27	6.08	17.19	-1,249.03	-5,232.52	17,725.08	17,676.81	48.27	367.215		
18,400.00	6,991.69	1,217.00	1,180.74	186.86	6.08	17.19	-1,249.03	-5,232.52	17,819.29	17,770.87	48.42	367.985		
18,500.00	6,991.72	1,217.00	1,180.74	188.45	6.08	17.19	-1,249.03	-5,232.52	17,913.56	17,864.99	48.58	368.756		
18,600.00	6,991.75	1,217.00	1,180.74	190.04	6.08	17.19	-1,249.03	-5,232.52	18,007.90	17,959.17	48.73	369.530		
18,700.00	6,991.78	1,217.00	1,180.74	191.63	6.08	17.19	-1,249.03	-5,232.52	18,102.30	18,053.41	48.88	370.305		
18,800.00	6,991.80	1,189.77	1,156.96	193.22	5.94	17.21	-1,258.80	-5,223.54	18,196.63	18,147.66	48.97	371.562		
18,900.00	6,991.83	1,184.34	1,152.19	194.81	5.91	17.22	-1,260.70	-5,221.76	18,291.10	18,241.98	49.11	372.429		
19,000.00	6,991.86	1,155.00	1,126.30	196.40	5.76	17.23	-1,270.75	-5,212.32	18,385.70	18,336.50	49.20	373.699		
19,100.00	6,991.88	1,155.00	1,126.30	197.99	5.76	17.23	-1,270.75	-5,212.32	18,480.22	18,430.87	49.35	374.468		
19,200.00	6,991.91	1,155.00	1,126.30	199.58	5.76	17.23	-1,270.75	-5,212.32	18,574.80	18,525.30	49.50	375.239		
19,300.00	6,991.94	1,155.00	1,126.30	201.17	5.76	17.23	-1,270.75	-5,212.32	18,669.44	18,619.79	49.65	376.012		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,342.28	6,991.95	1,155.00	1,126.30	201.84	5.76	17.23	-1,270.75	-5,212.32	18,709.46	18,659.75	49.71	376.339		
19,400.00	6,991.97	1,155.00	1,126.30	202.76	5.76	17.23	-1,270.75	-5,212.32	18,764.13	18,714.33	49.80	376.786		
19,500.00	6,991.99	1,155.00	1,126.30	204.35	5.76	17.23	-1,270.75	-5,212.32	18,858.88	18,808.93	49.95	377.561		
19,542.28	6,992.00	1,155.00	1,126.30	205.03	5.76	17.23	-1,270.75	-5,212.32	18,898.95	18,848.94	50.01	377.889		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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												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)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-165.45	-96.84	-25.14	103.90				
100.00	100.00	72.00	72.00	0.25	1.33	-165.45	-96.84	-25.14	100.05	98.47	1.58	63.243	
200.00	200.00	172.00	172.00	0.61	3.18	-165.45	-96.84	-25.14	100.05	96.26	3.79	26.406	
300.00	300.00	272.00	272.00	0.97	5.03	-165.45	-96.84	-25.14	100.05	94.06	6.00	16.687	
400.00	400.00	372.00	372.00	1.33	6.88	-165.45	-96.84	-25.14	100.05	91.84	8.21	12.187	
500.00	500.00	472.00	472.00	1.68	8.79	-165.45	-96.84	-25.14	100.05	89.58	10.47	9.556	
600.00	600.00	572.00	572.00	2.04	10.69	-165.45	-96.84	-25.14	100.05	87.32	12.73	7.859	
641.12	641.12	613.11	613.11	2.19	11.47	-165.37	-96.30	-25.14	99.53	85.87	13.66	7.286 CC	
700.00	700.00	671.90	671.89	2.40	12.59	-165.37	-96.34	-25.14	99.56	84.57	14.99	6.642	
800.00	799.98	771.71	771.70	2.76	14.49	-136.08	-96.53	-25.14	101.00	83.76	17.25	5.857	
900.00	899.92	871.95	871.92	3.12	16.41	-137.46	-96.84	-25.14	103.85	84.32	19.53	5.318	
1,000.00	999.86	971.89	971.86	3.47	18.44	-138.73	-96.84	-25.14	106.45	84.53	21.91	4.858	
1,100.00	1,099.80	1,071.83	1,071.80	3.83	20.46	-139.94	-96.84	-25.14	109.09	84.80	24.30	4.490	
1,200.00	1,199.74	1,171.68	1,171.64	4.19	22.49	-141.01	-95.95	-25.14	110.91	84.23	26.68	4.157	
1,300.00	1,299.68	1,271.36	1,271.32	4.55	24.51	-142.13	-96.16	-25.14	113.85	84.79	29.06	3.918	
1,400.00	1,399.61	1,371.03	1,370.98	4.91	26.53	-143.21	-96.59	-25.14	117.06	85.62	31.44	3.723	
1,500.00	1,499.55	1,471.65	1,471.55	5.27	28.76	-144.22	-96.84	-25.14	120.12	86.09	34.03	3.530	
1,600.00	1,599.49	1,571.59	1,571.49	5.63	31.10	-145.18	-96.84	-25.14	122.97	86.24	36.72	3.348	
1,700.00	1,699.43	1,671.53	1,671.43	5.99	33.44	-146.08	-96.84	-25.14	125.85	86.43	39.42	3.192	
1,800.00	1,799.37	1,771.23	1,771.11	6.35	35.77	-146.92	-95.63	-25.14	127.55	85.44	42.11	3.029	
1,900.00	1,899.31	1,870.79	1,870.67	6.71	38.10	-147.76	-95.98	-25.14	130.84	86.04	44.80	2.920	
2,000.00	1,999.25	1,970.35	1,970.22	7.07	40.43	-148.56	-96.62	-25.14	134.45	86.96	47.49	2.831	
2,100.00	2,099.19	2,071.46	2,071.19	7.42	43.07	-149.33	-96.84	-25.14	137.65	87.16	50.49	2.726	
2,200.00	2,199.13	2,170.35	2,170.05	7.78	45.75	-150.04	-96.19	-25.14	140.02	86.49	53.53	2.616	
2,300.00	2,299.07	2,271.46	2,271.07	8.14	48.61	-150.75	-96.84	-25.14	143.70	86.95	56.75	2.532	
2,400.00	2,399.01	2,371.40	2,371.01	8.50	51.58	-151.41	-96.84	-25.14	146.76	86.68	60.08	2.443	
2,500.00	2,498.94	2,471.34	2,470.94	8.86	54.54	-152.05	-96.84	-25.14	149.83	86.43	63.40	2.363	
2,600.00	2,598.88	2,570.93	2,570.48	9.22	57.50	-152.71	-94.27	-25.14	150.36	83.64	66.72	2.254 ES	
2,700.00	2,698.82	2,670.05	2,669.58	9.58	60.44	-153.29	-94.81	-25.14	154.00	83.99	70.01	2.200	
2,800.00	2,798.76	2,769.16	2,768.67	9.94	63.38	-153.83	-95.91	-25.14	158.24	84.93	73.31	2.159	
2,900.00	2,898.70	2,871.51	2,870.70	10.30	66.53	-154.36	-96.84	-25.14	162.30	85.47	76.82	2.113	
3,000.00	2,998.64	2,971.45	2,970.64	10.66	69.75	-154.88	-96.84	-25.14	165.45	85.05	80.40	2.058 SF	
3,100.00	3,098.58	2,977.00	2,976.06	11.02	69.93	-154.91	-96.84	-25.14	193.30	122.39	70.91	2.726	
3,200.00	3,198.52	2,977.00	2,976.06	11.38	69.93	-154.91	-96.84	-25.14	259.47	204.55	54.92	4.724	
3,300.00	3,298.46	2,977.00	2,976.06	11.75	69.93	-154.91	-96.84	-25.14	342.47	298.82	43.65	7.846	
3,400.00	3,398.40	2,977.00	2,976.06	12.11	69.93	-154.91	-96.84	-25.14	432.72	396.26	36.47	11.866	
3,500.00	3,498.34	2,977.00	2,976.06	12.47	69.93	-154.91	-96.84	-25.14	526.51	494.75	31.76	16.576	
3,600.00	3,598.27	2,977.00	2,976.06	12.83	69.93	-154.91	-96.84	-25.14	622.23	593.68	28.55	21.792	
3,700.00	3,698.21	2,977.00	2,976.06	13.19	69.93	-154.91	-96.84	-25.14	719.12	692.84	26.28	27.366	
3,800.00	3,798.15	2,977.00	2,976.06	13.55	69.93	-154.91	-96.84	-25.14	816.76	792.14	24.62	33.179	
3,900.00	3,898.09	2,977.00	2,976.06	13.91	69.93	-154.91	-96.84	-25.14	914.91	891.53	23.38	39.140	
4,000.00	3,998.03	2,977.00	2,976.06	14.27	69.93	-154.91	-96.84	-25.14	1,013.42	990.99	22.43	45.177	
4,100.00	4,097.97	2,977.00	2,976.06	14.63	69.93	-154.91	-96.84	-25.14	1,112.20	1,090.49	21.71	51.237	
4,200.00	4,197.91	2,977.00	2,976.06	14.99	69.93	-154.91	-96.84	-25.14	1,211.17	1,190.03	21.14	57.280	
4,300.00	4,297.85	2,977.00	2,976.06	15.35	69.93	-154.91	-96.84	-25.14	1,310.31	1,289.60	20.71	63.276	
4,400.00	4,397.79	2,977.00	2,976.06	15.71	69.93	-154.91	-96.84	-25.14	1,409.56	1,389.19	20.37	69.203	
4,500.00	4,497.73	2,977.00	2,976.06	16.07	69.93	-154.91	-96.84	-25.14	1,508.92	1,488.81	20.11	75.044	
4,600.00	4,597.66	2,977.00	2,976.06	16.43	69.93	-154.91	-96.84	-25.14	1,608.35	1,588.44	19.91	80.787	
4,700.00	4,697.60	2,977.00	2,976.06	16.79	69.93	-154.91	-96.84	-25.14	1,707.85	1,688.09	19.76	86.423	
4,800.00	4,797.54	2,977.00	2,976.06	17.15	69.93	-154.91	-96.84	-25.14	1,807.41	1,787.75	19.66	91.947	
4,900.00	4,897.48	2,977.00	2,976.06	17.51	69.93	-154.91	-96.84	-25.14	1,907.01	1,887.42	19.59	97.355	
5,000.00	4,997.42	2,977.00	2,976.06	17.87	69.93	-154.91	-96.84	-25.14	2,006.65	1,987.10	19.55	102.642	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,097.36	2,977.00	2,976.06	18.23	69.93	-154.91	-96.84	-25.14	2,106.32	2,086.79	19.54	107.809	
5,200.00	5,197.30	2,977.00	2,976.06	18.59	69.93	-154.91	-96.84	-25.14	2,206.03	2,186.48	19.55	112.854	
5,300.00	5,297.24	2,977.00	2,976.06	18.95	69.93	-154.91	-96.84	-25.14	2,305.76	2,286.18	19.58	117.777	
5,402.82	5,400.00	2,977.00	2,976.06	19.32	69.93	-154.91	-96.84	-25.14	2,408.33	2,388.70	19.63	122.712	
5,500.00	5,497.13	2,977.00	2,976.06	19.67	69.93	-157.65	-96.84	-25.14	2,505.26	2,485.58	19.68	127.301	
5,600.00	5,597.11	2,977.00	2,976.06	20.03	69.93	-160.01	-96.84	-25.14	2,604.97	2,585.23	19.74	131.989	
5,700.00	5,697.10	2,977.00	2,976.06	20.39	69.93	-162.00	-96.84	-25.14	2,704.64	2,684.84	19.79	136.636	
5,802.82	5,799.92	2,977.00	2,976.06	20.75	69.93	166.26	-96.84	-25.14	2,807.07	2,787.22	19.86	141.365	
5,900.00	5,897.09	2,977.00	2,976.06	21.10	69.93	166.26	-96.84	-25.14	2,903.87	2,883.95	19.92	145.744	
6,000.00	5,997.09	2,977.00	2,976.06	21.45	69.93	166.26	-96.84	-25.14	3,003.51	2,983.50	20.01	150.119	
6,100.00	6,097.09	2,977.00	2,976.06	21.81	69.93	166.26	-96.84	-25.14	3,103.17	3,083.07	20.10	154.363	
6,200.00	6,197.09	2,977.00	2,976.06	22.16	69.93	166.26	-96.84	-25.14	3,202.86	3,182.65	20.21	158.481	
6,300.00	6,297.09	2,977.00	2,976.06	22.52	69.93	166.26	-96.84	-25.14	3,302.56	3,282.23	20.33	162.473	
6,354.91	6,352.00	2,977.00	2,976.06	22.72	69.93	166.26	-96.84	-25.14	3,357.31	3,336.91	20.40	164.612	
6,400.00	6,397.06	2,977.00	2,976.06	22.87	69.93	44.99	-96.84	-25.14	3,402.24	3,381.79	20.45	166.352	
6,450.00	6,446.74	2,977.00	2,976.06	23.04	69.93	25.83	-96.84	-25.14	3,451.78	3,431.26	20.51	168.269	
6,500.00	6,495.84	2,977.00	2,976.06	23.20	69.93	17.70	-96.84	-25.14	3,500.75	3,480.17	20.57	170.148	
6,550.00	6,544.06	2,977.00	2,976.06	23.36	69.93	13.40	-96.84	-25.14	3,548.88	3,528.24	20.64	171.947	
6,600.00	6,591.08	2,977.00	2,976.06	23.51	69.93	10.78	-96.84	-25.14	3,595.92	3,575.21	20.71	173.614	
6,650.00	6,636.64	2,977.00	2,976.06	23.66	69.93	9.03	-96.84	-25.14	3,641.62	3,620.82	20.80	175.087	
6,700.00	6,680.44	2,977.00	2,976.06	23.82	69.93	7.80	-96.84	-25.14	3,685.75	3,664.84	20.91	176.300	
6,750.00	6,722.22	2,977.00	2,976.06	23.99	69.93	6.88	-96.84	-25.14	3,728.10	3,707.06	21.04	177.187	
6,800.00	6,761.71	2,977.00	2,976.06	24.16	69.93	6.18	-96.84	-25.14	3,768.49	3,747.28	21.21	177.685	
6,850.00	6,798.68	2,977.00	2,976.06	24.33	69.93	5.63	-96.84	-25.14	3,806.71	3,785.29	21.42	177.736	
6,900.00	6,832.89	2,977.00	2,976.06	24.50	69.93	5.19	-96.84	-25.14	3,842.61	3,820.94	21.67	177.298	
6,950.00	6,864.14	2,977.00	2,976.06	24.69	69.93	4.84	-96.84	-25.14	3,876.03	3,854.05	21.98	176.344	
7,000.00	6,892.23	2,977.00	2,976.06	24.88	69.93	4.55	-96.84	-25.14	3,906.84	3,884.50	22.34	174.865	
7,050.00	6,916.99	2,977.00	2,976.06	25.08	69.93	4.31	-96.84	-25.14	3,934.90	3,912.14	22.76	172.871	
7,100.00	6,938.27	2,977.00	2,976.06	25.29	69.93	4.12	-96.84	-25.14	3,960.10	3,936.86	23.24	170.391	
7,150.00	6,955.93	2,977.00	2,976.06	25.51	69.93	3.96	-96.84	-25.14	3,982.35	3,958.57	23.78	167.468	
7,200.00	6,969.87	2,977.00	2,976.06	25.75	69.93	3.84	-96.84	-25.14	4,001.55	3,977.17	24.38	164.157	
7,250.00	6,980.00	2,977.00	2,976.06	25.99	69.93	3.73	-96.84	-25.14	4,017.63	3,992.60	25.03	160.519	
7,300.00	6,986.25	2,977.00	2,976.06	26.25	69.93	3.66	-96.84	-25.14	4,030.54	4,004.80	25.73	156.619	
7,354.68	6,988.62	2,977.00	2,976.06	26.53	69.93	3.60	-96.84	-25.14	4,040.95	4,014.39	26.56	152.132	
7,400.00	6,988.64	2,977.00	2,976.06	26.78	69.93	3.60	-96.84	-25.14	4,048.22	4,020.93	27.29	148.364	
7,500.00	6,988.67	2,977.00	2,976.06	27.40	69.93	3.60	-96.84	-25.14	4,065.99	4,037.02	28.97	140.344	
7,600.00	6,988.71	2,977.00	2,976.06	28.08	69.93	3.60	-96.84	-25.14	4,086.14	4,055.39	30.75	132.892	
7,700.00	6,988.74	2,977.00	2,976.06	28.84	69.93	3.60	-96.84	-25.14	4,108.62	4,076.03	32.59	126.070	
7,800.00	6,988.78	2,977.00	2,976.06	29.67	69.93	3.60	-96.84	-25.14	4,133.40	4,098.92	34.48	119.888	
7,900.00	6,988.81	2,977.00	2,976.06	30.55	69.93	3.60	-96.84	-25.14	4,160.43	4,124.04	36.39	114.321	
8,000.00	6,988.85	2,977.00	2,976.06	31.49	69.93	3.60	-96.84	-25.14	4,189.68	4,151.36	38.32	109.328	
8,100.00	6,988.88	2,977.00	2,976.06	32.48	69.93	3.60	-96.84	-25.14	4,221.09	4,180.84	40.25	104.862	
8,200.00	6,988.91	2,977.00	2,976.06	33.51	69.93	3.60	-96.84	-25.14	4,254.63	4,212.45	42.18	100.872	
8,211.68	6,988.92	2,977.00	2,976.06	33.63	69.93	3.60	-96.84	-25.14	4,258.68	4,216.28	42.40	100.435	
8,300.00	6,988.95	2,977.00	2,976.06	34.58	69.93	4.27	-96.84	-25.14	4,290.15	4,246.06	44.08	97.316	
8,400.00	6,988.98	2,977.00	2,976.06	35.70	69.93	5.07	-96.84	-25.14	4,327.44	4,281.48	45.96	94.154	
8,500.00	6,989.01	2,977.00	2,976.06	36.84	69.93	5.91	-96.84	-25.14	4,366.43	4,318.63	47.80	91.341	
8,600.00	6,989.04	2,977.00	2,976.06	38.02	69.93	6.79	-96.84	-25.14	4,407.01	4,357.41	49.61	88.837	
8,700.00	6,989.07	2,977.00	2,976.06	39.22	69.93	7.71	-96.84	-25.14	4,449.10	4,397.73	51.37	86.608	
8,772.79	6,989.09	2,977.00	2,976.06	40.11	69.93	8.40	-96.84	-25.14	4,480.63	4,428.00	52.63	85.141	
8,800.00	6,989.10	2,977.00	2,976.06	40.44	69.93	8.40	-96.84	-25.14	4,492.61	4,439.53	53.09	84.623	
8,900.00	6,989.13	2,977.00	2,976.06	41.68	69.93	8.40	-96.84	-25.14	4,537.80	4,483.03	54.77	82.848	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336 - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		359-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	6,989.15	2,977.00	2,976.06	42.95	69.93	8.40	-96.84	-25.14	4,584.72	4,528.30	56.42	81.261	
9,100.00	6,989.18	2,977.00	2,976.06	44.24	69.93	8.40	-96.84	-25.14	4,633.32	4,575.30	58.03	79.846	
9,200.00	6,989.21	2,977.00	2,976.06	45.55	69.93	8.40	-96.84	-25.14	4,683.56	4,623.96	59.60	78.586	
9,300.00	6,989.24	2,977.00	2,976.06	46.88	69.93	8.40	-96.84	-25.14	4,735.37	4,674.25	61.13	77.469	
9,400.00	6,989.26	2,977.00	2,976.06	48.23	69.93	8.40	-96.84	-25.14	4,788.72	4,726.10	62.61	76.480	
9,500.00	6,989.29	2,977.00	2,976.06	49.59	69.93	8.40	-96.84	-25.14	4,843.53	4,779.48	64.06	75.610	
9,600.00	6,989.32	2,977.00	2,976.06	50.96	69.93	8.40	-96.84	-25.14	4,899.78	4,834.32	65.46	74.848	
9,700.00	6,989.34	2,977.00	2,976.06	52.35	69.93	8.40	-96.84	-25.14	4,957.41	4,890.58	66.82	74.185	
9,800.00	6,989.37	2,977.00	2,976.06	53.75	69.93	8.40	-96.84	-25.14	5,016.37	4,948.22	68.15	73.613	
9,900.00	6,989.40	2,977.00	2,976.06	55.16	69.93	8.40	-96.84	-25.14	5,076.61	5,007.18	69.43	73.124	
10,000.00	6,989.42	2,977.00	2,976.06	56.58	69.93	8.40	-96.84	-25.14	5,138.09	5,067.43	70.66	72.711	
10,100.00	6,989.45	2,977.00	2,976.06	58.01	69.93	8.40	-96.84	-25.14	5,200.77	5,128.91	71.86	72.370	
10,200.00	6,989.48	2,977.00	2,976.06	59.45	69.93	8.40	-96.84	-25.14	5,264.61	5,191.58	73.02	72.094	
10,300.00	6,989.51	2,977.00	2,976.06	60.90	69.93	8.40	-96.84	-25.14	5,329.55	5,255.40	74.15	71.878	
10,400.00	6,989.53	2,977.00	2,976.06	62.35	69.93	8.40	-96.84	-25.14	5,395.57	5,320.33	75.23	71.718	
10,500.00	6,989.56	2,977.00	2,976.06	63.81	69.93	8.40	-96.84	-25.14	5,462.62	5,386.33	76.28	71.610	
10,600.00	6,989.59	2,977.00	2,976.06	65.28	69.93	8.40	-96.84	-25.14	5,530.66	5,453.36	77.30	71.551	
10,700.00	6,989.61	2,977.00	2,976.06	66.76	69.93	8.40	-96.84	-25.14	5,599.66	5,521.39	78.28	71.536	
10,800.00	6,989.64	2,977.00	2,976.06	68.24	69.93	8.40	-96.84	-25.14	5,669.59	5,590.37	79.23	71.563	
10,900.00	6,989.67	2,977.00	2,976.06	69.73	69.93	8.40	-96.84	-25.14	5,740.41	5,660.27	80.14	71.628	
11,000.00	6,989.70	2,977.00	2,976.06	71.22	69.93	8.40	-96.84	-25.14	5,812.09	5,731.06	81.03	71.730	
11,100.00	6,989.72	2,977.00	2,976.06	72.71	69.93	8.40	-96.84	-25.14	5,884.59	5,802.71	81.88	71.866	
11,200.00	6,989.75	2,977.00	2,976.06	74.22	69.93	8.40	-96.84	-25.14	5,957.89	5,875.18	82.71	72.034	
11,300.00	6,989.78	2,977.00	2,976.06	75.72	69.93	8.40	-96.84	-25.14	6,031.95	5,948.44	83.51	72.232	
11,400.00	6,989.80	2,977.00	2,976.06	77.23	69.93	8.40	-96.84	-25.14	6,106.76	6,022.48	84.28	72.457	
11,500.00	6,989.83	2,977.00	2,976.06	78.74	69.93	8.40	-96.84	-25.14	6,182.27	6,097.25	85.03	72.709	
11,600.00	6,989.86	2,977.00	2,976.06	80.26	69.93	8.40	-96.84	-25.14	6,258.48	6,172.73	85.75	72.985	
11,700.00	6,989.88	2,977.00	2,976.06	81.78	69.93	8.40	-96.84	-25.14	6,335.34	6,248.90	86.45	73.285	
11,800.00	6,989.91	2,977.00	2,976.06	83.30	69.93	8.40	-96.84	-25.14	6,412.85	6,325.72	87.12	73.606	
11,900.00	6,989.94	2,977.00	2,976.06	84.83	69.93	8.40	-96.84	-25.14	6,490.97	6,403.19	87.78	73.948	
12,000.00	6,989.97	2,977.00	2,976.06	86.36	69.93	8.40	-96.84	-25.14	6,569.68	6,481.27	88.41	74.309	
12,100.00	6,989.99	2,977.00	2,976.06	87.89	69.93	8.40	-96.84	-25.14	6,648.96	6,559.94	89.02	74.689	
12,200.00	6,990.02	2,977.00	2,976.06	89.42	69.93	8.40	-96.84	-25.14	6,728.80	6,639.19	89.61	75.086	
12,300.00	6,990.05	2,977.00	2,976.06	90.96	69.93	8.40	-96.84	-25.14	6,809.17	6,718.98	90.19	75.499	
12,400.00	6,990.07	2,977.00	2,976.06	92.50	69.93	8.40	-96.84	-25.14	6,890.05	6,799.31	90.74	75.928	
12,500.00	6,990.10	2,977.00	2,976.06	94.04	69.93	8.40	-96.84	-25.14	6,971.43	6,880.15	91.28	76.371	
12,600.00	6,990.13	2,977.00	2,976.06	95.58	69.93	8.40	-96.84	-25.14	7,053.29	6,961.48	91.81	76.828	
12,700.00	6,990.15	2,977.00	2,976.06	97.13	69.93	8.40	-96.84	-25.14	7,135.61	7,043.30	92.31	77.299	
12,800.00	6,990.18	2,977.00	2,976.06	98.68	69.93	8.40	-96.84	-25.14	7,218.38	7,125.57	92.80	77.781	
12,900.00	6,990.21	2,977.00	2,976.06	100.22	69.93	8.40	-96.84	-25.14	7,301.58	7,208.30	93.28	78.276	
13,000.00	6,990.24	2,977.00	2,976.06	101.78	69.93	8.40	-96.84	-25.14	7,385.19	7,291.45	93.74	78.782	
13,100.00	6,990.26	2,977.00	2,976.06	103.33	69.93	8.40	-96.84	-25.14	7,469.21	7,375.02	94.19	79.298	
13,200.00	6,990.29	2,977.00	2,976.06	104.88	69.93	8.40	-96.84	-25.14	7,553.62	7,458.99	94.63	79.825	
13,300.00	6,990.32	2,977.00	2,976.06	106.44	69.93	8.40	-96.84	-25.14	7,638.40	7,543.35	95.05	80.361	
13,400.00	6,990.34	2,977.00	2,976.06	107.99	69.93	8.40	-96.84	-25.14	7,723.55	7,628.08	95.46	80.906	
13,500.00	6,990.37	2,977.00	2,976.06	109.55	69.93	8.40	-96.84	-25.14	7,809.05	7,713.18	95.86	81.460	
13,600.00	6,990.40	2,977.00	2,976.06	111.11	69.93	8.40	-96.84	-25.14	7,894.89	7,798.63	96.25	82.022	
13,700.00	6,990.42	2,977.00	2,976.06	112.67	69.93	8.40	-96.84	-25.14	7,981.06	7,884.43	96.63	82.593	
13,800.00	6,990.45	2,977.00	2,976.06	114.23	69.93	8.40	-96.84	-25.14	8,067.55	7,970.55	97.00	83.170	
13,900.00	6,990.48	2,977.00	2,976.06	115.80	69.93	8.40	-96.84	-25.14	8,154.35	8,056.99	97.36	83.755	
14,000.00	6,990.51	2,977.00	2,976.06	117.36	69.93	8.40	-96.84	-25.14	8,241.44	8,143.73	97.71	84.347	
14,100.00	6,990.53	2,977.00	2,976.06	118.93	69.93	8.40	-96.84	-25.14	8,328.83	8,230.78	98.05	84.945	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336 - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		359-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
14,200.00	6,990.56	2,977.00	2,976.06	120.49	69.93	8.40	-96.84	-25.14	8,416.50	8,318.12	98.38	85.549		
14,300.00	6,990.59	2,977.00	2,976.06	122.06	69.93	8.40	-96.84	-25.14	8,504.44	8,405.73	98.71	86.159		
14,400.00	6,990.61	2,977.00	2,976.06	123.63	69.93	8.40	-96.84	-25.14	8,592.64	8,493.62	99.02	86.775		
14,500.00	6,990.64	2,977.00	2,976.06	125.20	69.93	8.40	-96.84	-25.14	8,681.10	8,581.77	99.33	87.397		
14,600.00	6,990.67	2,977.00	2,976.06	126.77	69.93	8.40	-96.84	-25.14	8,769.81	8,670.18	99.63	88.023		
14,700.00	6,990.70	2,977.00	2,976.06	128.34	69.93	8.40	-96.84	-25.14	8,858.76	8,758.83	99.92	88.654		
14,800.00	6,990.72	2,977.00	2,976.06	129.91	69.93	8.40	-96.84	-25.14	8,947.94	8,847.73	100.21	89.290		
14,900.00	6,990.75	2,977.00	2,976.06	131.48	69.93	8.40	-96.84	-25.14	9,037.35	8,936.86	100.49	89.930		
15,000.00	6,990.78	2,977.00	2,976.06	133.06	69.93	8.40	-96.84	-25.14	9,126.98	9,026.21	100.77	90.575		
15,100.00	6,990.80	2,977.00	2,976.06	134.63	69.93	8.40	-96.84	-25.14	9,216.82	9,115.78	101.04	91.223		
15,200.00	6,990.83	2,977.00	2,976.06	136.20	69.93	8.40	-96.84	-25.14	9,306.87	9,205.57	101.30	91.876		
15,300.00	6,990.86	2,977.00	2,976.06	137.78	69.93	8.40	-96.84	-25.14	9,397.12	9,295.56	101.56	92.532		
15,400.00	6,990.88	2,977.00	2,976.06	139.36	69.93	8.40	-96.84	-25.14	9,487.56	9,385.76	101.81	93.191		
15,500.00	6,990.91	2,977.00	2,976.06	140.93	69.93	8.40	-96.84	-25.14	9,578.20	9,476.15	102.05	93.854		
15,600.00	6,990.94	2,977.00	2,976.06	142.51	69.93	8.40	-96.84	-25.14	9,669.02	9,566.72	102.30	94.520		
15,700.00	6,990.97	2,977.00	2,976.06	144.09	69.93	8.40	-96.84	-25.14	9,760.02	9,657.49	102.53	95.189		
15,800.00	6,990.99	2,977.00	2,976.06	145.67	69.93	8.40	-96.84	-25.14	9,851.19	9,748.43	102.76	95.861		
15,900.00	6,991.02	2,977.00	2,976.06	147.24	69.93	8.40	-96.84	-25.14	9,942.54	9,839.54	102.99	96.536		
16,000.00	6,991.05	2,977.00	2,976.06	148.82	69.93	8.40	-96.84	-25.14	10,034.05	9,930.83	103.22	97.213		
16,100.00	6,991.07	2,977.00	2,976.06	150.40	69.93	8.40	-96.84	-25.14	10,125.72	10,022.28	103.44	97.893		
16,200.00	6,991.10	2,977.00	2,976.06	151.99	69.93	8.40	-96.84	-25.14	10,217.54	10,113.89	103.65	98.575		
16,300.00	6,991.13	2,977.00	2,976.06	153.57	69.93	8.40	-96.84	-25.14	10,309.52	10,205.65	103.86	99.260		
16,400.00	6,991.15	2,977.00	2,976.06	155.15	69.93	8.40	-96.84	-25.14	10,401.64	10,297.57	104.07	99.946		
16,500.00	6,991.18	2,977.00	2,976.06	156.73	69.93	8.40	-96.84	-25.14	10,493.91	10,389.64	104.28	100.635		
16,600.00	6,991.21	2,977.00	2,976.06	158.31	69.93	8.40	-96.84	-25.14	10,586.33	10,481.85	104.48	101.325		
16,700.00	6,991.24	2,977.00	2,976.06	159.90	69.93	8.40	-96.84	-25.14	10,678.87	10,574.20	104.68	102.018		
16,800.00	6,991.26	2,977.00	2,976.06	161.48	69.93	8.40	-96.84	-25.14	10,771.55	10,666.68	104.87	102.712		
16,900.00	6,991.29	2,977.00	2,976.06	163.06	69.93	8.40	-96.84	-25.14	10,864.36	10,759.30	105.06	103.407		
17,000.00	6,991.32	2,977.00	2,976.06	164.65	69.93	8.40	-96.84	-25.14	10,957.30	10,852.05	105.25	104.104		
17,100.00	6,991.34	2,977.00	2,976.06	166.23	69.93	8.40	-96.84	-25.14	11,050.36	10,944.92	105.44	104.803		
17,200.00	6,991.37	2,977.00	2,976.06	167.82	69.93	8.40	-96.84	-25.14	11,143.54	11,037.92	105.62	105.503		
17,300.00	6,991.40	2,977.00	2,976.06	169.40	69.93	8.40	-96.84	-25.14	11,236.84	11,131.03	105.80	106.204		
17,400.00	6,991.42	2,977.00	2,976.06	170.99	69.93	8.40	-96.84	-25.14	11,330.25	11,224.27	105.98	106.907		
17,500.00	6,991.45	2,977.00	2,976.06	172.57	69.93	8.40	-96.84	-25.14	11,423.77	11,317.61	106.16	107.610		
17,600.00	6,991.48	2,977.00	2,976.06	174.16	69.93	8.40	-96.84	-25.14	11,517.41	11,411.07	106.33	108.315		
17,700.00	6,991.51	2,977.00	2,976.06	175.75	69.93	8.40	-96.84	-25.14	11,611.14	11,504.64	106.50	109.021		
17,800.00	6,991.53	2,977.00	2,976.06	177.33	69.93	8.40	-96.84	-25.14	11,704.99	11,598.31	106.67	109.727		
17,900.00	6,991.56	2,977.00	2,976.06	178.92	69.93	8.40	-96.84	-25.14	11,798.93	11,692.09	106.84	110.435		
18,000.00	6,991.59	2,977.00	2,976.06	180.51	69.93	8.40	-96.84	-25.14	11,892.97	11,785.97	107.01	111.143		
18,100.00	6,991.61	2,977.00	2,976.06	182.10	69.93	8.40	-96.84	-25.14	11,987.11	11,879.94	107.17	111.852		
18,200.00	6,991.64	2,977.00	2,976.06	183.68	69.93	8.40	-96.84	-25.14	12,081.34	11,974.01	107.33	112.562		
18,300.00	6,991.67	2,977.00	2,976.06	185.27	69.93	8.40	-96.84	-25.14	12,175.67	12,068.18	107.49	113.272		
18,400.00	6,991.69	2,977.00	2,976.06	186.86	69.93	8.40	-96.84	-25.14	12,270.08	12,162.43	107.65	113.983		
18,500.00	6,991.72	2,977.00	2,976.06	188.45	69.93	8.40	-96.84	-25.14	12,364.58	12,256.78	107.80	114.694		
18,600.00	6,991.75	2,977.00	2,976.06	190.04	69.93	8.40	-96.84	-25.14	12,459.17	12,351.21	107.96	115.406		
18,700.00	6,991.78	2,977.00	2,976.06	191.63	69.93	8.40	-96.84	-25.14	12,553.84	12,445.73	108.11	116.118		
18,800.00	6,991.80	2,977.00	2,976.06	193.22	69.93	8.40	-96.84	-25.14	12,648.60	12,540.33	108.26	116.831		
18,900.00	6,991.83	2,977.00	2,976.06	194.81	69.93	8.40	-96.84	-25.14	12,743.43	12,635.02	108.41	117.544		
19,000.00	6,991.86	2,977.00	2,976.06	196.40	69.93	8.40	-96.84	-25.14	12,838.35	12,729.78	108.56	118.257		
19,100.00	6,991.88	2,977.00	2,976.06	197.99	69.93	8.40	-96.84	-25.14	12,933.33	12,824.62	108.71	118.970		
19,200.00	6,991.91	2,977.00	2,976.06	199.58	69.93	8.40	-96.84	-25.14	13,028.40	12,919.54	108.86	119.684		
19,300.00	6,991.94	2,977.00	2,976.06	201.17	69.93	8.40	-96.84	-25.14	13,123.54	13,014.54	109.00	120.398		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:		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		
19,342.28	6,991.95	2,977.00	2,976.06	201.84	69.93	8.40	-96.84	-25.14	13,163.78	13,054.72	109.06	120.700		
19,400.00	6,991.97	2,977.00	2,976.06	202.76	69.93	8.40	-96.84	-25.14	13,218.75	13,109.60	109.15	121.112		
19,500.00	6,991.99	2,977.00	2,976.06	204.35	69.93	8.40	-96.84	-25.14	13,314.03	13,204.74	109.29	121.825		
19,542.28	6,992.00	2,977.00	2,976.06	205.03	69.93	8.40	-96.84	-25.14	13,354.33	13,244.98	109.35	122.127		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	-109.12	-817.93	-2,359.67	2,498.63				
100.00	100.00	22.00	22.00	0.25	0.41	-109.12	-817.93	-2,359.67	2,497.41	2,496.75	0.66	3,796.632	
200.00	200.00	122.00	122.00	0.61	2.26	-109.12	-817.93	-2,359.67	2,497.41	2,494.55	2.86	871.773	
300.00	300.00	222.00	222.00	0.97	4.10	-109.12	-817.93	-2,359.67	2,497.41	2,492.34	5.07	492.421	
400.00	400.00	322.00	322.00	1.33	5.95	-109.12	-817.93	-2,359.67	2,497.41	2,490.13	7.28	343.114	
500.00	500.00	422.00	422.00	1.68	7.94	-109.12	-817.93	-2,359.67	2,497.41	2,487.78	9.63	259.420	
600.00	600.00	522.00	522.00	2.04	9.97	-109.12	-817.93	-2,359.67	2,497.41	2,485.40	12.01	207.899	
672.87	672.87	594.83	594.82	2.30	11.45	-109.11	-817.39	-2,359.67	2,497.23	2,483.48	13.75	181.615	
700.00	700.00	621.57	621.57	2.40	11.99	-109.11	-817.40	-2,359.67	2,497.24	2,482.85	14.39	173.545	
800.00	799.98	720.14	720.13	2.76	13.99	-79.15	-817.53	-2,359.67	2,496.95	2,480.21	16.74	149.119	
900.00	899.92	818.66	818.65	3.12	15.98	-79.24	-817.84	-2,359.67	2,496.40	2,477.30	19.10	130.714	
1,000.00	999.86	921.92	921.86	3.47	18.35	-79.32	-817.93	-2,359.67	2,495.78	2,473.96	21.82	114.390	
1,100.00	1,099.80	1,021.86	1,021.80	3.83	20.70	-79.40	-817.93	-2,359.67	2,495.13	2,470.60	24.53	101.717	
1,200.00	1,199.74	1,120.29	1,120.20	4.19	23.02	-79.45	-816.66	-2,359.67	2,494.07	2,466.86	27.21	91.670	
1,300.00	1,299.68	1,216.60	1,216.51	4.55	25.29	-79.53	-817.05	-2,359.67	2,493.57	2,463.73	29.83	83.580	
1,400.00	1,399.61	1,321.82	1,321.61	4.91	27.76	-79.64	-817.93	-2,359.67	2,493.23	2,460.56	32.67	76.317	
1,500.00	1,499.55	1,421.76	1,421.55	5.27	29.98	-79.71	-817.93	-2,359.67	2,492.60	2,457.36	35.24	70.729	
1,600.00	1,599.49	1,521.70	1,521.49	5.63	32.19	-79.79	-817.93	-2,359.67	2,491.98	2,454.17	37.81	65.902	
1,700.00	1,699.43	1,619.46	1,619.23	5.99	34.36	-79.84	-816.36	-2,359.67	2,490.83	2,450.49	40.34	61.750	
1,800.00	1,799.37	1,715.18	1,714.94	6.35	36.48	-79.92	-816.85	-2,359.67	2,490.39	2,447.58	42.82	58.165	
1,900.00	1,899.31	1,821.61	1,821.31	6.71	38.83	-80.03	-817.93	-2,359.67	2,490.15	2,444.62	45.53	54.696	
2,000.00	1,999.25	1,921.55	1,921.25	7.07	40.70	-80.11	-817.93	-2,359.67	2,489.54	2,441.78	47.76	52.127	
2,100.00	2,099.19	2,021.49	2,021.19	7.42	42.57	-80.19	-817.93	-2,359.67	2,488.95	2,438.95	49.99	49.786	
2,200.00	2,199.13	2,121.21	2,120.90	7.78	44.44	-80.25	-816.98	-2,359.67	2,488.03	2,435.80	52.22	47.644	
2,300.00	2,299.07	2,219.25	2,218.94	8.14	46.28	-80.33	-817.12	-2,359.67	2,487.48	2,433.07	54.42	45.710	
2,400.00	2,399.01	2,317.28	2,316.96	8.50	48.12	-80.41	-817.47	-2,359.67	2,487.02	2,430.41	56.62	43.928	
2,500.00	2,498.94	2,421.28	2,420.94	8.86	50.09	-80.51	-817.93	-2,359.67	2,486.60	2,427.66	58.94	42.186	
2,600.00	2,598.88	2,521.01	2,520.67	9.22	52.04	-80.58	-817.68	-2,359.67	2,485.94	2,424.68	61.26	40.579	
2,700.00	2,698.82	2,617.72	2,617.38	9.58	53.94	-80.66	-817.88	-2,359.67	2,485.45	2,421.93	63.52	39.129	
2,800.00	2,798.76	2,721.12	2,720.76	9.94	56.27	-80.74	-817.93	-2,359.67	2,484.90	2,418.69	66.21	37.530	
2,900.00	2,898.70	2,809.00	2,808.60	10.30	58.29	-80.81	-817.93	-2,359.67	2,484.37	2,415.79	68.58	36.225 CC	
2,904.45	2,903.15	2,809.00	2,808.60	10.32	58.29	-80.81	-817.93	-2,359.67	2,484.37	2,415.77	68.60	36.217 ES	
3,000.00	2,998.64	2,809.00	2,808.60	10.66	58.29	-80.81	-817.93	-2,359.67	2,486.31	2,417.43	68.88	36.098	
3,100.00	3,098.58	2,809.00	2,808.60	11.02	58.29	-80.81	-817.93	-2,359.67	2,492.27	2,423.20	69.07	36.086 SF	
3,200.00	3,198.52	2,809.00	2,808.60	11.38	58.29	-80.81	-817.93	-2,359.67	2,502.21	2,433.06	69.15	36.186	
3,300.00	3,298.46	2,809.00	2,808.60	11.75	58.29	-80.81	-817.93	-2,359.67	2,516.09	2,446.96	69.13	36.398	
3,400.00	3,398.40	2,809.00	2,808.60	12.11	58.29	-80.81	-817.93	-2,359.67	2,533.84	2,464.83	69.01	36.719	
3,500.00	3,498.34	2,809.00	2,808.60	12.47	58.29	-80.81	-817.93	-2,359.67	2,555.39	2,486.59	68.79	37.147	
3,600.00	3,598.27	2,809.00	2,808.60	12.83	58.29	-80.81	-817.93	-2,359.67	2,580.63	2,512.14	68.49	37.681	
3,700.00	3,698.21	2,809.00	2,808.60	13.19	58.29	-80.81	-817.93	-2,359.67	2,609.46	2,541.36	68.10	38.317	
3,800.00	3,798.15	2,809.00	2,808.60	13.55	58.29	-80.81	-817.93	-2,359.67	2,641.77	2,574.13	67.64	39.055	
3,900.00	3,898.09	2,809.00	2,808.60	13.91	58.29	-80.81	-817.93	-2,359.67	2,677.42	2,610.31	67.12	39.892	
4,000.00	3,998.03	2,809.00	2,808.60	14.27	58.29	-80.81	-817.93	-2,359.67	2,716.29	2,649.76	66.53	40.827	
4,100.00	4,097.97	2,809.00	2,808.60	14.63	58.29	-80.81	-817.93	-2,359.67	2,758.24	2,692.35	65.90	41.856	
4,200.00	4,197.91	2,809.00	2,808.60	14.99	58.29	-80.81	-817.93	-2,359.67	2,803.13	2,737.91	65.22	42.978	
4,300.00	4,297.85	2,809.00	2,808.60	15.35	58.29	-80.81	-817.93	-2,359.67	2,850.83	2,786.32	64.51	44.191	
4,400.00	4,397.79	2,809.00	2,808.60	15.71	58.29	-80.81	-817.93	-2,359.67	2,901.18	2,837.41	63.77	45.492	
4,500.00	4,497.73	2,809.00	2,808.60	16.07	58.29	-80.81	-817.93	-2,359.67	2,954.07	2,891.05	63.01	46.880	
4,600.00	4,597.66	2,809.00	2,808.60	16.43	58.29	-80.81	-817.93	-2,359.67	3,009.35	2,947.11	62.24	48.351	
4,700.00	4,697.60	2,809.00	2,808.60	16.79	58.29	-80.81	-817.93	-2,359.67	3,066.89	3,005.43	61.46	49.904	
4,800.00	4,797.54	2,809.00	2,808.60	17.15	58.29	-80.81	-817.93	-2,359.67	3,126.58	3,065.91	60.67	51.536	
4,900.00	4,897.48	2,809.00	2,808.60	17.51	58.29	-80.81	-817.93	-2,359.67	3,188.28	3,128.40	59.88	53.244	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #336A - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		343-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor
5,000.00	4,997.42	2,809.00	2,808.60	17.87	58.29	-80.81	-817.93	-2,359.67	3,251.89	3,192.79	59.10	55.026	
5,100.00	5,097.36	2,809.00	2,808.60	18.23	58.29	-80.81	-817.93	-2,359.67	3,317.29	3,258.97	58.32	56.880	
5,200.00	5,197.30	2,809.00	2,808.60	18.59	58.29	-80.81	-817.93	-2,359.67	3,384.39	3,326.83	57.55	58.803	
5,300.00	5,297.24	2,809.00	2,808.60	18.95	58.29	-80.81	-817.93	-2,359.67	3,453.08	3,396.27	56.80	60.792	
5,402.82	5,400.00	2,809.00	2,808.60	19.32	58.29	-80.81	-817.93	-2,359.67	3,525.27	3,469.22	56.04	62.904	
5,500.00	5,497.13	2,809.00	2,808.60	19.67	58.29	-81.31	-817.93	-2,359.67	3,594.91	3,539.57	55.34	64.959	
5,600.00	5,597.11	2,809.00	2,808.60	20.03	58.29	-81.84	-817.93	-2,359.67	3,667.97	3,613.33	54.64	67.132	
5,700.00	5,697.10	2,809.00	2,808.60	20.39	58.29	-82.39	-817.93	-2,359.67	3,742.36	3,688.40	53.95	69.362	
5,802.82	5,799.92	2,809.00	2,808.60	20.75	58.29	-112.98	-817.93	-2,359.67	3,820.14	3,766.87	53.27	71.710	
5,900.00	5,897.09	2,809.00	2,808.60	21.10	58.29	-112.98	-817.93	-2,359.67	3,894.76	3,842.11	52.65	73.978	
6,000.00	5,997.09	2,809.00	2,808.60	21.45	58.29	-112.98	-817.93	-2,359.67	3,972.56	3,920.53	52.03	76.358	
6,100.00	6,097.09	2,809.00	2,808.60	21.81	58.29	-112.98	-817.93	-2,359.67	4,051.34	3,999.91	51.43	78.780	
6,200.00	6,197.09	2,809.00	2,808.60	22.16	58.29	-112.98	-817.93	-2,359.67	4,131.03	4,080.19	50.85	81.243	
6,300.00	6,297.09	2,809.00	2,808.60	22.52	58.29	-112.98	-817.93	-2,359.67	4,211.60	4,161.30	50.29	83.743	
6,354.91	6,352.00	2,809.00	2,808.60	22.72	58.29	-112.98	-817.93	-2,359.67	4,256.18	4,206.18	50.00	85.130	
6,400.00	6,397.06	2,809.00	2,808.60	22.87	58.29	166.67	-817.93	-2,359.67	4,293.84	4,244.07	49.78	86.264	
6,450.00	6,446.74	2,809.00	2,808.60	23.04	58.29	164.65	-817.93	-2,359.67	4,337.63	4,288.05	49.57	87.498	
6,500.00	6,495.84	2,809.00	2,808.60	23.20	58.29	161.75	-817.93	-2,359.67	4,383.21	4,333.80	49.41	88.703	
6,550.00	6,544.06	2,809.00	2,808.60	23.36	58.29	157.36	-817.93	-2,359.67	4,430.27	4,380.98	49.30	89.871	
6,600.00	6,591.08	2,809.00	2,808.60	23.51	58.29	150.11	-817.93	-2,359.67	4,478.47	4,429.25	49.22	90.991	
6,650.00	6,636.64	2,809.00	2,808.60	23.66	58.29	136.77	-817.93	-2,359.67	4,527.49	4,478.30	49.18	92.054	
6,700.00	6,680.44	2,809.00	2,808.60	23.82	58.29	110.49	-817.93	-2,359.67	4,576.99	4,527.80	49.19	93.052	
6,750.00	6,722.22	2,809.00	2,808.60	23.99	58.29	71.91	-817.93	-2,359.67	4,626.67	4,577.43	49.23	93.978	
6,800.00	6,761.71	2,809.00	2,808.60	24.16	58.29	44.08	-817.93	-2,359.67	4,676.21	4,626.89	49.31	94.825	
6,850.00	6,798.68	2,809.00	2,808.60	24.33	58.29	29.89	-817.93	-2,359.67	4,725.32	4,675.88	49.43	95.587	
6,900.00	6,832.89	2,809.00	2,808.60	24.50	58.29	22.25	-817.93	-2,359.67	4,773.72	4,724.12	49.59	96.258	
6,950.00	6,864.14	2,809.00	2,808.60	24.69	58.29	17.66	-817.93	-2,359.67	4,821.12	4,771.34	49.79	96.834	
7,000.00	6,892.23	2,809.00	2,808.60	24.88	58.29	14.65	-817.93	-2,359.67	4,867.29	4,817.27	50.02	97.310	
7,050.00	6,916.99	2,809.00	2,808.60	25.08	58.29	12.54	-817.93	-2,359.67	4,911.95	4,861.67	50.28	97.682	
7,100.00	6,938.27	2,809.00	2,808.60	25.29	58.29	11.00	-817.93	-2,359.67	4,954.90	4,904.31	50.59	97.949	
7,150.00	6,955.93	2,809.00	2,808.60	25.51	58.29	9.83	-817.93	-2,359.67	4,995.90	4,944.98	50.92	98.106	
7,200.00	6,969.87	2,809.00	2,808.60	25.75	58.29	8.93	-817.93	-2,359.67	5,034.77	4,983.47	51.29	98.154	
7,250.00	6,980.00	2,809.00	2,808.60	25.99	58.29	8.21	-817.93	-2,359.67	5,071.30	5,019.60	51.70	98.091	
7,300.00	6,986.25	2,809.00	2,808.60	26.25	58.29	7.63	-817.93	-2,359.67	5,105.32	5,053.18	52.14	97.918	
7,354.68	6,988.62	2,809.00	2,808.60	26.53	58.29	7.13	-817.93	-2,359.67	5,139.48	5,086.83	52.66	97.605	
7,400.00	6,988.64	2,809.00	2,808.60	26.78	58.29	7.13	-817.93	-2,359.67	5,166.55	5,113.45	53.10	97.292	
7,500.00	6,988.67	2,809.00	2,808.60	27.40	58.29	7.13	-817.93	-2,359.67	5,227.17	5,173.08	54.10	96.629	
7,600.00	6,988.71	2,809.00	2,808.60	28.08	58.29	7.13	-817.93	-2,359.67	5,288.99	5,233.92	55.07	96.036	
7,700.00	6,988.74	2,809.00	2,808.60	28.84	58.29	7.13	-817.93	-2,359.67	5,351.96	5,295.92	56.04	95.509	
7,800.00	6,988.78	2,809.00	2,808.60	29.67	58.29	7.13	-817.93	-2,359.67	5,416.05	5,359.06	56.98	95.046	
7,900.00	6,988.81	2,809.00	2,808.60	30.55	58.29	7.13	-817.93	-2,359.67	5,481.21	5,423.29	57.91	94.646	
8,000.00	6,988.85	2,809.00	2,808.60	31.49	58.29	7.13	-817.93	-2,359.67	5,547.41	5,488.58	58.82	94.304	
8,100.00	6,988.88	2,809.00	2,808.60	32.48	58.29	7.13	-817.93	-2,359.67	5,614.61	5,554.89	59.72	94.020	
8,200.00	6,988.91	2,809.00	2,808.60	33.51	58.29	7.13	-817.93	-2,359.67	5,682.77	5,622.18	60.59	93.790	
8,211.68	6,988.92	2,809.00	2,808.60	33.63	58.29	7.13	-817.93	-2,359.67	5,690.79	5,630.10	60.69	93.766	
8,300.00	6,988.95	2,809.00	2,808.60	34.58	58.29	8.79	-817.93	-2,359.67	5,751.73	5,690.29	61.44	93.610	
8,400.00	6,988.98	2,809.00	2,808.60	35.70	58.29	10.70	-817.93	-2,359.67	5,821.22	5,758.94	62.28	93.475	
8,500.00	6,989.01	2,809.00	2,808.60	36.84	58.29	12.61	-817.93	-2,359.67	5,891.12	5,828.04	63.09	93.382	
8,600.00	6,989.04	2,809.00	2,808.60	38.02	58.29	14.53	-817.93	-2,359.67	5,961.34	5,897.47	63.88	93.327	
8,700.00	6,989.07	2,809.00	2,808.60	39.22	58.29	16.44	-817.93	-2,359.67	6,031.79	5,967.15	64.65	93.305	
8,772.79	6,989.09	2,809.00	2,808.60	40.11	58.29	17.83	-817.93	-2,359.67	6,083.16	6,017.96	65.19	93.309	
8,800.00	6,989.10	2,809.00	2,808.60	40.44	58.29	17.83	-817.93	-2,359.67	6,102.40	6,037.00	65.40	93.315	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		Semi Major Axis		Rule Assigned:		Offset Well Error:	0.00 usft
Reference	Vertical	Reference	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Depth (usft)	Measured Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,900.00	6,989.13	2,809.00	2,808.60	41.68	58.29	17.83	-817.93	-2,359.67	6,173.63	6,107.49	66.13	93.354		
9,000.00	6,989.15	2,809.00	2,808.60	42.95	58.29	17.83	-817.93	-2,359.67	6,245.64	6,178.79	66.85	93.427		
9,100.00	6,989.18	2,809.00	2,808.60	44.24	58.29	17.83	-817.93	-2,359.67	6,318.42	6,250.87	67.55	93.531		
9,200.00	6,989.21	2,809.00	2,808.60	45.55	58.29	17.83	-817.93	-2,359.67	6,391.93	6,323.69	68.24	93.665		
9,300.00	6,989.24	2,809.00	2,808.60	46.88	58.29	17.83	-817.93	-2,359.67	6,466.16	6,397.24	68.92	93.828		
9,400.00	6,989.26	2,809.00	2,808.60	48.23	58.29	17.83	-817.93	-2,359.67	6,541.07	6,471.50	69.57	94.018		
9,500.00	6,989.29	2,809.00	2,808.60	49.59	58.29	17.83	-817.93	-2,359.67	6,616.64	6,546.43	70.21	94.235		
9,600.00	6,989.32	2,809.00	2,808.60	50.96	58.29	17.83	-817.93	-2,359.67	6,692.86	6,622.02	70.84	94.477		
9,700.00	6,989.34	2,809.00	2,808.60	52.35	58.29	17.83	-817.93	-2,359.67	6,769.69	6,698.24	71.45	94.743		
9,800.00	6,989.37	2,809.00	2,808.60	53.75	58.29	17.83	-817.93	-2,359.67	6,847.12	6,775.07	72.05	95.032		
9,900.00	6,989.40	2,809.00	2,808.60	55.16	58.29	17.83	-817.93	-2,359.67	6,925.14	6,852.50	72.63	95.343		
10,000.00	6,989.42	2,809.00	2,808.60	56.58	58.29	17.83	-817.93	-2,359.67	7,003.71	6,930.50	73.20	95.675		
10,100.00	6,989.45	2,809.00	2,808.60	58.01	58.29	17.83	-817.93	-2,359.67	7,082.82	7,009.06	73.76	96.026		
10,200.00	6,989.48	2,809.00	2,808.60	59.45	58.29	17.83	-817.93	-2,359.67	7,162.45	7,088.15	74.30	96.397		
10,300.00	6,989.51	2,809.00	2,808.60	60.90	58.29	17.83	-817.93	-2,359.67	7,242.59	7,167.75	74.83	96.786		
10,400.00	6,989.53	2,809.00	2,808.60	62.35	58.29	17.83	-817.93	-2,359.67	7,323.21	7,247.86	75.35	97.192		
10,500.00	6,989.56	2,809.00	2,808.60	63.81	58.29	17.83	-817.93	-2,359.67	7,404.31	7,328.46	75.85	97.614		
10,600.00	6,989.59	2,809.00	2,808.60	65.28	58.29	17.83	-817.93	-2,359.67	7,485.87	7,409.52	76.35	98.053		
10,700.00	6,989.61	2,809.00	2,808.60	66.76	58.29	17.83	-817.93	-2,359.67	7,567.87	7,491.04	76.83	98.506		
10,800.00	6,989.64	2,809.00	2,808.60	68.24	58.29	17.83	-817.93	-2,359.67	7,650.29	7,573.00	77.30	98.974		
10,900.00	6,989.67	2,809.00	2,808.60	69.73	58.29	17.83	-817.93	-2,359.67	7,733.13	7,655.38	77.75	99.456		
11,000.00	6,989.70	2,809.00	2,808.60	71.22	58.29	17.83	-817.93	-2,359.67	7,816.38	7,738.17	78.20	99.950		
11,100.00	6,989.72	2,809.00	2,808.60	72.71	58.29	17.83	-817.93	-2,359.67	7,900.01	7,821.37	78.64	100.457		
11,200.00	6,989.75	2,809.00	2,808.60	74.22	58.29	17.83	-817.93	-2,359.67	7,984.02	7,904.95	79.07	100.977		
11,300.00	6,989.78	2,809.00	2,808.60	75.72	58.29	17.83	-817.93	-2,359.67	8,068.39	7,988.90	79.49	101.507		
11,400.00	6,989.80	2,809.00	2,808.60	77.23	58.29	17.83	-817.93	-2,359.67	8,153.11	8,073.22	79.89	102.049		
11,500.00	6,989.83	2,809.00	2,808.60	78.74	58.29	17.83	-817.93	-2,359.67	8,238.18	8,157.89	80.29	102.601		
11,600.00	6,989.86	2,809.00	2,808.60	80.26	58.29	17.83	-817.93	-2,359.67	8,323.58	8,242.90	80.68	103.163		
11,700.00	6,989.88	2,809.00	2,808.60	81.78	58.29	17.83	-817.93	-2,359.67	8,409.31	8,328.24	81.07	103.734		
11,800.00	6,989.91	2,809.00	2,808.60	83.30	58.29	17.83	-817.93	-2,359.67	8,495.34	8,413.90	81.44	104.315		
11,900.00	6,989.94	2,809.00	2,808.60	84.83	58.29	17.83	-817.93	-2,359.67	8,581.68	8,499.87	81.81	104.904		
12,000.00	6,989.97	2,809.00	2,808.60	86.36	58.29	17.83	-817.93	-2,359.67	8,668.31	8,586.15	82.16	105.502		
12,100.00	6,989.99	2,809.00	2,808.60	87.89	58.29	17.83	-817.93	-2,359.67	8,755.23	8,672.71	82.51	106.107		
12,200.00	6,990.02	2,809.00	2,808.60	89.42	58.29	17.83	-817.93	-2,359.67	8,842.42	8,759.56	82.86	106.721		
12,300.00	6,990.05	2,809.00	2,808.60	90.96	58.29	17.83	-817.93	-2,359.67	8,929.88	8,846.69	83.19	107.341		
12,400.00	6,990.07	2,809.00	2,808.60	92.50	58.29	17.83	-817.93	-2,359.67	9,017.60	8,934.08	83.52	107.969		
12,500.00	6,990.10	2,809.00	2,808.60	94.04	58.29	17.83	-817.93	-2,359.67	9,105.58	9,021.73	83.84	108.603		
12,600.00	6,990.13	2,809.00	2,808.60	95.58	58.29	17.83	-817.93	-2,359.67	9,193.80	9,109.64	84.16	109.244		
12,700.00	6,990.15	2,809.00	2,808.60	97.13	58.29	17.83	-817.93	-2,359.67	9,282.26	9,197.79	84.47	109.891		
12,800.00	6,990.18	2,809.00	2,808.60	98.68	58.29	17.83	-817.93	-2,359.67	9,370.95	9,286.18	84.77	110.543		
12,900.00	6,990.21	2,809.00	2,808.60	100.22	58.29	17.83	-817.93	-2,359.67	9,459.87	9,374.80	85.07	111.202		
13,000.00	6,990.24	2,809.00	2,808.60	101.78	58.29	17.83	-817.93	-2,359.67	9,549.00	9,463.64	85.36	111.865		
13,100.00	6,990.26	2,809.00	2,808.60	103.33	58.29	17.83	-817.93	-2,359.67	9,638.35	9,552.70	85.65	112.534		
13,200.00	6,990.29	2,809.00	2,808.60	104.88	58.29	17.83	-817.93	-2,359.67	9,727.91	9,641.98	85.93	113.208		
13,300.00	6,990.32	2,809.00	2,808.60	106.44	58.29	17.83	-817.93	-2,359.67	9,817.67	9,731.46	86.21	113.886		
13,400.00	6,990.34	2,809.00	2,808.60	107.99	58.29	17.83	-817.93	-2,359.67	9,907.62	9,821.14	86.48	114.569		
13,500.00	6,990.37	2,809.00	2,808.60	109.55	58.29	17.83	-817.93	-2,359.67	9,997.77	9,911.02	86.74	115.256		
13,600.00	6,990.40	2,809.00	2,808.60	111.11	58.29	17.83	-817.93	-2,359.67	10,088.10	10,001.09	87.01	115.947		
13,700.00	6,990.42	2,809.00	2,808.60	112.67	58.29	17.83	-817.93	-2,359.67	10,178.61	10,091.35	87.26	116.643		
13,800.00	6,990.45	2,809.00	2,808.60	114.23	58.29	17.83	-817.93	-2,359.67	10,269.30	10,181.78	87.52	117.341		
13,900.00	6,990.48	2,809.00	2,808.60	115.80	58.29	17.83	-817.93	-2,359.67	10,360.16	10,272.39	87.77	118.044		
14,000.00	6,990.51	2,809.00	2,808.60	117.36	58.29	17.83	-817.93	-2,359.67	10,451.19	10,363.18	88.01	118.750		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
14,100.00	6,990.53	2,809.00	2,808.60	118.93	58.29	17.83	-817.93	-2,359.67	10,542.37	10,454.12	88.25	119.459			
14,200.00	6,990.56	2,809.00	2,808.60	120.49	58.29	17.83	-817.93	-2,359.67	10,633.72	10,545.23	88.49	120.171			
14,300.00	6,990.59	2,809.00	2,808.60	122.06	58.29	17.83	-817.93	-2,359.67	10,725.22	10,636.50	88.72	120.887			
14,400.00	6,990.61	2,809.00	2,808.60	123.63	58.29	17.83	-817.93	-2,359.67	10,816.88	10,727.93	88.95	121.605			
14,500.00	6,990.64	2,809.00	2,808.60	125.20	58.29	17.83	-817.93	-2,359.67	10,908.68	10,819.50	89.18	122.326			
14,600.00	6,990.67	2,809.00	2,808.60	126.77	58.29	17.83	-817.93	-2,359.67	11,000.62	10,911.22	89.40	123.049			
14,700.00	6,990.70	2,809.00	2,808.60	128.34	58.29	17.83	-817.93	-2,359.67	11,092.70	11,003.08	89.62	123.775			
14,800.00	6,990.72	2,809.00	2,808.60	129.91	58.29	17.83	-817.93	-2,359.67	11,184.92	11,095.08	89.84	124.503			
14,900.00	6,990.75	2,809.00	2,808.60	131.48	58.29	17.83	-817.93	-2,359.67	11,277.27	11,187.22	90.05	125.234			
15,000.00	6,990.78	2,809.00	2,808.60	133.06	58.29	17.83	-817.93	-2,359.67	11,369.75	11,279.49	90.26	125.966			
15,100.00	6,990.80	2,809.00	2,808.60	134.63	58.29	17.83	-817.93	-2,359.67	11,462.35	11,371.88	90.47	126.701			
15,200.00	6,990.83	2,809.00	2,808.60	136.20	58.29	17.83	-817.93	-2,359.67	11,555.08	11,464.41	90.67	127.437			
15,300.00	6,990.86	2,809.00	2,808.60	137.78	58.29	17.83	-817.93	-2,359.67	11,647.93	11,557.06	90.87	128.176			
15,400.00	6,990.88	2,809.00	2,808.60	139.36	58.29	17.83	-817.93	-2,359.67	11,740.90	11,649.82	91.07	128.915			
15,500.00	6,990.91	2,809.00	2,808.60	140.93	58.29	17.83	-817.93	-2,359.67	11,833.98	11,742.71	91.27	129.657			
15,600.00	6,990.94	2,809.00	2,808.60	142.51	58.29	17.83	-817.93	-2,359.67	11,927.17	11,835.71	91.47	130.400			
15,700.00	6,990.97	2,809.00	2,808.60	144.09	58.29	17.83	-817.93	-2,359.67	12,020.48	11,928.82	91.66	131.145			
15,800.00	6,990.99	2,809.00	2,808.60	145.67	58.29	17.83	-817.93	-2,359.67	12,113.89	12,022.04	91.85	131.891			
15,900.00	6,991.02	2,809.00	2,808.60	147.24	58.29	17.83	-817.93	-2,359.67	12,207.40	12,115.36	92.04	132.638			
16,000.00	6,991.05	2,809.00	2,808.60	148.82	58.29	17.83	-817.93	-2,359.67	12,301.02	12,208.79	92.22	133.386			
16,100.00	6,991.07	2,809.00	2,808.60	150.40	58.29	17.83	-817.93	-2,359.67	12,394.73	12,302.33	92.40	134.136			
16,200.00	6,991.10	2,809.00	2,808.60	151.99	58.29	17.83	-817.93	-2,359.67	12,488.54	12,395.96	92.59	134.886			
16,300.00	6,991.13	2,809.00	2,808.60	153.57	58.29	17.83	-817.93	-2,359.67	12,582.45	12,489.69	92.77	135.638			
16,400.00	6,991.15	2,809.00	2,808.60	155.15	58.29	17.83	-817.93	-2,359.67	12,676.46	12,583.51	92.94	136.390			
16,500.00	6,991.18	2,809.00	2,808.60	156.73	58.29	17.83	-817.93	-2,359.67	12,770.55	12,677.43	93.12	137.144			
16,600.00	6,991.21	2,809.00	2,808.60	158.31	58.29	17.83	-817.93	-2,359.67	12,864.73	12,771.44	93.29	137.898			
16,700.00	6,991.24	2,809.00	2,808.60	159.90	58.29	17.83	-817.93	-2,359.67	12,959.00	12,865.54	93.46	138.652			
16,800.00	6,991.26	2,809.00	2,808.60	161.48	58.29	17.83	-817.93	-2,359.67	13,053.35	12,959.72	93.63	139.408			
16,900.00	6,991.29	2,809.00	2,808.60	163.06	58.29	17.83	-817.93	-2,359.67	13,147.79	13,053.99	93.80	140.164			
17,000.00	6,991.32	2,809.00	2,808.60	164.65	58.29	17.83	-817.93	-2,359.67	13,242.31	13,148.34	93.97	140.920			
17,100.00	6,991.34	2,809.00	2,808.60	166.23	58.29	17.83	-817.93	-2,359.67	13,336.91	13,242.78	94.14	141.677			
17,200.00	6,991.37	2,809.00	2,808.60	167.82	58.29	17.83	-817.93	-2,359.67	13,431.59	13,337.29	94.30	142.435			
17,300.00	6,991.40	2,809.00	2,808.60	169.40	58.29	17.83	-817.93	-2,359.67	13,526.34	13,431.88	94.46	143.193			
17,400.00	6,991.42	2,809.00	2,808.60	170.99	58.29	17.83	-817.93	-2,359.67	13,621.17	13,526.55	94.62	143.951			
17,500.00	6,991.45	2,809.00	2,808.60	172.57	58.29	17.83	-817.93	-2,359.67	13,716.08	13,621.29	94.78	144.709			
17,600.00	6,991.48	2,809.00	2,808.60	174.16	58.29	17.83	-817.93	-2,359.67	13,811.05	13,716.11	94.94	145.468			
17,700.00	6,991.51	2,809.00	2,808.60	175.75	58.29	17.83	-817.93	-2,359.67	13,906.10	13,811.00	95.10	146.227			
17,800.00	6,991.53	2,809.00	2,808.60	177.33	58.29	17.83	-817.93	-2,359.67	14,001.21	13,905.96	95.26	146.986			
17,900.00	6,991.56	2,809.00	2,808.60	178.92	58.29	17.83	-817.93	-2,359.67	14,096.39	14,000.98	95.41	147.745			
18,000.00	6,991.59	2,809.00	2,808.60	180.51	58.29	17.83	-817.93	-2,359.67	14,191.64	14,096.08	95.56	148.504			
18,100.00	6,991.61	2,809.00	2,808.60	182.10	58.29	17.83	-817.93	-2,359.67	14,286.95	14,191.24	95.72	149.263			
18,200.00	6,991.64	2,809.00	2,808.60	183.68	58.29	17.83	-817.93	-2,359.67	14,382.33	14,286.46	95.87	150.022			
18,300.00	6,991.67	2,809.00	2,808.60	185.27	58.29	17.83	-817.93	-2,359.67	14,477.77	14,381.75	96.02	150.781			
18,400.00	6,991.69	2,809.00	2,808.60	186.86	58.29	17.83	-817.93	-2,359.67	14,573.27	14,477.10	96.17	151.540			
18,500.00	6,991.72	2,809.00	2,808.60	188.45	58.29	17.83	-817.93	-2,359.67	14,668.83	14,572.52	96.32	152.299			
18,600.00	6,991.75	2,809.00	2,808.60	190.04	58.29	17.83	-817.93	-2,359.67	14,764.45	14,667.99	96.46	153.058			
18,700.00	6,991.78	2,809.00	2,808.60	191.63	58.29	17.83	-817.93	-2,359.67	14,860.13	14,763.52	96.61	153.816			
18,800.00	6,991.80	2,809.00	2,808.60	193.22	58.29	17.83	-817.93	-2,359.67	14,955.86	14,859.11	96.76	154.574			
18,900.00	6,991.83	2,809.00	2,808.60	194.81	58.29	17.83	-817.93	-2,359.67	15,051.65	14,954.75	96.90	155.332			
19,000.00	6,991.86	2,809.00	2,808.60	196.40	58.29	17.83	-817.93	-2,359.67	15,147.49	15,050.45	97.04	156.089			
19,100.00	6,991.88	2,809.00	2,808.60	197.99	58.29	17.83	-817.93	-2,359.67	15,243.39	15,146.20	97.19	156.847			
19,200.00	6,991.91	2,809.00	2,808.60	199.58	58.29	17.83	-817.93	-2,359.67	15,339.34	15,242.01	97.33	157.604			

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:			
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	Warning	
19,300.00	6,991.94	2,809.00	2,808.60	201.17	58.29	17.83	-817.93	-2,359.67	15,435.34	15,337.87	97.47	158.360		
19,342.28	6,991.95	2,809.00	2,808.60	201.84	58.29	17.83	-817.93	-2,359.67	15,475.94	15,378.41	97.53	158.680		
19,400.00	6,991.97	2,809.00	2,808.60	202.76	58.29	17.83	-817.93	-2,359.67	15,531.39	15,433.78	97.61	159.116		
19,500.00	6,991.99	2,809.00	2,808.60	204.35	58.29	17.83	-817.93	-2,359.67	15,627.49	15,529.74	97.75	159.872		
19,542.28	6,992.00	2,809.00	2,808.60	205.03	58.29	17.83	-817.93	-2,359.67	15,668.13	15,570.32	97.81	160.191		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit #350A - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 100-MWD OWSG Rev5													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	283.78	283.77	0.00	1.81	88.87	143.13	7,288.62	7,290.06				
100.00	100.00	365.03	365.02	0.25	2.14	88.87	143.54	7,288.96	7,290.49	7,288.18	2.31	3,156.936	
200.00	200.00	428.09	428.08	0.61	2.37	88.87	143.68	7,289.42	7,291.25	7,288.36	2.89	2,519.337	
300.00	300.00	500.00	499.98	0.97	2.61	88.87	143.61	7,290.56	7,292.74	7,289.24	3.50	2,083.807	
400.00	400.00	541.56	541.53	1.33	2.74	88.87	143.55	7,291.46	7,294.73	7,290.73	4.00	1,824.910	
500.00	500.00	600.00	599.95	1.68	2.93	88.87	143.61	7,292.85	7,297.17	7,292.62	4.55	1,603.393	
600.00	600.00	668.86	668.78	2.04	3.16	88.87	143.72	7,294.82	7,300.09	7,294.95	5.14	1,420.900	
700.00	700.00	700.00	699.91	2.40	3.26	88.87	143.74	7,295.89	7,303.72	7,298.12	5.60	1,304.570	
800.00	799.98	765.09	764.94	2.76	3.47	118.79	143.62	7,298.58	7,308.79	7,302.62	6.17	1,183.822	
900.00	899.92	800.00	799.81	3.12	3.59	118.80	143.46	7,300.31	7,315.53	7,308.88	6.65	1,100.760	
1,000.00	999.86	844.30	844.03	3.47	3.77	118.81	143.14	7,302.87	7,323.07	7,315.87	7.20	1,016.645	
1,100.00	1,099.80	900.00	899.59	3.83	4.02	118.83	142.57	7,306.77	7,331.57	7,323.75	7.81	938.274	
1,200.00	1,199.74	932.09	931.58	4.19	4.16	118.84	142.17	7,309.26	7,340.73	7,332.42	8.31	883.291	
1,300.00	1,299.68	1,000.00	999.27	4.55	4.45	118.87	141.19	7,314.72	7,350.43	7,341.46	8.97	819.446	
1,400.00	1,399.61	1,044.96	1,044.06	4.91	4.61	118.88	140.52	7,318.59	7,360.72	7,351.24	9.48	776.390	
1,500.00	1,499.55	1,100.00	1,098.84	5.27	4.80	118.90	139.80	7,323.81	7,371.79	7,361.76	10.03	735.189	
1,600.00	1,599.49	1,100.00	1,098.84	5.63	4.80	118.90	139.80	7,323.81	7,383.73	7,373.35	10.37	711.767	
1,700.00	1,699.43	1,169.14	1,167.58	5.99	5.09	118.93	138.78	7,331.19	7,396.20	7,385.18	11.02	671.089	
1,800.00	1,799.37	1,216.31	1,214.41	6.35	5.29	118.95	137.91	7,336.75	7,409.60	7,398.02	11.57	640.283	
1,900.00	1,899.31	1,300.00	1,297.45	6.71	5.64	118.98	136.24	7,347.01	7,423.50	7,411.22	12.29	604.231	
2,000.00	1,999.25	1,333.40	1,330.57	7.07	5.79	118.99	135.55	7,351.29	7,437.89	7,425.12	12.77	582.246	
2,100.00	2,099.19	1,400.00	1,396.52	7.42	6.07	119.02	134.13	7,360.46	7,453.18	7,439.77	13.41	555.817	
2,200.00	2,199.13	1,400.00	1,396.52	7.78	6.07	119.02	134.13	7,360.46	7,469.05	7,455.30	13.75	543.341	
2,300.00	2,299.07	1,468.71	1,464.45	8.14	6.36	119.05	132.83	7,370.65	7,485.61	7,471.22	14.40	520.013	
2,400.00	2,399.01	1,500.00	1,495.37	8.50	6.50	119.06	132.37	7,375.49	7,502.89	7,488.02	14.87	504.517	
2,500.00	2,498.94	1,555.52	1,550.15	8.86	6.74	119.08	131.64	7,384.46	7,520.83	7,505.37	15.46	486.394	
2,600.00	2,598.88	1,600.00	1,593.97	9.22	6.94	119.10	131.08	7,392.08	7,539.58	7,523.58	16.00	471.207	
2,700.00	2,698.82	1,646.03	1,639.26	9.58	7.14	119.11	130.38	7,400.28	7,559.02	7,542.47	16.55	456.790	
2,800.00	2,798.76	1,700.00	1,692.30	9.94	7.38	119.14	129.26	7,410.20	7,579.06	7,561.93	17.13	442.370	
2,900.00	2,898.70	1,754.97	1,746.25	10.30	7.61	119.16	127.84	7,420.63	7,599.67	7,581.96	17.71	429.217	
3,000.00	2,998.64	1,800.00	1,790.40	10.66	7.80	119.18	126.49	7,429.37	7,620.81	7,602.58	18.23	417.984	
3,100.00	3,098.58	1,844.84	1,834.30	11.02	8.01	119.20	125.02	7,438.37	7,642.63	7,623.85	18.78	406.949	
3,200.00	3,198.52	1,900.00	1,888.18	11.38	8.26	119.23	123.04	7,450.03	7,665.30	7,645.92	19.38	395.516	
3,300.00	3,298.46	1,927.50	1,914.99	11.75	8.39	119.25	122.02	7,456.04	7,688.59	7,668.75	19.84	387.579	
3,400.00	3,398.40	2,000.00	1,985.62	12.11	8.74	119.29	119.45	7,472.23	7,712.53	7,692.00	20.53	375.658	
3,500.00	3,498.34	2,000.00	1,985.62	12.47	8.74	119.29	119.45	7,472.23	7,737.10	7,716.26	20.84	371.300	
3,600.00	3,598.27	2,056.21	2,040.23	12.83	9.01	119.32	117.35	7,485.35	7,762.29	7,740.83	21.45	361.815	
3,700.00	3,698.21	2,100.00	2,082.65	13.19	9.23	119.34	115.49	7,496.09	7,788.38	7,766.38	22.00	354.025	
3,800.00	3,798.15	2,135.55	2,117.02	13.55	9.40	119.36	113.98	7,505.06	7,815.17	7,792.67	22.50	347.348	
3,900.00	3,898.09	2,200.00	2,179.25	13.91	9.72	119.39	111.71	7,521.66	7,842.55	7,819.38	23.16	338.588	
4,000.00	3,998.03	2,200.00	2,179.25	14.27	9.72	119.39	111.71	7,521.66	7,870.62	7,847.16	23.46	335.557	
4,100.00	4,097.97	2,265.05	2,241.90	14.63	10.04	119.43	109.67	7,539.04	7,899.16	7,875.04	24.11	327.615	
4,200.00	4,197.91	2,300.00	2,275.46	14.99	10.21	119.44	108.53	7,548.73	7,928.54	7,903.95	24.60	322.353	
4,300.00	4,297.85	2,355.41	2,328.58	15.35	10.48	119.47	106.89	7,564.41	7,958.53	7,933.33	25.20	315.831	
4,400.00	4,397.79	2,400.00	2,371.27	15.71	10.69	119.49	105.83	7,577.25	7,989.04	7,963.30	25.74	310.397	
4,500.00	4,497.73	2,463.96	2,432.41	16.07	10.99	119.51	104.56	7,595.98	8,020.01	7,993.64	26.37	304.086	
4,600.00	4,597.66	2,500.00	2,466.82	16.43	11.16	119.53	103.90	7,606.69	8,051.51	8,024.65	26.85	299.836	
4,700.00	4,697.60	2,563.15	2,527.00	16.79	11.46	119.55	102.60	7,625.80	8,083.48	8,055.99	27.49	294.079	
4,800.00	4,797.54	2,600.00	2,562.03	17.15	11.63	119.57	101.66	7,637.16	8,116.06	8,088.09	27.97	290.166	
4,900.00	4,897.48	2,661.26	2,620.16	17.51	11.92	119.60	99.58	7,656.37	8,149.13	8,120.54	28.60	284.965	
5,000.00	4,997.42	2,700.00	2,656.85	17.87	12.11	119.62	97.85	7,668.71	8,182.75	8,153.66	29.09	281.282	
5,100.00	5,097.36	2,749.07	2,703.19	18.23	12.35	119.65	95.17	7,684.61	8,216.93	8,187.27	29.66	277.045	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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
Measured Depth (usft)	Reference Vertical Depth (usft)	Measured Depth (usft)	Offset 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)					
5,200.00	5,197.30	2,800.00	2,751.12	18.59	12.61	119.68	91.77	7,701.50	8,251.76	8,221.52	30.24	272.894			
5,300.00	5,297.24	2,800.00	2,751.12	18.95	12.61	119.68	91.77	7,701.50	8,287.28	8,256.79	30.50	271.747			
5,402.82	5,400.00	2,846.01	2,794.22	19.32	12.88	119.72	88.31	7,717.23	8,324.46	8,293.37	31.09	267.793			
5,500.00	5,497.13	2,900.00	2,844.49	19.67	13.18	119.93	83.99	7,736.44	8,360.37	8,328.65	31.72	263.601			
5,600.00	5,597.11	2,900.00	2,844.49	20.03	13.18	120.10	83.99	7,736.44	8,397.31	8,365.34	31.96	262.709			
5,700.00	5,697.10	2,900.00	2,844.49	20.39	13.18	120.28	83.99	7,736.44	8,434.87	8,402.66	32.21	261.888			
5,802.82	5,799.92	2,963.12	2,902.93	20.75	13.52	90.49	79.22	7,759.79	8,473.46	8,440.57	32.89	257.643			
5,900.00	5,897.09	3,645.00	3,540.64	21.10	17.80	90.71	46.03	7,995.83	8,508.44	8,470.06	38.38	221.707			
6,000.00	5,997.09	3,645.00	3,540.64	21.45	17.80	90.71	46.03	7,995.83	8,540.26	8,501.62	38.64	221.018			
6,100.00	6,097.09	3,645.00	3,540.64	21.81	17.80	90.71	46.03	7,995.83	8,573.12	8,534.23	38.90	220.393			
6,200.00	6,197.09	3,645.00	3,540.64	22.16	17.80	90.71	46.03	7,995.83	8,607.03	8,567.88	39.15	219.830			
6,300.00	6,297.09	3,645.00	3,540.64	22.52	17.80	90.71	46.03	7,995.83	8,641.96	8,602.56	39.40	219.328			
6,354.91	6,352.00	3,645.00	3,540.64	22.72	17.80	90.71	46.03	7,995.83	8,661.57	8,622.03	39.54	219.076			
6,400.00	6,397.06	3,645.00	3,540.64	22.87	17.80	11.43	46.03	7,995.83	8,676.43	8,636.79	39.64	218.880			
6,450.00	6,446.74	3,645.00	3,540.64	23.04	17.80	11.19	46.03	7,995.83	8,689.66	8,649.92	39.75	218.620			
6,500.00	6,495.84	3,645.00	3,540.64	23.20	17.80	11.01	46.03	7,995.83	8,699.42	8,659.57	39.85	218.280			
6,550.00	6,544.06	3,645.00	3,540.64	23.36	17.80	10.91	46.03	7,995.83	8,705.66	8,665.70	39.96	217.867			
6,600.00	6,591.08	3,645.00	3,540.64	23.51	17.80	10.86	46.03	7,995.83	8,708.34	8,668.28	40.06	217.385			
6,650.00	6,636.64	3,645.00	3,540.64	23.66	17.80	10.88	46.03	7,995.83	8,707.46	8,667.30	40.16	216.841			
6,700.00	6,680.44	3,645.00	3,540.64	23.82	17.80	10.95	46.03	7,995.83	8,703.01	8,662.76	40.25	216.238			
6,750.00	6,722.22	3,645.00	3,540.64	23.99	17.80	11.09	46.03	7,995.83	8,695.02	8,654.69	40.33	215.580			
6,800.00	6,761.71	3,645.00	3,540.64	24.16	17.80	11.30	46.03	7,995.83	8,683.53	8,643.11	40.41	214.871			
6,850.00	6,798.68	3,645.00	3,540.64	24.33	17.80	11.58	46.03	7,995.83	8,668.59	8,628.10	40.49	214.114			
6,900.00	6,832.89	3,645.00	3,540.64	24.50	17.80	11.94	46.03	7,995.83	8,650.28	8,609.73	40.55	213.310			
6,950.00	6,864.14	3,645.00	3,540.64	24.69	17.80	12.39	46.03	7,995.83	8,628.70	8,588.09	40.61	212.462			
7,000.00	6,892.23	3,645.00	3,540.64	24.88	17.80	12.96	46.03	7,995.83	8,603.95	8,563.28	40.67	211.573			
7,050.00	6,916.99	3,645.00	3,540.64	25.08	17.80	13.65	46.03	7,995.83	8,576.15	8,535.44	40.71	210.645			
7,100.00	6,938.27	3,645.00	3,540.64	25.29	17.80	14.50	46.03	7,995.83	8,545.45	8,504.70	40.75	209.680			
7,150.00	6,955.93	3,645.00	3,540.64	25.51	17.80	15.55	46.03	7,995.83	8,512.01	8,471.22	40.79	208.681			
7,200.00	6,969.87	3,645.00	3,540.64	25.75	17.80	16.85	46.03	7,995.83	8,476.01	8,435.19	40.82	207.649			
7,250.00	6,980.00	3,645.00	3,540.64	25.99	17.80	18.49	46.03	7,995.83	8,437.62	8,396.78	40.84	206.589			
7,300.00	6,986.25	3,645.00	3,540.64	26.25	17.80	20.58	46.03	7,995.83	8,397.07	8,356.21	40.86	205.501			
7,354.68	6,988.62	3,645.00	3,540.64	26.53	17.80	23.59	46.03	7,995.83	8,350.49	8,309.62	40.88	204.284			
7,400.00	6,988.64	3,645.00	3,540.64	26.78	17.80	23.59	46.03	7,995.83	8,311.04	8,270.16	40.89	203.272			
7,500.00	6,988.67	3,645.00	3,540.64	27.40	17.80	23.59	46.03	7,995.83	8,224.20	8,183.29	40.91	201.051			
7,600.00	6,988.71	3,645.00	3,540.64	28.08	17.80	23.59	46.03	7,995.83	8,137.66	8,096.72	40.94	198.787			
7,700.00	6,988.74	3,645.00	3,540.64	28.84	17.80	23.59	46.03	7,995.83	8,051.43	8,010.45	40.98	196.477			
7,800.00	6,988.78	3,645.00	3,540.64	29.67	17.80	23.59	46.03	7,995.83	7,965.52	7,924.49	41.03	194.121			
7,900.00	6,988.81	3,645.00	3,540.64	30.55	17.80	23.59	46.03	7,995.83	7,879.95	7,838.85	41.10	191.721			
8,000.00	6,988.85	3,645.00	3,540.64	31.49	17.80	23.59	46.03	7,995.83	7,794.72	7,753.54	41.18	189.274			
8,100.00	6,988.88	3,645.00	3,540.64	32.48	17.80	23.59	46.03	7,995.83	7,709.84	7,668.57	41.28	186.783			
8,200.00	6,988.91	3,645.00	3,540.64	33.51	17.80	23.59	46.03	7,995.83	7,625.33	7,583.95	41.39	184.247			
8,211.68	6,988.92	3,645.00	3,540.64	33.63	17.80	23.59	46.03	7,995.83	7,615.48	7,574.08	41.40	183.948			
8,300.00	6,988.95	3,645.00	3,540.64	34.58	17.80	21.02	46.03	7,995.83	7,540.92	7,499.41	41.51	181.684			
8,400.00	6,988.98	3,645.00	3,540.64	35.70	17.80	18.01	46.03	7,995.83	7,456.22	7,414.59	41.62	179.131			
8,500.00	6,989.01	3,645.00	3,540.64	36.84	17.80	14.93	46.03	7,995.83	7,371.32	7,329.58	41.74	176.602			
8,600.00	6,989.04	3,645.00	3,540.64	38.02	17.80	11.79	46.03	7,995.83	7,286.33	7,244.48	41.85	174.105			
8,700.00	6,989.07	3,645.00	3,540.64	39.22	17.80	8.62	46.03	7,995.83	7,201.34	7,159.38	41.95	171.649			
8,772.79	6,989.09	3,645.00	3,540.64	40.11	17.80	6.30	46.03	7,995.83	7,139.54	7,097.52	42.02	169.888			
8,800.00	6,989.10	3,645.00	3,540.64	40.44	17.80	6.30	46.03	7,995.83	7,116.47	7,074.42	42.05	169.234			
8,900.00	6,989.13	3,645.00	3,540.64	41.68	17.80	6.30	46.03	7,995.83	7,031.93	6,989.78	42.15	166.817			
9,000.00	6,989.15	3,645.00	3,540.64	42.95	17.80	6.30	46.03	7,995.83	6,947.80	6,905.54	42.27	164.377			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)		
9,100.00	6,989.18	3,645.00	3,540.64	44.24	17.80	6.30	46.03	7,995.83	6,864.11	6,821.71	42.39	161.915	
9,200.00	6,989.21	3,645.00	3,540.64	45.55	17.80	6.30	46.03	7,995.83	6,780.85	6,738.32	42.53	159.433	
9,300.00	6,989.24	3,645.00	3,540.64	46.88	17.80	6.30	46.03	7,995.83	6,698.05	6,655.37	42.68	156.930	
9,400.00	6,989.26	3,645.00	3,540.64	48.23	17.80	6.30	46.03	7,995.83	6,615.72	6,572.88	42.85	154.409	
9,500.00	6,989.29	3,645.00	3,540.64	49.59	17.80	6.30	46.03	7,995.83	6,533.89	6,490.87	43.02	151.870	
9,600.00	6,989.32	3,645.00	3,540.64	50.96	17.80	6.30	46.03	7,995.83	6,452.57	6,409.36	43.21	149.314	
9,700.00	6,989.34	3,645.00	3,540.64	52.35	17.80	6.30	46.03	7,995.83	6,371.79	6,328.36	43.42	146.745	
9,800.00	6,989.37	3,645.00	3,540.64	53.75	17.80	6.30	46.03	7,995.83	6,291.55	6,247.91	43.64	144.163	
9,900.00	6,989.40	3,645.00	3,540.64	55.16	17.80	6.30	46.03	7,995.83	6,211.89	6,168.01	43.88	141.570	
10,000.00	6,989.42	3,645.00	3,540.64	56.58	17.80	6.30	46.03	7,995.83	6,132.82	6,088.69	44.13	138.968	
10,100.00	6,989.45	3,645.00	3,540.64	58.01	17.80	6.30	46.03	7,995.83	6,054.37	6,009.97	44.40	136.360	
10,200.00	6,989.48	3,645.00	3,540.64	59.45	17.80	6.30	46.03	7,995.83	5,976.57	5,931.89	44.69	133.748	
10,300.00	6,989.51	3,645.00	3,540.64	60.90	17.80	6.30	46.03	7,995.83	5,899.44	5,854.45	44.99	131.134	
10,400.00	6,989.53	3,645.00	3,540.64	62.35	17.80	6.30	46.03	7,995.83	5,823.00	5,777.69	45.31	128.521	
10,500.00	6,989.56	3,645.00	3,540.64	63.81	17.80	6.30	46.03	7,995.83	5,747.28	5,701.64	45.65	125.912	
10,600.00	6,989.59	3,645.00	3,540.64	65.28	17.80	6.30	46.03	7,995.83	5,672.32	5,626.32	46.00	123.309	
10,700.00	6,989.61	3,645.00	3,540.64	66.76	17.80	6.30	46.03	7,995.83	5,598.14	5,551.76	46.37	120.715	
10,800.00	6,989.64	3,645.00	3,540.64	68.24	17.80	6.30	46.03	7,995.83	5,524.77	5,478.00	46.77	118.134	
10,900.00	6,989.67	3,645.00	3,540.64	69.73	17.80	6.30	46.03	7,995.83	5,452.25	5,405.07	47.18	115.568	
11,000.00	6,989.70	3,645.00	3,540.64	71.22	17.80	6.30	46.03	7,995.83	5,380.61	5,333.01	47.61	113.020	
11,100.00	6,989.72	3,645.00	3,540.64	72.71	17.80	6.30	46.03	7,995.83	5,309.89	5,261.84	48.06	110.493	
11,200.00	6,989.75	3,645.00	3,540.64	74.22	17.80	6.30	46.03	7,995.83	5,240.12	5,191.60	48.52	107.991	
11,300.00	6,989.78	3,645.00	3,540.64	75.72	17.80	6.30	46.03	7,995.83	5,171.35	5,122.34	49.01	105.516	
11,400.00	6,989.80	3,645.00	3,540.64	77.23	17.80	6.30	46.03	7,995.83	5,103.61	5,054.09	49.51	103.072	
11,500.00	6,989.83	3,645.00	3,540.64	78.74	17.80	6.30	46.03	7,995.83	5,036.94	4,986.90	50.04	100.662	
11,600.00	6,989.86	3,645.00	3,540.64	80.26	17.80	6.30	46.03	7,995.83	4,971.39	4,920.81	50.58	98.287	
11,700.00	6,989.88	3,645.00	3,540.64	81.78	17.80	6.30	46.03	7,995.83	4,907.00	4,855.86	51.14	95.952	
11,800.00	6,989.91	3,645.00	3,540.64	83.30	17.80	6.30	46.03	7,995.83	4,843.82	4,792.10	51.72	93.659	
11,900.00	6,989.94	3,645.00	3,540.64	84.83	17.80	6.30	46.03	7,995.83	4,781.90	4,729.59	52.31	91.411	
12,000.00	6,989.97	3,645.00	3,540.64	86.36	17.80	6.30	46.03	7,995.83	4,721.28	4,668.36	52.92	89.211	
12,100.00	6,989.99	3,645.00	3,540.64	87.89	17.80	6.30	46.03	7,995.83	4,662.02	4,608.47	53.55	87.060	
12,200.00	6,990.02	3,645.00	3,540.64	89.42	17.80	6.30	46.03	7,995.83	4,604.17	4,549.98	54.19	84.962	
12,300.00	6,990.05	3,645.00	3,540.64	90.96	17.80	6.30	46.03	7,995.83	4,547.79	4,492.94	54.85	82.918	
12,400.00	6,990.07	3,645.00	3,540.64	92.50	17.80	6.30	46.03	7,995.83	4,492.92	4,437.40	55.52	80.930	
12,500.00	6,990.10	3,645.00	3,540.64	94.04	17.80	6.30	46.03	7,995.83	4,439.62	4,383.43	56.20	79.001	
12,600.00	6,990.13	3,645.00	3,540.64	95.58	17.80	6.30	46.03	7,995.83	4,387.96	4,331.07	56.89	77.133	
12,700.00	6,990.15	3,645.00	3,540.64	97.13	17.80	6.30	46.03	7,995.83	4,337.99	4,280.40	57.59	75.327	
12,800.00	6,990.18	3,645.00	3,540.64	98.68	17.80	6.30	46.03	7,995.83	4,289.77	4,231.47	58.30	73.584	
12,900.00	6,990.21	3,645.00	3,540.64	100.22	17.80	6.30	46.03	7,995.83	4,243.36	4,184.34	59.01	71.906	
13,000.00	6,990.24	3,645.00	3,540.64	101.78	17.80	6.30	46.03	7,995.83	4,198.81	4,139.08	59.73	70.294	
13,100.00	6,990.26	3,645.00	3,540.64	103.33	17.80	6.30	46.03	7,995.83	4,156.20	4,095.74	60.45	68.750	
13,200.00	6,990.29	3,645.00	3,540.64	104.88	17.80	6.30	46.03	7,995.83	4,115.57	4,054.39	61.18	67.273	
13,300.00	6,990.32	3,645.00	3,540.64	106.44	17.80	6.30	46.03	7,995.83	4,076.99	4,015.09	61.90	65.866	
13,400.00	6,990.34	3,645.00	3,540.64	107.99	17.80	6.30	46.03	7,995.83	4,040.52	3,977.90	62.62	64.527	
13,500.00	6,990.37	3,645.00	3,540.64	109.55	17.80	6.30	46.03	7,995.83	4,006.22	3,942.89	63.33	63.259	
13,600.00	6,990.40	3,645.00	3,540.64	111.11	17.80	6.30	46.03	7,995.83	3,974.13	3,910.09	64.04	62.061	
13,700.00	6,990.42	3,645.00	3,540.64	112.67	17.80	6.30	46.03	7,995.83	3,944.32	3,879.59	64.73	60.933	
13,800.00	6,990.45	3,645.00	3,540.64	114.23	17.80	6.30	46.03	7,995.83	3,916.84	3,851.42	65.42	59.875	
13,900.00	6,990.48	3,645.00	3,540.64	115.80	17.80	6.30	46.03	7,995.83	3,891.73	3,825.64	66.09	58.887	
14,000.00	6,990.51	3,645.00	3,540.64	117.36	17.80	6.30	46.03	7,995.83	3,869.05	3,802.30	66.74	57.968	
14,100.00	6,990.53	3,645.00	3,540.64	118.93	17.80	6.30	46.03	7,995.83	3,848.83	3,781.44	67.38	57.119	
14,200.00	6,990.56	3,645.00	3,540.64	120.49	17.80	6.30	46.03	7,995.83	3,831.11	3,763.11	68.00	56.337	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	
14,300.00	6,990.59	3,645.00	3,540.64	122.06	17.80	6.30	46.03	7,995.83	3,815.94	3,747.33	68.60	55.623		
14,400.00	6,990.61	3,645.00	3,540.64	123.63	17.80	6.30	46.03	7,995.83	3,803.33	3,734.15	69.18	54.975		
14,500.00	6,990.64	3,645.00	3,540.64	125.20	17.80	6.30	46.03	7,995.83	3,793.32	3,723.58	69.74	54.392		
14,600.00	6,990.67	3,645.00	3,540.64	126.77	17.80	6.30	46.03	7,995.83	3,785.92	3,715.65	70.28	53.871		
14,700.00	6,990.70	3,645.00	3,540.64	128.34	17.80	6.30	46.03	7,995.83	3,781.16	3,710.37	70.79	53.412		
14,800.00	6,990.72	3,645.00	3,540.64	129.91	17.80	6.30	46.03	7,995.83	3,779.04	3,707.75	71.29	53.013		
14,830.20	6,990.73	3,645.00	3,540.64	130.38	17.80	6.30	46.03	7,995.83	3,778.92	3,707.49	71.43	52.904	CC, ES	
14,900.00	6,990.75	3,645.00	3,540.64	131.48	17.80	6.30	46.03	7,995.83	3,779.56	3,707.80	71.76	52.671		
15,000.00	6,990.78	3,645.00	3,540.64	133.06	17.80	6.30	46.03	7,995.83	3,782.73	3,710.51	72.21	52.383		
15,100.00	6,990.80	3,645.00	3,540.64	134.63	17.80	6.30	46.03	7,995.83	3,788.53	3,715.88	72.65	52.147		
15,200.00	6,990.83	3,645.00	3,540.64	136.20	17.80	6.30	46.03	7,995.83	3,796.96	3,723.89	73.07	51.962		
15,300.00	6,990.86	3,645.00	3,540.64	137.78	17.80	6.30	46.03	7,995.83	3,808.00	3,734.52	73.48	51.823		
15,400.00	6,990.88	3,645.00	3,540.64	139.36	17.80	6.30	46.03	7,995.83	3,821.63	3,747.75	73.88	51.728		
15,500.00	6,990.91	3,645.00	3,540.64	140.93	17.80	6.30	46.03	7,995.83	3,837.81	3,763.54	74.27	51.675		
15,600.00	6,990.94	3,645.00	3,540.64	142.51	17.80	6.30	46.03	7,995.83	3,856.52	3,781.87	74.65	51.661	SF	
15,700.00	6,990.97	3,645.00	3,540.64	144.09	17.80	6.30	46.03	7,995.83	3,877.72	3,802.69	75.03	51.686		
15,800.00	6,990.99	3,645.00	3,540.64	145.67	17.80	6.30	46.03	7,995.83	3,901.36	3,825.97	75.39	51.746		
15,900.00	6,991.02	3,645.00	3,540.64	147.24	17.80	6.30	46.03	7,995.83	3,927.41	3,851.66	75.76	51.843		
16,000.00	6,991.05	3,645.00	3,540.64	148.82	17.80	6.30	46.03	7,995.83	3,955.82	3,879.71	76.11	51.974		
16,100.00	6,991.07	3,645.00	3,540.64	150.40	17.80	6.30	46.03	7,995.83	3,986.54	3,910.08	76.46	52.140		
16,200.00	6,991.10	3,645.00	3,540.64	151.99	17.80	6.30	46.03	7,995.83	4,019.51	3,942.71	76.79	52.342		
16,300.00	6,991.13	3,645.00	3,540.64	153.57	17.80	6.30	46.03	7,995.83	4,054.67	3,977.56	77.12	52.578		
16,400.00	6,991.15	3,645.00	3,540.64	155.15	17.80	6.30	46.03	7,995.83	4,091.98	4,014.56	77.43	52.849		
16,500.00	6,991.18	3,645.00	3,540.64	156.73	17.80	6.30	46.03	7,995.83	4,131.38	4,053.66	77.72	53.155		
16,600.00	6,991.21	3,645.00	3,540.64	158.31	17.80	6.30	46.03	7,995.83	4,172.80	4,094.80	78.00	53.497		
16,700.00	6,991.24	3,645.00	3,540.64	159.90	17.80	6.30	46.03	7,995.83	4,216.18	4,137.92	78.26	53.874		
16,800.00	6,991.26	3,645.00	3,540.64	161.48	17.80	6.30	46.03	7,995.83	4,261.47	4,182.97	78.50	54.285		
16,900.00	6,991.29	3,645.00	3,540.64	163.06	17.80	6.30	46.03	7,995.83	4,308.61	4,229.88	78.72	54.731		
17,000.00	6,991.32	3,645.00	3,540.64	164.65	17.80	6.30	46.03	7,995.83	4,357.53	4,278.60	78.93	55.210		
17,100.00	6,991.34	3,645.00	3,540.64	166.23	17.80	6.30	46.03	7,995.83	4,408.17	4,329.06	79.11	55.723		
17,200.00	6,991.37	3,645.00	3,540.64	167.82	17.80	6.30	46.03	7,995.83	4,460.49	4,381.21	79.27	56.267		
17,300.00	6,991.40	3,645.00	3,540.64	169.40	17.80	6.30	46.03	7,995.83	4,514.41	4,434.99	79.42	56.844		
17,400.00	6,991.42	3,645.00	3,540.64	170.99	17.80	6.30	46.03	7,995.83	4,569.88	4,490.34	79.55	57.450		
17,500.00	6,991.45	3,645.00	3,540.64	172.57	17.80	6.30	46.03	7,995.83	4,626.86	4,547.20	79.65	58.087		
17,600.00	6,991.48	3,645.00	3,540.64	174.16	17.80	6.30	46.03	7,995.83	4,685.27	4,605.52	79.75	58.752		
17,700.00	6,991.51	3,645.00	3,540.64	175.75	17.80	6.30	46.03	7,995.83	4,745.07	4,665.25	79.82	59.444		
17,800.00	6,991.53	3,645.00	3,540.64	177.33	17.80	6.30	46.03	7,995.83	4,806.21	4,726.32	79.89	60.164		
17,900.00	6,991.56	3,645.00	3,540.64	178.92	17.80	6.30	46.03	7,995.83	4,868.63	4,788.70	79.93	60.909		
18,000.00	6,991.59	3,645.00	3,540.64	180.51	17.80	6.30	46.03	7,995.83	4,932.30	4,852.33	79.97	61.679		
18,100.00	6,991.61	3,645.00	3,540.64	182.10	17.80	6.30	46.03	7,995.83	4,997.15	4,917.16	79.99	62.473		
18,200.00	6,991.64	3,645.00	3,540.64	183.68	17.80	6.30	46.03	7,995.83	5,063.15	4,983.15	80.00	63.290		
18,300.00	6,991.67	3,645.00	3,540.64	185.27	17.80	6.30	46.03	7,995.83	5,130.24	5,050.24	80.00	64.129		
18,400.00	6,991.69	3,645.00	3,540.64	186.86	17.80	6.30	46.03	7,995.83	5,198.40	5,118.41	79.99	64.989		
18,500.00	6,991.72	3,645.00	3,540.64	188.45	17.80	6.30	46.03	7,995.83	5,267.57	5,187.60	79.97	65.870		
18,600.00	6,991.75	3,645.00	3,540.64	190.04	17.80	6.30	46.03	7,995.83	5,337.72	5,257.78	79.94	66.770		
18,700.00	6,991.78	3,645.00	3,540.64	191.63	17.80	6.30	46.03	7,995.83	5,408.81	5,328.90	79.91	67.689		
18,800.00	6,991.80	3,645.00	3,540.64	193.22	17.80	6.30	46.03	7,995.83	5,480.80	5,400.93	79.86	68.626		
18,900.00	6,991.83	3,645.00	3,540.64	194.81	17.80	6.30	46.03	7,995.83	5,553.66	5,473.84	79.82	69.580		
19,000.00	6,991.86	3,645.00	3,540.64	196.40	17.80	6.30	46.03	7,995.83	5,627.35	5,547.59	79.76	70.551		
19,100.00	6,991.88	3,645.00	3,540.64	197.99	17.80	6.30	46.03	7,995.83	5,701.84	5,622.14	79.70	71.537		
19,200.00	6,991.91	3,645.00	3,540.64	199.58	17.80	6.30	46.03	7,995.83	5,777.11	5,697.46	79.64	72.539		
19,300.00	6,991.94	3,645.00	3,540.64	201.17	17.80	6.30	46.03	7,995.83	5,853.11	5,773.54	79.57	73.555		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
19,342.28	6,991.95	3,645.00	3,540.64	201.84	17.80	6.30	46.03	7,995.83	5,885.46	5,805.91	79.55	73.989		
19,400.00	6,991.97	3,645.00	3,540.64	202.76	17.80	6.30	46.03	7,995.83	5,929.83	5,850.32	79.50	74.585		
19,500.00	6,991.99	3,645.00	3,540.64	204.35	17.80	6.30	46.03	7,995.83	6,007.23	5,927.80	79.43	75.628		
19,542.28	6,992.00	3,645.00	3,540.64	205.03	17.80	6.30	46.03	7,995.83	6,040.15	5,960.75	79.40	76.072		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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	125.35	-81.92	115.47	146.08				
100.00	100.00	64.00	64.00	0.25	1.14	125.35	-81.92	115.47	141.57	140.19	1.39	102.141	
197.62	197.62	161.62	161.62	0.60	2.89	125.32	-81.81	115.47	141.51	138.01	3.50	40.480	
200.00	200.00	164.00	164.00	0.61	2.94	125.32	-81.81	115.47	141.51	137.96	3.55	39.894	
300.00	300.00	264.00	264.00	0.97	4.74	125.35	-81.92	115.47	141.57	135.86	5.71	24.794	
400.00	400.00	364.00	364.00	1.33	6.69	125.35	-81.92	115.47	141.57	133.56	8.02	17.657	
500.00	500.00	464.00	464.00	1.68	8.64	125.35	-81.92	115.47	141.57	131.25	10.33	13.711	
539.74	539.74	503.72	503.71	1.83	9.42	125.19	-81.42	115.47	141.29	130.05	11.24	12.567 CC	
600.00	600.00	563.89	563.88	2.04	10.59	125.21	-81.48	115.47	141.32	128.69	12.63	11.188	
700.00	700.00	663.74	663.73	2.40	12.53	125.29	-81.72	115.47	141.46	126.52	14.94	9.471	
800.00	799.98	764.02	763.98	2.76	14.56	155.63	-81.92	115.47	143.16	125.84	17.32	8.265 ES	
900.00	899.92	863.96	863.92	3.12	16.66	156.19	-81.92	115.47	146.35	126.57	19.77	7.401	
1,000.00	999.86	963.57	963.52	3.47	18.75	156.55	-81.31	115.47	149.19	126.97	22.22	6.714	
1,100.00	1,099.80	1,063.89	1,063.80	3.83	20.85	157.25	-81.92	115.47	152.76	128.09	24.67	6.191	
1,200.00	1,199.74	1,163.83	1,163.74	4.19	22.81	157.75	-81.92	115.47	155.99	128.98	27.00	5.777	
1,300.00	1,299.68	1,263.77	1,263.68	4.55	24.78	158.22	-81.92	115.47	159.22	129.89	29.33	5.429	
1,400.00	1,399.61	1,363.71	1,363.61	4.91	26.75	158.68	-81.92	115.47	162.47	130.81	31.65	5.133	
1,500.00	1,499.55	1,463.55	1,463.43	5.27	28.72	158.70	-80.37	115.47	164.75	130.77	33.98	4.849	
1,600.00	1,599.49	1,563.24	1,563.13	5.63	30.68	159.19	-80.59	115.47	168.15	131.85	36.30	4.632	
1,700.00	1,699.43	1,662.93	1,662.81	5.99	32.65	159.72	-81.06	115.47	171.72	133.09	38.62	4.446	
1,800.00	1,799.37	1,762.61	1,762.48	6.35	34.61	160.30	-81.77	115.47	175.45	134.51	40.94	4.285	
1,900.00	1,899.31	1,863.47	1,863.31	6.71	36.48	160.71	-81.92	115.47	178.84	135.66	43.18	4.142	
2,000.00	1,999.25	1,963.41	1,963.25	7.07	38.32	161.07	-81.92	115.47	182.13	136.77	45.37	4.015	
2,100.00	2,099.19	2,063.20	2,063.03	7.42	40.14	161.32	-81.48	115.47	185.15	137.60	47.55	3.893	
2,200.00	2,199.13	2,162.89	2,162.72	7.78	41.97	161.71	-81.71	115.47	188.61	138.87	49.74	3.792	
2,300.00	2,299.07	2,263.24	2,263.07	8.14	43.79	162.09	-81.92	115.47	192.07	140.15	51.92	3.700	
2,400.00	2,399.01	2,363.18	2,363.01	8.50	45.57	162.40	-81.92	115.47	195.39	141.34	54.05	3.615	
2,500.00	2,498.94	2,463.12	2,462.94	8.86	47.34	162.71	-81.92	115.47	198.72	142.54	56.19	3.537	
2,600.00	2,598.88	2,563.06	2,562.88	9.22	49.12	163.00	-81.92	115.47	202.06	143.73	58.32	3.464	
2,700.00	2,698.82	2,662.87	2,662.69	9.58	50.89	163.13	-81.15	115.47	204.88	144.42	60.46	3.389	
2,800.00	2,798.76	2,762.64	2,762.46	9.94	52.67	163.44	-81.31	115.47	208.32	145.73	62.59	3.328	
2,900.00	2,898.70	2,862.41	2,862.22	10.30	54.44	163.76	-81.58	115.47	211.86	147.14	64.72	3.273	
3,000.00	2,998.64	2,962.83	2,962.64	10.66	56.23	164.09	-81.92	115.47	215.45	148.58	66.87	3.220	
3,100.00	3,098.58	3,062.77	3,062.58	11.02	58.02	164.34	-81.92	115.47	218.81	149.79	69.01	3.172	
3,200.00	3,198.52	3,162.71	3,162.52	11.38	59.80	164.58	-81.92	115.47	222.17	151.01	71.16	3.122	
3,300.00	3,298.46	3,262.56	3,262.37	11.75	61.59	164.77	-81.66	115.47	225.36	152.05	73.30	3.074	
3,400.00	3,398.40	3,362.36	3,362.17	12.11	63.37	165.02	-81.76	115.47	228.79	153.35	75.44	3.033	
3,500.00	3,498.34	3,462.54	3,462.34	12.47	65.20	165.27	-81.92	115.47	232.28	154.64	77.64	2.992	
3,600.00	3,598.27	3,562.48	3,562.27	12.83	67.29	165.48	-81.92	115.47	235.65	155.58	80.08	2.943	
3,700.00	3,698.21	3,662.42	3,662.21	13.19	69.37	165.69	-81.92	115.47	239.03	156.51	82.52	2.897	
3,800.00	3,798.15	3,762.36	3,762.15	13.55	71.46	165.90	-81.92	115.47	242.42	157.45	84.96	2.853	
3,900.00	3,898.09	3,862.26	3,862.05	13.91	73.54	165.95	-81.05	115.47	245.18	157.78	87.41	2.805	
4,000.00	3,998.03	3,962.01	3,961.80	14.27	75.62	166.16	-81.13	115.47	248.63	158.78	89.85	2.767	
4,100.00	4,097.97	4,061.75	4,061.54	14.63	77.70	166.38	-81.31	115.47	252.15	159.87	92.28	2.732	
4,200.00	4,197.91	4,161.48	4,161.27	14.99	79.78	166.61	-81.61	115.47	255.76	161.03	94.72	2.700	
4,300.00	4,297.85	4,262.18	4,261.85	15.35	81.94	166.84	-81.92	115.47	259.38	162.13	97.24	2.667	
4,400.00	4,397.79	4,361.73	4,361.38	15.71	84.29	166.91	-81.25	115.47	262.29	162.34	99.95	2.624	
4,500.00	4,497.73	4,462.13	4,461.73	16.07	86.68	167.18	-81.92	115.47	266.18	163.47	102.71	2.592	
4,600.00	4,597.66	4,562.07	4,561.66	16.43	89.27	167.34	-81.92	115.47	269.58	163.93	105.66	2.552	
4,700.00	4,697.60	4,660.60	4,660.17	16.79	91.83	167.41	-81.29	115.47	272.54	163.97	108.56	2.510	
4,800.00	4,797.54	4,762.10	4,761.54	17.15	94.47	167.66	-81.92	115.47	276.40	164.82	111.57	2.477	
4,900.00	4,897.48	4,860.51	4,859.92	17.51	97.06	167.69	-81.08	115.47	279.19	164.68	114.52	2.438	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
5,000.00	4,997.42	4,962.09	4,961.42	17.87	99.68	167.96	-81.92	115.47	283.22	165.72	117.50	2.410		
5,100.00	5,097.36	5,060.69	5,060.02	18.23	102.15	168.04	-81.45	115.47	286.29	165.97	120.32	2.379		
5,200.00	5,197.30	5,162.04	5,161.30	18.59	104.64	168.25	-81.92	115.47	290.05	166.87	123.18	2.355		
5,300.00	5,297.24	5,260.32	5,259.56	18.95	107.04	168.31	-81.35	115.47	293.05	167.12	125.93	2.327		
5,402.82	5,400.00	5,364.81	5,364.00	19.32	109.45	168.53	-81.92	115.47	296.98	168.27	128.72	2.307		
5,500.00	5,497.13	5,461.94	5,461.13	19.67	111.59	168.64	-81.92	115.47	299.90	168.70	131.20	2.286 SF		
5,600.00	5,597.11	5,494.00	5,493.16	20.03	112.30	168.68	-81.92	115.47	309.62	180.53	129.09	2.399		
5,700.00	5,697.10	5,494.00	5,493.16	20.39	112.30	168.72	-81.92	115.47	346.76	230.14	116.62	2.974		
5,802.82	5,799.92	5,494.00	5,493.16	20.75	112.30	138.79	-81.92	115.47	406.97	306.18	100.79	4.038		
5,900.00	5,897.09	5,494.00	5,493.16	21.10	112.30	138.79	-81.92	115.47	477.17	389.77	87.40	5.459		
6,000.00	5,997.09	5,494.00	5,493.16	21.45	112.30	138.79	-81.92	115.47	557.92	481.55	76.37	7.306		
6,100.00	6,097.09	5,494.00	5,493.16	21.81	112.30	138.79	-81.92	115.47	644.10	576.26	67.84	9.494		
6,200.00	6,197.09	5,494.00	5,493.16	22.16	112.30	138.79	-81.92	115.47	733.79	672.53	61.27	11.977		
6,300.00	6,297.09	5,494.00	5,493.16	22.52	112.30	138.79	-81.92	115.47	825.86	769.70	56.16	14.705		
6,354.91	6,352.00	5,494.00	5,493.16	22.72	112.30	138.79	-81.92	115.47	877.15	823.30	53.85	16.290		
6,400.00	6,397.06	5,494.00	5,493.16	22.87	112.30	51.04	-81.92	115.47	919.28	867.22	52.06	17.656		
6,450.00	6,446.74	5,494.00	5,493.16	23.04	112.30	43.09	-81.92	115.47	965.48	915.37	50.11	19.266		
6,500.00	6,495.84	5,494.00	5,493.16	23.20	112.30	36.78	-81.92	115.47	1,010.96	962.75	48.21	20.970		
6,550.00	6,544.06	5,494.00	5,493.16	23.36	112.30	31.79	-81.92	115.47	1,055.53	1,009.14	46.39	22.755		
6,600.00	6,591.08	5,494.00	5,493.16	23.51	112.30	27.83	-81.92	115.47	1,099.06	1,054.37	44.69	24.595		
6,650.00	6,636.64	5,494.00	5,493.16	23.66	112.30	24.66	-81.92	115.47	1,141.41	1,098.26	43.15	26.452		
6,700.00	6,680.44	5,494.00	5,493.16	23.82	112.30	22.10	-81.92	115.47	1,182.45	1,140.63	41.83	28.269		
6,750.00	6,722.22	5,494.00	5,493.16	23.99	112.30	20.00	-81.92	115.47	1,222.09	1,181.32	40.77	29.973		
6,800.00	6,761.71	5,494.00	5,493.16	24.16	112.30	18.26	-81.92	115.47	1,260.22	1,220.18	40.04	31.477		
6,850.00	6,798.68	5,494.00	5,493.16	24.33	112.30	16.81	-81.92	115.47	1,296.74	1,257.08	39.66	32.695		
6,900.00	6,832.89	5,494.00	5,493.16	24.50	112.30	15.59	-81.92	115.47	1,331.58	1,291.89	39.68	33.554		
6,950.00	6,864.14	5,494.00	5,493.16	24.69	112.30	14.56	-81.92	115.47	1,364.65	1,324.53	40.12	34.014		
7,000.00	6,892.23	5,494.00	5,493.16	24.88	112.30	13.68	-81.92	115.47	1,395.89	1,354.92	40.97	34.073		
7,050.00	6,916.99	5,494.00	5,493.16	25.08	112.30	12.93	-81.92	115.47	1,425.23	1,383.02	42.21	33.767		
7,100.00	6,938.27	5,494.00	5,493.16	25.29	112.30	12.28	-81.92	115.47	1,452.60	1,408.79	43.81	33.159		
7,150.00	6,955.93	5,494.00	5,493.16	25.51	112.30	11.73	-81.92	115.47	1,477.96	1,432.23	45.73	32.320		
7,200.00	6,969.87	5,494.00	5,493.16	25.75	112.30	11.26	-81.92	115.47	1,501.25	1,453.32	47.93	31.323		
7,250.00	6,980.00	5,494.00	5,493.16	25.99	112.30	10.86	-81.92	115.47	1,522.43	1,472.06	50.36	30.229		
7,300.00	6,986.25	5,494.00	5,493.16	26.25	112.30	10.51	-81.92	115.47	1,541.45	1,488.45	53.00	29.085		
7,354.68	6,988.62	5,494.00	5,493.16	26.53	112.30	10.20	-81.92	115.47	1,559.74	1,503.68	56.06	27.821		
7,400.00	6,988.64	5,494.00	5,493.16	26.78	112.30	10.20	-81.92	115.47	1,574.40	1,515.71	58.68	26.828		
7,500.00	6,988.67	5,494.00	5,493.16	27.40	112.30	10.20	-81.92	115.47	1,610.77	1,546.31	64.46	24.987		
7,600.00	6,988.71	5,494.00	5,493.16	28.08	112.30	10.20	-81.92	115.47	1,652.41	1,582.32	70.09	23.576		
7,700.00	6,988.74	5,494.00	5,493.16	28.84	112.30	10.20	-81.92	115.47	1,698.92	1,623.47	75.45	22.516		
7,800.00	6,988.78	5,494.00	5,493.16	29.67	112.30	10.20	-81.92	115.47	1,749.92	1,669.43	80.49	21.741		
7,900.00	6,988.81	5,494.00	5,493.16	30.55	112.30	10.20	-81.92	115.47	1,805.02	1,719.85	85.17	21.193		
8,000.00	6,988.85	5,494.00	5,493.16	31.49	112.30	10.20	-81.92	115.47	1,863.86	1,774.37	89.49	20.828		
8,100.00	6,988.88	5,494.00	5,493.16	32.48	112.30	10.20	-81.92	115.47	1,926.09	1,832.64	93.45	20.611		
8,200.00	6,988.91	5,494.00	5,493.16	33.51	112.30	10.20	-81.92	115.47	1,991.41	1,894.34	97.07	20.516		
8,211.68	6,988.92	5,494.00	5,493.16	33.63	112.30	10.20	-81.92	115.47	1,999.23	1,901.76	97.47	20.512		
8,300.00	6,988.95	5,494.00	5,493.16	34.58	112.30	11.81	-81.92	115.47	2,059.33	1,958.97	100.35	20.521		
8,400.00	6,988.98	5,494.00	5,493.16	35.70	112.30	13.72	-81.92	115.47	2,129.28	2,025.95	103.33	20.607		
8,500.00	6,989.01	5,494.00	5,493.16	36.84	112.30	15.71	-81.92	115.47	2,200.98	2,094.96	106.02	20.760		
8,600.00	6,989.04	5,494.00	5,493.16	38.02	112.30	17.77	-81.92	115.47	2,274.19	2,165.74	108.46	20.969		
8,700.00	6,989.07	5,494.00	5,493.16	39.22	112.30	19.88	-81.92	115.47	2,348.69	2,238.02	110.66	21.224		
8,772.79	6,989.09	5,494.00	5,493.16	40.11	112.30	21.44	-81.92	115.47	2,403.59	2,291.45	112.14	21.434		
8,800.00	6,989.10	5,494.00	5,493.16	40.44	112.30	21.44	-81.92	115.47	2,424.28	2,311.62	112.66	21.518		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
8,900.00	6,989.13	5,494.00	5,493.16	41.68	112.30	21.44	-81.92	115.47	2,501.39	2,386.89	114.49 21.847
9,000.00	6,989.15	5,494.00	5,493.16	42.95	112.30	21.44	-81.92	115.47	2,580.06	2,463.89	116.17 22.209
9,100.00	6,989.18	5,494.00	5,493.16	44.24	112.30	21.44	-81.92	115.47	2,660.17	2,542.45	117.72 22.598
9,200.00	6,989.21	5,494.00	5,493.16	45.55	112.30	21.44	-81.92	115.47	2,741.59	2,622.46	119.13 23.013
9,300.00	6,989.24	5,494.00	5,493.16	46.88	112.30	21.44	-81.92	115.47	2,824.20	2,703.76	120.43 23.450
9,400.00	6,989.26	5,494.00	5,493.16	48.23	112.30	21.44	-81.92	115.47	2,907.90	2,786.27	121.63 23.908
9,500.00	6,989.29	5,494.00	5,493.16	49.59	112.30	21.44	-81.92	115.47	2,992.60	2,869.87	122.74 24.383
9,600.00	6,989.32	5,494.00	5,493.16	50.96	112.30	21.44	-81.92	115.47	3,078.22	2,954.47	123.75 24.874
9,700.00	6,989.34	5,494.00	5,493.16	52.35	112.30	21.44	-81.92	115.47	3,164.69	3,039.99	124.70 25.379
9,800.00	6,989.37	5,494.00	5,493.16	53.75	112.30	21.44	-81.92	115.47	3,251.93	3,126.36	125.57 25.897
9,900.00	6,989.40	5,494.00	5,493.16	55.16	112.30	21.44	-81.92	115.47	3,339.88	3,213.50	126.38 26.427
10,000.00	6,989.42	5,494.00	5,493.16	56.58	112.30	21.44	-81.92	115.47	3,428.50	3,301.37	127.13 26.968
10,100.00	6,989.45	5,494.00	5,493.16	58.01	112.30	21.44	-81.92	115.47	3,517.73	3,389.89	127.83 27.519
10,200.00	6,989.48	5,494.00	5,493.16	59.45	112.30	21.44	-81.92	115.47	3,607.52	3,479.03	128.48 28.078
10,300.00	6,989.51	5,494.00	5,493.16	60.90	112.30	21.44	-81.92	115.47	3,697.83	3,568.74	129.09 28.645
10,400.00	6,989.53	5,494.00	5,493.16	62.35	112.30	21.44	-81.92	115.47	3,788.64	3,658.97	129.66 29.219
10,500.00	6,989.56	5,494.00	5,493.16	63.81	112.30	21.44	-81.92	115.47	3,879.89	3,749.69	130.20 29.800
10,600.00	6,989.59	5,494.00	5,493.16	65.28	112.30	21.44	-81.92	115.47	3,971.57	3,840.87	130.70 30.388
10,700.00	6,989.61	5,494.00	5,493.16	66.76	112.30	21.44	-81.92	115.47	4,063.63	3,932.47	131.17 30.981
10,800.00	6,989.64	5,494.00	5,493.16	68.24	112.30	21.44	-81.92	115.47	4,156.07	4,024.46	131.61 31.579
10,900.00	6,989.67	5,494.00	5,493.16	69.73	112.30	21.44	-81.92	115.47	4,248.85	4,116.82	132.03 32.181
11,000.00	6,989.70	5,494.00	5,493.16	71.22	112.30	21.44	-81.92	115.47	4,341.95	4,209.52	132.42 32.788
11,100.00	6,989.72	5,494.00	5,493.16	72.71	112.30	21.44	-81.92	115.47	4,435.34	4,302.55	132.80 33.400
11,200.00	6,989.75	5,494.00	5,493.16	74.22	112.30	21.44	-81.92	115.47	4,529.02	4,395.87	133.15 34.014
11,300.00	6,989.78	5,494.00	5,493.16	75.72	112.30	21.44	-81.92	115.47	4,622.97	4,489.48	133.49 34.632
11,400.00	6,989.80	5,494.00	5,493.16	77.23	112.30	21.44	-81.92	115.47	4,717.16	4,583.36	133.81 35.254
11,500.00	6,989.83	5,494.00	5,493.16	78.74	112.30	21.44	-81.92	115.47	4,811.59	4,677.48	134.11 35.878
11,600.00	6,989.86	5,494.00	5,493.16	80.26	112.30	21.44	-81.92	115.47	4,906.24	4,771.84	134.40 36.505
11,700.00	6,989.88	5,494.00	5,493.16	81.78	112.30	21.44	-81.92	115.47	5,001.10	4,866.42	134.68 37.134
11,800.00	6,989.91	5,494.00	5,493.16	83.30	112.30	21.44	-81.92	115.47	5,096.15	4,961.21	134.94 37.766
11,900.00	6,989.94	5,494.00	5,493.16	84.83	112.30	21.44	-81.92	115.47	5,191.39	5,056.20	135.20 38.399
12,000.00	6,989.97	5,494.00	5,493.16	86.36	112.30	21.44	-81.92	115.47	5,286.81	5,151.37	135.44 39.035
12,100.00	6,989.99	5,494.00	5,493.16	87.89	112.30	21.44	-81.92	115.47	5,382.39	5,246.72	135.67 39.672
12,200.00	6,990.02	5,494.00	5,493.16	89.42	112.30	21.44	-81.92	115.47	5,478.13	5,342.24	135.90 40.311
12,300.00	6,990.05	5,494.00	5,493.16	90.96	112.30	21.44	-81.92	115.47	5,574.02	5,437.91	136.11 40.951
12,400.00	6,990.07	5,494.00	5,493.16	92.50	112.30	21.44	-81.92	115.47	5,670.05	5,533.73	136.32 41.593
12,500.00	6,990.10	5,494.00	5,493.16	94.04	112.30	21.44	-81.92	115.47	5,766.22	5,629.70	136.52 42.236
12,600.00	6,990.13	5,494.00	5,493.16	95.58	112.30	21.44	-81.92	115.47	5,862.52	5,725.80	136.72 42.880
12,700.00	6,990.15	5,494.00	5,493.16	97.13	112.30	21.44	-81.92	115.47	5,958.93	5,822.03	136.91 43.525
12,800.00	6,990.18	5,494.00	5,493.16	98.68	112.30	21.44	-81.92	115.47	6,055.47	5,918.38	137.09 44.171
12,900.00	6,990.21	5,494.00	5,493.16	100.22	112.30	21.44	-81.92	115.47	6,152.11	6,014.84	137.27 44.818
13,000.00	6,990.24	5,494.00	5,493.16	101.78	112.30	21.44	-81.92	115.47	6,248.86	6,111.42	137.44 45.466
13,100.00	6,990.26	5,494.00	5,493.16	103.33	112.30	21.44	-81.92	115.47	6,345.71	6,208.10	137.61 46.114
13,200.00	6,990.29	5,494.00	5,493.16	104.88	112.30	21.44	-81.92	115.47	6,442.66	6,304.89	137.77 46.763
13,300.00	6,990.32	5,494.00	5,493.16	106.44	112.30	21.44	-81.92	115.47	6,539.70	6,401.76	137.93 47.413
13,400.00	6,990.34	5,494.00	5,493.16	107.99	112.30	21.44	-81.92	115.47	6,636.82	6,498.74	138.09 48.063
13,500.00	6,990.37	5,494.00	5,493.16	109.55	112.30	21.44	-81.92	115.47	6,734.03	6,595.79	138.24 48.713
13,600.00	6,990.40	5,494.00	5,493.16	111.11	112.30	21.44	-81.92	115.47	6,831.32	6,692.94	138.39 49.364
13,700.00	6,990.42	5,494.00	5,493.16	112.67	112.30	21.44	-81.92	115.47	6,928.69	6,790.16	138.53 50.015
13,800.00	6,990.45	5,494.00	5,493.16	114.23	112.30	21.44	-81.92	115.47	7,026.13	6,887.46	138.67 50.666
13,900.00	6,990.48	5,494.00	5,493.16	115.80	112.30	21.44	-81.92	115.47	7,123.65	6,984.83	138.81 51.318
14,000.00	6,990.51	5,494.00	5,493.16	117.36	112.30	21.44	-81.92	115.47	7,221.23	7,082.28	138.95 51.969

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)			
14,100.00	6,990.53	5,494.00	5,493.16	118.93	112.30	21.44	-81.92	115.47	7,318.87	7,179.79	139.09	52.621	
14,200.00	6,990.56	5,494.00	5,493.16	120.49	112.30	21.44	-81.92	115.47	7,416.58	7,277.36	139.22	53.273	
14,300.00	6,990.59	5,494.00	5,493.16	122.06	112.30	21.44	-81.92	115.47	7,514.35	7,375.00	139.35	53.925	
14,400.00	6,990.61	5,494.00	5,493.16	123.63	112.30	21.44	-81.92	115.47	7,612.18	7,472.70	139.48	54.576	
14,500.00	6,990.64	5,494.00	5,493.16	125.20	112.30	21.44	-81.92	115.47	7,710.06	7,570.46	139.60	55.228	
14,600.00	6,990.67	5,494.00	5,493.16	126.77	112.30	21.44	-81.92	115.47	7,808.00	7,668.27	139.73	55.879	
14,700.00	6,990.70	5,494.00	5,493.16	128.34	112.30	21.44	-81.92	115.47	7,905.99	7,766.14	139.85	56.531	
14,800.00	6,990.72	5,494.00	5,493.16	129.91	112.30	21.44	-81.92	115.47	8,004.03	7,864.05	139.97	57.182	
14,900.00	6,990.75	5,494.00	5,493.16	131.48	112.30	21.44	-81.92	115.47	8,102.11	7,962.02	140.10	57.833	
15,000.00	6,990.78	5,494.00	5,493.16	133.06	112.30	21.44	-81.92	115.47	8,200.25	8,060.03	140.21	58.484	
15,100.00	6,990.80	5,494.00	5,493.16	134.63	112.30	21.44	-81.92	115.47	8,298.42	8,158.09	140.33	59.134	
15,200.00	6,990.83	5,494.00	5,493.16	136.20	112.30	21.44	-81.92	115.47	8,396.64	8,256.19	140.45	59.784	
15,300.00	6,990.86	5,494.00	5,493.16	137.78	112.30	21.44	-81.92	115.47	8,494.90	8,354.34	140.56	60.434	
15,400.00	6,990.88	5,494.00	5,493.16	139.36	112.30	21.44	-81.92	115.47	8,593.21	8,452.53	140.68	61.083	
15,500.00	6,990.91	5,494.00	5,493.16	140.93	112.30	21.44	-81.92	115.47	8,691.55	8,550.75	140.79	61.733	
15,600.00	6,990.94	5,494.00	5,493.16	142.51	112.30	21.44	-81.92	115.47	8,789.92	8,649.02	140.91	62.381	
15,700.00	6,990.97	5,494.00	5,493.16	144.09	112.30	21.44	-81.92	115.47	8,888.34	8,747.32	141.02	63.030	
15,800.00	6,990.99	5,494.00	5,493.16	145.67	112.30	21.44	-81.92	115.47	8,986.79	8,845.66	141.13	63.677	
15,900.00	6,991.02	5,494.00	5,493.16	147.24	112.30	21.44	-81.92	115.47	9,085.27	8,944.03	141.24	64.325	
16,000.00	6,991.05	5,494.00	5,493.16	148.82	112.30	21.44	-81.92	115.47	9,183.78	9,042.43	141.35	64.972	
16,100.00	6,991.07	5,494.00	5,493.16	150.40	112.30	21.44	-81.92	115.47	9,282.33	9,140.87	141.46	65.618	
16,200.00	6,991.10	5,494.00	5,493.16	151.99	112.30	21.44	-81.92	115.47	9,380.91	9,239.34	141.57	66.264	
16,300.00	6,991.13	5,494.00	5,493.16	153.57	112.30	21.44	-81.92	115.47	9,479.52	9,337.84	141.68	66.909	
16,400.00	6,991.15	5,494.00	5,493.16	155.15	112.30	21.44	-81.92	115.47	9,578.16	9,436.37	141.79	67.554	
16,500.00	6,991.18	5,494.00	5,493.16	156.73	112.30	21.44	-81.92	115.47	9,676.82	9,534.93	141.89	68.198	
16,600.00	6,991.21	5,494.00	5,493.16	158.31	112.30	21.44	-81.92	115.47	9,775.51	9,633.51	142.00	68.841	
16,700.00	6,991.24	5,494.00	5,493.16	159.90	112.30	21.44	-81.92	115.47	9,874.23	9,732.12	142.11	69.484	
16,800.00	6,991.26	5,494.00	5,493.16	161.48	112.30	21.44	-81.92	115.47	9,972.97	9,830.76	142.21	70.127	
16,900.00	6,991.29	5,494.00	5,493.16	163.06	112.30	21.44	-81.92	115.47	10,071.74	9,929.42	142.32	70.768	
17,000.00	6,991.32	5,494.00	5,493.16	164.65	112.30	21.44	-81.92	115.47	10,170.54	10,028.11	142.43	71.409	
17,100.00	6,991.34	5,494.00	5,493.16	166.23	112.30	21.44	-81.92	115.47	10,269.35	10,126.82	142.53	72.050	
17,200.00	6,991.37	5,494.00	5,493.16	167.82	112.30	21.44	-81.92	115.47	10,368.19	10,225.55	142.64	72.689	
17,300.00	6,991.40	5,494.00	5,493.16	169.40	112.30	21.44	-81.92	115.47	10,467.05	10,324.31	142.74	73.328	
17,400.00	6,991.42	5,494.00	5,493.16	170.99	112.30	21.44	-81.92	115.47	10,565.93	10,423.09	142.85	73.966	
17,500.00	6,991.45	5,494.00	5,493.16	172.57	112.30	21.44	-81.92	115.47	10,664.84	10,521.88	142.95	74.604	
17,600.00	6,991.48	5,494.00	5,493.16	174.16	112.30	21.44	-81.92	115.47	10,763.76	10,620.70	143.06	75.241	
17,700.00	6,991.51	5,494.00	5,493.16	175.75	112.30	21.44	-81.92	115.47	10,862.70	10,719.54	143.16	75.877	
17,800.00	6,991.53	5,494.00	5,493.16	177.33	112.30	21.44	-81.92	115.47	10,961.66	10,818.40	143.27	76.512	
17,900.00	6,991.56	5,494.00	5,493.16	178.92	112.30	21.44	-81.92	115.47	11,060.65	10,917.27	143.37	77.147	
18,000.00	6,991.59	5,494.00	5,493.16	180.51	112.30	21.44	-81.92	115.47	11,159.64	11,016.17	143.48	77.780	
18,100.00	6,991.61	5,494.00	5,493.16	182.10	112.30	21.44	-81.92	115.47	11,258.66	11,115.08	143.58	78.413	
18,200.00	6,991.64	5,494.00	5,493.16	183.68	112.30	21.44	-81.92	115.47	11,357.70	11,214.01	143.69	79.046	
18,300.00	6,991.67	5,494.00	5,493.16	185.27	112.30	21.44	-81.92	115.47	11,456.75	11,312.96	143.79	79.677	
18,400.00	6,991.69	5,494.00	5,493.16	186.86	112.30	21.44	-81.92	115.47	11,555.81	11,411.92	143.89	80.308	
18,500.00	6,991.72	5,494.00	5,493.16	188.45	112.30	21.44	-81.92	115.47	11,654.90	11,510.90	144.00	80.937	
18,600.00	6,991.75	5,494.00	5,493.16	190.04	112.30	21.44	-81.92	115.47	11,754.00	11,609.89	144.10	81.566	
18,700.00	6,991.78	5,494.00	5,493.16	191.63	112.30	21.44	-81.92	115.47	11,853.11	11,708.90	144.21	82.194	
18,800.00	6,991.80	5,494.00	5,493.16	193.22	112.30	21.44	-81.92	115.47	11,952.24	11,807.92	144.31	82.822	
18,900.00	6,991.83	5,494.00	5,493.16	194.81	112.30	21.44	-81.92	115.47	12,051.38	11,906.96	144.42	83.448	
19,000.00	6,991.86	5,494.00	5,493.16	196.40	112.30	21.44	-81.92	115.47	12,150.54	12,006.01	144.52	84.074	
19,100.00	6,991.88	5,494.00	5,493.16	197.99	112.30	21.44	-81.92	115.47	12,249.71	12,105.08	144.63	84.698	
19,200.00	6,991.91	5,494.00	5,493.16	199.58	112.30	21.44	-81.92	115.47	12,348.89	12,204.16	144.73	85.322	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:		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		
19,300.00	6,991.94	5,494.00	5,493.16	201.17	112.30	21.44	-81.92	115.47	12,448.09	12,303.25	144.84	85.945		
19,342.28	6,991.95	5,494.00	5,493.16	201.84	112.30	21.44	-81.92	115.47	12,490.03	12,345.15	144.88	86.208		
19,400.00	6,991.97	5,494.00	5,493.16	202.76	112.30	21.44	-81.92	115.47	12,547.30	12,402.36	144.94	86.567		
19,500.00	6,991.99	5,494.00	5,493.16	204.35	112.30	21.44	-81.92	115.47	12,646.52	12,501.47	145.05	87.188		
19,542.28	6,992.00	5,494.00	5,493.16	205.03	112.30	21.44	-81.92	115.47	12,688.47	12,543.38	145.09	87.451		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)			
0.00	0.00	0.00	0.00	0.00	0.00	-108.21	-803.03	-2,440.38	2,569.91				
100.00	100.00	34.51	34.51	0.25	0.36	-108.21	-803.04	-2,440.39	2,569.12	2,568.51	0.61	4,196.047	
200.00	200.00	130.38	130.38	0.61	1.37	-108.22	-803.19	-2,440.48	2,569.26	2,567.29	1.97	1,301.600	
300.00	300.00	226.26	226.25	0.97	2.37	-108.22	-803.49	-2,440.68	2,569.56	2,566.22	3.34	770.350	
400.00	400.00	322.08	322.07	1.33	3.19	-108.23	-803.97	-2,440.99	2,570.02	2,565.51	4.51	569.722	
500.00	500.00	619.22	618.20	1.68	3.56	-107.86	-785.34	-2,436.68	2,566.59	2,561.44	5.15	498.784	
600.00	600.00	768.25	764.80	2.04	3.83	-107.33	-759.11	-2,432.19	2,558.15	2,552.49	5.66	452.324	
700.00	700.00	856.00	850.15	2.40	4.04	-106.91	-738.84	-2,430.62	2,549.44	2,543.29	6.15	414.719	
800.00	799.98	929.11	920.68	2.76	4.24	-76.68	-719.63	-2,430.69	2,541.29	2,534.64	6.65	381.990	
900.00	899.92	999.37	987.75	3.12	4.47	-76.27	-698.74	-2,432.17	2,533.85	2,526.66	7.19	352.612	
1,000.00	999.86	1,076.00	1,060.02	3.47	4.74	-75.75	-673.46	-2,435.19	2,527.47	2,519.70	7.77	325.298	
1,100.00	1,099.80	1,146.41	1,125.70	3.83	4.99	-75.23	-648.38	-2,439.14	2,522.29	2,513.92	8.38	301.110	
1,200.00	1,199.74	1,203.00	1,178.04	4.19	5.20	-74.78	-627.29	-2,443.34	2,518.75	2,509.79	8.96	280.984	
1,300.00	1,299.68	1,346.30	1,311.02	4.55	5.74	-73.67	-575.19	-2,454.83	2,516.96	2,506.99	9.97	252.496	
1,400.00	1,399.61	1,438.67	1,396.20	4.91	6.13	-72.93	-539.92	-2,460.50	2,512.99	2,502.21	10.78	233.070	
1,500.00	1,499.55	1,527.69	1,477.81	5.27	6.52	-72.18	-504.92	-2,466.73	2,510.08	2,498.46	11.62	216.088	
1,600.00	1,599.49	1,659.21	1,597.42	5.63	7.16	-71.02	-450.95	-2,475.23	2,506.90	2,494.17	12.74	196.790	
1,700.00	1,699.43	1,729.59	1,660.22	5.99	7.59	-70.34	-419.53	-2,479.95	2,503.94	2,490.39	13.56	184.701	
1,800.00	1,799.37	1,803.52	1,725.38	6.35	8.09	-69.59	-385.11	-2,485.80	2,502.46	2,488.03	14.43	173.447	
1,900.00	1,899.31	1,921.97	1,831.53	6.71	8.89	-68.47	-333.20	-2,493.90	2,501.05	2,485.47	15.58	160.528	
2,000.00	1,999.25	2,009.21	1,909.70	7.07	9.48	-67.64	-294.94	-2,499.95	2,500.51	2,483.98	16.53	151.262	
2,100.00	2,099.19	2,192.90	2,077.11	7.42	10.66	-66.03	-219.75	-2,506.72	2,497.14	2,479.08	18.07	138.225	
2,200.00	2,199.13	2,260.62	2,139.60	7.78	11.07	-65.48	-193.72	-2,508.82	2,494.86	2,476.02	18.84	132.449	
2,300.00	2,299.07	2,352.91	2,225.46	8.14	11.60	-64.77	-160.06	-2,511.97	2,493.54	2,473.82	19.73	126.395	
2,400.00	2,399.01	2,463.00	2,328.80	8.50	12.21	-63.97	-122.23	-2,515.07	2,492.23	2,471.54	20.69	120.468	
2,500.00	2,498.94	2,578.42	2,438.09	8.86	12.80	-63.19	-85.21	-2,517.49	2,490.79	2,469.15	21.63	115.128	
2,600.00	2,598.88	2,679.80	2,534.85	9.22	13.28	-62.57	-55.01	-2,519.15	2,489.34	2,466.86	22.48	110.755	
2,700.00	2,698.82	2,776.85	2,628.23	9.58	13.71	-62.03	-28.59	-2,520.23	2,487.75	2,464.49	23.26	106.960	
2,800.00	2,798.76	2,858.21	2,706.97	9.94	14.04	-61.61	-8.14	-2,521.16	2,486.53	2,462.58	23.95	103.827	
2,900.00	2,898.70	2,974.19	2,819.99	10.30	14.46	-61.09	17.80	-2,522.48	2,485.45	2,460.72	24.73	100.509	
3,000.00	2,998.64	3,074.12	2,918.13	10.66	14.77	-60.73	36.54	-2,523.63	2,484.63	2,459.23	25.40	97.839	
3,100.00	3,098.58	3,171.36	3,014.22	11.02	15.02	-60.45	51.42	-2,524.42	2,483.57	2,457.57	26.00	95.518	
3,200.00	3,198.52	3,306.13	3,147.92	11.38	15.32	-60.16	68.36	-2,524.74	2,482.03	2,455.39	26.64	93.175	
3,300.00	3,298.46	3,398.62	3,239.83	11.75	15.52	-59.98	78.73	-2,524.36	2,479.87	2,452.69	27.17	91.263	
3,400.00	3,398.40	3,478.95	3,319.74	12.11	15.69	-59.85	86.85	-2,524.71	2,478.52	2,450.85	27.68	89.555	
3,500.00	3,498.34	3,580.10	3,420.56	12.47	15.95	-59.73	94.93	-2,525.59	2,477.67	2,449.49	28.18	87.926	
3,600.00	3,598.27	3,667.85	3,508.21	12.83	16.20	-59.70	99.00	-2,526.36	2,476.80	2,448.17	28.62	86.532	
3,700.00	3,698.21	3,780.48	3,620.80	13.19	16.49	-59.71	101.85	-2,527.15	2,475.74	2,446.69	29.05	85.215	
3,800.00	3,798.15	3,880.79	3,721.08	13.55	22.70	-59.74	103.85	-2,527.68	2,474.52	2,438.94	35.58	69.550	
3,900.00	3,898.09	3,981.17	3,821.44	13.91	30.34	-59.76	105.84	-2,528.19	2,473.28	2,429.69	43.58	56.749	
4,000.00	3,998.03	4,081.55	3,921.80	14.27	37.98	-59.79	107.79	-2,528.69	2,472.02	2,420.44	51.59	47.920	
4,100.00	4,097.97	4,181.92	4,022.16	14.63	45.62	-59.81	109.72	-2,529.17	2,470.75	2,411.16	59.59	41.462	
4,200.00	4,197.91	4,282.30	4,122.51	14.99	53.26	-59.84	111.62	-2,529.63	2,469.47	2,401.87	67.60	36.533	
4,300.00	4,297.85	4,382.67	4,222.87	15.35	60.90	-59.86	113.49	-2,530.08	2,468.17	2,392.57	75.60	32.648	
4,400.00	4,397.79	4,483.05	4,323.23	15.71	68.54	-59.89	115.34	-2,530.52	2,466.85	2,383.25	83.60	29.507	
4,500.00	4,497.73	4,583.42	4,423.58	16.07	76.18	-59.92	117.16	-2,530.93	2,465.52	2,373.91	91.61	26.914	
4,600.00	4,597.66	4,683.79	4,523.94	16.43	83.82	-59.95	118.95	-2,531.34	2,464.17	2,364.56	99.61	24.738	
4,700.00	4,697.60	4,784.17	4,624.29	16.79	91.46	-59.98	120.72	-2,531.72	2,462.81	2,355.20	107.61	22.885	
4,800.00	4,797.54	4,884.54	4,724.65	17.15	99.10	-60.01	122.46	-2,532.09	2,461.44	2,345.82	115.62	21.289	
4,900.00	4,897.48	4,984.90	4,825.00	17.51	106.74	-60.04	124.17	-2,532.45	2,460.05	2,336.42	123.62	19.900	
5,000.00	4,997.42	5,085.27	4,925.35	17.87	114.38	-60.07	125.86	-2,532.79	2,458.64	2,327.01	131.63	18.679	
5,100.00	5,097.36	5,185.64	5,025.71	18.23	122.02	-60.10	127.52	-2,533.11	2,457.22	2,317.59	139.63	17.598	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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)
5,200.00	5,197.30	5,286.00	5,126.06	18.59	129.66	-60.13	129.16	-2,533.42	2,455.78	2,308.15	147.63	16.634	
5,300.00	5,297.24	5,386.37	5,226.41	18.95	137.30	-60.17	130.76	-2,533.71	2,454.33	2,298.69	155.64	15.770	
5,402.82	5,400.00	5,489.57	5,329.59	19.32	145.16	-60.20	132.39	-2,533.99	2,452.82	2,288.96	163.86	14.969	
5,500.00	5,497.13	5,587.10	5,427.11	19.67	152.58	-60.22	133.90	-2,534.24	2,451.59	2,279.95	171.64	14.283	
5,600.00	5,597.11	5,687.48	5,527.48	20.03	160.22	-60.23	135.43	-2,534.49	2,450.73	2,271.08	179.65	13.642	
5,700.00	5,697.10	5,787.86	5,627.85	20.39	167.86	-60.22	136.93	-2,534.72	2,450.29	2,262.64	187.65	13.058	
5,755.39	5,752.48	5,843.46	5,683.44	20.58	172.10	-60.21	137.75	-2,534.84	2,450.23	2,258.15	192.08	12.756 CC	
5,802.82	5,799.92	5,891.07	5,731.05	20.75	175.72	-90.19	138.44	-2,534.93	2,450.27	2,254.40	195.88	12.509	
5,900.00	5,897.09	5,988.61	5,828.58	21.10	183.15	-90.16	139.85	-2,535.13	2,450.46	2,246.81	203.65	12.033	
6,000.00	5,997.09	6,088.98	5,928.94	21.45	190.79	-90.13	141.27	-2,535.31	2,450.64	2,238.99	211.65	11.579	
6,100.00	6,097.09	6,189.36	6,029.31	21.81	198.43	-90.09	142.67	-2,535.47	2,450.80	2,231.15	219.65	11.158	
6,200.00	6,197.09	6,289.73	6,129.67	22.16	206.07	-90.06	144.03	-2,535.62	2,450.94	2,223.30	227.65	10.766	
6,300.00	6,297.09	6,390.11	6,230.04	22.52	213.71	-90.03	145.38	-2,535.76	2,451.08	2,215.43	235.65	10.401	
6,354.91	6,352.00	6,445.22	6,285.15	22.72	217.91	-90.01	146.10	-2,535.82	2,451.14	2,211.10	240.04	10.211	
6,400.00	6,397.06	6,490.31	6,330.24	22.87	220.72	-168.98	146.69	-2,535.87	2,452.76	2,209.75	243.01	10.093 ES	
6,450.00	6,446.74	6,539.95	6,379.87	23.04	223.41	-168.89	147.34	-2,535.93	2,458.21	2,212.35	245.86	9.998	
6,500.00	6,495.84	6,589.01	6,428.93	23.20	226.07	-168.76	148.00	-2,535.99	2,467.47	2,218.79	248.68	9.922	
6,550.00	6,544.06	6,637.19	6,477.10	23.36	228.68	-168.56	148.64	-2,536.05	2,480.49	2,229.03	251.45	9.865	
6,600.00	6,591.08	6,684.19	6,524.10	23.51	231.23	-168.30	149.28	-2,536.10	2,497.18	2,243.02	254.15	9.825	
6,650.00	6,636.64	6,729.73	6,569.63	23.66	233.70	-167.97	149.90	-2,536.16	2,517.44	2,260.67	256.77	9.804	
6,700.00	6,680.44	6,773.51	6,613.41	23.82	236.07	-167.56	150.51	-2,536.22	2,541.16	2,281.88	259.28	9.801 SF	
6,750.00	6,722.22	6,815.28	6,655.17	23.99	238.34	-167.04	151.09	-2,536.27	2,568.19	2,306.51	261.68	9.814	
6,800.00	6,761.71	6,854.77	6,694.66	24.16	240.48	-166.40	151.64	-2,536.32	2,598.36	2,334.43	263.94	9.845	
6,850.00	6,798.68	6,891.75	6,731.63	24.33	242.48	-165.60	152.16	-2,536.37	2,631.50	2,365.45	266.05	9.891	
6,900.00	6,832.89	6,925.97	6,765.85	24.50	244.34	-164.58	152.65	-2,536.41	2,667.39	2,399.39	268.01	9.953	
6,950.00	6,864.14	6,957.24	6,797.12	24.69	246.03	-163.30	153.09	-2,536.46	2,705.83	2,436.04	269.79	10.029	
7,000.00	6,892.23	6,985.36	6,825.24	24.88	247.56	-161.63	153.50	-2,536.49	2,746.58	2,475.19	271.40	10.120	
7,050.00	6,916.99	7,010.16	6,850.03	25.08	248.90	-159.41	153.86	-2,536.53	2,789.39	2,516.58	272.81	10.225	
7,100.00	6,938.27	7,031.47	6,871.34	25.29	250.06	-156.37	154.16	-2,536.56	2,833.99	2,559.97	274.02	10.342	
7,150.00	6,955.93	7,049.18	6,889.05	25.51	251.02	-152.04	154.42	-2,536.58	2,880.12	2,605.09	275.03	10.472	
7,200.00	6,969.87	7,063.17	6,903.04	25.75	251.78	-145.54	154.63	-2,536.60	2,927.49	2,651.67	275.83	10.614	
7,250.00	6,980.00	7,073.36	6,913.23	25.99	252.33	-135.20	154.77	-2,536.61	2,975.81	2,699.40	276.41	10.766	
7,300.00	6,986.25	7,079.68	6,919.55	26.25	252.67	-118.15	154.87	-2,536.62	3,024.78	2,748.01	276.77	10.929	
7,354.68	6,988.62	7,082.13	6,921.99	26.53	252.80	-89.81	154.90	-2,536.63	3,078.73	2,801.81	276.93	11.118	
7,400.00	6,988.64	7,082.21	6,922.07	26.78	252.81	-89.82	154.90	-2,536.63	3,123.51	2,846.57	276.94	11.278	
7,500.00	6,988.67	7,082.38	6,922.25	27.40	252.82	-89.84	154.91	-2,536.63	3,222.38	2,945.40	276.98	11.634	
7,600.00	6,988.71	7,082.56	6,922.43	28.08	252.83	-89.86	154.91	-2,536.63	3,321.32	3,044.29	277.03	11.989	
7,700.00	6,988.74	7,082.74	6,922.60	28.84	252.84	-89.89	154.91	-2,536.63	3,420.32	3,143.25	277.07	12.345	
7,800.00	6,988.78	7,082.92	6,922.78	29.67	252.85	-89.91	154.91	-2,536.63	3,519.37	3,242.26	277.11	12.700	
7,900.00	6,988.81	7,083.09	6,922.96	30.55	252.86	-89.93	154.92	-2,536.63	3,618.48	3,341.32	277.15	13.056	
8,000.00	6,988.85	7,083.27	6,923.14	31.49	252.86	-89.95	154.92	-2,536.63	3,717.63	3,440.44	277.20	13.412	
8,100.00	6,988.88	7,083.45	6,923.31	32.48	252.87	-89.97	154.92	-2,536.63	3,816.83	3,539.59	277.24	13.767	
8,200.00	6,988.91	7,083.63	6,923.49	33.51	252.88	-89.99	154.92	-2,536.63	3,916.07	3,638.78	277.29	14.123	
8,211.68	6,988.92	7,083.65	6,923.51	33.63	252.89	-89.99	154.92	-2,536.63	3,927.67	3,650.38	277.29	14.164	
8,300.00	6,988.95	7,083.78	6,923.65	34.58	252.89	-90.01	154.93	-2,536.63	4,015.49	3,738.17	277.33	14.479	
8,400.00	6,988.98	7,083.89	6,923.75	35.70	252.90	-90.03	154.93	-2,536.63	4,115.24	3,837.88	277.36	14.837	
8,500.00	6,989.01	7,083.94	6,923.80	36.84	252.90	-90.08	154.93	-2,536.63	4,215.18	3,937.79	277.39	15.196	
8,600.00	6,989.04	7,083.94	6,923.80	38.02	252.90	90.02	154.93	-2,536.63	4,315.18	4,037.77	277.41	15.555	
8,700.00	6,989.07	7,083.89	6,923.75	39.22	252.90	89.98	154.93	-2,536.63	4,415.11	4,137.69	277.42	15.915	
8,772.79	6,989.09	7,083.81	6,923.68	40.11	252.89	89.97	154.93	-2,536.63	4,487.74	4,210.32	277.42	16.177	
8,800.00	6,989.10	7,083.78	6,923.65	40.44	252.89	89.96	154.93	-2,536.63	4,514.87	4,237.45	277.42	16.275	
8,900.00	6,989.13	7,083.66	6,923.53	41.68	252.89	89.94	154.92	-2,536.63	4,614.58	4,337.16	277.42	16.634	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 34 - (O) Rosa Unit #80B - OH - OH-SVY											Offset Site Error:		0.00 usft	
Survey Program:		300-MWD OWSG Rev5						Rule Assigned:				Offset Well Error:		0.00 usft		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
9,000.00	6,989.15	7,083.55	6,923.41	42.95	252.88	89.92	154.92	-2,536.63	4,714.30	4,436.88	277.43	16.993				
9,100.00	6,989.18	7,083.43	6,923.29	44.24	252.87	89.90	154.92	-2,536.63	4,814.04	4,536.61	277.43	17.352				
9,200.00	6,989.21	7,083.31	6,923.17	45.55	252.87	89.88	154.92	-2,536.63	4,913.79	4,636.35	277.44	17.711				
9,300.00	6,989.24	7,083.19	6,923.06	46.88	252.86	89.86	154.92	-2,536.63	5,013.54	4,736.09	277.45	18.070				
9,400.00	6,989.26	7,083.07	6,922.94	48.23	252.85	89.84	154.92	-2,536.63	5,113.31	4,835.85	277.46	18.429				
9,500.00	6,989.29	7,082.96	6,922.82	49.59	252.85	89.82	154.91	-2,536.63	5,213.08	4,935.61	277.47	18.788				
9,600.00	6,989.32	7,082.84	6,922.70	50.96	252.84	89.80	154.91	-2,536.63	5,312.86	5,035.38	277.48	19.147				
9,700.00	6,989.34	7,082.72	6,922.59	52.35	252.83	89.79	154.91	-2,536.63	5,412.65	5,135.16	277.50	19.505				
9,800.00	6,989.37	7,082.60	6,922.47	53.75	252.83	89.77	154.91	-2,536.63	5,512.45	5,234.94	277.51	19.864				
9,900.00	6,989.40	7,082.48	6,922.35	55.16	252.82	89.75	154.91	-2,536.63	5,612.26	5,334.73	277.53	20.222				
10,000.00	6,989.42	7,082.37	6,922.23	56.58	252.82	89.73	154.91	-2,536.63	5,712.07	5,434.52	277.55	20.580				
10,100.00	6,989.45	7,082.25	6,922.11	58.01	252.81	89.71	154.90	-2,536.63	5,811.89	5,534.32	277.57	20.939				
10,200.00	6,989.48	7,082.13	6,922.00	59.45	252.80	89.69	154.90	-2,536.63	5,911.71	5,634.13	277.59	21.297				
10,300.00	6,989.51	7,082.01	6,921.88	60.90	252.80	89.67	154.90	-2,536.63	6,011.55	5,733.94	277.61	21.655				
10,400.00	6,989.53	7,081.90	6,921.76	62.35	252.79	89.65	154.90	-2,536.63	6,111.38	5,833.75	277.63	22.012				
10,500.00	6,989.56	7,081.78	6,921.64	63.81	252.78	89.63	154.90	-2,536.63	6,211.22	5,933.57	277.66	22.370				
10,600.00	6,989.59	7,081.66	6,921.53	65.28	252.78	89.61	154.90	-2,536.63	6,311.07	6,033.39	277.68	22.728				
10,700.00	6,989.61	7,081.54	6,921.41	66.76	252.77	89.59	154.89	-2,536.63	6,410.92	6,133.21	277.71	23.085				
10,800.00	6,989.64	7,081.43	6,921.29	68.24	252.76	89.57	154.89	-2,536.63	6,510.78	6,233.04	277.74	23.442				
10,900.00	6,989.67	7,081.31	6,921.17	69.73	252.76	89.55	154.89	-2,536.63	6,610.64	6,332.87	277.76	23.800				
11,000.00	6,989.70	7,081.19	6,921.05	71.22	252.75	89.53	154.89	-2,536.63	6,710.50	6,432.71	277.79	24.156				
11,100.00	6,989.72	7,081.07	6,920.94	72.71	252.75	89.51	154.89	-2,536.63	6,810.37	6,532.55	277.82	24.513				
11,200.00	6,989.75	7,080.95	6,920.82	74.22	252.74	89.49	154.89	-2,536.62	6,910.24	6,632.39	277.85	24.870				
11,300.00	6,989.78	7,080.84	6,920.70	75.72	252.73	89.47	154.88	-2,536.62	7,010.12	6,732.23	277.89	25.226				
11,400.00	6,989.80	7,080.72	6,920.58	77.23	252.73	89.45	154.88	-2,536.62	7,110.00	6,832.08	277.92	25.583				
11,500.00	6,989.83	7,080.60	6,920.47	78.74	252.72	89.44	154.88	-2,536.62	7,209.88	6,931.92	277.96	25.939				
11,600.00	6,989.86	7,080.48	6,920.35	80.26	252.71	89.42	154.88	-2,536.62	7,309.77	7,031.78	277.99	26.295				
11,700.00	6,989.88	7,080.37	6,920.23	81.78	252.71	89.40	154.88	-2,536.62	7,409.65	7,131.63	278.03	26.651				
11,800.00	6,989.91	7,080.25	6,920.11	83.30	252.70	89.38	154.87	-2,536.62	7,509.55	7,231.48	278.06	27.007				
11,900.00	6,989.94	7,080.13	6,920.00	84.83	252.69	89.36	154.87	-2,536.62	7,609.44	7,331.34	278.10	27.362				
12,000.00	6,989.97	7,080.01	6,919.88	86.36	252.69	89.34	154.87	-2,536.62	7,709.34	7,431.20	278.14	27.717				
12,100.00	6,989.99	7,079.90	6,919.76	87.89	252.68	89.32	154.87	-2,536.62	7,809.24	7,531.06	278.18	28.072				
12,200.00	6,990.02	7,079.78	6,919.64	89.42	252.68	89.30	154.87	-2,536.62	7,909.14	7,630.92	278.22	28.427				
12,300.00	6,990.05	7,079.66	6,919.53	90.96	252.67	89.28	154.87	-2,536.62	8,009.05	7,730.78	278.27	28.782				
12,400.00	6,990.07	7,079.54	6,919.41	92.50	252.66	89.26	154.86	-2,536.62	8,108.95	7,830.65	278.31	29.137				
12,500.00	6,990.10	7,079.43	6,919.29	94.04	252.66	89.24	154.86	-2,536.62	8,208.86	7,930.51	278.35	29.491				
12,600.00	6,990.13	7,079.31	6,919.17	95.58	252.65	89.22	154.86	-2,536.62	8,308.78	8,030.38	278.40	29.845				
12,700.00	6,990.15	7,079.19	6,919.06	97.13	252.64	89.20	154.86	-2,536.62	8,408.69	8,130.25	278.44	30.199				
12,800.00	6,990.18	7,079.07	6,918.94	98.68	252.64	89.18	154.86	-2,536.62	8,508.61	8,230.12	278.49	30.553				
12,900.00	6,990.21	7,078.96	6,918.82	100.22	252.63	89.16	154.86	-2,536.62	8,608.52	8,329.99	278.54	30.906				
13,000.00	6,990.24	7,078.84	6,918.70	101.78	252.62	89.14	154.85	-2,536.62	8,708.44	8,429.86	278.58	31.260				
13,100.00	6,990.26	7,078.72	6,918.59	103.33	252.62	89.12	154.85	-2,536.62	8,808.36	8,529.73	278.63	31.613				
13,200.00	6,990.29	7,078.60	6,918.47	104.88	252.61	89.11	154.85	-2,536.62	8,908.29	8,629.61	278.68	31.966				
13,300.00	6,990.32	7,078.49	6,918.35	106.44	252.61	89.09	154.85	-2,536.62	9,008.21	8,729.48	278.73	32.318				
13,400.00	6,990.34	7,078.37	6,918.23	107.99	252.60	89.07	154.85	-2,536.62	9,108.14	8,829.36	278.78	32.671				
13,500.00	6,990.37	7,078.25	6,918.12	109.55	252.59	89.05	154.85	-2,536.62	9,208.07	8,929.23	278.84	33.023				
13,600.00	6,990.40	7,078.13	6,918.00	111.11	252.59	89.03	154.84	-2,536.62	9,308.00	9,029.11	278.89	33.375				
13,700.00	6,990.42	7,078.02	6,917.88	112.67	252.58	89.01	154.84	-2,536.62	9,407.93	9,128.99	278.94	33.727				
13,800.00	6,990.45	7,077.90	6,917.76	114.23	252.57	88.99	154.84	-2,536.62	9,507.86	9,228.86	279.00	34.079				
13,900.00	6,990.48	7,077.78	6,917.65	115.80	252.57	88.97	154.84	-2,536.62	9,607.80	9,328.74	279.05	34.430				
14,000.00	6,990.51	7,077.66	6,917.53	117.36	252.56	88.95	154.84	-2,536.62	9,707.73	9,428.62	279.11	34.781				
14,100.00	6,990.53	7,077.55	6,917.41	118.93	252.55	88.93	154.84	-2,536.62	9,807.67	9,528.50	279.17	35.132				

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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			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)					
14,200.00	6,990.56	7,077.43	6,917.29	120.49	252.55	88.91	154.83	-2,536.62	9,907.61	9,628.38	279.23	35.482				
14,300.00	6,990.59	7,077.31	6,917.18	122.06	252.54	88.89	154.83	-2,536.62	10,007.55	9,728.26	279.28	35.833				
14,400.00	6,990.61	7,077.19	6,917.06	123.63	252.54	88.87	154.83	-2,536.62	10,107.49	9,828.14	279.34	36.183				
14,500.00	6,990.64	7,077.08	6,916.94	125.20	252.53	88.85	154.83	-2,536.62	10,207.43	9,928.02	279.40	36.533				
14,600.00	6,990.67	7,076.96	6,916.82	126.77	252.52	88.83	154.83	-2,536.62	10,307.37	10,027.91	279.46	36.883				
14,700.00	6,990.70	7,076.84	6,916.71	128.34	252.52	88.81	154.82	-2,536.62	10,407.31	10,127.79	279.53	37.232				
14,800.00	6,990.72	7,076.72	6,916.59	129.91	252.51	88.79	154.82	-2,536.62	10,507.26	10,227.67	279.59	37.581				
14,900.00	6,990.75	7,076.61	6,916.47	131.48	252.50	88.78	154.82	-2,536.62	10,607.21	10,327.56	279.65	37.930				
15,000.00	6,990.78	7,076.49	6,916.36	133.06	252.50	88.76	154.82	-2,536.62	10,707.15	10,427.44	279.71	38.279				
15,100.00	6,990.80	7,076.37	6,916.24	134.63	252.49	88.74	154.82	-2,536.62	10,807.10	10,527.32	279.78	38.627				
15,200.00	6,990.83	7,076.26	6,916.12	136.20	252.48	88.72	154.82	-2,536.62	10,907.05	10,627.21	279.84	38.975				
15,300.00	6,990.86	7,076.14	6,916.00	137.78	252.48	88.70	154.81	-2,536.62	11,007.00	10,727.09	279.91	39.323				
15,400.00	6,990.88	7,076.02	6,915.89	139.36	252.47	88.68	154.81	-2,536.62	11,106.95	10,826.97	279.98	39.671				
15,500.00	6,990.91	7,075.90	6,915.77	140.93	252.47	88.66	154.81	-2,536.62	11,206.90	10,926.86	280.04	40.018				
15,600.00	6,990.94	7,075.79	6,915.65	142.51	252.46	88.64	154.81	-2,536.62	11,306.85	11,026.74	280.11	40.366				
15,700.00	6,990.97	7,075.67	6,915.53	144.09	252.45	88.62	154.81	-2,536.62	11,406.81	11,126.63	280.18	40.712				
15,800.00	6,990.99	7,075.55	6,915.42	145.67	252.45	88.60	154.81	-2,536.62	11,506.76	11,226.51	280.25	41.059				
15,900.00	6,991.02	7,075.43	6,915.30	147.24	252.44	88.58	154.80	-2,536.62	11,606.72	11,326.40	280.32	41.405				
16,000.00	6,991.05	7,075.32	6,915.18	148.82	252.43	88.56	154.80	-2,536.62	11,706.67	11,426.28	280.39	41.752				
16,100.00	6,991.07	7,075.20	6,915.07	150.40	252.43	88.54	154.80	-2,536.62	11,806.63	11,526.17	280.46	42.097				
16,200.00	6,991.10	7,075.08	6,914.95	151.99	252.42	88.52	154.80	-2,536.62	11,906.59	11,626.05	280.53	42.443				
16,300.00	6,991.13	7,074.97	6,914.83	153.57	252.41	88.50	154.80	-2,536.62	12,006.54	11,725.94	280.60	42.788				
16,400.00	6,991.15	7,074.85	6,914.71	155.15	252.41	88.49	154.80	-2,536.62	12,106.50	11,825.83	280.68	43.133				
16,500.00	6,991.18	7,074.73	6,914.60	156.73	252.40	88.47	154.79	-2,536.62	12,206.46	11,925.71	280.75	43.478				
16,600.00	6,991.21	7,074.61	6,914.48	158.31	252.40	88.45	154.79	-2,536.62	12,306.42	12,025.60	280.83	43.822				
16,700.00	6,991.24	7,074.50	6,914.36	159.90	252.39	88.43	154.79	-2,536.62	12,406.38	12,125.48	280.90	44.167				
16,800.00	6,991.26	7,074.38	6,914.25	161.48	252.38	88.41	154.79	-2,536.62	12,506.34	12,225.37	280.98	44.510				
16,900.00	6,991.29	7,074.26	6,914.13	163.06	252.38	88.39	154.79	-2,536.62	12,606.31	12,325.25	281.05	44.854				
17,000.00	6,991.32	7,074.15	6,914.01	164.65	252.37	88.37	154.79	-2,536.62	12,706.27	12,425.14	281.13	45.197				
17,100.00	6,991.34	7,074.03	6,913.89	166.23	252.36	88.35	154.78	-2,536.62	12,806.23	12,525.03	281.21	45.540				
17,200.00	6,991.37	7,073.91	6,913.78	167.82	252.36	88.33	154.78	-2,536.62	12,906.19	12,624.91	281.28	45.883				
17,300.00	6,991.40	7,073.79	6,913.66	169.40	252.35	88.31	154.78	-2,536.61	13,006.16	12,724.80	281.36	46.226				
17,400.00	6,991.42	7,073.68	6,913.54	170.99	252.34	88.29	154.78	-2,536.61	13,106.12	12,824.68	281.44	46.568				
17,500.00	6,991.45	7,073.56	6,913.43	172.57	252.34	88.27	154.78	-2,536.61	13,206.09	12,924.57	281.52	46.910				
17,600.00	6,991.48	7,073.44	6,913.31	174.16	252.33	88.25	154.78	-2,536.61	13,306.05	13,024.45	281.60	47.251				
17,700.00	6,991.51	7,073.33	6,913.19	175.75	252.33	88.23	154.77	-2,536.61	13,406.02	13,124.34	281.68	47.593				
17,800.00	6,991.53	7,073.21	6,913.08	177.33	252.32	88.21	154.77	-2,536.61	13,505.99	13,224.22	281.76	47.934				
17,900.00	6,991.56	7,073.09	6,912.96	178.92	252.31	88.20	154.77	-2,536.61	13,605.95	13,324.11	281.84	48.275				
18,000.00	6,991.59	7,072.98	6,912.84	180.51	252.31	88.18	154.77	-2,536.61	13,705.92	13,424.00	281.93	48.615				
18,100.00	6,991.61	7,072.86	6,912.72	182.10	252.30	88.16	154.77	-2,536.61	13,805.89	13,523.88	282.01	48.955				
18,200.00	6,991.64	7,072.74	6,912.61	183.68	252.29	88.14	154.77	-2,536.61	13,905.86	13,623.77	282.09	49.295				
18,300.00	6,991.67	7,072.62	6,912.49	185.27	252.29	88.12	154.76	-2,536.61	14,005.83	13,723.65	282.18	49.635				
18,400.00	6,991.69	7,072.51	6,912.37	186.86	252.28	88.10	154.76	-2,536.61	14,105.80	13,823.54	282.26	49.974				
18,500.00	6,991.72	7,072.39	6,912.26	188.45	252.27	88.08	154.76	-2,536.61	14,205.77	13,923.42	282.35	50.313				
18,600.00	6,991.75	7,072.27	6,912.14	190.04	252.27	88.06	154.76	-2,536.61	14,305.74	14,023.31	282.43	50.652				
18,700.00	6,991.78	7,072.16	6,912.02	191.63	252.26	88.04	154.76	-2,536.61	14,405.71	14,123.19	282.52	50.990				
18,800.00	6,991.80	7,072.04	6,911.91	193.22	252.26	88.02	154.75	-2,536.61	14,505.68	14,223.07	282.61	51.328				
18,900.00	6,991.83	7,071.92	6,911.79	194.81	252.25	88.00	154.75	-2,536.61	14,605.65	14,322.96	282.69	51.666				
19,000.00	6,991.86	7,071.81	6,911.67	196.40	252.24	87.98	154.75	-2,536.61	14,705.62	14,422.84	282.78	52.004				
19,100.00	6,991.88	7,071.69	6,911.56	197.99	252.24	87.96	154.75	-2,536.61	14,805.60	14,522.73	282.87	52.341				
19,200.00	6,991.91	7,071.57	6,911.44	199.58	252.23	87.94	154.75	-2,536.61	14,905.57	14,622.61	282.96	52.678				
19,300.00	6,991.94	7,071.46	6,911.32	201.17	252.22	87.93	154.75	-2,536.61	15,005.54	14,722.50	283.05	53.015				

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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		
19,342.28	6,991.95	7,071.41	6,911.27	201.84	252.22	87.92	154.75	-2,536.61	15,047.81	14,764.72	283.08	53.157		
19,400.00	6,991.97	7,071.34	6,911.20	202.76	252.22	87.91	154.74	-2,536.61	15,105.52	14,822.38	283.14	53.351		
19,500.00	6,991.99	7,071.22	6,911.09	204.35	252.21	87.89	154.74	-2,536.61	15,205.49	14,922.26	283.23	53.687		
19,542.28	6,992.00	7,071.17	6,911.04	205.03	252.21	87.88	154.74	-2,536.61	15,247.76	14,964.49	283.26	53.829		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	93.37	-363.21	6,175.65	6,186.32				
100.00	100.00	528.57	528.55	0.25	11.25	93.36	-362.11	6,175.65	6,186.25	6,174.75	11.50	537.904	
200.00	200.00	627.37	627.35	0.61	13.35	93.36	-362.39	6,175.65	6,186.27	6,172.31	13.96	443.081	
300.00	300.00	726.18	726.15	0.97	15.46	93.36	-363.01	6,175.65	6,186.31	6,169.88	16.42	376.677	
400.00	400.00	829.09	829.00	1.33	17.65	93.37	-363.21	6,175.65	6,186.32	6,167.35	18.97	326.075	
500.00	500.00	929.09	929.00	1.68	19.77	93.37	-363.21	6,175.65	6,186.32	6,164.86	21.46	288.287	
572.94	572.94	1,002.00	1,001.90	1.95	21.33	93.36	-362.12	6,175.65	6,186.25	6,162.98	23.27	265.822	
600.00	600.00	1,028.73	1,028.63	2.04	21.89	93.36	-362.13	6,175.65	6,186.25	6,162.32	23.94	258.428	
700.00	700.00	1,127.49	1,127.39	2.40	24.00	93.36	-362.40	6,175.65	6,186.27	6,159.87	26.40	234.342	
800.00	799.98	1,226.23	1,226.12	2.76	26.10	123.36	-363.01	6,175.65	6,187.27	6,158.41	28.86	214.411	
900.00	899.92	1,329.09	1,328.92	3.12	28.36	123.39	-363.21	6,175.65	6,189.20	6,157.73	31.47	196.658	
1,000.00	999.86	1,429.02	1,428.86	3.47	30.57	123.42	-363.21	6,175.65	6,191.12	6,157.08	34.04	181.858	
1,100.00	1,099.80	1,528.49	1,528.31	3.83	32.78	123.43	-362.17	6,175.65	6,192.98	6,156.38	36.61	169.182	
1,200.00	1,199.74	1,627.11	1,626.93	4.19	34.96	123.46	-362.47	6,175.65	6,194.92	6,155.78	39.15	158.240	
1,300.00	1,299.68	1,725.71	1,725.52	4.55	37.15	123.50	-363.12	6,175.65	6,196.89	6,155.20	41.69	148.634	
1,400.00	1,399.61	1,828.87	1,828.61	4.91	39.52	123.52	-363.21	6,175.65	6,198.82	6,154.40	44.42	139.542	
1,500.00	1,499.55	1,928.81	1,928.55	5.27	41.83	123.55	-363.21	6,175.65	6,200.75	6,153.66	47.09	131.684	
1,600.00	1,599.49	2,028.05	2,027.77	5.63	44.12	123.57	-361.88	6,175.65	6,202.60	6,152.86	49.74	124.707	
1,700.00	1,699.43	2,126.33	2,126.04	5.99	46.39	123.60	-362.27	6,175.65	6,204.56	6,152.19	52.36	118.487	
1,800.00	1,799.37	2,224.60	2,224.30	6.35	48.66	123.63	-363.09	6,175.65	6,206.54	6,151.55	54.99	112.862	
1,900.00	1,899.31	2,328.69	2,328.31	6.71	51.15	123.66	-363.21	6,175.65	6,208.48	6,150.64	57.84	107.332	
2,000.00	1,999.25	2,428.63	2,428.25	7.07	53.55	123.69	-363.21	6,175.65	6,210.42	6,149.81	60.61	102.471	
2,100.00	2,099.19	2,527.87	2,527.47	7.42	55.94	123.70	-361.87	6,175.65	6,212.27	6,148.92	63.35	98.058	
2,200.00	2,199.13	2,626.10	2,625.69	7.78	58.30	123.73	-362.25	6,175.65	6,214.23	6,148.16	66.07	94.049	
2,300.00	2,299.07	2,724.31	2,723.89	8.14	60.67	123.76	-363.05	6,175.65	6,216.22	6,147.43	68.80	90.357	
2,400.00	2,399.01	2,828.53	2,828.01	8.50	63.26	123.79	-363.21	6,175.65	6,218.17	6,146.42	71.75	86.661	
2,500.00	2,498.94	2,928.47	2,927.94	8.86	65.77	123.82	-363.21	6,175.65	6,220.12	6,145.50	74.62	83.360	
2,600.00	2,598.88	3,027.57	3,027.02	9.22	68.25	123.83	-361.61	6,175.65	6,221.95	6,144.49	77.46	80.324	
2,700.00	2,698.82	3,125.39	3,124.83	9.58	70.70	123.86	-362.06	6,175.65	6,223.93	6,143.66	80.27	77.536	
2,800.00	2,798.76	3,223.19	3,222.61	9.94	73.16	123.90	-363.01	6,175.65	6,225.94	6,142.86	83.08	74.937	
2,900.00	2,898.70	3,328.40	3,327.70	10.30	75.97	123.93	-363.21	6,175.65	6,227.90	6,141.64	86.26	72.199	
3,000.00	2,998.64	3,425.67	3,424.95	10.66	78.61	123.95	-362.57	6,175.65	6,229.81	6,140.55	89.25	69.798	
3,100.00	3,098.58	3,528.39	3,527.58	11.02	81.47	123.98	-363.21	6,175.65	6,231.80	6,139.33	92.48	67.389	
3,200.00	3,198.52	3,628.33	3,627.52	11.38	84.39	124.01	-363.21	6,175.65	6,233.75	6,138.00	95.76	65.099	
3,300.00	3,298.46	3,728.27	3,727.46	11.75	87.32	124.03	-363.21	6,175.65	6,235.71	6,136.67	99.04	62.961	
3,400.00	3,398.40	3,825.67	3,824.81	12.11	90.17	124.04	-361.27	6,175.65	6,237.52	6,135.28	102.25	61.004	
3,500.00	3,498.34	3,922.67	3,921.77	12.47	93.00	124.07	-362.17	6,175.65	6,239.55	6,134.10	105.44	59.174	
3,600.00	3,598.27	4,028.39	4,027.27	12.83	95.99	124.11	-363.21	6,175.65	6,241.57	6,132.79	108.79	57.374	
3,700.00	3,698.21	4,128.33	4,127.21	13.19	98.61	124.14	-363.21	6,175.65	6,243.53	6,131.76	111.77	55.859	
3,800.00	3,798.15	4,228.27	4,227.15	13.55	101.24	124.17	-363.21	6,175.65	6,245.49	6,130.74	114.76	54.424	
3,900.00	3,898.09	4,325.59	4,324.42	13.91	103.79	124.17	-361.27	6,175.65	6,247.31	6,129.64	117.67	53.090	
4,000.00	3,998.03	4,422.48	4,421.29	14.27	106.34	124.21	-362.17	6,175.65	6,249.34	6,128.77	120.58	51.828	
4,100.00	4,097.97	4,528.29	4,526.97	14.63	109.01	124.24	-363.21	6,175.65	6,251.38	6,127.78	123.60	50.576	
4,200.00	4,197.91	4,628.23	4,626.91	14.99	111.32	124.27	-363.21	6,175.65	6,253.35	6,127.07	126.28	49.521	
4,300.00	4,297.85	4,728.17	4,726.85	15.35	113.63	124.30	-363.21	6,175.65	6,255.31	6,126.37	128.95	48.511	
4,400.00	4,397.79	4,826.36	4,825.01	15.71	115.90	124.31	-362.01	6,175.65	6,257.19	6,125.61	131.58	47.555	
4,500.00	4,497.73	4,924.28	4,922.92	16.07	118.17	124.34	-362.59	6,175.65	6,259.20	6,125.00	134.20	46.639	
4,600.00	4,597.66	5,028.11	5,026.66	16.43	120.57	124.38	-363.21	6,175.65	6,261.22	6,124.25	136.97	45.713	
4,700.00	4,697.60	5,128.05	5,126.60	16.79	122.89	124.40	-363.21	6,175.65	6,263.19	6,123.55	139.64	44.853	
4,800.00	4,797.54	5,227.99	5,226.54	17.15	125.20	124.43	-363.21	6,175.65	6,265.17	6,122.85	142.31	44.024	
4,900.00	4,897.48	5,326.11	5,324.64	17.51	127.47	124.44	-362.01	6,175.65	6,267.05	6,122.11	144.94	43.238	
5,000.00	4,997.42	5,423.97	5,422.50	17.87	129.73	124.48	-362.58	6,175.65	6,269.07	6,121.50	147.57	42.483	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
5,100.00	5,097.36	5,527.92	5,526.36	18.23	132.18	124.51	-363.21	6,175.65	6,271.09	6,120.72	150.37	41.704		
5,200.00	5,197.30	5,627.86	5,626.30	18.59	134.60	124.53	-363.21	6,175.65	6,273.07	6,119.93	153.15	40.961		
5,300.00	5,297.24	5,727.80	5,726.24	18.95	137.01	124.56	-363.21	6,175.65	6,275.05	6,119.13	155.92	40.244		
5,402.82	5,400.00	5,830.56	5,829.00	19.32	139.50	124.59	-363.21	6,175.65	6,277.09	6,118.31	158.78	39.533		
5,500.00	5,497.13	5,927.69	5,926.13	19.67	141.85	124.62	-363.21	6,175.65	6,278.78	6,117.31	161.48	38.883		
5,600.00	5,597.11	5,990.00	5,988.29	20.03	143.36	124.63	-363.21	6,175.65	6,280.15	6,116.81	163.34	38.449		
5,700.00	5,697.10	5,990.00	5,988.29	20.39	143.36	124.64	-363.21	6,175.65	6,282.31	6,118.65	163.66	38.387		
5,802.82	5,799.92	5,990.00	5,988.29	20.75	143.36	94.66	-363.21	6,175.65	6,285.66	6,121.72	163.94	38.341		
5,900.00	5,897.09	5,990.00	5,988.29	21.10	143.36	94.66	-363.21	6,175.65	6,290.13	6,125.97	164.17	38.315		
6,000.00	5,997.09	5,990.00	5,988.29	21.45	143.36	94.66	-363.21	6,175.65	6,296.30	6,131.93	164.36	38.307		
6,100.00	6,097.09	5,990.00	5,988.29	21.81	143.36	94.66	-363.21	6,175.65	6,304.04	6,139.52	164.52	38.318		
6,200.00	6,197.09	5,990.00	5,988.29	22.16	143.36	94.66	-363.21	6,175.65	6,313.36	6,148.72	164.64	38.347		
6,300.00	6,297.09	5,990.00	5,988.29	22.52	143.36	94.66	-363.21	6,175.65	6,324.24	6,159.53	164.71	38.395		
6,354.91	6,352.00	5,990.00	5,988.29	22.72	143.36	94.66	-363.21	6,175.65	6,330.88	6,166.14	164.74	38.430		
6,400.00	6,397.06	5,990.00	5,988.29	22.87	143.36	15.55	-363.21	6,175.65	6,335.16	6,170.41	164.75	38.454		
6,450.00	6,446.74	5,990.00	5,988.29	23.04	143.36	15.52	-363.21	6,175.65	6,336.68	6,171.94	164.74	38.465		
6,500.00	6,495.84	5,990.00	5,988.29	23.20	143.36	15.56	-363.21	6,175.65	6,334.82	6,170.10	164.72	38.458		
6,550.00	6,544.06	5,990.00	5,988.29	23.36	143.36	15.69	-363.21	6,175.65	6,329.58	6,164.88	164.69	38.433		
6,600.00	6,591.08	5,990.00	5,988.29	23.51	143.36	15.90	-363.21	6,175.65	6,320.98	6,156.32	164.65	38.390		
6,650.00	6,636.64	5,990.00	5,988.29	23.66	143.36	16.21	-363.21	6,175.65	6,309.06	6,144.46	164.60	38.329		
6,700.00	6,680.44	5,990.00	5,988.29	23.82	143.36	16.61	-363.21	6,175.65	6,293.89	6,129.35	164.54	38.251		
6,750.00	6,722.22	5,990.00	5,988.29	23.99	143.36	17.13	-363.21	6,175.65	6,275.52	6,111.05	164.47	38.156		
6,800.00	6,761.71	5,990.00	5,988.29	24.16	143.36	17.77	-363.21	6,175.65	6,254.05	6,089.66	164.39	38.044		
6,850.00	6,798.68	5,990.00	5,988.29	24.33	143.36	18.56	-363.21	6,175.65	6,229.57	6,065.27	164.30	37.915		
6,900.00	6,832.89	5,990.00	5,988.29	24.50	143.36	19.52	-363.21	6,175.65	6,202.21	6,038.00	164.21	37.769		
6,950.00	6,864.14	5,990.00	5,988.29	24.69	143.36	20.69	-363.21	6,175.65	6,172.09	6,007.97	164.12	37.608		
7,000.00	6,892.23	5,990.00	5,988.29	24.88	143.36	22.11	-363.21	6,175.65	6,139.36	5,975.34	164.02	37.430		
7,050.00	6,916.99	5,990.00	5,988.29	25.08	143.36	23.85	-363.21	6,175.65	6,104.18	5,940.25	163.93	37.237		
7,100.00	6,938.27	5,990.00	5,988.29	25.29	143.36	26.00	-363.21	6,175.65	6,066.73	5,902.89	163.83	37.030		
7,150.00	6,955.93	5,990.00	5,988.29	25.51	143.36	28.67	-363.21	6,175.65	6,027.20	5,863.45	163.75	36.808		
7,200.00	6,969.87	5,990.00	5,988.29	25.75	143.36	32.03	-363.21	6,175.65	5,985.79	5,822.12	163.67	36.572		
7,250.00	6,980.00	5,990.00	5,988.29	25.99	143.36	36.31	-363.21	6,175.65	5,942.72	5,779.12	163.60	36.324		
7,300.00	6,986.25	5,990.00	5,988.29	26.25	143.36	41.85	-363.21	6,175.65	5,898.23	5,734.68	163.55	36.064		
7,354.68	6,988.62	5,990.00	5,988.29	26.53	143.36	49.82	-363.21	6,175.65	5,848.23	5,684.72	163.51	35.768		
7,400.00	6,988.64	5,990.00	5,988.29	26.78	143.36	49.82	-363.21	6,175.65	5,806.32	5,642.84	163.48	35.517		
7,500.00	6,988.67	5,990.00	5,988.29	27.40	143.36	49.82	-363.21	6,175.65	5,714.04	5,550.61	163.42	34.965		
7,600.00	6,988.71	5,990.00	5,988.29	28.08	143.36	49.82	-363.21	6,175.65	5,622.02	5,458.64	163.38	34.412		
7,700.00	6,988.74	5,990.00	5,988.29	28.84	143.36	49.82	-363.21	6,175.65	5,530.27	5,366.93	163.34	33.858		
7,800.00	6,988.78	5,990.00	5,988.29	29.67	143.36	49.82	-363.21	6,175.65	5,438.82	5,275.51	163.31	33.304		
7,900.00	6,988.81	5,990.00	5,988.29	30.55	143.36	49.82	-363.21	6,175.65	5,347.67	5,184.38	163.29	32.749		
8,000.00	6,988.85	5,990.00	5,988.29	31.49	143.36	49.82	-363.21	6,175.65	5,256.85	5,093.56	163.29	32.194		
8,100.00	6,988.88	5,990.00	5,988.29	32.48	143.36	49.82	-363.21	6,175.65	5,166.36	5,003.06	163.29	31.638		
8,200.00	6,988.91	5,990.00	5,988.29	33.51	143.36	49.82	-363.21	6,175.65	5,076.23	4,912.91	163.32	31.082		
8,211.68	6,988.92	5,990.00	5,988.29	33.63	143.36	49.82	-363.21	6,175.65	5,065.72	4,902.40	163.32	31.017		
8,300.00	6,988.95	5,990.00	5,988.29	34.58	143.36	47.38	-363.21	6,175.65	4,986.03	4,822.68	163.34	30.525		
8,400.00	6,988.98	5,990.00	5,988.29	35.70	143.36	44.34	-363.21	6,175.65	4,895.10	4,731.75	163.36	29.966		
8,500.00	6,989.01	5,990.00	5,988.29	36.84	143.36	40.98	-363.21	6,175.65	4,803.52	4,640.17	163.35	29.406		
8,600.00	6,989.04	5,990.00	5,988.29	38.02	143.36	37.30	-363.21	6,175.65	4,711.36	4,548.04	163.32	28.847		
8,700.00	6,989.07	5,990.00	5,988.29	39.22	143.36	33.28	-363.21	6,175.65	4,618.71	4,455.44	163.27	28.289		
8,772.79	6,989.09	5,990.00	5,988.29	40.11	143.36	30.15	-363.21	6,175.65	4,551.00	4,387.79	163.21	27.885		
8,800.00	6,989.10	5,990.00	5,988.29	40.44	143.36	30.15	-363.21	6,175.65	4,525.66	4,362.48	163.18	27.734		
8,900.00	6,989.13	5,990.00	5,988.29	41.68	143.36	30.15	-363.21	6,175.65	4,432.73	4,269.65	163.08	27.181		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)			
9,000.00	6,989.15	5,990.00	5,988.29	42.95	143.36	30.15	-363.21	6,175.65	4,340.12	4,177.15	162.97	26.631	
9,100.00	6,989.18	5,990.00	5,988.29	44.24	143.36	30.15	-363.21	6,175.65	4,247.85	4,084.98	162.87	26.082	
9,200.00	6,989.21	5,990.00	5,988.29	45.55	143.36	30.15	-363.21	6,175.65	4,155.93	3,993.18	162.75	25.535	
9,300.00	6,989.24	5,990.00	5,988.29	46.88	143.36	30.15	-363.21	6,175.65	4,064.39	3,901.76	162.64	24.991	
9,400.00	6,989.26	5,990.00	5,988.29	48.23	143.36	30.15	-363.21	6,175.65	3,973.27	3,810.75	162.51	24.449	
9,500.00	6,989.29	5,990.00	5,988.29	49.59	143.36	30.15	-363.21	6,175.65	3,882.57	3,720.19	162.38	23.910	
9,600.00	6,989.32	5,990.00	5,988.29	50.96	143.36	30.15	-363.21	6,175.65	3,792.35	3,630.10	162.25	23.374	
9,700.00	6,989.34	5,990.00	5,988.29	52.35	143.36	30.15	-363.21	6,175.65	3,702.63	3,540.52	162.11	22.841	
9,800.00	6,989.37	5,990.00	5,988.29	53.75	143.36	30.15	-363.21	6,175.65	3,613.45	3,451.49	161.95	22.312	
9,900.00	6,989.40	5,990.00	5,988.29	55.16	143.36	30.15	-363.21	6,175.65	3,524.85	3,363.06	161.79	21.787	
10,000.00	6,989.42	5,990.00	5,988.29	56.58	143.36	30.15	-363.21	6,175.65	3,436.87	3,275.26	161.61	21.266	
10,100.00	6,989.45	5,990.00	5,988.29	58.01	143.36	30.15	-363.21	6,175.65	3,349.57	3,188.15	161.43	20.750	
10,200.00	6,989.48	5,990.00	5,988.29	59.45	143.36	30.15	-363.21	6,175.65	3,263.00	3,101.78	161.22	20.239	
10,300.00	6,989.51	5,990.00	5,988.29	60.90	143.36	30.15	-363.21	6,175.65	3,177.22	3,016.22	161.00	19.735	
10,400.00	6,989.53	5,990.00	5,988.29	62.35	143.36	30.15	-363.21	6,175.65	3,092.29	2,931.54	160.75	19.236	
10,500.00	6,989.56	5,990.00	5,988.29	63.81	143.36	30.15	-363.21	6,175.65	3,008.29	2,847.81	160.48	18.745	
10,600.00	6,989.59	5,990.00	5,988.29	65.28	143.36	30.15	-363.21	6,175.65	2,925.29	2,765.11	160.18	18.262	
10,700.00	6,989.61	5,990.00	5,988.29	66.76	143.36	30.15	-363.21	6,175.65	2,843.39	2,683.54	159.85	17.788	
10,800.00	6,989.64	5,990.00	5,988.29	68.24	143.36	30.15	-363.21	6,175.65	2,762.68	2,603.20	159.48	17.323	
10,900.00	6,989.67	5,990.00	5,988.29	69.73	143.36	30.15	-363.21	6,175.65	2,683.28	2,524.20	159.07	16.868	
11,000.00	6,989.70	5,990.00	5,988.29	71.22	143.36	30.15	-363.21	6,175.65	2,605.28	2,446.67	158.61	16.426	
11,100.00	6,989.72	5,990.00	5,988.29	72.71	143.36	30.15	-363.21	6,175.65	2,528.84	2,370.75	158.09	15.996	
11,200.00	6,989.75	5,990.00	5,988.29	74.22	143.36	30.15	-363.21	6,175.65	2,454.10	2,296.59	157.51	15.581	
11,300.00	6,989.78	5,990.00	5,988.29	75.72	143.36	30.15	-363.21	6,175.65	2,381.20	2,224.35	156.85	15.181	
11,400.00	6,989.80	5,990.00	5,988.29	77.23	143.36	30.15	-363.21	6,175.65	2,310.34	2,154.22	156.12	14.799	
11,500.00	6,989.83	5,990.00	5,988.29	78.74	143.36	30.15	-363.21	6,175.65	2,241.70	2,086.41	155.29	14.435	
11,600.00	6,989.86	5,990.00	5,988.29	80.26	143.36	30.15	-363.21	6,175.65	2,175.49	2,021.12	154.37	14.093	
11,700.00	6,989.88	5,990.00	5,988.29	81.78	143.36	30.15	-363.21	6,175.65	2,111.94	1,958.60	153.34	13.773	
11,800.00	6,989.91	5,990.00	5,988.29	83.30	143.36	30.15	-363.21	6,175.65	2,051.30	1,899.09	152.21	13.477	
11,900.00	6,989.94	5,990.00	5,988.29	84.83	143.36	30.15	-363.21	6,175.65	1,993.84	1,842.87	150.96	13.207	
12,000.00	6,989.97	5,990.00	5,988.29	86.36	143.36	30.15	-363.21	6,175.65	1,939.83	1,790.21	149.61	12.966	
12,100.00	6,989.99	5,990.00	5,988.29	87.89	143.36	30.15	-363.21	6,175.65	1,889.57	1,741.40	148.17	12.753	
12,200.00	6,990.02	5,990.00	5,988.29	89.42	143.36	30.15	-363.21	6,175.65	1,843.37	1,696.71	146.66	12.569	
12,300.00	6,990.05	5,990.00	5,988.29	90.96	143.36	30.15	-363.21	6,175.65	1,801.54	1,656.43	145.11	12.415	
12,400.00	6,990.07	5,990.00	5,988.29	92.50	143.36	30.15	-363.21	6,175.65	1,764.40	1,620.81	143.59	12.288	
12,500.00	6,990.10	5,990.00	5,988.29	94.04	143.36	30.15	-363.21	6,175.65	1,732.24	1,590.08	142.15	12.186	
12,600.00	6,990.13	5,990.00	5,988.29	95.58	143.36	30.15	-363.21	6,175.65	1,705.34	1,564.44	140.89	12.104	
12,700.00	6,990.15	5,990.00	5,988.29	97.13	143.36	30.15	-363.21	6,175.65	1,683.96	1,544.05	139.91	12.036	
12,800.00	6,990.18	5,990.00	5,988.29	98.68	143.36	30.15	-363.21	6,175.65	1,668.31	1,529.02	139.30	11.977	
12,900.00	6,990.21	5,990.00	5,988.29	100.22	143.36	30.15	-363.21	6,175.65	1,658.56	1,519.41	139.15	11.920	
13,000.00	6,990.24	5,990.00	5,988.29	101.78	143.36	30.15	-363.21	6,175.65	1,654.80	1,515.28	139.52	11.861	
13,012.29	6,990.24	5,990.00	5,988.29	101.97	143.36	30.15	-363.21	6,175.65	1,654.75	1,515.15	139.60	11.853 CC, ES	
13,100.00	6,990.26	5,990.00	5,988.29	103.33	143.36	30.15	-363.21	6,175.65	1,657.07	1,516.64	140.44	11.799	
13,200.00	6,990.29	5,990.00	5,988.29	104.88	143.36	30.15	-363.21	6,175.65	1,665.36	1,523.49	141.87	11.738	
13,300.00	6,990.32	5,990.00	5,988.29	106.44	143.36	30.15	-363.21	6,175.65	1,679.58	1,535.82	143.76	11.683	
13,400.00	6,990.34	5,990.00	5,988.29	107.99	143.36	30.15	-363.21	6,175.65	1,699.56	1,553.57	146.00	11.641	
13,500.00	6,990.37	5,990.00	5,988.29	109.55	143.36	30.15	-363.21	6,175.65	1,725.13	1,576.65	148.48	11.619 SF	
13,600.00	6,990.40	5,990.00	5,988.29	111.11	143.36	30.15	-363.21	6,175.65	1,756.02	1,604.93	151.08	11.623	
13,700.00	6,990.42	5,990.00	5,988.29	112.67	143.36	30.15	-363.21	6,175.65	1,791.97	1,638.24	153.73	11.657	
13,800.00	6,990.45	5,990.00	5,988.29	114.23	143.36	30.15	-363.21	6,175.65	1,832.67	1,676.35	156.33	11.723	
13,900.00	6,990.48	5,990.00	5,988.29	115.80	143.36	30.15	-363.21	6,175.65	1,877.83	1,719.00	158.82	11.824	
14,000.00	6,990.51	5,990.00	5,988.29	117.36	143.36	30.15	-363.21	6,175.65	1,927.11	1,765.94	161.17	11.957	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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)			
14,100.00	6,990.53	5,990.00	5,988.29	118.93	143.36	30.15	-363.21	6,175.65	1,980.23	1,816.87	163.36	12.122	
14,200.00	6,990.56	5,990.00	5,988.29	120.49	143.36	30.15	-363.21	6,175.65	2,036.87	1,871.52	165.36	12.318	
14,300.00	6,990.59	5,990.00	5,988.29	122.06	143.36	30.15	-363.21	6,175.65	2,096.76	1,929.58	167.18	12.542	
14,400.00	6,990.61	5,990.00	5,988.29	123.63	143.36	30.15	-363.21	6,175.65	2,159.62	1,990.80	168.82	12.793	
14,500.00	6,990.64	5,990.00	5,988.29	125.20	143.36	30.15	-363.21	6,175.65	2,225.19	2,054.91	170.29	13.067	
14,600.00	6,990.67	5,990.00	5,988.29	126.77	143.36	30.15	-363.21	6,175.65	2,293.26	2,121.66	171.60	13.364	
14,700.00	6,990.70	5,990.00	5,988.29	128.34	143.36	30.15	-363.21	6,175.65	2,363.59	2,190.83	172.76	13.681	
14,800.00	6,990.72	5,990.00	5,988.29	129.91	143.36	30.15	-363.21	6,175.65	2,436.00	2,262.21	173.79	14.017	
14,900.00	6,990.75	5,990.00	5,988.29	131.48	143.36	30.15	-363.21	6,175.65	2,510.31	2,335.61	174.70	14.369	
15,000.00	6,990.78	5,990.00	5,988.29	133.06	143.36	30.15	-363.21	6,175.65	2,586.35	2,410.85	175.50	14.737	
15,100.00	6,990.80	5,990.00	5,988.29	134.63	143.36	30.15	-363.21	6,175.65	2,663.97	2,487.76	176.21	15.119	
15,200.00	6,990.83	5,990.00	5,988.29	136.20	143.36	30.15	-363.21	6,175.65	2,743.04	2,566.22	176.83	15.513	
15,300.00	6,990.86	5,990.00	5,988.29	137.78	143.36	30.15	-363.21	6,175.65	2,823.44	2,646.07	177.37	15.918	
15,400.00	6,990.88	5,990.00	5,988.29	139.36	143.36	30.15	-363.21	6,175.65	2,905.06	2,727.21	177.85	16.334	
15,500.00	6,990.91	5,990.00	5,988.29	140.93	143.36	30.15	-363.21	6,175.65	2,987.79	2,809.52	178.27	16.760	
15,600.00	6,990.94	5,990.00	5,988.29	142.51	143.36	30.15	-363.21	6,175.65	3,071.55	2,892.92	178.64	17.194	
15,700.00	6,990.97	5,990.00	5,988.29	144.09	143.36	30.15	-363.21	6,175.65	3,156.26	2,977.30	178.96	17.637	
15,800.00	6,990.99	5,990.00	5,988.29	145.67	143.36	30.15	-363.21	6,175.65	3,241.84	3,062.60	179.24	18.086	
15,900.00	6,991.02	5,990.00	5,988.29	147.24	143.36	30.15	-363.21	6,175.65	3,328.22	3,148.73	179.49	18.543	
16,000.00	6,991.05	5,990.00	5,988.29	148.82	143.36	30.15	-363.21	6,175.65	3,415.35	3,235.64	179.71	19.005	
16,100.00	6,991.07	5,990.00	5,988.29	150.40	143.36	30.15	-363.21	6,175.65	3,503.16	3,323.26	179.90	19.473	
16,200.00	6,991.10	5,990.00	5,988.29	151.99	143.36	30.15	-363.21	6,175.65	3,591.61	3,411.54	180.07	19.946	
16,300.00	6,991.13	5,990.00	5,988.29	153.57	143.36	30.15	-363.21	6,175.65	3,680.66	3,500.44	180.22	20.423	
16,400.00	6,991.15	5,990.00	5,988.29	155.15	143.36	30.15	-363.21	6,175.65	3,770.25	3,589.90	180.35	20.905	
16,500.00	6,991.18	5,990.00	5,988.29	156.73	143.36	30.15	-363.21	6,175.65	3,860.35	3,679.89	180.47	21.391	
16,600.00	6,991.21	5,990.00	5,988.29	158.31	143.36	30.15	-363.21	6,175.65	3,950.93	3,770.36	180.57	21.880	
16,700.00	6,991.24	5,990.00	5,988.29	159.90	143.36	30.15	-363.21	6,175.65	4,041.96	3,861.29	180.66	22.373	
16,800.00	6,991.26	5,990.00	5,988.29	161.48	143.36	30.15	-363.21	6,175.65	4,133.39	3,952.65	180.74	22.869	
16,900.00	6,991.29	5,990.00	5,988.29	163.06	143.36	30.15	-363.21	6,175.65	4,225.22	4,044.41	180.81	23.368	
17,000.00	6,991.32	5,990.00	5,988.29	164.65	143.36	30.15	-363.21	6,175.65	4,317.41	4,136.53	180.88	23.869	
17,100.00	6,991.34	5,990.00	5,988.29	166.23	143.36	30.15	-363.21	6,175.65	4,409.94	4,229.00	180.94	24.373	
17,200.00	6,991.37	5,990.00	5,988.29	167.82	143.36	30.15	-363.21	6,175.65	4,502.79	4,321.80	180.99	24.878	
17,300.00	6,991.40	5,990.00	5,988.29	169.40	143.36	30.15	-363.21	6,175.65	4,595.94	4,414.90	181.04	25.386	
17,400.00	6,991.42	5,990.00	5,988.29	170.99	143.36	30.15	-363.21	6,175.65	4,689.37	4,508.29	181.09	25.896	
17,500.00	6,991.45	5,990.00	5,988.29	172.57	143.36	30.15	-363.21	6,175.65	4,783.07	4,601.94	181.13	26.407	
17,600.00	6,991.48	5,990.00	5,988.29	174.16	143.36	30.15	-363.21	6,175.65	4,877.02	4,695.85	181.17	26.920	
17,700.00	6,991.51	5,990.00	5,988.29	175.75	143.36	30.15	-363.21	6,175.65	4,971.20	4,790.00	181.20	27.435	
17,800.00	6,991.53	5,990.00	5,988.29	177.33	143.36	30.15	-363.21	6,175.65	5,065.61	4,884.37	181.24	27.950	
17,900.00	6,991.56	5,990.00	5,988.29	178.92	143.36	30.15	-363.21	6,175.65	5,160.22	4,978.95	181.27	28.467	
18,000.00	6,991.59	5,990.00	5,988.29	180.51	143.36	30.15	-363.21	6,175.65	5,255.04	5,073.74	181.30	28.985	
18,100.00	6,991.61	5,990.00	5,988.29	182.10	143.36	30.15	-363.21	6,175.65	5,350.05	5,168.71	181.33	29.504	
18,200.00	6,991.64	5,990.00	5,988.29	183.68	143.36	30.15	-363.21	6,175.65	5,445.23	5,263.87	181.36	30.024	
18,300.00	6,991.67	5,990.00	5,988.29	185.27	143.36	30.15	-363.21	6,175.65	5,540.58	5,359.19	181.39	30.544	
18,400.00	6,991.69	5,990.00	5,988.29	186.86	143.36	30.15	-363.21	6,175.65	5,636.10	5,454.68	181.42	31.066	
18,500.00	6,991.72	5,990.00	5,988.29	188.45	143.36	30.15	-363.21	6,175.65	5,731.77	5,550.31	181.45	31.588	
18,600.00	6,991.75	5,990.00	5,988.29	190.04	143.36	30.15	-363.21	6,175.65	5,827.58	5,646.10	181.48	32.111	
18,700.00	6,991.78	5,990.00	5,988.29	191.63	143.36	30.15	-363.21	6,175.65	5,923.53	5,742.02	181.52	32.634	
18,800.00	6,991.80	5,990.00	5,988.29	193.22	143.36	30.15	-363.21	6,175.65	6,019.62	5,838.07	181.55	33.157	
18,900.00	6,991.83	5,990.00	5,988.29	194.81	143.36	30.15	-363.21	6,175.65	6,115.83	5,934.25	181.58	33.682	
19,000.00	6,991.86	5,990.00	5,988.29	196.40	143.36	30.15	-363.21	6,175.65	6,212.16	6,030.55	181.61	34.206	
19,100.00	6,991.88	5,990.00	5,988.29	197.99	143.36	30.15	-363.21	6,175.65	6,308.60	6,126.96	181.64	34.731	
19,200.00	6,991.91	5,990.00	5,988.29	199.58	143.36	30.15	-363.21	6,175.65	6,405.15	6,223.47	181.68	35.256	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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		
19,300.00	6,991.94	5,990.00	5,988.29	201.17	143.36	30.15	-363.21	6,175.65	6,501.81	6,320.10	181.71	35.781		
19,342.28	6,991.95	5,990.00	5,988.29	201.84	143.36	30.15	-363.21	6,175.65	6,542.70	6,360.98	181.73	36.003		
19,400.00	6,991.97	5,990.00	5,988.29	202.76	143.36	30.15	-363.21	6,175.65	6,598.56	6,416.82	181.75	36.306		
19,500.00	6,991.99	5,990.00	5,988.29	204.35	143.36	30.15	-363.21	6,175.65	6,695.42	6,513.63	181.78	36.832		
19,542.28	6,992.00	5,990.00	5,988.29	205.03	143.36	30.15	-363.21	6,175.65	6,736.39	6,554.59	181.80	37.054		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 358-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-51.65	3,067.85	-3,878.23	4,945.02				
100.00	100.00	77.30	77.30	0.25	0.08	-51.66	3,067.77	-3,878.24	4,944.89	4,944.56	0.33	N/A	
200.00	200.00	186.18	186.18	0.61	0.20	-51.66	3,067.38	-3,878.24	4,944.67	4,943.86	0.81	6,094.844	
300.00	300.00	295.05	295.05	0.97	0.32	-51.67	3,066.68	-3,878.24	4,944.28	4,942.99	1.29	3,839.403	
400.00	400.00	375.83	375.82	1.33	0.43	-51.67	3,065.93	-3,878.32	4,943.82	4,942.07	1.75	2,819.688 CC	
417.99	417.99	389.00	388.99	1.39	0.46	-51.68	3,065.75	-3,878.48	4,943.83	4,941.98	1.85	2,677.790 ES	
500.00	500.00	419.00	418.98	1.68	0.52	-51.68	3,065.33	-3,879.15	4,944.37	4,942.17	2.20	2,244.364	
600.00	600.00	450.00	449.95	2.04	0.59	-51.70	3,064.89	-3,880.46	4,946.33	4,943.70	2.63	1,882.031	
700.00	700.00	462.80	462.73	2.40	0.63	-51.70	3,064.71	-3,881.22	4,949.72	4,946.70	3.02	1,641.139	
800.00	799.98	480.00	479.88	2.76	0.67	-21.69	3,064.49	-3,882.44	4,953.10	4,949.69	3.41	1,452.761	
900.00	899.92	510.00	509.75	3.12	0.75	-21.72	3,064.18	-3,885.19	4,956.43	4,952.60	3.83	1,293.493	
1,000.00	999.86	524.46	524.12	3.47	0.79	-21.73	3,064.10	-3,886.78	4,961.38	4,957.16	4.22	1,175.738	
1,100.00	1,099.80	541.00	540.54	3.83	0.83	-21.75	3,064.13	-3,888.80	4,967.96	4,963.35	4.61	1,077.089	
1,200.00	1,199.74	572.00	571.23	4.19	0.92	-21.78	3,064.43	-3,893.18	4,976.21	4,971.17	5.04	987.300	
1,300.00	1,299.68	572.00	571.23	4.55	0.92	-21.78	3,064.43	-3,893.18	4,986.03	4,980.64	5.39	925.048	
1,400.00	1,399.61	602.00	600.79	4.91	1.01	-21.82	3,065.02	-3,898.21	4,997.46	4,991.65	5.82	859.318	
1,500.00	1,499.55	616.53	615.06	5.27	1.05	-21.84	3,065.41	-3,900.93	5,010.53	5,004.33	6.20	808.037	
1,600.00	1,599.49	633.00	631.19	5.63	1.11	-21.86	3,065.92	-3,904.22	5,025.20	5,018.61	6.59	762.773	
1,700.00	1,699.43	664.00	661.42	5.99	1.21	-21.90	3,067.03	-3,910.98	5,041.42	5,034.40	7.02	718.252	
1,800.00	1,799.37	681.86	678.77	6.35	1.28	-21.93	3,067.70	-3,915.21	5,059.09	5,051.68	7.41	682.655	
1,900.00	1,899.31	711.98	707.89	6.71	1.41	-21.97	3,068.80	-3,922.79	5,078.18	5,070.34	7.84	647.494	
2,000.00	1,999.25	743.40	738.12	7.07	1.56	-22.03	3,069.80	-3,931.27	5,098.54	5,090.26	8.28	615.588	
2,100.00	2,099.19	787.00	779.87	7.42	1.79	-22.11	3,071.02	-3,943.81	5,120.11	5,111.34	8.77	583.673	
2,200.00	2,199.13	829.90	820.74	7.78	2.04	-22.20	3,071.80	-3,956.81	5,142.59	5,133.32	9.27	554.759	
2,300.00	2,299.07	848.00	837.89	8.14	2.15	-22.24	3,072.10	-3,962.58	5,166.40	5,156.74	9.66	534.636	
2,400.00	2,399.01	879.00	867.07	8.50	2.35	-22.32	3,072.63	-3,973.04	5,191.63	5,181.51	10.12	513.195	
2,500.00	2,498.94	894.11	881.19	8.86	2.46	-22.35	3,072.90	-3,978.42	5,218.27	5,207.78	10.50	497.159	
2,600.00	2,598.88	910.00	895.96	9.22	2.57	-22.39	3,073.17	-3,984.27	5,246.34	5,235.46	10.87	482.426	
2,700.00	2,698.82	940.00	923.64	9.58	2.80	-22.48	3,073.58	-3,995.83	5,275.71	5,264.38	11.33	465.710	
2,800.00	2,798.76	971.00	951.95	9.94	3.05	-22.56	3,073.86	-4,008.45	5,306.43	5,294.63	11.79	449.988	
2,900.00	2,898.70	984.74	964.41	10.30	3.16	-22.61	3,073.97	-4,014.25	5,338.41	5,326.25	12.16	439.073	
3,000.00	2,998.64	1,000.00	978.17	10.66	3.29	-22.65	3,074.10	-4,020.85	5,371.74	5,359.21	12.53	428.772	
3,100.00	3,098.58	1,031.00	1,005.93	11.02	3.57	-22.75	3,074.44	-4,034.64	5,406.32	5,393.32	12.99	416.105	
3,200.00	3,198.52	1,062.00	1,033.44	11.38	3.86	-22.85	3,074.78	-4,048.92	5,442.12	5,428.66	13.46	404.323	
3,300.00	3,298.46	1,079.73	1,049.06	11.75	4.04	-22.90	3,074.99	-4,057.30	5,479.08	5,465.24	13.84	395.874	
3,400.00	3,398.40	1,091.00	1,058.95	12.11	4.15	-22.94	3,075.15	-4,062.70	5,517.29	5,503.12	14.17	389.286	
3,500.00	3,498.34	1,122.00	1,085.90	12.47	4.46	-23.05	3,075.63	-4,078.02	5,556.71	5,542.07	14.64	379.606	
3,600.00	3,598.27	1,122.00	1,085.90	12.83	4.46	-23.05	3,075.63	-4,078.02	5,597.44	5,582.55	14.89	376.041	
3,700.00	3,698.21	1,152.00	1,111.56	13.19	4.79	-23.15	3,076.25	-4,093.54	5,639.37	5,624.03	15.34	367.602	
3,800.00	3,798.15	1,152.00	1,111.56	13.55	4.79	-23.15	3,076.25	-4,093.54	5,682.57	5,666.99	15.58	364.803	
3,900.00	3,898.09	1,182.00	1,136.86	13.91	5.13	-23.25	3,077.04	-4,109.65	5,726.86	5,710.83	16.03	357.273	
4,000.00	3,998.03	1,214.00	1,163.51	14.27	5.51	-23.37	3,077.87	-4,127.34	5,772.28	5,755.78	16.50	349.830	
4,100.00	4,097.97	1,244.00	1,188.29	14.63	5.87	-23.48	3,078.45	-4,144.24	5,818.56	5,801.60	16.95	343.179	
4,200.00	4,197.91	1,283.47	1,220.65	14.99	6.36	-23.63	3,078.97	-4,166.83	5,865.62	5,848.14	17.49	335.443	
4,300.00	4,297.85	1,358.51	1,281.80	15.35	7.29	-23.92	3,079.72	-4,210.31	5,913.27	5,894.96	18.30	323.071	
4,400.00	4,397.79	1,435.00	1,344.17	15.71	8.20	-24.20	3,080.58	-4,254.59	5,961.07	5,941.96	19.11	311.957	
4,500.00	4,497.73	1,451.92	1,357.87	16.07	8.42	-24.27	3,080.75	-4,264.51	6,009.59	5,990.13	19.45	308.900	
4,600.00	4,597.66	1,476.89	1,377.93	16.43	8.75	-24.36	3,081.01	-4,279.39	6,059.09	6,039.23	19.86	305.040	
4,700.00	4,697.60	1,522.74	1,414.64	16.79	9.35	-24.54	3,081.84	-4,306.83	6,109.36	6,088.92	20.44	298.908	
4,800.00	4,797.54	1,562.00	1,445.97	17.15	9.88	-24.68	3,082.63	-4,330.49	6,160.23	6,139.27	20.96	293.856	
4,900.00	4,897.48	1,604.15	1,479.49	17.51	10.44	-24.84	3,083.79	-4,356.02	6,211.79	6,190.29	21.50	288.910	
5,000.00	4,997.42	1,690.00	1,547.37	17.87	11.58	-25.16	3,085.26	-4,408.55	6,263.65	6,241.23	22.41	279.487	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	Reference	Offset				Offset Wellbore Centre		Distance					
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	5,097.36	1,722.00	1,572.61	18.23	12.01	-25.28	3,085.90	-4,428.22	6,315.98	6,293.12	22.86	276.280		
5,200.00	5,197.30	1,754.00	1,597.83	18.59	12.45	-25.39	3,086.83	-4,447.89	6,368.95	6,345.64	23.30	273.303		
5,300.00	5,297.24	1,786.00	1,622.83	18.95	12.90	-25.51	3,087.74	-4,467.84	6,422.71	6,398.96	23.75	270.387		
5,402.82	5,400.00	5,991.60	5,478.90	19.32	38.05	-32.48	3,009.15	-5,579.56	6,202.59	6,161.25	41.33	150.061		
5,500.00	5,497.13	6,086.14	5,573.36	19.67	38.11	-32.52	3,005.17	-5,579.80	6,198.40	6,156.64	41.77	148.402		
5,600.00	5,597.11	6,183.49	5,670.62	20.03	38.18	-32.56	3,001.17	-5,580.04	6,194.87	6,152.65	42.22	146.731		
5,700.00	5,697.10	6,280.90	5,767.95	20.39	38.24	-32.59	2,997.26	-5,580.28	6,192.11	6,149.44	42.68	145.099		
5,802.82	5,799.92	6,381.10	5,868.07	20.75	38.31	-62.62	2,993.34	-5,580.52	6,190.09	6,146.94	43.15	143.463		
5,900.00	5,897.09	6,475.82	5,962.72	21.10	38.37	-62.65	2,989.72	-5,580.74	6,188.58	6,144.98	43.60	141.949		
6,000.00	5,997.09	6,573.30	6,060.13	21.45	38.44	-62.68	2,986.09	-5,580.96	6,187.07	6,143.01	44.06	140.414		
6,100.00	6,097.09	6,670.78	6,157.56	21.81	38.51	-62.71	2,982.56	-5,581.18	6,185.61	6,141.07	44.53	138.902		
6,200.00	6,197.09	6,768.28	6,254.99	22.16	38.57	-62.74	2,979.12	-5,581.39	6,184.18	6,139.18	45.00	137.412		
6,300.00	6,297.09	6,865.78	6,352.43	22.52	38.64	-62.77	2,975.78	-5,581.59	6,182.80	6,137.32	45.48	135.946		
6,354.91	6,352.00	6,919.31	6,405.94	22.72	38.68	-62.78	2,973.98	-5,581.70	6,182.05	6,136.31	45.74	135.150		
6,365.73	6,362.82	6,929.87	6,416.48	22.75	38.68	-141.79	2,973.63	-5,581.72	6,181.98	6,136.19	45.79	134.999		
6,400.00	6,397.06	6,963.23	6,449.84	22.87	38.71	-141.77	2,972.53	-5,581.79	6,182.71	6,136.76	45.95	134.552		
6,450.00	6,446.74	7,011.64	6,498.21	23.04	38.74	-141.61	2,970.96	-5,581.88	6,186.37	6,140.20	46.17	133.994		
6,500.00	6,495.84	7,059.45	6,546.00	23.20	38.77	-141.29	2,969.42	-5,581.98	6,193.11	6,146.74	46.38	133.534		
6,550.00	6,544.06	7,106.36	6,592.89	23.36	38.80	-140.81	2,967.94	-5,582.07	6,202.90	6,156.32	46.58	133.173		
6,600.00	6,591.08	7,152.10	6,638.61	23.51	38.83	-140.16	2,966.51	-5,582.15	6,215.67	6,168.90	46.76	132.913		
6,650.00	6,636.64	7,196.38	6,682.87	23.66	38.86	-139.32	2,965.15	-5,582.24	6,231.37	6,184.43	46.94	132.751		
6,700.00	6,680.44	7,238.93	6,725.39	23.82	38.89	-138.28	2,963.87	-5,582.32	6,249.90	6,202.80	47.10	132.688		
6,750.00	6,722.22	7,279.48	6,765.93	23.99	38.92	-137.02	2,962.66	-5,582.39	6,271.18	6,223.93	47.25	132.719		
6,800.00	6,761.71	7,317.79	6,804.22	24.16	38.95	-135.50	2,961.53	-5,582.46	6,295.08	6,247.69	47.39	132.842		
6,850.00	6,798.68	7,353.62	6,840.04	24.33	38.97	-133.70	2,960.48	-5,582.52	6,321.47	6,273.96	47.51	133.053		
6,900.00	6,832.89	7,386.75	6,873.15	24.50	38.99	-131.58	2,959.53	-5,582.58	6,350.21	6,302.59	47.62	133.348		
6,950.00	6,864.14	7,416.98	6,903.36	24.69	39.01	-129.10	2,958.67	-5,582.63	6,381.13	6,333.41	47.72	133.721		
7,000.00	6,892.23	7,444.11	6,930.49	24.88	39.03	-126.20	2,957.91	-5,582.68	6,414.05	6,366.24	47.81	134.168		
7,050.00	6,916.99	7,467.98	6,954.35	25.08	39.05	-122.83	2,957.24	-5,582.72	6,448.78	6,400.90	47.88	134.682		
7,100.00	6,938.27	7,488.45	6,974.81	25.29	39.06	-118.95	2,956.68	-5,582.75	6,485.12	6,437.17	47.95	135.258		
7,150.00	6,955.93	7,505.38	6,991.73	25.51	39.08	-114.52	2,956.21	-5,582.78	6,522.85	6,474.85	48.00	135.889		
7,200.00	6,969.87	7,518.67	7,005.02	25.75	39.08	-109.52	2,955.85	-5,582.80	6,561.75	6,513.71	48.05	136.569		
7,250.00	6,980.00	7,528.24	7,014.58	25.99	39.09	-103.98	2,955.59	-5,582.82	6,601.58	6,553.50	48.08	137.292		
7,300.00	6,986.25	7,534.02	7,020.36	26.25	39.09	-97.95	2,955.43	-5,582.83	6,642.10	6,593.99	48.11	138.050		
7,354.68	6,988.62	7,535.97	7,022.31	26.53	39.10	-90.97	2,955.38	-5,582.83	6,686.91	6,638.77	48.14	138.911		
7,400.00	6,988.64	7,535.68	7,022.03	26.78	39.10	-90.97	2,955.39	-5,582.83	6,724.22	6,676.06	48.16	139.630		
7,500.00	6,988.67	7,535.05	7,021.40	27.40	39.10	-90.96	2,955.40	-5,582.83	6,806.88	6,758.66	48.22	141.165		
7,600.00	6,988.71	7,534.42	7,020.77	28.08	39.09	-90.95	2,955.42	-5,582.83	6,890.01	6,841.70	48.31	142.635		
7,700.00	6,988.74	7,533.79	7,020.14	28.84	39.09	-90.94	2,955.44	-5,582.83	6,973.58	6,925.17	48.41	144.045		
7,800.00	6,988.78	7,533.16	7,019.51	29.67	39.09	-90.93	2,955.46	-5,582.83	7,057.58	7,009.04	48.54	145.399		
7,900.00	6,988.81	7,532.53	7,018.88	30.55	39.09	-90.92	2,955.47	-5,582.83	7,141.99	7,093.30	48.68	146.703		
8,000.00	6,988.85	7,531.90	7,018.25	31.49	39.09	-90.91	2,955.49	-5,582.83	7,226.79	7,177.95	48.84	147.961		
8,100.00	6,988.88	7,531.27	7,017.61	32.48	39.09	-90.90	2,955.51	-5,582.82	7,311.98	7,262.97	49.02	149.176		
8,200.00	6,988.91	7,530.64	7,016.98	33.51	39.09	-90.89	2,955.52	-5,582.82	7,397.55	7,348.35	49.20	150.353		
8,211.68	6,988.92	7,530.56	7,016.91	33.63	39.09	-90.89	2,955.53	-5,582.82	7,407.57	7,358.34	49.22	150.488		
8,300.00	6,988.95	7,530.04	7,016.39	34.58	39.09	-90.93	2,955.54	-5,582.82	7,484.15	7,434.75	49.39	151.518		
8,400.00	6,988.98	7,529.53	7,015.88	35.70	39.09	-90.99	2,955.55	-5,582.82	7,572.73	7,523.14	49.59	152.714		
8,500.00	6,989.01	7,529.11	7,015.46	36.84	39.09	-91.05	2,955.57	-5,582.82	7,663.13	7,613.35	49.78	153.953		
8,600.00	6,989.04	7,528.79	7,015.13	38.02	39.09	-91.14	2,955.57	-5,582.82	7,755.17	7,705.22	49.96	155.241		
8,700.00	6,989.07	7,528.55	7,014.89	39.22	39.09	-91.24	2,955.58	-5,582.82	7,848.70	7,798.57	50.13	156.581		
8,772.79	6,989.09	7,528.43	7,014.78	40.11	39.09	-91.33	2,955.58	-5,582.82	7,917.60	7,867.36	50.24	157.590		
8,800.00	6,989.10	7,528.40	7,014.74	40.44	39.09	-91.33	2,955.59	-5,582.82	7,943.49	7,893.21	50.28	157.973		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program:		358-APC_ISCWSA REV 2 MWD					Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)				
8,900.00	6,989.13	7,528.27	7,014.62	41.68	39.09	-91.33	2,955.59	-5,582.82	8,038.71	7,988.27	50.44	159.379			
9,000.00	6,989.15	7,528.15	7,014.49	42.95	39.09	-91.32	2,955.59	-5,582.82	8,134.03	8,083.44	50.59	160.776			
9,100.00	6,989.18	7,528.02	7,014.37	44.24	39.09	-91.32	2,955.60	-5,582.82	8,229.47	8,178.73	50.75	162.163			
9,200.00	6,989.21	7,527.90	7,014.24	45.55	39.09	-91.32	2,955.60	-5,582.82	8,325.02	8,274.12	50.90	163.543			
9,300.00	6,989.24	7,527.77	7,014.12	46.88	39.09	-91.31	2,955.60	-5,582.82	8,420.67	8,369.61	51.06	164.915			
9,400.00	6,989.26	7,527.64	7,013.99	48.23	39.09	-91.31	2,955.61	-5,582.82	8,516.42	8,465.20	51.22	166.280			
9,500.00	6,989.29	7,527.52	7,013.86	49.59	39.09	-91.31	2,955.61	-5,582.82	8,612.26	8,560.89	51.37	167.638			
9,600.00	6,989.32	7,527.39	7,013.74	50.96	39.09	-91.31	2,955.61	-5,582.82	8,708.20	8,656.67	51.53	168.989			
9,700.00	6,989.34	7,527.27	7,013.61	52.35	39.09	-91.30	2,955.62	-5,582.82	8,804.23	8,752.54	51.69	170.334			
9,800.00	6,989.37	7,527.14	7,013.49	53.75	39.09	-91.30	2,955.62	-5,582.82	8,900.35	8,848.50	51.84	171.674			
9,900.00	6,989.40	7,527.02	7,013.36	55.16	39.09	-91.30	2,955.62	-5,582.82	8,996.55	8,944.55	52.00	173.008			
10,000.00	6,989.42	7,526.89	7,013.24	56.58	39.09	-91.29	2,955.63	-5,582.82	9,092.83	9,040.68	52.16	174.337			
10,100.00	6,989.45	7,526.77	7,013.11	58.01	39.09	-91.29	2,955.63	-5,582.82	9,189.20	9,136.88	52.31	175.662			
10,200.00	6,989.48	7,526.64	7,012.99	59.45	39.09	-91.29	2,955.63	-5,582.82	9,285.64	9,233.17	52.47	176.981			
10,300.00	6,989.51	7,526.51	7,012.86	60.90	39.09	-91.29	2,955.64	-5,582.82	9,382.15	9,329.53	52.62	178.296			
10,400.00	6,989.53	7,526.39	7,012.73	62.35	39.09	-91.28	2,955.64	-5,582.82	9,478.74	9,425.96	52.77	179.607			
10,500.00	6,989.56	7,526.26	7,012.61	63.81	39.09	-91.28	2,955.64	-5,582.82	9,575.39	9,522.47	52.93	180.914			
10,600.00	6,989.59	7,526.14	7,012.48	65.28	39.09	-91.28	2,955.65	-5,582.82	9,672.12	9,619.04	53.08	182.217			
10,700.00	6,989.61	7,526.01	7,012.36	66.76	39.09	-91.27	2,955.65	-5,582.82	9,768.91	9,715.68	53.23	183.517			
10,800.00	6,989.64	7,525.89	7,012.23	68.24	39.09	-91.27	2,955.65	-5,582.82	9,865.76	9,812.38	53.38	184.812			
10,900.00	6,989.67	7,525.76	7,012.11	69.73	39.09	-91.27	2,955.66	-5,582.82	9,962.68	9,909.15	53.53	186.105			
11,000.00	6,989.70	7,525.63	7,011.98	71.22	39.09	-91.26	2,955.66	-5,582.82	10,059.66	10,005.98	53.68	187.394			
11,100.00	6,989.72	7,525.51	7,011.85	72.71	39.09	-91.26	2,955.66	-5,582.82	10,156.69	10,102.86	53.83	188.679			
11,200.00	6,989.75	7,525.38	7,011.73	74.22	39.09	-91.26	2,955.67	-5,582.81	10,253.79	10,199.81	53.98	189.962			
11,300.00	6,989.78	7,525.26	7,011.60	75.72	39.09	-91.26	2,955.67	-5,582.81	10,350.93	10,296.81	54.13	191.241			
11,400.00	6,989.80	7,525.13	7,011.48	77.23	39.09	-91.25	2,955.67	-5,582.81	10,448.14	10,393.87	54.27	192.517			
11,500.00	6,989.83	7,525.01	7,011.35	78.74	39.09	-91.25	2,955.68	-5,582.81	10,545.39	10,490.97	54.42	193.791			
11,600.00	6,989.86	7,524.88	7,011.23	80.26	39.09	-91.25	2,955.68	-5,582.81	10,642.70	10,588.13	54.56	195.061			
11,700.00	6,989.88	7,524.75	7,011.10	81.78	39.09	-91.24	2,955.68	-5,582.81	10,740.05	10,685.35	54.70	196.329			
11,800.00	6,989.91	7,524.63	7,010.97	83.30	39.09	-91.24	2,955.69	-5,582.81	10,837.45	10,782.61	54.85	197.594			
11,900.00	6,989.94	7,524.50	7,010.85	84.83	39.09	-91.24	2,955.69	-5,582.81	10,934.90	10,879.91	54.99	198.856			
12,000.00	6,989.97	7,524.38	7,010.72	86.36	39.09	-91.24	2,955.69	-5,582.81	11,032.40	10,977.27	55.13	200.116			
12,100.00	6,989.99	7,524.25	7,010.60	87.89	39.09	-91.23	2,955.70	-5,582.81	11,129.94	11,074.67	55.27	201.372			
12,200.00	6,990.02	7,524.12	7,010.47	89.42	39.09	-91.23	2,955.70	-5,582.81	11,227.52	11,172.11	55.41	202.627			
12,300.00	6,990.05	7,524.00	7,010.34	90.96	39.09	-91.23	2,955.70	-5,582.81	11,325.15	11,269.60	55.55	203.878			
12,400.00	6,990.07	7,523.87	7,010.22	92.50	39.09	-91.22	2,955.71	-5,582.81	11,422.81	11,367.13	55.69	205.127			
12,500.00	6,990.10	7,523.75	7,010.09	94.04	39.09	-91.22	2,955.71	-5,582.81	11,520.52	11,464.69	55.82	206.374			
12,600.00	6,990.13	7,523.62	7,009.97	95.58	39.09	-91.22	2,955.71	-5,582.81	11,618.26	11,562.30	55.96	207.618			
12,700.00	6,990.15	7,523.49	7,009.84	97.13	39.09	-91.21	2,955.72	-5,582.81	11,716.05	11,659.95	56.10	208.859			
12,800.00	6,990.18	7,523.37	7,009.72	98.68	39.09	-91.21	2,955.72	-5,582.81	11,813.87	11,757.64	56.23	210.098			
12,900.00	6,990.21	7,523.24	7,009.59	100.22	39.09	-91.21	2,955.73	-5,582.81	11,911.72	11,855.36	56.36	211.334			
13,000.00	6,990.24	7,523.12	7,009.46	101.78	39.09	-91.21	2,955.73	-5,582.81	12,009.62	11,953.12	56.50	212.568			
13,100.00	6,990.26	7,522.99	7,009.34	103.33	39.09	-91.20	2,955.73	-5,582.81	12,107.54	12,050.91	56.63	213.799			
13,200.00	6,990.29	7,522.86	7,009.21	104.88	39.09	-91.20	2,955.74	-5,582.81	12,205.50	12,148.74	56.76	215.028			
13,300.00	6,990.32	7,522.74	7,009.09	106.44	39.09	-91.20	2,955.74	-5,582.81	12,303.50	12,246.60	56.89	216.254			
13,400.00	6,990.34	1,091.00	1,058.95	107.99	4.15	-23.52	3,075.15	-4,062.70	12,434.53	12,388.00	46.53	267.234			
13,500.00	6,990.37	1,091.00	1,058.95	109.55	4.15	-23.52	3,075.15	-4,062.70	12,520.21	12,473.40	46.82	267.435			
13,600.00	6,990.40	1,091.00	1,058.95	111.11	4.15	-23.52	3,075.15	-4,062.70	12,606.10	12,559.00	47.10	267.657			
13,700.00	6,990.42	1,062.00	1,033.44	112.67	3.86	-23.43	3,074.78	-4,048.92	12,692.16	12,644.85	47.30	268.307			
13,800.00	6,990.45	1,062.00	1,033.44	114.23	3.86	-23.43	3,074.78	-4,048.92	12,778.35	12,730.77	47.58	268.561			
13,900.00	6,990.48	1,062.00	1,033.44	115.80	3.86	-23.43	3,074.78	-4,048.92	12,864.74	12,816.89	47.85	268.836			
14,000.00	6,990.51	1,062.00	1,033.44	117.36	3.86	-23.43	3,074.78	-4,048.92	12,951.33	12,903.21	48.12	269.129			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 072B - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		358-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)			
14,100.00	6,990.53	1,062.00	1,033.44	118.93	3.86	-23.43	3,074.78	-4,048.92	13,038.11	12,989.72	48.39	269.441		
14,200.00	6,990.56	1,045.09	1,018.46	120.49	3.70	-23.37	3,074.60	-4,041.07	13,124.99	13,076.37	48.62	269.973		
14,300.00	6,990.59	1,031.00	1,005.93	122.06	3.57	-23.33	3,074.44	-4,034.64	13,212.09	13,163.25	48.85	270.486		
14,400.00	6,990.61	1,031.00	1,005.93	123.63	3.57	-23.33	3,074.44	-4,034.64	13,299.32	13,250.22	49.10	270.841		
14,500.00	6,990.64	1,031.00	1,005.93	125.20	3.57	-23.33	3,074.44	-4,034.64	13,386.73	13,337.37	49.36	271.212		
14,600.00	6,990.67	1,031.00	1,005.93	126.77	3.57	-23.33	3,074.44	-4,034.64	13,474.31	13,424.69	49.61	271.599		
14,700.00	6,990.70	1,031.00	1,005.93	128.34	3.57	-23.33	3,074.44	-4,034.64	13,562.06	13,512.20	49.86	272.001		
14,800.00	6,990.72	1,000.00	978.17	129.91	3.29	-23.23	3,074.10	-4,020.85	13,649.93	13,599.88	50.05	272.732		
14,900.00	6,990.75	1,000.00	978.17	131.48	3.29	-23.23	3,074.10	-4,020.85	13,737.92	13,687.62	50.29	273.156		
15,000.00	6,990.78	1,000.00	978.17	133.06	3.29	-23.23	3,074.10	-4,020.85	13,826.07	13,775.53	50.54	273.593		
15,100.00	6,990.80	1,000.00	978.17	134.63	3.29	-23.23	3,074.10	-4,020.85	13,914.38	13,863.60	50.77	274.044		
15,200.00	6,990.83	1,000.00	978.17	136.20	3.29	-23.23	3,074.10	-4,020.85	14,002.84	13,951.83	51.01	274.507		
15,300.00	6,990.86	1,000.00	978.17	137.78	3.29	-23.23	3,074.10	-4,020.85	14,091.46	14,040.22	51.24	274.983		
15,400.00	6,990.88	1,000.00	978.17	139.36	3.29	-23.23	3,074.10	-4,020.85	14,180.23	14,128.76	51.48	275.471		
15,500.00	6,990.91	971.00	951.95	140.93	3.05	-23.14	3,073.86	-4,008.45	14,269.11	14,217.45	51.66	276.210		
15,600.00	6,990.94	971.00	951.95	142.51	3.05	-23.14	3,073.86	-4,008.45	14,358.09	14,306.21	51.89	276.715		
15,700.00	6,990.97	971.00	951.95	144.09	3.05	-23.14	3,073.86	-4,008.45	14,447.22	14,395.10	52.11	277.231		
15,800.00	6,990.99	971.00	951.95	145.67	3.05	-23.14	3,073.86	-4,008.45	14,536.48	14,484.15	52.34	277.758		
15,900.00	6,991.02	971.00	951.95	147.24	3.05	-23.14	3,073.86	-4,008.45	14,625.89	14,573.33	52.56	278.295		
16,000.00	6,991.05	971.00	951.95	148.82	3.05	-23.14	3,073.86	-4,008.45	14,715.43	14,662.66	52.77	278.841		
16,100.00	6,991.07	971.00	951.95	150.40	3.05	-23.14	3,073.86	-4,008.45	14,805.10	14,752.12	52.99	279.398		
16,200.00	6,991.10	971.00	951.95	151.99	3.05	-23.14	3,073.86	-4,008.45	14,894.91	14,841.71	53.20	279.964		
16,300.00	6,991.13	955.00	937.38	153.57	2.92	-23.09	3,073.73	-4,001.86	14,984.75	14,931.35	53.40	280.638		
16,400.00	6,991.15	940.00	923.64	155.15	2.80	-23.04	3,073.58	-3,995.83	15,074.81	15,021.23	53.59	281.316		
16,500.00	6,991.18	940.00	923.64	156.73	2.80	-23.04	3,073.58	-3,995.83	15,164.92	15,111.12	53.79	281.903		
16,600.00	6,991.21	940.00	923.64	158.31	2.80	-23.04	3,073.58	-3,995.83	15,255.15	15,201.15	54.00	282.498		
16,700.00	6,991.24	940.00	923.64	159.90	2.80	-23.04	3,073.58	-3,995.83	15,345.49	15,291.29	54.21	283.101		
16,800.00	6,991.26	940.00	923.64	161.48	2.80	-23.04	3,073.58	-3,995.83	15,435.96	15,381.56	54.41	283.711		
16,900.00	6,991.29	940.00	923.64	163.06	2.80	-23.04	3,073.58	-3,995.83	15,526.55	15,471.94	54.61	284.329		
17,000.00	6,991.32	940.00	923.64	164.65	2.80	-23.04	3,073.58	-3,995.83	15,617.25	15,562.44	54.81	284.954		
17,100.00	6,991.34	940.00	923.64	166.23	2.80	-23.04	3,073.58	-3,995.83	15,708.06	15,653.06	55.00	285.586		
17,200.00	6,991.37	926.10	910.85	167.82	2.69	-22.99	3,073.41	-3,990.39	15,798.90	15,743.72	55.19	286.288		
17,300.00	6,991.40	910.00	895.96	169.40	2.57	-22.94	3,073.17	-3,984.27	15,889.97	15,834.61	55.36	287.010		
17,400.00	6,991.42	910.00	895.96	170.99	2.57	-22.94	3,073.17	-3,984.27	15,981.04	15,925.48	55.56	287.657		
17,500.00	6,991.45	910.00	895.96	172.57	2.57	-22.94	3,073.17	-3,984.27	16,072.21	16,016.47	55.75	288.311		
17,600.00	6,991.48	910.00	895.96	174.16	2.57	-22.94	3,073.17	-3,984.27	16,163.49	16,107.56	55.93	288.970		
17,700.00	6,991.51	910.00	895.96	175.75	2.57	-22.94	3,073.17	-3,984.27	16,254.87	16,198.75	56.12	289.635		
17,800.00	6,991.53	910.00	895.96	177.33	2.57	-22.94	3,073.17	-3,984.27	16,346.35	16,290.05	56.31	290.306		
17,900.00	6,991.56	910.00	895.96	178.92	2.57	-22.94	3,073.17	-3,984.27	16,437.94	16,381.44	56.49	290.981		
18,000.00	6,991.59	910.00	895.96	180.51	2.57	-22.94	3,073.17	-3,984.27	16,529.61	16,472.94	56.67	291.662		
18,100.00	6,991.61	910.00	895.96	182.10	2.57	-22.94	3,073.17	-3,984.27	16,621.39	16,564.53	56.85	292.348		
18,200.00	6,991.64	910.00	895.96	183.68	2.57	-22.94	3,073.17	-3,984.27	16,713.26	16,656.22	57.03	293.039		
18,300.00	6,991.67	910.00	895.96	185.27	2.57	-22.94	3,073.17	-3,984.27	16,805.22	16,748.01	57.21	293.734		
18,400.00	6,991.69	894.12	881.20	186.86	2.46	-22.89	3,072.90	-3,978.42	16,897.16	16,839.78	57.38	294.480		
18,500.00	6,991.72	879.00	867.07	188.45	2.35	-22.84	3,072.63	-3,973.04	16,989.34	16,931.79	57.55	295.230		
18,600.00	6,991.75	879.00	867.07	190.04	2.35	-22.84	3,072.63	-3,973.04	17,081.51	17,023.79	57.72	295.935		
18,700.00	6,991.78	879.00	867.07	191.63	2.35	-22.84	3,072.63	-3,973.04	17,173.76	17,115.87	57.89	296.644		
18,800.00	6,991.80	879.00	867.07	193.22	2.35	-22.84	3,072.63	-3,973.04	17,266.10	17,208.03	58.07	297.357		
18,900.00	6,991.83	879.00	867.07	194.81	2.35	-22.84	3,072.63	-3,973.04	17,358.52	17,300.29	58.24	298.074		
19,000.00	6,991.86	879.00	867.07	196.40	2.35	-22.84	3,072.63	-3,973.04	17,451.03	17,392.63	58.40	298.794		
19,100.00	6,991.88	879.00	867.07	197.99	2.35	-22.84	3,072.63	-3,973.04	17,543.62	17,485.05	58.57	299.518		
19,200.00	6,991.91	879.00	867.07	199.58	2.35	-22.84	3,072.63	-3,973.04	17,636.30	17,577.56	58.74	300.246		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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:			
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	
19,300.00	6,991.94	879.00	867.07	201.17	2.35	-22.84	3,072.63	-3,973.04	17,729.05	17,670.14	58.91	300.976		
19,342.28	6,991.95	879.00	867.07	201.84	2.35	-22.84	3,072.63	-3,973.04	17,768.28	17,709.31	58.97	301.286		
19,400.00	6,991.97	879.00	867.07	202.76	2.35	-22.84	3,072.63	-3,973.04	17,821.88	17,762.81	59.07	301.710		
19,500.00	6,991.99	879.00	867.07	204.35	2.35	-22.84	3,072.63	-3,973.04	17,914.78	17,855.55	59.23	302.447		
19,542.28	6,992.00	879.00	867.07	205.03	2.35	-22.84	3,072.63	-3,973.04	17,954.08	17,894.78	59.30	302.759		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 148 COM - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 248-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-84.72	1,297.08	-14,032.58	14,092.46				
100.00	100.00	61.00	61.00	0.25	1.13	-84.72	1,297.08	-14,032.58	14,092.40	14,091.03	1.38	N/A	
200.00	200.00	161.00	161.00	0.61	2.98	-84.72	1,297.08	-14,032.58	14,092.40	14,088.82	3.59	3,930.254	
300.00	300.00	261.00	261.00	0.97	4.85	-84.72	1,297.08	-14,032.58	14,092.40	14,086.59	5.82	2,423.299	
400.00	400.00	361.00	361.00	1.33	6.87	-84.72	1,297.08	-14,032.58	14,092.40	14,084.21	8.20	1,719.130	
500.00	500.00	464.80	464.80	1.68	8.97	-84.72	1,297.23	-14,032.58	14,092.42	14,081.76	10.66	1,322.444	
600.00	600.00	561.04	561.00	2.04	11.14	-84.72	1,297.08	-14,032.58	14,092.40	14,079.22	13.18	1,069.136	
700.00	700.00	664.27	664.22	2.40	13.65	-84.72	1,297.74	-14,032.58	14,092.46	14,076.42	16.05	878.204	
800.00	799.98	776.63	776.57	2.76	16.37	-54.74	1,296.92	-14,032.59	14,091.39	14,072.26	19.13	736.493	
900.00	899.92	861.04	860.92	3.12	18.67	-54.75	1,297.08	-14,032.58	14,089.38	14,067.59	21.79	646.711	
1,000.00	999.86	964.42	964.28	3.47	21.44	-54.76	1,298.34	-14,032.58	14,087.48	14,062.57	24.91	565.448	
1,100.00	1,099.80	1,077.30	1,077.13	3.83	24.47	-54.78	1,297.48	-14,032.58	14,085.40	14,057.10	28.30	497.777	
1,200.00	1,199.74	1,161.02	1,160.74	4.19	26.68	-54.79	1,297.08	-14,032.58	14,083.34	14,052.47	30.86	456.292	
1,300.00	1,299.68	1,260.96	1,260.68	4.55	29.30	-54.80	1,297.08	-14,032.58	14,081.33	14,047.49	33.84	416.106	
1,400.00	1,399.61	1,361.41	1,361.09	4.91	31.93	-54.80	1,298.97	-14,032.58	14,079.49	14,042.65	36.83	382.280	
1,500.00	1,499.55	1,469.84	1,469.51	5.27	34.77	-54.82	1,298.57	-14,032.58	14,077.44	14,037.41	40.03	351.679	
1,600.00	1,599.49	1,578.26	1,577.91	5.63	37.61	-54.83	1,297.45	-14,032.58	14,075.33	14,032.11	43.23	325.607	
1,700.00	1,699.43	1,660.92	1,660.43	5.99	39.60	-54.85	1,297.08	-14,032.58	14,073.28	14,027.70	45.58	308.770	
1,800.00	1,799.37	1,760.85	1,760.37	6.35	41.91	-54.86	1,297.08	-14,032.58	14,071.27	14,023.02	48.25	291.628	
1,900.00	1,899.31	1,861.28	1,860.77	6.71	44.24	-54.86	1,298.71	-14,032.58	14,069.41	14,018.47	50.93	276.226	
2,000.00	1,999.25	1,968.28	1,967.76	7.07	46.72	-54.88	1,298.37	-14,032.58	14,067.37	14,013.60	53.77	261.619	
2,100.00	2,099.19	2,075.27	2,074.73	7.42	49.19	-54.89	1,297.43	-14,032.58	14,065.28	14,008.68	56.61	248.477	
2,200.00	2,199.13	2,160.73	2,160.13	7.78	51.06	-54.90	1,297.08	-14,032.58	14,063.24	14,004.41	58.83	239.054	
2,300.00	2,299.07	2,260.67	2,260.07	8.14	53.17	-54.92	1,297.08	-14,032.58	14,061.23	13,999.93	61.30	229.389	
2,400.00	2,399.01	2,362.33	2,361.72	8.50	55.32	-54.92	1,298.02	-14,032.58	14,059.31	13,995.50	63.81	220.347	
2,500.00	2,498.94	2,467.38	2,466.76	8.86	57.53	-54.94	1,297.66	-14,032.58	14,057.27	13,990.89	66.38	211.759	
2,600.00	2,598.88	2,560.56	2,559.88	9.22	59.48	-54.95	1,297.08	-14,032.58	14,055.21	13,986.52	68.69	204.616	
2,700.00	2,698.82	2,660.50	2,659.82	9.58	61.40	-54.96	1,297.08	-14,032.58	14,053.21	13,982.24	70.97	198.016	
2,800.00	2,798.76	2,760.43	2,759.76	9.94	63.32	-54.97	1,297.08	-14,032.58	14,051.20	13,977.95	73.25	191.826	
2,900.00	2,898.70	2,863.34	2,862.66	10.30	65.30	-54.98	1,298.06	-14,032.58	14,049.29	13,973.70	75.59	185.871	
3,000.00	2,998.64	2,967.84	2,967.15	10.66	67.31	-55.00	1,297.62	-14,032.58	14,047.24	13,969.29	77.95	180.201	
3,100.00	3,098.58	3,060.30	3,059.58	11.02	69.03	-55.01	1,297.08	-14,032.58	14,045.19	13,965.15	80.04	175.479	
3,200.00	3,198.52	3,160.23	3,159.52	11.38	70.70	-55.02	1,297.08	-14,032.58	14,043.19	13,961.13	82.06	171.136	
3,300.00	3,298.46	3,260.17	3,259.46	11.75	72.36	-55.03	1,297.08	-14,032.58	14,041.19	13,957.11	84.08	167.001	
3,400.00	3,398.40	3,360.11	3,359.40	12.11	74.02	-55.04	1,297.08	-14,032.58	14,039.19	13,953.09	86.10	163.060	
3,500.00	3,498.34	3,461.56	3,460.84	12.47	75.70	-55.05	1,297.73	-14,032.58	14,037.25	13,949.10	88.14	159.255	
3,600.00	3,598.27	3,563.14	3,562.41	12.83	77.39	-55.07	1,297.53	-14,032.58	14,035.23	13,945.04	90.19	155.618	
3,700.00	3,698.21	3,664.70	3,663.98	13.19	79.08	-55.08	1,297.20	-14,032.58	14,033.20	13,940.97	92.24	152.142	
3,800.00	3,798.15	3,759.88	3,759.15	13.55	80.73	-55.09	1,297.08	-14,032.58	14,031.19	13,936.94	94.25	148.869	
3,900.00	3,898.09	3,860.52	3,859.79	13.91	82.52	-55.10	1,297.21	-14,032.58	14,029.21	13,932.81	96.40	145.534	
4,000.00	3,998.03	3,959.77	3,959.03	14.27	84.31	-55.11	1,297.08	-14,032.58	14,027.20	13,928.65	98.55	142.336	
4,100.00	4,097.97	4,059.71	4,058.97	14.63	86.88	-55.13	1,297.08	-14,032.58	14,025.20	13,923.72	101.48	138.209	
4,200.00	4,197.91	4,162.12	4,161.37	14.99	89.51	-55.14	1,297.54	-14,032.58	14,023.24	13,918.77	104.47	134.233	
4,300.00	4,297.85	4,267.27	4,266.52	15.35	92.22	-55.15	1,297.09	-14,032.58	14,021.21	13,913.68	107.53	130.392	
4,400.00	4,397.79	4,365.37	4,364.47	15.71	95.36	-55.16	1,297.89	-14,032.58	14,019.28	13,908.25	111.04	126.255	
4,500.00	4,497.73	4,459.76	4,458.73	16.07	98.44	-55.17	1,297.08	-14,032.58	14,017.22	13,902.74	114.48	122.443	
4,600.00	4,597.66	4,559.83	4,558.66	16.43	101.80	-55.18	1,297.08	-14,032.58	14,015.23	13,897.03	118.19	118.580	
4,700.00	4,697.60	4,660.26	4,659.05	16.79	106.32	-55.20	1,296.94	-14,032.59	14,013.26	13,890.18	123.07	113.864	
4,800.00	4,797.54	4,773.03	4,771.69	17.15	109.29	-55.21	1,297.64	-14,032.58	14,011.29	13,884.89	126.41	110.842	
4,900.00	4,897.48	4,859.95	4,858.48	17.51	112.48	-55.22	1,297.08	-14,032.58	14,009.25	13,879.29	129.96	107.799	
5,000.00	4,997.42	4,960.06	4,958.42	17.87	116.24	-55.23	1,297.08	-14,032.58	14,007.26	13,873.18	134.08	104.472	
5,100.00	5,097.36	5,076.89	5,075.20	18.23	120.75	-55.24	1,297.93	-14,032.58	14,005.35	13,866.41	138.94	100.803	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		
5,200.00	5,197.30	5,160.22	5,158.30	18.59	123.97	-55.25	1,297.08	-14,032.58	14,003.28	13,860.76	142.52	98.254		
5,300.00	5,297.24	5,260.34	5,258.24	18.95	127.83	-55.27	1,297.08	-14,032.58	14,001.29	13,854.55	146.74	95.415		
5,402.82	5,400.00	5,389.21	5,387.04	19.32	132.59	-55.28	1,297.34	-14,032.58	13,999.29	13,847.41	151.87	92.177		
5,500.00	5,497.13	5,460.43	5,458.13	19.67	135.17	-55.28	1,297.08	-14,032.58	13,997.54	13,842.74	154.80	90.423		
5,600.00	5,597.11	5,560.55	5,558.11	20.03	138.79	-55.28	1,297.08	-14,032.58	13,996.29	13,837.51	158.77	88.152		
5,700.00	5,697.10	5,663.41	5,660.93	20.39	142.51	-55.28	1,298.56	-14,032.58	13,995.65	13,832.79	162.86	85.938		
5,802.82	5,799.92	5,795.34	5,792.78	20.75	147.29	-85.29	1,296.57	-14,032.59	13,995.26	13,827.26	168.00	83.305		
5,814.49	5,811.58	5,810.31	5,807.74	20.79	147.83	-85.29	1,296.14	-14,032.59	13,995.23	13,826.65	168.58	83.017	CC	
5,900.00	5,897.09	5,860.83	5,858.09	21.10	149.77	-85.28	1,297.08	-14,032.58	13,995.27	13,824.44	170.83	81.926		
6,000.00	5,997.09	5,977.87	5,975.07	21.45	154.16	-85.28	1,298.00	-14,032.58	13,995.35	13,819.78	175.57	79.712		
6,100.00	6,097.09	6,061.14	6,058.09	21.81	157.33	-85.28	1,297.08	-14,032.58	13,995.27	13,816.17	179.10	78.142		
6,200.00	6,197.09	6,170.68	6,167.58	22.16	161.59	-85.28	1,298.37	-14,032.58	13,995.37	13,811.67	183.71	76.182		
6,300.00	6,297.09	6,261.44	6,258.09	22.52	165.10	-85.28	1,297.08	-14,032.58	13,995.27	13,807.69	187.57	74.612		
6,354.91	6,352.00	6,323.12	6,319.75	22.72	167.43	-85.28	1,297.86	-14,032.58	13,995.33	13,805.23	190.10	73.620		
6,356.93	6,354.03	6,327.00	6,323.62	22.72	167.58	-164.28	1,297.83	-14,032.58	13,995.33	13,805.08	190.25	73.561	ES	
6,400.00	6,397.06	6,361.46	6,358.06	22.87	168.88	-164.25	1,297.08	-14,032.58	13,996.80	13,805.09	191.71	73.011		
6,450.00	6,446.74	6,411.25	6,407.74	23.04	170.72	-164.12	1,297.08	-14,032.58	14,002.09	13,808.37	193.72	72.281		
6,500.00	6,495.84	6,460.35	6,456.84	23.20	172.52	-163.91	1,297.08	-14,032.58	14,011.11	13,815.43	195.69	71.600		
6,550.00	6,544.06	6,523.92	6,520.37	23.36	174.86	-163.59	1,297.88	-14,032.58	14,023.89	13,825.71	198.19	70.762		
6,600.00	6,591.08	6,589.31	6,585.71	23.51	177.26	-163.19	1,296.48	-14,032.59	14,040.12	13,839.38	200.75	69.940		
6,650.00	6,636.64	6,601.37	6,597.64	23.66	177.71	-162.62	1,297.08	-14,032.58	14,059.94	13,858.60	201.34	69.831		
6,700.00	6,680.44	6,647.96	6,644.20	23.82	179.42	-161.93	1,297.95	-14,032.58	14,083.21	13,880.01	203.20	69.306		
6,750.00	6,722.22	6,714.00	6,710.10	23.99	181.86	-161.10	1,297.08	-14,032.58	14,109.61	13,903.84	205.77	68.570		
6,800.00	6,761.71	6,726.61	6,722.71	24.16	182.28	-160.02	1,297.08	-14,032.58	14,139.10	13,932.78	206.32	68.530		
6,850.00	6,798.68	6,763.58	6,759.68	24.33	183.51	-158.71	1,297.08	-14,032.58	14,171.52	13,963.85	207.67	68.240		
6,900.00	6,832.89	6,797.79	6,793.89	24.50	184.65	-157.10	1,297.08	-14,032.58	14,206.64	13,997.72	208.92	68.000		
6,950.00	6,864.14	6,829.04	6,825.14	24.69	185.70	-155.07	1,297.08	-14,032.58	14,244.24	14,034.18	210.06	67.809		
7,000.00	6,892.23	6,857.13	6,853.23	24.88	186.64	-152.51	1,297.08	-14,032.58	14,284.10	14,073.01	211.09	67.668		
7,050.00	6,916.99	6,884.19	6,880.24	25.08	187.54	-149.23	1,298.94	-14,032.58	14,326.12	14,114.04	212.07	67.553		
7,100.00	6,938.27	6,909.66	6,905.70	25.29	188.39	-144.96	1,298.83	-14,032.58	14,369.73	14,156.74	212.99	67.466		
7,150.00	6,955.93	6,930.73	6,926.76	25.51	189.09	-139.30	1,298.67	-14,032.58	14,414.83	14,201.08	213.76	67.435	SF	
7,200.00	6,969.87	6,947.28	6,943.31	25.75	189.64	-131.66	1,298.50	-14,032.58	14,461.14	14,246.78	214.36	67.461		
7,250.00	6,980.00	6,959.23	6,955.25	25.99	190.04	-121.36	1,298.35	-14,032.58	14,508.38	14,293.57	214.81	67.541		
7,300.00	6,986.25	6,966.53	6,962.55	26.25	190.29	-107.91	1,298.24	-14,032.58	14,556.25	14,341.15	215.09	67.674		
7,354.68	6,988.62	6,969.16	6,965.18	26.53	190.38	-90.31	1,298.20	-14,032.58	14,608.98	14,393.76	215.22	67.879		
7,400.00	6,988.64	6,969.02	6,965.04	26.78	190.37	-90.31	1,298.21	-14,032.58	14,652.75	14,437.50	215.25	68.074		
7,500.00	6,988.67	6,968.72	6,964.74	27.40	190.36	-90.30	1,298.21	-14,032.58	14,749.36	14,534.06	215.31	68.504		
7,600.00	6,988.71	6,968.42	6,964.44	28.08	190.35	-90.30	1,298.21	-14,032.58	14,846.03	14,630.65	215.37	68.931		
7,700.00	6,988.74	6,968.13	6,964.14	28.84	190.34	-90.29	1,298.22	-14,032.58	14,942.73	14,727.28	215.45	69.357		
7,800.00	6,988.78	6,967.83	6,963.85	29.67	190.33	-90.29	1,298.22	-14,032.58	15,039.48	14,823.95	215.53	69.780		
7,900.00	6,988.81	6,967.54	6,963.56	30.55	190.32	-90.28	1,298.23	-14,032.58	15,136.27	14,920.66	215.61	70.202		
8,000.00	6,988.85	6,967.25	6,963.26	31.49	190.31	-90.28	1,298.23	-14,032.58	15,233.10	15,017.40	215.70	70.622		
8,100.00	6,988.88	6,966.96	6,962.98	32.48	190.30	-90.28	1,298.24	-14,032.58	15,329.97	15,114.18	215.79	71.040		
8,200.00	6,988.91	6,966.67	6,962.69	33.51	190.29	-90.27	1,298.24	-14,032.58	15,426.89	15,211.00	215.89	71.457		
8,211.68	6,988.92	6,966.64	6,962.66	33.63	190.29	-90.27	1,298.24	-14,032.58	15,438.21	15,222.31	215.90	71.506		
8,300.00	6,988.95	6,966.41	6,962.43	34.58	190.28	-90.30	1,298.24	-14,032.58	15,524.16	15,308.17	215.99	71.875		
8,400.00	6,988.98	6,966.21	6,962.22	35.70	190.28	-90.35	1,298.25	-14,032.58	15,622.20	15,406.12	216.08	72.299		
8,500.00	6,989.01	6,966.06	6,962.07	36.84	190.27	-90.43	1,298.25	-14,032.58	15,720.89	15,504.73	216.16	72.728		
8,600.00	6,989.04	6,965.97	6,961.98	38.02	190.27	-90.56	1,298.25	-14,032.58	15,820.09	15,603.86	216.23	73.164		
8,700.00	6,989.07	6,965.94	6,961.95	39.22	190.27	-90.81	1,298.25	-14,032.58	15,919.67	15,703.39	216.29	73.605		
8,772.79	6,989.09	6,965.95	6,961.96	40.11	190.27	-91.23	1,298.25	-14,032.58	15,992.33	15,776.01	216.32	73.929		
8,800.00	6,989.10	6,965.96	6,961.97	40.44	190.27	-91.23	1,298.25	-14,032.58	16,019.51	15,803.18	216.33	74.051		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - (O) Rosa Unit 148 COM - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		248-A027Ua_INC-ONLY					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,900.00	6,989.13	6,965.99	6,962.01	41.68	190.27	-91.24	1,298.25	-14,032.58	16,119.40	15,903.03	216.37	74.499		
9,000.00	6,989.15	6,966.03	6,962.05	42.95	190.27	-91.24	1,298.25	-14,032.58	16,219.29	16,002.88	216.41	74.946		
9,100.00	6,989.18	6,966.07	6,962.08	44.24	190.27	-91.24	1,298.25	-14,032.58	16,319.19	16,102.73	216.46	75.392		
9,200.00	6,989.21	6,966.10	6,962.12	45.55	190.27	-91.24	1,298.25	-14,032.58	16,419.08	16,202.58	216.50	75.838		
9,300.00	6,989.24	6,966.14	6,962.16	46.88	190.27	-91.25	1,298.25	-14,032.58	16,518.98	16,302.43	216.55	76.284		
9,400.00	6,989.26	6,966.18	6,962.19	48.23	190.28	-91.25	1,298.25	-14,032.58	16,618.87	16,402.28	216.59	76.729		
9,500.00	6,989.29	6,966.21	6,962.23	49.59	190.28	-91.25	1,298.25	-14,032.58	16,718.77	16,502.14	216.64	77.174		
9,600.00	6,989.32	6,966.25	6,962.27	50.96	190.28	-91.26	1,298.25	-14,032.58	16,818.67	16,601.99	216.68	77.619		
9,700.00	6,989.34	6,966.29	6,962.30	52.35	190.28	-91.26	1,298.25	-14,032.58	16,918.57	16,701.84	216.73	78.063		
9,800.00	6,989.37	6,966.32	6,962.34	53.75	190.28	-91.26	1,298.25	-14,032.58	17,018.47	16,801.69	216.78	78.506		
9,900.00	6,989.40	6,966.36	6,962.38	55.16	190.28	-91.26	1,298.25	-14,032.58	17,118.38	16,901.55	216.83	78.949		
10,000.00	6,989.42	6,966.40	6,962.41	56.58	190.28	-91.27	1,298.24	-14,032.58	17,218.28	17,001.40	216.88	79.392		
10,100.00	6,989.45	6,966.43	6,962.45	58.01	190.28	-91.27	1,298.24	-14,032.58	17,318.19	17,101.26	216.93	79.834		
10,200.00	6,989.48	6,966.47	6,962.48	59.45	190.29	-91.27	1,298.24	-14,032.58	17,418.09	17,201.11	216.98	80.276		
10,300.00	6,989.51	6,966.51	6,962.52	60.90	190.29	-91.28	1,298.24	-14,032.58	17,518.00	17,300.97	217.03	80.717		
10,400.00	6,989.53	6,966.54	6,962.56	62.35	190.29	-91.28	1,298.24	-14,032.58	17,617.91	17,400.82	217.08	81.158		
10,500.00	6,989.56	6,966.58	6,962.59	63.81	190.29	-91.28	1,298.24	-14,032.58	17,717.82	17,500.68	217.14	81.598		
10,600.00	6,989.59	6,966.62	6,962.63	65.28	190.29	-91.28	1,298.24	-14,032.58	17,817.73	17,600.54	217.19	82.038		
10,700.00	6,989.61	6,966.65	6,962.67	66.76	190.29	-91.29	1,298.24	-14,032.58	17,917.64	17,700.39	217.24	82.477		
10,800.00	6,989.64	6,966.69	6,962.70	68.24	190.29	-91.29	1,298.24	-14,032.58	18,017.55	17,800.25	217.30	82.916		
10,900.00	6,989.67	6,966.73	6,962.74	69.73	190.29	-91.29	1,298.24	-14,032.58	18,117.46	17,900.11	217.36	83.354		
11,000.00	6,989.70	6,966.76	6,962.78	71.22	190.30	-91.29	1,298.24	-14,032.58	18,217.38	17,999.97	217.41	83.792		
11,100.00	6,989.72	6,966.80	6,962.81	72.71	190.30	-91.30	1,298.24	-14,032.58	18,317.29	18,099.82	217.47	84.230		
11,200.00	6,989.75	6,966.84	6,962.85	74.22	190.30	-91.30	1,298.24	-14,032.58	18,417.21	18,199.68	217.53	84.666		
11,300.00	6,989.78	6,966.87	6,962.89	75.72	190.30	-91.30	1,298.24	-14,032.58	18,517.13	18,299.54	217.59	85.103		
11,400.00	6,989.80	6,966.91	6,962.92	77.23	190.30	-91.31	1,298.24	-14,032.58	18,617.04	18,399.40	217.64	85.539		
11,500.00	6,989.83	6,966.95	6,962.96	78.74	190.30	-91.31	1,298.24	-14,032.58	18,716.96	18,499.26	217.70	85.974		
11,600.00	6,989.86	6,966.98	6,963.00	80.26	190.30	-91.31	1,298.24	-14,032.58	18,816.88	18,599.12	217.76	86.409		
11,700.00	6,989.88	6,967.02	6,963.03	81.78	190.30	-91.31	1,298.24	-14,032.58	18,916.80	18,698.98	217.83	86.844		
11,800.00	6,989.91	6,967.06	6,963.07	83.30	190.30	-91.32	1,298.23	-14,032.58	19,016.72	18,798.84	217.89	87.278		
11,900.00	6,989.94	6,967.09	6,963.11	84.83	190.31	-91.32	1,298.23	-14,032.58	19,116.65	18,898.70	217.95	87.711		
12,000.00	6,989.97	6,967.13	6,963.14	86.36	190.31	-91.32	1,298.23	-14,032.58	19,216.57	18,998.56	218.01	88.144		
12,100.00	6,989.99	6,967.17	6,963.18	87.89	190.31	-91.33	1,298.23	-14,032.58	19,316.49	19,098.42	218.08	88.577		
12,200.00	6,990.02	6,967.20	6,963.22	89.42	190.31	-91.33	1,298.23	-14,032.58	19,416.42	19,198.28	218.14	89.009		
12,300.00	6,990.05	6,967.24	6,963.25	90.96	190.31	-91.33	1,298.23	-14,032.58	19,516.34	19,298.14	218.21	89.440		
12,400.00	6,990.07	6,967.28	6,963.29	92.50	190.31	-91.33	1,298.23	-14,032.58	19,616.27	19,398.00	218.27	89.871		
12,500.00	6,990.10	6,967.31	6,963.33	94.04	190.31	-91.34	1,298.23	-14,032.58	19,716.20	19,497.86	218.34	90.302		
12,600.00	6,990.13	6,967.35	6,963.36	95.58	190.31	-91.34	1,298.23	-14,032.58	19,816.12	19,597.72	218.40	90.731		
12,700.00	6,990.15	6,967.39	6,963.40	97.13	190.32	-91.34	1,298.23	-14,032.58	19,916.05	19,697.58	218.47	91.161		
12,800.00	6,990.18	6,967.42	6,963.44	98.68	190.32	-91.35	1,298.23	-14,032.58	20,015.98	19,797.44	218.54	91.590		
12,900.00	6,990.21	6,967.46	6,963.47	100.22	190.32	-91.35	1,298.23	-14,032.58	20,115.91	19,897.30	218.61	92.018		
13,000.00	6,990.24	6,967.50	6,963.51	101.78	190.32	-91.35	1,298.23	-14,032.58	20,215.84	19,997.16	218.68	92.446		
13,100.00	6,990.26	6,967.53	6,963.55	103.33	190.32	-91.35	1,298.23	-14,032.58	20,315.77	20,097.02	218.75	92.873		
13,200.00	6,990.29	6,967.57	6,963.58	104.88	190.32	-91.36	1,298.23	-14,032.58	20,415.70	20,196.89	218.82	93.300		
13,300.00	6,990.32	6,967.61	6,963.62	106.44	190.32	-91.36	1,298.23	-14,032.58	20,515.64	20,296.75	218.89	93.727		
13,400.00	6,990.34	6,967.64	6,963.66	107.99	190.32	-91.36	1,298.23	-14,032.58	20,615.57	20,396.61	218.96	94.152		
13,500.00	6,990.37	6,967.68	6,963.69	109.55	190.33	-91.36	1,298.23	-14,032.58	20,715.50	20,496.47	219.03	94.578		
13,600.00	6,990.40	6,967.72	6,963.73	111.11	190.33	-91.37	1,298.22	-14,032.58	20,815.44	20,596.33	219.10	95.002		
13,700.00	6,990.42	6,967.75	6,963.77	112.67	190.33	-91.37	1,298.22	-14,032.58	20,915.37	20,696.19	219.18	95.427		
13,800.00	6,990.45	6,967.79	6,963.81	114.23	190.33	-91.37	1,298.22	-14,032.58	21,015.31	20,796.06	219.25	95.850		
13,900.00	6,990.48	6,967.83	6,963.84	115.80	190.33	-91.38	1,298.22	-14,032.58	21,115.24	20,895.92	219.33	96.273		
14,000.00	6,990.51	6,967.86	6,963.88	117.36	190.33	-91.38	1,298.22	-14,032.58	21,215.18	20,995.78	219.40	96.696		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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	
14,100.00	6,990.53	6,967.90	6,963.92	118.93	190.33	-91.38	1,298.22	-14,032.58	21,315.12	21,095.64	219.48	97.118		
14,200.00	6,990.56	6,967.94	6,963.95	120.49	190.33	-91.38	1,298.22	-14,032.58	21,415.06	21,195.50	219.55	97.540		
14,300.00	6,990.59	6,967.97	6,963.99	122.06	190.34	-91.39	1,298.22	-14,032.58	21,514.99	21,295.37	219.63	97.961		
14,400.00	6,990.61	6,968.01	6,964.03	123.63	190.34	-91.39	1,298.22	-14,032.58	21,614.93	21,395.23	219.71	98.381		
14,500.00	6,990.64	6,968.05	6,964.06	125.20	190.34	-91.39	1,298.22	-14,032.58	21,714.87	21,495.09	219.78	98.801		
14,600.00	6,990.67	6,968.08	6,964.10	126.77	190.34	-91.40	1,298.22	-14,032.58	21,814.81	21,594.95	219.86	99.221		
14,700.00	6,990.70	6,968.12	6,964.14	128.34	190.34	-91.40	1,298.22	-14,032.58	21,914.75	21,694.81	219.94	99.640		
14,800.00	6,990.72	6,968.16	6,964.17	129.91	190.34	-91.40	1,298.22	-14,032.58	22,014.70	21,794.68	220.02	100.058		
14,900.00	6,990.75	6,968.19	6,964.21	131.48	190.34	-91.40	1,298.22	-14,032.58	22,114.64	21,894.54	220.10	100.476		
15,000.00	6,990.78	6,968.23	6,964.25	133.06	190.34	-91.41	1,298.22	-14,032.58	22,214.58	21,994.40	220.18	100.893		
15,100.00	6,990.80	6,968.27	6,964.28	134.63	190.35	-91.41	1,298.22	-14,032.58	22,314.52	22,094.26	220.26	101.310		
15,200.00	6,990.83	6,968.31	6,964.32	136.20	190.35	-91.41	1,298.22	-14,032.58	22,414.47	22,194.12	220.34	101.726		
15,300.00	6,990.86	6,968.34	6,964.36	137.78	190.35	-91.42	1,298.22	-14,032.58	22,514.41	22,293.99	220.42	102.142		
15,400.00	6,990.88	6,968.38	6,964.39	139.36	190.35	-91.42	1,298.22	-14,032.58	22,614.35	22,393.85	220.51	102.557		
15,500.00	6,990.91	6,968.42	6,964.43	140.93	190.35	-91.42	1,298.21	-14,032.58	22,714.30	22,493.71	220.59	102.972		
15,600.00	6,990.94	6,968.45	6,964.47	142.51	190.35	-91.42	1,298.21	-14,032.58	22,814.24	22,593.57	220.67	103.386		
15,700.00	6,990.97	6,968.49	6,964.50	144.09	190.35	-91.43	1,298.21	-14,032.58	22,914.19	22,693.44	220.76	103.799		
15,800.00	6,990.99	6,968.53	6,964.54	145.67	190.35	-91.43	1,298.21	-14,032.58	23,014.14	22,793.30	220.84	104.212		
15,900.00	6,991.02	6,968.56	6,964.58	147.24	190.36	-91.43	1,298.21	-14,032.58	23,114.08	22,893.16	220.92	104.624		
16,000.00	6,991.05	6,968.60	6,964.61	148.82	190.36	-91.43	1,298.21	-14,032.58	23,214.03	22,993.02	221.01	105.036		
16,100.00	6,991.07	6,968.64	6,964.65	150.40	190.36	-91.44	1,298.21	-14,032.58	23,313.98	23,092.88	221.10	105.448		
16,200.00	6,991.10	6,968.67	6,964.69	151.99	190.36	-91.44	1,298.21	-14,032.58	23,413.93	23,192.75	221.18	105.858		
16,300.00	6,991.13	6,968.71	6,964.73	153.57	190.36	-91.44	1,298.21	-14,032.58	23,513.88	23,292.61	221.27	106.269		
16,400.00	6,991.15	6,968.75	6,964.76	155.15	190.36	-91.45	1,298.21	-14,032.58	23,613.82	23,392.47	221.36	106.678		
16,500.00	6,991.18	6,968.78	6,964.80	156.73	190.36	-91.45	1,298.21	-14,032.58	23,713.77	23,492.33	221.44	107.088		
16,600.00	6,991.21	6,968.82	6,964.84	158.31	190.36	-91.45	1,298.21	-14,032.58	23,813.72	23,592.19	221.53	107.496		
16,700.00	6,991.24	6,968.86	6,964.87	159.90	190.37	-91.45	1,298.21	-14,032.58	23,913.67	23,692.05	221.62	107.904		
16,800.00	6,991.26	6,968.90	6,964.91	161.48	190.37	-91.46	1,298.21	-14,032.58	24,013.62	23,791.92	221.71	108.312		
16,900.00	6,991.29	6,968.93	6,964.95	163.06	190.37	-91.46	1,298.21	-14,032.58	24,113.58	23,891.78	221.80	108.719		
17,000.00	6,991.32	6,968.97	6,964.98	164.65	190.37	-91.46	1,298.21	-14,032.58	24,213.53	23,991.64	221.89	109.125		
17,100.00	6,991.34	6,969.01	6,965.02	166.23	190.37	-91.47	1,298.21	-14,032.58	24,313.48	24,091.50	221.98	109.531		
17,200.00	6,991.37	6,969.04	6,965.06	167.82	190.37	-91.47	1,298.21	-14,032.58	24,413.43	24,191.36	222.07	109.936		
17,300.00	6,991.40	6,969.08	6,965.09	169.40	190.37	-91.47	1,298.20	-14,032.58	24,513.38	24,291.22	222.16	110.341		
17,400.00	6,991.42	6,969.12	6,965.13	170.99	190.37	-91.47	1,298.20	-14,032.58	24,613.34	24,391.09	222.25	110.745		
17,500.00	6,991.45	6,969.15	6,965.17	172.57	190.38	-91.48	1,298.20	-14,032.58	24,713.29	24,490.95	222.34	111.149		
17,600.00	6,991.48	6,969.19	6,965.20	174.16	190.38	-91.48	1,298.20	-14,032.58	24,813.24	24,590.81	222.44	111.552		
17,700.00	6,991.51	6,969.23	6,965.24	175.75	190.38	-91.48	1,298.20	-14,032.58	24,913.20	24,690.67	222.53	111.955		
17,800.00	6,991.53	6,969.26	6,965.28	177.33	190.38	-91.49	1,298.20	-14,032.58	25,013.15	24,790.53	222.62	112.357		
17,900.00	6,991.56	6,969.30	6,965.32	178.92	190.38	-91.49	1,298.20	-14,032.58	25,113.11	24,890.39	222.72	112.758		
18,000.00	6,991.59	6,969.34	6,965.35	180.51	190.38	-91.49	1,298.20	-14,032.58	25,213.06	24,990.25	222.81	113.159		
18,100.00	6,991.61	6,969.38	6,965.39	182.10	190.38	-91.49	1,298.20	-14,032.58	25,313.02	25,090.11	222.91	113.559		
18,200.00	6,991.64	6,969.41	6,965.43	183.68	190.38	-91.50	1,298.20	-14,032.58	25,412.98	25,189.97	223.00	113.959		
18,300.00	6,991.67	6,969.45	6,965.46	185.27	190.38	-91.50	1,298.20	-14,032.58	25,512.93	25,289.84	223.10	114.359		
18,400.00	6,991.69	6,969.49	6,965.50	186.86	190.39	-91.50	1,298.20	-14,032.58	25,612.89	25,389.70	223.19	114.757		
18,500.00	6,991.72	6,969.52	6,965.54	188.45	190.39	-91.51	1,298.20	-14,032.58	25,712.85	25,489.56	223.29	115.155		
18,600.00	6,991.75	6,969.56	6,965.57	190.04	190.39	-91.51	1,298.20	-14,032.58	25,812.80	25,589.42	223.38	115.553		
18,700.00	6,991.78	6,969.60	6,965.61	191.63	190.39	-91.51	1,298.20	-14,032.58	25,912.76	25,689.28	223.48	115.950		
18,800.00	6,991.80	6,969.63	6,965.65	193.22	190.39	-91.51	1,298.20	-14,032.58	26,012.72	25,789.14	223.58	116.347		
18,900.00	6,991.83	6,969.67	6,965.69	194.81	190.39	-91.52	1,298.20	-14,032.58	26,112.68	25,889.00	223.68	116.743		
19,000.00	6,991.86	6,969.71	6,965.72	196.40	190.39	-91.52	1,298.19	-14,032.58	26,212.64	25,988.86	223.78	117.138		
19,100.00	6,991.88	6,969.74	6,965.76	197.99	190.39	-91.52	1,298.19	-14,032.58	26,312.59	26,088.72	223.87	117.533		
19,200.00	6,991.91	6,969.78	6,965.80	199.58	190.40	-91.52	1,298.19	-14,032.58	26,412.55	26,188.58	223.97	117.927		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	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		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		
19,300.00	6,991.94	6,969.82	6,965.83	201.17	190.40	-91.53	1,298.19	-14,032.58	26,512.51	26,288.44	224.07	118.321		
19,342.28	6,991.95	6,969.83	6,965.85	201.84	190.40	-91.53	1,298.19	-14,032.58	26,554.77	26,330.66	224.11	118.488		
19,400.00	6,991.97	6,969.86	6,965.87	202.76	190.40	-91.53	1,298.19	-14,032.58	26,612.47	26,388.30	224.17	118.715		
19,500.00	6,991.99	6,969.89	6,965.91	204.35	190.40	-91.53	1,298.19	-14,032.58	26,712.43	26,488.16	224.27	119.107		
19,542.28	6,992.00	6,969.91	6,965.92	205.03	190.40	-91.53	1,298.19	-14,032.58	26,754.69	26,530.38	224.31	119.273		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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)			
0.00	0.00	0.00	0.00	0.00	0.00	29.19	87.38	48.82	100.09				
100.00	100.00	100.00	100.00	0.25	0.25	29.19	87.38	48.82	100.09	99.59	0.50	199.437	
200.00	200.00	200.00	200.00	0.61	0.61	29.19	87.38	48.82	100.09	98.87	1.22	82.121	
300.00	300.00	300.00	300.00	0.97	0.97	29.19	87.38	48.82	100.09	98.15	1.94	51.706	
400.00	400.00	400.00	400.00	1.33	1.33	29.19	87.38	48.82	100.09	97.44	2.65	37.731	
500.00	500.00	500.00	500.00	1.68	1.68	29.19	87.38	48.82	100.09	96.72	3.37	29.703 CC, ES	
600.00	600.00	596.77	596.75	2.04	2.03	28.89	88.99	49.10	101.69	97.61	4.07	24.954	
700.00	700.00	693.32	693.17	2.40	2.38	28.04	93.80	49.95	106.49	101.71	4.78	22.290	
800.00	799.98	789.54	789.05	2.76	2.73	57.37	101.77	51.36	113.58	108.11	5.47	20.756	
900.00	899.92	885.33	884.17	3.12	3.08	57.11	112.86	53.31	122.92	116.76	6.16	19.955	
1,000.00	999.86	980.43	978.18	3.47	3.43	56.49	126.96	55.80	135.45	128.60	6.84	19.792 SF	
1,100.00	1,099.80	1,075.01	1,071.17	3.83	3.79	55.55	144.03	58.56	151.03	143.51	7.52	20.080	
1,200.00	1,199.74	1,168.66	1,162.63	4.19	4.17	54.28	163.94	61.06	169.49	161.30	8.19	20.686	
1,300.00	1,299.68	1,261.11	1,252.25	4.55	4.55	52.83	186.51	63.29	190.85	182.00	8.85	21.564	
1,400.00	1,399.61	1,352.18	1,339.79	4.91	4.95	51.32	211.56	65.24	215.11	205.61	9.50	22.641	
1,500.00	1,499.55	1,441.74	1,425.06	5.27	5.36	49.83	238.88	66.93	242.28	232.14	10.14	23.897	
1,600.00	1,599.49	1,532.52	1,510.66	5.63	5.79	48.39	269.06	68.42	272.13	261.33	10.80	25.204	
1,700.00	1,699.43	1,627.56	1,600.08	5.99	6.26	47.12	301.19	69.94	302.65	291.14	11.52	26.281	
1,800.00	1,799.37	1,722.59	1,689.51	6.35	6.73	46.09	333.31	71.45	333.28	321.05	12.24	27.230	
1,900.00	1,899.31	1,817.63	1,778.94	6.71	7.21	45.23	365.44	72.97	364.00	351.03	12.97	28.072	
2,000.00	1,999.25	1,912.67	1,868.37	7.07	7.70	44.51	397.57	74.48	394.78	381.08	13.70	28.822	
2,100.00	2,099.19	2,007.70	1,957.80	7.42	8.20	43.89	429.69	76.00	425.60	411.17	14.43	29.493	
2,200.00	2,199.13	2,102.74	2,047.23	7.78	8.70	43.35	461.82	77.51	456.47	441.30	15.17	30.098	
2,300.00	2,299.07	2,197.77	2,136.66	8.14	9.20	42.88	493.94	79.03	487.36	471.46	15.90	30.645	
2,400.00	2,399.01	2,292.81	2,226.09	8.50	9.70	42.47	526.07	80.54	518.28	501.64	16.64	31.142	
2,500.00	2,498.94	2,387.85	2,315.52	8.86	10.21	42.10	558.19	82.06	549.23	531.85	17.38	31.595	
2,600.00	2,598.88	2,482.88	2,404.95	9.22	10.72	41.78	590.32	83.57	580.19	562.07	18.13	32.010	
2,700.00	2,698.82	2,577.92	2,494.38	9.58	11.23	41.48	622.44	85.09	611.17	592.30	18.87	32.391	
2,800.00	2,798.76	2,672.96	2,583.81	9.94	11.74	41.22	654.57	86.60	642.16	622.55	19.61	32.742	
2,900.00	2,898.70	2,767.99	2,673.23	10.30	12.25	40.98	686.70	88.12	673.16	652.80	20.36	33.067	
3,000.00	2,998.64	2,863.03	2,762.66	10.66	12.76	40.76	718.82	89.63	704.17	683.07	21.10	33.368	
3,100.00	3,098.58	2,958.07	2,852.09	11.02	13.28	40.55	750.95	91.15	735.20	713.35	21.85	33.648	
3,200.00	3,198.52	3,053.10	2,941.52	11.38	13.80	40.37	783.07	92.66	766.22	743.63	22.60	33.908	
3,300.00	3,298.46	3,148.14	3,030.95	11.75	14.31	40.20	815.20	94.18	797.26	773.91	23.34	34.151	
3,400.00	3,398.40	3,243.18	3,120.38	12.11	14.83	40.04	847.32	95.69	828.30	804.21	24.09	34.379	
3,500.00	3,498.34	3,338.21	3,209.81	12.47	15.35	39.89	879.45	97.21	859.35	834.50	24.84	34.592	
3,600.00	3,598.27	3,433.25	3,299.24	12.83	15.87	39.76	911.57	98.72	890.40	864.80	25.59	34.792	
3,700.00	3,698.21	3,528.28	3,388.67	13.19	16.39	39.63	943.70	100.24	921.45	895.11	26.34	34.981	
3,800.00	3,798.15	3,623.32	3,478.10	13.55	16.91	39.51	975.83	101.75	952.51	925.42	27.09	35.159	
3,900.00	3,898.09	3,718.36	3,567.53	13.91	17.43	39.40	1,007.95	103.27	983.57	955.73	27.84	35.327	
4,000.00	3,998.03	3,813.39	3,656.96	14.27	17.95	39.29	1,040.08	104.78	1,014.64	986.05	28.59	35.485	
4,100.00	4,097.97	3,908.43	3,746.38	14.63	18.47	39.20	1,072.20	106.30	1,045.71	1,016.36	29.34	35.635	
4,200.00	4,197.91	4,003.47	3,835.81	14.99	18.99	39.10	1,104.33	107.81	1,076.78	1,046.68	30.10	35.778	
4,300.00	4,297.85	4,098.50	3,925.24	15.35	19.51	39.02	1,136.45	109.33	1,107.85	1,077.00	30.85	35.913	
4,400.00	4,397.79	4,193.54	4,014.67	15.71	20.04	38.93	1,168.58	110.84	1,138.93	1,107.33	31.60	36.041	
4,500.00	4,497.73	4,288.58	4,104.10	16.07	20.56	38.86	1,200.70	112.36	1,170.01	1,137.65	32.35	36.164	
4,600.00	4,597.66	4,383.61	4,193.53	16.43	21.08	38.78	1,232.83	113.87	1,201.08	1,167.98	33.11	36.280	
4,700.00	4,697.60	4,478.65	4,282.96	16.79	21.60	38.71	1,264.95	115.39	1,232.17	1,198.31	33.86	36.391	
4,800.00	4,797.54	4,573.69	4,372.39	17.15	22.13	38.64	1,297.08	116.90	1,263.25	1,228.64	34.61	36.497	
4,900.00	4,897.48	4,668.72	4,461.82	17.51	22.65	38.58	1,329.21	118.42	1,294.33	1,258.97	35.37	36.598	
5,000.00	4,997.42	4,763.76	4,551.25	17.87	23.18	38.52	1,361.33	119.93	1,325.42	1,289.30	36.12	36.695	
5,100.00	5,097.36	4,858.79	4,640.68	18.23	23.70	38.46	1,393.46	121.45	1,356.51	1,319.63	36.87	36.788	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,200.00	5,197.30	4,953.83	4,730.11	18.59	24.22	38.40	1,425.58	122.96	1,387.59	1,349.97	37.63	36.877	
5,300.00	5,297.24	5,048.87	4,819.53	18.95	24.75	38.35	1,457.71	124.48	1,418.68	1,380.30	38.38	36.962	
5,402.82	5,400.00	5,146.59	4,911.49	19.32	25.29	38.30	1,490.74	126.04	1,450.65	1,411.49	39.16	37.046	
5,500.00	5,497.13	5,238.84	4,998.29	19.67	25.80	38.34	1,521.92	127.51	1,481.17	1,441.28	39.89	37.131	
5,600.00	5,597.11	5,333.54	5,087.41	20.03	26.32	38.37	1,553.94	129.02	1,513.22	1,472.58	40.64	37.232	
5,700.00	5,697.10	5,428.01	5,176.31	20.39	26.84	38.38	1,585.87	130.52	1,545.92	1,504.53	41.39	37.348	
5,802.82	5,799.92	5,524.90	5,267.48	20.75	27.37	8.38	1,618.62	132.07	1,580.22	1,538.07	42.16	37.483	
5,900.00	5,897.09	5,616.34	5,353.53	21.10	27.88	8.26	1,649.53	133.52	1,612.97	1,570.09	42.88	37.614	
6,000.00	5,997.09	5,728.37	5,459.06	21.45	28.49	8.13	1,687.08	135.29	1,646.43	1,602.66	43.77	37.616	
6,100.00	6,097.09	5,861.76	5,585.56	21.81	29.20	7.98	1,729.33	137.29	1,678.01	1,633.21	44.81	37.450	
6,200.00	6,197.09	5,997.17	5,714.96	22.16	29.90	7.86	1,769.20	139.17	1,707.38	1,661.55	45.83	37.256	
6,300.00	6,297.09	6,134.50	5,847.11	22.52	30.58	7.74	1,806.50	140.93	1,734.48	1,687.65	46.83	37.038	
6,354.91	6,352.00	6,210.68	5,920.79	22.72	30.94	7.68	1,825.82	141.84	1,748.37	1,701.00	47.37	36.908	
6,400.00	6,397.06	6,273.71	5,981.94	22.87	31.23	-70.53	1,841.07	142.56	1,758.75	1,710.95	47.80	36.792	
6,450.00	6,446.74	6,343.88	6,050.22	23.04	31.55	-69.98	1,857.25	143.32	1,768.49	1,720.22	48.27	36.639	
6,500.00	6,495.84	6,413.86	6,118.50	23.20	31.86	-69.76	1,872.56	144.04	1,776.35	1,727.63	48.72	36.460	
6,550.00	6,544.06	6,483.14	6,186.27	23.36	32.16	-69.84	1,886.89	144.72	1,782.36	1,733.20	49.16	36.258	
6,600.00	6,591.08	6,551.20	6,253.03	23.51	32.45	-70.22	1,900.17	145.34	1,786.59	1,737.01	49.58	36.034	
6,650.00	6,636.64	6,617.55	6,318.25	23.66	32.73	-70.87	1,912.36	145.92	1,789.14	1,739.15	49.99	35.792	
6,700.00	6,680.44	6,681.70	6,381.43	23.82	32.98	-71.74	1,923.42	146.44	1,790.16	1,739.79	50.38	35.535	
6,750.00	6,722.22	6,722.82	6,422.00	23.99	33.15	-72.45	1,930.14	146.76	1,789.92	1,739.23	50.68	35.316	
6,800.00	6,761.71	6,750.00	6,448.76	24.16	33.26	-73.04	1,934.87	146.53	1,789.31	1,738.37	50.94	35.124	
6,850.00	6,798.68	6,750.00	6,448.76	24.33	33.26	-73.10	1,934.87	146.53	1,788.60	1,737.50	51.10	35.004	
6,900.00	6,832.89	6,766.90	6,465.32	24.50	33.33	-73.55	1,938.20	145.97	1,787.91	1,736.58	51.33	34.833	
6,950.00	6,864.14	6,777.28	6,475.45	24.69	33.38	-73.87	1,940.39	145.45	1,787.33	1,735.80	51.54	34.679	
7,000.00	6,892.23	6,800.00	6,497.51	24.88	33.48	-74.53	1,945.57	143.90	1,787.07	1,735.24	51.83	34.479	
7,050.00	6,916.99	6,800.00	6,497.51	25.08	33.48	-74.56	1,945.57	143.90	1,786.73	1,734.70	52.02	34.344	
7,073.05	6,927.24	6,800.00	6,497.51	25.18	33.48	-74.56	1,945.57	143.90	1,786.69	1,734.57	52.12	34.280	
7,100.00	6,938.27	6,800.00	6,497.51	25.29	33.48	-74.56	1,945.57	143.90	1,786.74	1,734.50	52.24	34.205	
7,150.00	6,955.93	6,800.00	6,497.51	25.51	33.48	-74.53	1,945.57	143.90	1,787.11	1,734.64	52.47	34.059	
7,200.00	6,969.87	6,800.00	6,497.51	25.75	33.48	-74.46	1,945.57	143.90	1,787.83	1,735.09	52.73	33.904	
7,250.00	6,980.00	6,800.00	6,497.51	25.99	33.48	-74.37	1,945.57	143.90	1,788.89	1,735.87	53.02	33.739	
7,300.00	6,986.25	6,800.00	6,497.51	26.25	33.48	-74.25	1,945.57	143.90	1,790.29	1,736.96	53.34	33.564	
7,354.68	6,988.62	6,800.00	6,497.51	26.53	33.48	-74.08	1,945.57	143.90	1,792.21	1,738.49	53.72	33.364	
7,400.00	6,988.64	6,800.00	6,497.51	26.78	33.48	-74.08	1,945.57	143.90	1,794.52	1,740.47	54.05	33.198	
7,500.00	6,988.67	6,800.00	6,497.51	27.40	33.48	-74.08	1,945.57	143.90	1,803.65	1,748.78	54.87	32.870	
7,600.00	6,988.71	6,800.00	6,497.51	28.08	33.48	-74.08	1,945.57	143.90	1,818.24	1,762.47	55.77	32.603	
7,700.00	6,988.74	6,800.00	6,497.51	28.84	33.48	-74.08	1,945.57	143.90	1,838.17	1,781.45	56.72	32.408	
7,800.00	6,988.78	6,800.00	6,497.51	29.67	33.48	-74.08	1,945.57	143.90	1,863.25	1,805.55	57.70	32.291	
7,900.00	6,988.81	6,800.00	6,497.51	30.55	33.48	-74.08	1,945.57	143.90	1,893.29	1,834.60	58.69	32.258	
8,000.00	6,988.85	6,800.00	6,497.51	31.49	33.48	-74.08	1,945.57	143.90	1,928.06	1,868.38	59.68	32.309	
8,100.00	6,988.88	6,800.00	6,497.51	32.48	33.48	-74.08	1,945.57	143.90	1,967.30	1,906.66	60.64	32.445	
8,200.00	6,988.91	6,800.00	6,497.51	33.51	33.48	-74.08	1,945.57	143.90	2,010.75	1,949.19	61.56	32.663	
8,211.68	6,988.92	6,800.00	6,497.51	33.63	33.48	-74.08	1,945.57	143.90	2,016.09	1,954.43	61.67	32.694	
8,300.00	6,988.95	6,800.00	6,497.51	34.58	33.48	-73.81	1,945.57	143.90	2,059.28	1,996.84	62.44	32.982	
8,400.00	6,988.98	6,800.00	6,497.51	35.70	33.48	-73.44	1,945.57	143.90	2,114.21	2,050.95	63.25	33.424	
8,500.00	6,989.01	6,800.00	6,497.51	36.84	33.48	-73.00	1,945.57	143.90	2,175.00	2,111.00	64.00	33.982	
8,600.00	6,989.04	6,800.00	6,497.51	38.02	33.48	-72.47	1,945.57	143.90	2,241.12	2,176.43	64.69	34.646	
8,700.00	6,989.07	6,800.00	6,497.51	39.22	33.48	-71.86	1,945.57	143.90	2,312.02	2,246.72	65.30	35.406	
8,772.79	6,989.09	6,800.00	6,497.51	40.11	33.48	-71.34	1,945.57	143.90	2,366.34	2,300.63	65.71	36.014	
8,800.00	6,989.10	6,800.00	6,497.51	40.44	33.48	-71.34	1,945.57	143.90	2,387.12	2,321.27	65.85	36.251	
8,900.00	6,989.13	6,800.00	6,497.51	41.68	33.48	-71.34	1,945.57	143.90	2,464.54	2,398.19	66.35	37.145	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #672H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS				Rule Assigned:				Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
9,000.00	6,989.15	6,800.00	6,497.51	42.95	33.48	-71.34	1,945.57	143.90	2,543.53	2,476.73	66.81	38.073		
9,100.00	6,989.18	6,800.00	6,497.51	44.24	33.48	-71.34	1,945.57	143.90	2,623.96	2,556.74	67.23	39.031		
9,200.00	6,989.21	6,800.00	6,497.51	45.55	33.48	-71.34	1,945.57	143.90	2,705.70	2,638.09	67.61	40.017		
9,300.00	6,989.24	6,800.00	6,497.51	46.88	33.48	-71.34	1,945.57	143.90	2,788.63	2,720.66	67.97	41.027		
9,400.00	6,989.26	6,800.00	6,497.51	48.23	33.48	-71.34	1,945.57	143.90	2,872.64	2,804.34	68.30	42.059		
9,500.00	6,989.29	6,800.00	6,497.51	49.59	33.48	-71.34	1,945.57	143.90	2,957.65	2,889.04	68.60	43.112		
9,600.00	6,989.32	6,800.00	6,497.51	50.96	33.48	-71.34	1,945.57	143.90	3,043.57	2,974.68	68.88	44.184		
9,700.00	6,989.34	6,800.00	6,497.51	52.35	33.48	-71.34	1,945.57	143.90	3,130.32	3,061.18	69.14	45.273		
9,800.00	6,989.37	6,800.00	6,497.51	53.75	33.48	-71.34	1,945.57	143.90	3,217.85	3,148.46	69.38	46.377		
9,900.00	6,989.40	6,800.00	6,497.51	55.16	33.48	-71.34	1,945.57	143.90	3,306.08	3,236.47	69.61	47.495		
10,000.00	6,989.42	6,800.00	6,497.51	56.58	33.48	-71.34	1,945.57	143.90	3,394.96	3,325.15	69.82	48.626		
10,100.00	6,989.45	6,800.00	6,497.51	58.01	33.48	-71.34	1,945.57	143.90	3,484.45	3,414.44	70.01	49.768		
10,200.00	6,989.48	6,778.28	6,476.42	59.45	33.38	-70.54	1,940.61	145.40	3,574.08	3,504.03	70.05	51.021		
10,300.00	6,989.51	6,777.39	6,475.56	60.90	33.38	-70.51	1,940.41	145.45	3,664.61	3,594.39	70.22	52.190		
10,400.00	6,989.53	6,776.54	6,474.73	62.35	33.37	-70.47	1,940.23	145.49	3,755.62	3,685.24	70.37	53.367		
10,500.00	6,989.56	6,775.72	6,473.93	63.81	33.37	-70.44	1,940.05	145.54	3,847.07	3,776.55	70.52	54.553		
10,600.00	6,989.59	6,774.93	6,473.16	65.28	33.37	-70.41	1,939.88	145.58	3,938.94	3,868.28	70.66	55.746		
10,700.00	6,989.61	6,774.16	6,472.41	66.76	33.36	-70.39	1,939.72	145.62	4,031.19	3,960.40	70.79	56.946		
10,800.00	6,989.64	6,773.42	6,471.69	68.24	33.36	-70.36	1,939.56	145.66	4,123.81	4,052.89	70.91	58.153		
10,900.00	6,989.67	6,772.70	6,470.99	69.73	33.36	-70.33	1,939.41	145.69	4,216.76	4,145.73	71.03	59.365		
11,000.00	6,989.70	6,772.01	6,470.31	71.22	33.35	-70.31	1,939.26	145.73	4,310.02	4,238.88	71.14	60.582		
11,100.00	6,989.72	6,750.00	6,448.76	72.71	33.26	-69.50	1,934.87	146.53	4,403.97	4,332.85	71.11	61.928		
11,200.00	6,989.75	6,750.00	6,448.76	74.22	33.26	-69.50	1,934.87	146.53	4,497.78	4,426.56	71.22	63.153		
11,300.00	6,989.78	6,750.00	6,448.76	75.72	33.26	-69.50	1,934.87	146.53	4,591.85	4,520.53	71.32	64.381		
11,400.00	6,989.80	6,750.00	6,448.76	77.23	33.26	-69.50	1,934.87	146.53	4,686.17	4,614.75	71.42	65.613		
11,500.00	6,989.83	6,750.00	6,448.76	78.74	33.26	-69.50	1,934.87	146.53	4,780.72	4,709.20	71.52	66.848		
11,600.00	6,989.86	6,750.00	6,448.76	80.26	33.26	-69.50	1,934.87	146.53	4,875.49	4,803.88	71.61	68.086		
11,700.00	6,989.88	6,750.00	6,448.76	81.78	33.26	-69.50	1,934.87	146.53	4,970.46	4,898.76	71.70	69.327		
11,800.00	6,989.91	6,750.00	6,448.76	83.30	33.26	-69.50	1,934.87	146.53	5,065.62	4,993.84	71.78	70.571		
11,900.00	6,989.94	6,750.00	6,448.76	84.83	33.26	-69.50	1,934.87	146.53	5,160.97	5,089.11	71.86	71.816		
12,000.00	6,989.97	6,750.00	6,448.76	86.36	33.26	-69.50	1,934.87	146.53	5,256.49	5,184.55	71.94	73.064		
12,100.00	6,989.99	6,750.00	6,448.76	87.89	33.26	-69.50	1,934.87	146.53	5,352.18	5,280.16	72.02	74.313		
12,200.00	6,990.02	6,750.00	6,448.76	89.42	33.26	-69.50	1,934.87	146.53	5,448.02	5,375.92	72.10	75.564		
12,300.00	6,990.05	6,750.00	6,448.76	90.96	33.26	-69.50	1,934.87	146.53	5,544.00	5,471.83	72.17	76.816		
12,400.00	6,990.07	6,750.00	6,448.76	92.50	33.26	-69.50	1,934.87	146.53	5,640.13	5,567.88	72.25	78.069		
12,500.00	6,990.10	6,750.00	6,448.76	94.04	33.26	-69.50	1,934.87	146.53	5,736.39	5,664.07	72.32	79.324		
12,600.00	6,990.13	6,750.00	6,448.76	95.58	33.26	-69.50	1,934.87	146.53	5,832.77	5,760.39	72.39	80.579		
12,700.00	6,990.15	6,750.00	6,448.76	97.13	33.26	-69.50	1,934.87	146.53	5,929.28	5,856.82	72.45	81.834		
12,800.00	6,990.18	6,750.00	6,448.76	98.68	33.26	-69.50	1,934.87	146.53	6,025.90	5,953.37	72.52	83.090		
12,900.00	6,990.21	6,750.00	6,448.76	100.22	33.26	-69.50	1,934.87	146.53	6,122.62	6,050.03	72.59	84.347		
13,000.00	6,990.24	6,750.00	6,448.76	101.78	33.26	-69.50	1,934.87	146.53	6,219.45	6,146.80	72.65	85.604		
13,100.00	6,990.26	6,750.00	6,448.76	103.33	33.26	-69.50	1,934.87	146.53	6,316.38	6,243.66	72.72	86.860		
13,200.00	6,990.29	6,750.00	6,448.76	104.88	33.26	-69.50	1,934.87	146.53	6,413.41	6,340.62	72.78	88.117		
13,300.00	6,990.32	6,750.00	6,448.76	106.44	33.26	-69.50	1,934.87	146.53	6,510.52	6,437.67	72.85	89.374		
13,400.00	6,990.34	6,750.00	6,448.76	107.99	33.26	-69.50	1,934.87	146.53	6,607.72	6,534.81	72.91	90.630		
13,500.00	6,990.37	6,750.00	6,448.76	109.55	33.26	-69.50	1,934.87	146.53	6,705.00	6,632.03	72.97	91.886		
13,600.00	6,990.40	6,750.00	6,448.76	111.11	33.26	-69.50	1,934.87	146.53	6,802.36	6,729.33	73.03	93.142		
13,700.00	6,990.42	6,750.00	6,448.76	112.67	33.26	-69.50	1,934.87	146.53	6,899.80	6,826.70	73.09	94.396		
13,800.00	6,990.45	6,750.00	6,448.76	114.23	33.26	-69.50	1,934.87	146.53	6,997.31	6,924.15	73.15	95.651		
13,900.00	6,990.48	6,750.00	6,448.76	115.80	33.26	-69.50	1,934.87	146.53	7,094.89	7,021.67	73.22	96.904		
14,000.00	6,990.51	6,750.00	6,448.76	117.36	33.26	-69.50	1,934.87	146.53	7,192.53	7,119.25	73.28	98.157		
14,100.00	6,990.53	6,750.00	6,448.76	118.93	33.26	-69.50	1,934.87	146.53	7,290.24	7,216.90	73.34	99.409		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #672H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:				Offset Well Error:	0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
14,200.00	6,990.56	6,750.00	6,448.76	120.49	33.26	-69.50	1,934.87	146.53	7,388.01	7,314.61	73.40	100.660		
14,300.00	6,990.59	6,750.00	6,448.76	122.06	33.26	-69.50	1,934.87	146.53	7,485.84	7,412.38	73.46	101.910		
14,400.00	6,990.61	6,750.00	6,448.76	123.63	33.26	-69.50	1,934.87	146.53	7,583.72	7,510.21	73.52	103.159		
14,500.00	6,990.64	6,750.00	6,448.76	125.20	33.26	-69.50	1,934.87	146.53	7,681.66	7,608.09	73.57	104.406		
14,600.00	6,990.67	6,750.00	6,448.76	126.77	33.26	-69.50	1,934.87	146.53	7,779.65	7,706.02	73.63	105.653		
14,700.00	6,990.70	6,750.00	6,448.76	128.34	33.26	-69.50	1,934.87	146.53	7,877.70	7,804.00	73.69	106.898		
14,800.00	6,990.72	6,750.00	6,448.76	129.91	33.26	-69.50	1,934.87	146.53	7,975.79	7,902.04	73.75	108.142		
14,900.00	6,990.75	6,750.00	6,448.76	131.48	33.26	-69.50	1,934.87	146.53	8,073.93	8,000.11	73.81	109.384		
15,000.00	6,990.78	6,750.00	6,448.76	133.06	33.26	-69.50	1,934.87	146.53	8,172.11	8,098.24	73.87	110.625		
15,100.00	6,990.80	6,750.00	6,448.76	134.63	33.26	-69.50	1,934.87	146.53	8,270.34	8,196.40	73.93	111.864		
15,200.00	6,990.83	6,750.00	6,448.76	136.20	33.26	-69.50	1,934.87	146.53	8,368.61	8,294.61	73.99	113.102		
15,300.00	6,990.86	6,750.00	6,448.76	137.78	33.26	-69.50	1,934.87	146.53	8,466.91	8,392.86	74.05	114.338		
15,400.00	6,990.88	6,750.00	6,448.76	139.36	33.26	-69.50	1,934.87	146.53	8,565.26	8,491.15	74.11	115.573		
15,500.00	6,990.91	6,750.00	6,448.76	140.93	33.26	-69.50	1,934.87	146.53	8,663.65	8,589.48	74.17	116.805		
15,600.00	6,990.94	6,750.00	6,448.76	142.51	33.26	-69.50	1,934.87	146.53	8,762.07	8,687.84	74.23	118.036		
15,700.00	6,990.97	6,750.00	6,448.76	144.09	33.26	-69.50	1,934.87	146.53	8,860.53	8,786.24	74.29	119.266		
15,800.00	6,990.99	6,750.00	6,448.76	145.67	33.26	-69.50	1,934.87	146.53	8,959.02	8,884.67	74.35	120.493		
15,900.00	6,991.02	6,750.00	6,448.76	147.24	33.26	-69.50	1,934.87	146.53	9,057.55	8,983.13	74.41	121.718		
16,000.00	6,991.05	6,750.00	6,448.76	148.82	33.26	-69.50	1,934.87	146.53	9,156.11	9,081.63	74.47	122.942		
16,100.00	6,991.07	6,750.00	6,448.76	150.40	33.26	-69.50	1,934.87	146.53	9,254.69	9,180.16	74.54	124.164		
16,200.00	6,991.10	6,750.00	6,448.76	151.99	33.26	-69.50	1,934.87	146.53	9,353.31	9,278.71	74.60	125.383		
16,300.00	6,991.13	6,750.00	6,448.76	153.57	33.26	-69.50	1,934.87	146.53	9,451.96	9,377.30	74.66	126.601		
16,400.00	6,991.15	6,750.00	6,448.76	155.15	33.26	-69.50	1,934.87	146.53	9,550.63	9,475.91	74.72	127.816		
16,500.00	6,991.18	6,750.00	6,448.76	156.73	33.26	-69.50	1,934.87	146.53	9,649.34	9,574.55	74.78	129.029		
16,600.00	6,991.21	6,750.00	6,448.76	158.31	33.26	-69.50	1,934.87	146.53	9,748.07	9,673.22	74.85	130.241		
16,700.00	6,991.24	6,750.00	6,448.76	159.90	33.26	-69.50	1,934.87	146.53	9,846.82	9,771.91	74.91	131.450		
16,800.00	6,991.26	6,750.00	6,448.76	161.48	33.26	-69.50	1,934.87	146.53	9,945.60	9,870.63	74.97	132.656		
16,900.00	6,991.29	6,750.00	6,448.76	163.06	33.26	-69.50	1,934.87	146.53	10,044.40	9,969.37	75.04	133.861		
17,000.00	6,991.32	6,750.00	6,448.76	164.65	33.26	-69.50	1,934.87	146.53	10,143.23	10,068.13	75.10	135.063		
17,100.00	6,991.34	6,750.00	6,448.76	166.23	33.26	-69.50	1,934.87	146.53	10,242.08	10,166.92	75.16	136.263		
17,200.00	6,991.37	6,750.00	6,448.76	167.82	33.26	-69.50	1,934.87	146.53	10,340.95	10,265.73	75.23	137.461		
17,300.00	6,991.40	6,750.00	6,448.76	169.40	33.26	-69.50	1,934.87	146.53	10,439.85	10,364.55	75.29	138.656		
17,400.00	6,991.42	6,750.00	6,448.76	170.99	33.26	-69.50	1,934.87	146.53	10,538.76	10,463.40	75.36	139.849		
17,500.00	6,991.45	6,750.00	6,448.76	172.57	33.26	-69.50	1,934.87	146.53	10,637.70	10,562.27	75.42	141.040		
17,600.00	6,991.48	6,750.00	6,448.76	174.16	33.26	-69.50	1,934.87	146.53	10,736.65	10,661.16	75.49	142.228		
17,700.00	6,991.51	6,750.00	6,448.76	175.75	33.26	-69.50	1,934.87	146.53	10,835.63	10,760.07	75.55	143.414		
17,800.00	6,991.53	6,750.00	6,448.76	177.33	33.26	-69.50	1,934.87	146.53	10,934.62	10,859.00	75.62	144.597		
17,900.00	6,991.56	6,750.00	6,448.76	178.92	33.26	-69.50	1,934.87	146.53	11,033.63	10,957.94	75.69	145.778		
18,000.00	6,991.59	6,750.00	6,448.76	180.51	33.26	-69.50	1,934.87	146.53	11,132.66	11,056.90	75.75	146.956		
18,100.00	6,991.61	6,750.00	6,448.76	182.10	33.26	-69.50	1,934.87	146.53	11,231.70	11,155.88	75.82	148.132		
18,200.00	6,991.64	6,750.00	6,448.76	183.68	33.26	-69.50	1,934.87	146.53	11,330.76	11,254.87	75.89	149.305		
18,300.00	6,991.67	6,750.00	6,448.76	185.27	33.26	-69.50	1,934.87	146.53	11,429.84	11,353.88	75.96	150.476		
18,400.00	6,991.69	6,750.00	6,448.76	186.86	33.26	-69.50	1,934.87	146.53	11,528.94	11,452.91	76.03	151.644		
18,500.00	6,991.72	6,750.00	6,448.76	188.45	33.26	-69.50	1,934.87	146.53	11,628.05	11,551.95	76.10	152.809		
18,600.00	6,991.75	6,750.00	6,448.76	190.04	33.26	-69.50	1,934.87	146.53	11,727.17	11,651.01	76.16	153.972		
18,700.00	6,991.78	6,750.00	6,448.76	191.63	33.26	-69.50	1,934.87	146.53	11,826.31	11,750.08	76.23	155.132		
18,800.00	6,991.80	6,750.00	6,448.76	193.22	33.26	-69.50	1,934.87	146.53	11,925.47	11,849.16	76.30	156.290		
18,900.00	6,991.83	6,750.00	6,448.76	194.81	33.26	-69.50	1,934.87	146.53	12,024.63	11,948.26	76.37	157.445		
19,000.00	6,991.86	6,750.00	6,448.76	196.40	33.26	-69.50	1,934.87	146.53	12,123.82	12,047.37	76.44	158.597		
19,100.00	6,991.88	6,750.00	6,448.76	197.99	33.26	-69.50	1,934.87	146.53	12,223.01	12,146.50	76.52	159.746		
19,200.00	6,991.91	6,750.00	6,448.76	199.58	33.26	-69.50	1,934.87	146.53	12,322.22	12,245.63	76.59	160.893		
19,300.00	6,991.94	6,750.00	6,448.76	201.17	33.26	-69.50	1,934.87	146.53	12,421.44	12,344.78	76.66	162.037		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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		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		
19,342.28	6,991.95	6,750.00	6,448.76	201.84	33.26	-69.50	1,934.87	146.53	12,463.39	12,386.70	76.69	162.520		
19,400.00	6,991.97	6,750.00	6,448.76	202.76	33.26	-69.50	1,934.87	146.53	12,520.67	12,443.94	76.73	163.178		
19,500.00	6,991.99	6,750.00	6,448.76	204.35	33.26	-69.50	1,934.87	146.53	12,619.92	12,543.12	76.80	164.317		
19,542.28	6,992.00	6,750.00	6,448.76	205.03	33.26	-69.50	1,934.87	146.53	12,661.88	12,585.05	76.83	164.797		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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
							+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	69.90	39.17	80.13				
100.00	100.00	100.00	100.00	0.25	0.25	29.27	69.90	39.17	80.13	79.63	0.50	159.663	
200.00	200.00	200.00	200.00	0.61	0.61	29.27	69.90	39.17	80.13	78.91	1.22	65.744	
300.00	300.00	300.00	300.00	0.97	0.97	29.27	69.90	39.17	80.13	78.19	1.94	41.394	
400.00	400.00	400.00	400.00	1.33	1.33	29.27	69.90	39.17	80.13	77.48	2.65	30.207	
500.00	500.00	500.00	500.00	1.68	1.68	29.27	69.90	39.17	80.13	76.76	3.37	23.780	
510.00	510.00	510.00	510.00	1.72	1.72	29.27	69.90	39.17	80.13	76.69	3.44	23.284	CC
600.00	600.00	598.83	598.83	2.04	2.04	29.11	70.32	39.15	80.49	76.41	4.08	19.717	ES
700.00	700.00	696.38	696.32	2.40	2.39	27.92	73.64	39.02	83.42	78.63	4.79	17.417	
800.00	799.98	793.71	793.41	2.76	2.74	56.60	80.25	38.74	88.39	82.90	5.49	16.098	
900.00	899.92	890.71	889.90	3.12	3.10	55.41	90.12	38.33	95.40	89.22	6.19	15.421	
1,000.00	999.86	987.13	985.44	3.47	3.45	53.59	103.16	37.79	105.47	98.59	6.88	15.335	SF
1,100.00	1,099.80	1,082.77	1,079.71	3.83	3.81	51.44	119.26	37.12	118.67	111.11	7.56	15.695	
1,200.00	1,199.74	1,179.48	1,174.51	4.19	4.18	49.23	138.31	36.32	134.69	126.43	8.26	16.311	
1,300.00	1,299.68	1,278.00	1,271.01	4.55	4.58	47.41	158.12	35.50	151.25	142.28	8.97	16.860	
1,400.00	1,399.61	1,376.51	1,367.52	4.91	4.97	45.95	177.93	34.67	167.93	158.24	9.70	17.321	
1,500.00	1,499.55	1,475.03	1,464.02	5.27	5.38	44.75	197.74	33.85	184.71	174.29	10.42	17.728	
1,600.00	1,599.49	1,573.55	1,560.52	5.63	5.79	43.75	217.55	33.02	201.54	190.40	11.14	18.086	
1,700.00	1,699.43	1,672.06	1,657.02	5.99	6.20	42.91	237.36	32.20	218.43	206.56	11.87	18.402	
1,800.00	1,799.37	1,770.58	1,753.52	6.35	6.61	42.18	257.17	31.37	235.35	222.76	12.60	18.683	
1,900.00	1,899.31	1,869.10	1,850.02	6.71	7.02	41.56	276.98	30.55	252.31	238.99	13.33	18.934	
2,000.00	1,999.25	1,967.61	1,946.52	7.07	7.44	41.01	296.79	29.72	269.30	255.24	14.06	19.160	
2,100.00	2,099.19	2,066.13	2,043.02	7.42	7.86	40.53	316.60	28.90	286.30	271.51	14.79	19.364	
2,200.00	2,199.13	2,164.65	2,139.52	7.78	8.28	40.10	336.40	28.07	303.32	287.81	15.52	19.550	
2,300.00	2,299.07	2,263.16	2,236.03	8.14	8.70	39.71	356.21	27.25	320.36	304.11	16.25	19.719	
2,400.00	2,399.01	2,361.68	2,332.53	8.50	9.12	39.37	376.02	26.42	337.41	320.43	16.98	19.873	
2,500.00	2,498.94	2,460.20	2,429.03	8.86	9.54	39.06	395.83	25.60	354.47	336.76	17.71	20.015	
2,600.00	2,598.88	2,558.71	2,525.53	9.22	9.96	38.78	415.64	24.77	371.54	353.09	18.44	20.146	
2,700.00	2,698.82	2,657.23	2,622.03	9.58	10.38	38.52	435.45	23.95	388.61	369.44	19.17	20.267	
2,800.00	2,798.76	2,755.75	2,718.53	9.94	10.81	38.28	455.26	23.12	405.70	385.79	19.91	20.379	
2,900.00	2,898.70	2,854.26	2,815.03	10.30	11.23	38.07	475.07	22.30	422.79	402.15	20.64	20.483	
3,000.00	2,998.64	2,952.78	2,911.53	10.66	11.66	37.87	494.88	21.47	439.88	418.51	21.37	20.581	
3,100.00	3,098.58	3,051.30	3,008.03	11.02	12.08	37.68	514.69	20.65	456.98	434.88	22.11	20.671	
3,200.00	3,198.52	3,149.81	3,104.53	11.38	12.51	37.51	534.50	19.82	474.09	451.25	22.84	20.756	
3,300.00	3,298.46	3,248.33	3,201.04	11.75	12.93	37.35	554.31	19.00	491.20	467.62	23.57	20.836	
3,400.00	3,398.40	3,346.85	3,297.54	12.11	13.36	37.20	574.12	18.17	508.31	484.00	24.31	20.911	
3,500.00	3,498.34	3,445.36	3,394.04	12.47	13.78	37.06	593.92	17.34	525.43	500.38	25.04	20.981	
3,600.00	3,598.27	3,543.88	3,490.54	12.83	14.21	36.93	613.73	16.52	542.54	516.77	25.78	21.047	
3,700.00	3,698.21	3,642.40	3,587.04	13.19	14.63	36.81	633.54	15.69	559.66	533.15	26.51	21.110	
3,800.00	3,798.15	3,740.91	3,683.54	13.55	15.06	36.69	653.35	14.87	576.79	549.54	27.25	21.169	
3,900.00	3,898.09	3,839.43	3,780.04	13.91	15.49	36.58	673.16	14.04	593.91	565.93	27.98	21.226	
4,000.00	3,998.03	3,937.95	3,876.54	14.27	15.91	36.48	692.97	13.22	611.04	582.32	28.72	21.279	
4,100.00	4,097.97	4,036.46	3,973.04	14.63	16.34	36.38	712.78	12.39	628.17	598.72	29.45	21.330	
4,200.00	4,197.91	4,134.98	4,069.54	14.99	16.77	36.29	732.59	11.57	645.30	615.11	30.19	21.378	
4,300.00	4,297.85	4,233.50	4,166.05	15.35	17.19	36.21	752.40	10.74	662.43	631.51	30.92	21.424	
4,400.00	4,397.79	4,332.01	4,262.55	15.71	17.62	36.12	772.21	9.92	679.56	647.91	31.66	21.467	
4,500.00	4,497.73	4,430.53	4,359.05	16.07	18.05	36.04	792.02	9.09	696.70	664.31	32.39	21.509	
4,600.00	4,597.66	4,529.05	4,455.55	16.43	18.48	35.97	811.83	8.27	713.83	680.71	33.13	21.549	
4,700.00	4,697.60	4,627.56	4,552.05	16.79	18.90	35.90	831.63	7.44	730.97	697.11	33.86	21.587	
4,800.00	4,797.54	4,726.08	4,648.55	17.15	19.33	35.83	851.44	6.62	748.11	713.51	34.60	21.623	
4,900.00	4,897.48	4,824.60	4,745.05	17.51	19.76	35.77	871.25	5.79	765.25	729.92	35.33	21.658	
5,000.00	4,997.42	4,923.11	4,841.55	17.87	20.19	35.70	891.06	4.97	782.39	746.32	36.07	21.692	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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			
5,100.00	5,097.36	5,021.63	4,938.05	18.23	20.62	35.64	910.87	4.14	799.53	762.72	36.80	21.724			
5,200.00	5,197.30	5,120.15	5,034.56	18.59	21.04	35.59	930.68	3.32	816.67	779.13	37.54	21.755			
5,300.00	5,297.24	5,218.66	5,131.06	18.95	21.47	35.53	950.49	2.49	833.81	795.54	38.28	21.784			
5,402.82	5,400.00	5,319.96	5,230.28	19.32	21.91	35.48	970.86	1.64	851.44	812.41	39.03	21.814			
5,500.00	5,497.13	5,415.64	5,324.00	19.67	22.33	35.46	990.10	0.84	868.43	828.68	39.75	21.849			
5,600.00	5,597.11	5,515.68	5,422.00	20.03	22.76	35.42	1,010.19	0.01	886.59	846.09	40.49	21.895			
5,700.00	5,697.10	5,622.24	5,526.52	20.39	23.22	35.34	1,030.93	-0.86	904.82	863.53	41.29	21.916			
5,802.82	5,799.92	5,732.04	5,634.41	20.75	23.69	5.24	1,051.28	-1.70	923.36	881.26	42.09	21.935			
5,900.00	5,897.09	5,836.08	5,736.82	21.10	24.12	5.09	1,069.61	-2.47	940.35	897.49	42.85	21.943			
6,000.00	5,997.09	5,943.49	5,842.72	21.45	24.56	4.95	1,087.55	-3.22	956.94	913.30	43.63	21.931			
6,100.00	6,097.09	6,051.24	5,949.11	21.81	25.00	4.82	1,104.56	-3.92	972.61	928.20	44.41	21.901			
6,200.00	6,197.09	6,159.30	6,055.97	22.16	25.43	4.70	1,120.61	-4.59	987.36	942.18	45.18	21.854			
6,300.00	6,297.09	6,267.66	6,163.27	22.52	25.86	4.59	1,135.70	-5.22	1,001.19	955.25	45.95	21.789			
6,354.91	6,352.00	6,327.27	6,222.37	22.72	26.09	4.54	1,143.56	-5.55	1,008.39	962.02	46.37	21.747			
6,400.00	6,397.06	6,376.29	6,270.98	22.87	26.28	-74.14	1,149.80	-5.81	1,013.67	966.96	46.71	21.703			
6,450.00	6,446.74	6,430.47	6,324.75	23.04	26.49	-74.11	1,156.45	-6.09	1,018.30	971.23	47.07	21.633			
6,500.00	6,495.84	6,484.14	6,378.05	23.20	26.69	-74.40	1,162.79	-6.35	1,021.70	974.27	47.43	21.541			
6,550.00	6,544.06	6,519.01	6,412.67	23.36	26.83	-74.70	1,166.96	-6.82	1,024.26	976.56	47.70	21.472			
6,600.00	6,591.08	6,550.00	6,443.29	23.51	26.95	-75.15	1,171.33	-8.52	1,026.92	978.97	47.95	21.418			
6,650.00	6,636.64	6,571.00	6,463.93	23.66	27.04	-75.47	1,174.69	-10.42	1,029.82	981.70	48.12	21.400			
6,700.00	6,680.44	6,600.00	6,492.24	23.82	27.16	-76.13	1,179.85	-14.05	1,033.23	984.89	48.34	21.373			
6,750.00	6,722.22	6,614.37	6,506.16	23.99	27.22	-76.31	1,182.63	-16.27	1,037.20	988.75	48.45	21.406			
6,800.00	6,761.71	6,632.44	6,523.56	24.16	27.30	-76.62	1,186.33	-19.46	1,042.01	993.42	48.59	21.445			
6,850.00	6,798.68	6,650.00	6,540.33	24.33	27.38	-76.89	1,190.13	-22.99	1,047.76	999.04	48.73	21.503			
6,900.00	6,832.89	6,650.00	6,540.33	24.50	27.38	-76.27	1,190.13	-22.99	1,054.70	1,006.00	48.70	21.657			
6,950.00	6,864.14	6,672.08	6,561.22	24.69	27.48	-76.63	1,195.21	-28.01	1,062.56	1,013.63	48.92	21.719			
7,000.00	6,892.23	6,680.70	6,569.32	24.88	27.52	-76.25	1,197.28	-30.14	1,071.73	1,022.70	49.03	21.858			
7,050.00	6,916.99	6,700.00	6,587.28	25.08	27.60	-76.34	1,202.10	-35.28	1,082.29	1,032.99	49.30	21.952			
7,100.00	6,938.27	6,700.00	6,587.28	25.29	27.60	-75.31	1,202.10	-35.28	1,093.77	1,044.38	49.39	22.147			
7,150.00	6,955.93	6,700.00	6,587.28	25.51	27.60	-74.17	1,202.10	-35.28	1,106.43	1,056.92	49.51	22.349			
7,200.00	6,969.87	6,700.00	6,587.28	25.75	27.60	-72.94	1,202.10	-35.28	1,120.16	1,070.48	49.67	22.551			
7,250.00	6,980.00	6,700.00	6,587.28	25.99	27.60	-71.62	1,202.10	-35.28	1,134.83	1,084.95	49.88	22.750			
7,300.00	6,986.25	6,700.00	6,587.28	26.25	27.60	-70.23	1,202.10	-35.28	1,150.33	1,100.20	50.13	22.945			
7,354.68	6,988.62	6,700.00	6,587.28	26.53	27.60	-68.65	1,202.10	-35.28	1,168.07	1,117.62	50.46	23.150			
7,400.00	6,988.64	6,700.00	6,587.28	26.78	27.60	-68.65	1,202.10	-35.28	1,183.85	1,133.10	50.75	23.329			
7,500.00	6,988.67	6,678.08	6,566.86	27.40	27.50	-67.54	1,196.65	-29.48	1,223.34	1,172.22	51.12	23.931			
7,600.00	6,988.71	6,671.17	6,560.37	28.08	27.47	-67.19	1,194.99	-27.79	1,269.60	1,217.91	51.69	24.561			
7,700.00	6,988.74	6,650.00	6,540.33	28.84	27.38	-66.13	1,190.13	-22.99	1,321.98	1,269.91	52.06	25.392			
7,800.00	6,988.78	6,650.00	6,540.33	29.67	27.38	-66.13	1,190.13	-22.99	1,379.15	1,326.48	52.67	26.185			
7,900.00	6,988.81	6,650.00	6,540.33	30.55	27.38	-66.13	1,190.13	-22.99	1,441.01	1,387.78	53.23	27.073			
8,000.00	6,988.85	6,650.00	6,540.33	31.49	27.38	-66.13	1,190.13	-22.99	1,506.97	1,453.23	53.73	28.045			
8,100.00	6,988.88	6,650.00	6,540.33	32.48	27.38	-66.13	1,190.13	-22.99	1,576.51	1,522.32	54.19	29.094			
8,200.00	6,988.91	6,650.00	6,540.33	33.51	27.38	-66.13	1,190.13	-22.99	1,649.19	1,594.60	54.59	30.209			
8,211.68	6,988.92	6,650.00	6,540.33	33.63	27.38	-66.13	1,190.13	-22.99	1,657.87	1,603.23	54.64	30.343			
8,300.00	6,988.95	6,650.00	6,540.33	34.58	27.38	-65.26	1,190.13	-22.99	1,725.40	1,670.44	54.95	31.398			
8,400.00	6,988.98	6,630.87	6,522.05	35.70	27.29	-63.08	1,186.00	-19.17	1,805.41	1,750.32	55.09	32.774			
8,500.00	6,989.01	6,626.77	6,518.11	36.84	27.28	-61.42	1,185.14	-18.41	1,889.21	1,833.87	55.33	34.142			
8,600.00	6,989.04	6,622.73	6,514.22	38.02	27.26	-59.47	1,184.31	-17.69	1,976.01	1,920.46	55.55	35.573			
8,700.00	6,989.07	6,600.00	6,492.24	39.22	27.16	-56.03	1,179.85	-14.05	2,065.69	2,010.12	55.57	37.173			
8,772.79	6,989.09	6,600.00	6,492.24	40.11	27.16	-54.19	1,179.85	-14.05	2,131.94	2,076.23	55.72	38.263			
8,800.00	6,989.10	6,600.00	6,492.24	40.44	27.16	-54.19	1,179.85	-14.05	2,156.94	2,101.17	55.77	38.676			
8,900.00	6,989.13	6,600.00	6,492.24	41.68	27.16	-54.19	1,179.85	-14.05	2,249.22	2,193.28	55.95	40.203			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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	
9,000.00	6,989.15	6,600.00	6,492.24	42.95	27.16	-54.19	1,179.85	-14.05	2,342.14	2,286.03	56.11	41.744		
9,100.00	6,989.18	6,600.00	6,492.24	44.24	27.16	-54.19	1,179.85	-14.05	2,435.62	2,379.36	56.25	43.297		
9,200.00	6,989.21	6,600.00	6,492.24	45.55	27.16	-54.19	1,179.85	-14.05	2,529.60	2,473.21	56.39	44.861		
9,300.00	6,989.24	6,600.00	6,492.24	46.88	27.16	-54.19	1,179.85	-14.05	2,624.02	2,567.51	56.51	46.434		
9,400.00	6,989.26	6,600.00	6,492.24	48.23	27.16	-54.19	1,179.85	-14.05	2,718.84	2,662.22	56.62	48.015		
9,500.00	6,989.29	6,600.00	6,492.24	49.59	27.16	-54.19	1,179.85	-14.05	2,814.02	2,757.29	56.73	49.604		
9,600.00	6,989.32	6,600.00	6,492.24	50.96	27.16	-54.19	1,179.85	-14.05	2,909.52	2,852.69	56.83	51.198		
9,700.00	6,989.34	6,600.00	6,492.24	52.35	27.16	-54.19	1,179.85	-14.05	3,005.32	2,948.40	56.92	52.798		
9,800.00	6,989.37	6,600.00	6,492.24	53.75	27.16	-54.19	1,179.85	-14.05	3,101.38	3,044.37	57.01	54.402		
9,900.00	6,989.40	6,600.00	6,492.24	55.16	27.16	-54.19	1,179.85	-14.05	3,197.68	3,140.59	57.09	56.010		
10,000.00	6,989.42	6,600.00	6,492.24	56.58	27.16	-54.19	1,179.85	-14.05	3,294.21	3,237.04	57.17	57.621		
10,100.00	6,989.45	6,600.00	6,492.24	58.01	27.16	-54.19	1,179.85	-14.05	3,390.93	3,333.69	57.25	59.235		
10,200.00	6,989.48	6,577.91	6,470.70	59.45	27.07	-52.87	1,175.87	-11.18	3,487.40	3,430.22	57.18	60.985		
10,300.00	6,989.51	6,576.11	6,468.94	60.90	27.06	-52.77	1,175.56	-10.98	3,584.41	3,527.16	57.24	62.616		
10,400.00	6,989.53	6,574.40	6,467.26	62.35	27.05	-52.67	1,175.27	-10.79	3,681.57	3,624.27	57.30	64.247		
10,500.00	6,989.56	6,572.75	6,465.64	63.81	27.05	-52.57	1,174.99	-10.61	3,778.88	3,721.52	57.36	65.880		
10,600.00	6,989.59	6,550.00	6,443.29	65.28	26.95	-51.26	1,171.33	-8.52	3,876.71	3,819.41	57.30	67.661		
10,700.00	6,989.61	6,550.00	6,443.29	66.76	26.95	-51.26	1,171.33	-8.52	3,974.22	3,916.86	57.36	69.284		
10,800.00	6,989.64	6,550.00	6,443.29	68.24	26.95	-51.26	1,171.33	-8.52	4,071.84	4,014.42	57.42	70.908		
10,900.00	6,989.67	6,550.00	6,443.29	69.73	26.95	-51.26	1,171.33	-8.52	4,169.58	4,112.10	57.49	72.533		
11,000.00	6,989.70	6,550.00	6,443.29	71.22	26.95	-51.26	1,171.33	-8.52	4,267.42	4,209.88	57.55	74.157		
11,100.00	6,989.72	6,550.00	6,443.29	72.71	26.95	-51.26	1,171.33	-8.52	4,365.37	4,307.76	57.61	75.781		
11,200.00	6,989.75	6,550.00	6,443.29	74.22	26.95	-51.26	1,171.33	-8.52	4,463.40	4,405.74	57.66	77.404		
11,300.00	6,989.78	6,550.00	6,443.29	75.72	26.95	-51.26	1,171.33	-8.52	4,561.52	4,503.80	57.72	79.026		
11,400.00	6,989.80	6,550.00	6,443.29	77.23	26.95	-51.26	1,171.33	-8.52	4,659.72	4,601.94	57.78	80.648		
11,500.00	6,989.83	6,550.00	6,443.29	78.74	26.95	-51.26	1,171.33	-8.52	4,757.99	4,700.15	57.84	82.268		
11,600.00	6,989.86	6,550.00	6,443.29	80.26	26.95	-51.26	1,171.33	-8.52	4,856.33	4,798.44	57.89	83.887		
11,700.00	6,989.88	6,550.00	6,443.29	81.78	26.95	-51.26	1,171.33	-8.52	4,954.74	4,896.80	57.95	85.505		
11,800.00	6,989.91	6,550.00	6,443.29	83.30	26.95	-51.26	1,171.33	-8.52	5,053.21	4,995.21	58.00	87.121		
11,900.00	6,989.94	6,550.00	6,443.29	84.83	26.95	-51.26	1,171.33	-8.52	5,151.75	5,093.69	58.06	88.735		
12,000.00	6,989.97	6,550.00	6,443.29	86.36	26.95	-51.26	1,171.33	-8.52	5,250.33	5,192.22	58.11	90.348		
12,100.00	6,989.99	6,550.00	6,443.29	87.89	26.95	-51.26	1,171.33	-8.52	5,348.97	5,290.80	58.17	91.958		
12,200.00	6,990.02	6,550.00	6,443.29	89.42	26.95	-51.26	1,171.33	-8.52	5,447.66	5,389.44	58.22	93.566		
12,300.00	6,990.05	6,550.00	6,443.29	90.96	26.95	-51.26	1,171.33	-8.52	5,546.40	5,488.12	58.28	95.172		
12,400.00	6,990.07	6,550.00	6,443.29	92.50	26.95	-51.26	1,171.33	-8.52	5,645.18	5,586.84	58.33	96.776		
12,500.00	6,990.10	6,550.00	6,443.29	94.04	26.95	-51.26	1,171.33	-8.52	5,744.00	5,685.61	58.39	98.377		
12,600.00	6,990.13	6,550.00	6,443.29	95.58	26.95	-51.26	1,171.33	-8.52	5,842.86	5,784.42	58.44	99.976		
12,700.00	6,990.15	6,550.00	6,443.29	97.13	26.95	-51.26	1,171.33	-8.52	5,941.76	5,883.26	58.50	101.572		
12,800.00	6,990.18	6,550.00	6,443.29	98.68	26.95	-51.26	1,171.33	-8.52	6,040.70	5,982.15	58.55	103.165		
12,900.00	6,990.21	6,550.00	6,443.29	100.22	26.95	-51.26	1,171.33	-8.52	6,139.67	6,081.06	58.61	104.755		
13,000.00	6,990.24	6,550.00	6,443.29	101.78	26.95	-51.26	1,171.33	-8.52	6,238.67	6,180.01	58.67	106.343		
13,100.00	6,990.26	6,550.00	6,443.29	103.33	26.95	-51.26	1,171.33	-8.52	6,337.71	6,278.99	58.72	107.928		
13,200.00	6,990.29	6,550.00	6,443.29	104.88	26.95	-51.26	1,171.33	-8.52	6,436.78	6,378.00	58.78	109.509		
13,300.00	6,990.32	6,550.00	6,443.29	106.44	26.95	-51.26	1,171.33	-8.52	6,535.87	6,477.03	58.84	111.087		
13,400.00	6,990.34	6,550.00	6,443.29	107.99	26.95	-51.26	1,171.33	-8.52	6,634.99	6,576.10	58.89	112.663		
13,500.00	6,990.37	6,550.00	6,443.29	109.55	26.95	-51.26	1,171.33	-8.52	6,734.14	6,675.19	58.95	114.234		
13,600.00	6,990.40	6,550.00	6,443.29	111.11	26.95	-51.26	1,171.33	-8.52	6,833.31	6,774.30	59.01	115.803		
13,700.00	6,990.42	6,550.00	6,443.29	112.67	26.95	-51.26	1,171.33	-8.52	6,932.50	6,873.44	59.07	117.368		
13,800.00	6,990.45	6,550.00	6,443.29	114.23	26.95	-51.26	1,171.33	-8.52	7,031.72	6,972.60	59.13	118.930		
13,900.00	6,990.48	6,550.00	6,443.29	115.80	26.95	-51.26	1,171.33	-8.52	7,130.96	7,071.78	59.18	120.488		
14,000.00	6,990.51	6,550.00	6,443.29	117.36	26.95	-51.26	1,171.33	-8.52	7,230.22	7,170.98	59.24	122.042		
14,100.00	6,990.53	6,550.00	6,443.29	118.93	26.95	-51.26	1,171.33	-8.52	7,329.51	7,270.20	59.30	123.593		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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		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		
14,200.00	6,990.56	6,550.00	6,443.29	120.49	26.95	-51.26	1,171.33	-8.52	7,428.81	7,369.44	59.36	125.140			
14,300.00	6,990.59	6,550.00	6,443.29	122.06	26.95	-51.26	1,171.33	-8.52	7,528.12	7,468.70	59.42	126.684			
14,400.00	6,990.61	6,550.00	6,443.29	123.63	26.95	-51.26	1,171.33	-8.52	7,627.46	7,567.98	59.49	128.223			
14,500.00	6,990.64	6,550.00	6,443.29	125.20	26.95	-51.26	1,171.33	-8.52	7,726.82	7,667.27	59.55	129.759			
14,600.00	6,990.67	6,550.00	6,443.29	126.77	26.95	-51.26	1,171.33	-8.52	7,826.19	7,766.58	59.61	131.291			
14,700.00	6,990.70	6,550.00	6,443.29	128.34	26.95	-51.26	1,171.33	-8.52	7,925.57	7,865.90	59.67	132.819			
14,800.00	6,990.72	6,550.00	6,443.29	129.91	26.95	-51.26	1,171.33	-8.52	8,024.97	7,965.24	59.73	134.343			
14,900.00	6,990.75	6,550.00	6,443.29	131.48	26.95	-51.26	1,171.33	-8.52	8,124.39	8,064.59	59.80	135.863			
15,000.00	6,990.78	6,550.00	6,443.29	133.06	26.95	-51.26	1,171.33	-8.52	8,223.82	8,163.96	59.86	137.379			
15,100.00	6,990.80	6,550.00	6,443.29	134.63	26.95	-51.26	1,171.33	-8.52	8,323.26	8,263.34	59.93	138.891			
15,200.00	6,990.83	6,550.00	6,443.29	136.20	26.95	-51.26	1,171.33	-8.52	8,422.72	8,362.73	59.99	140.398			
15,300.00	6,990.86	6,550.00	6,443.29	137.78	26.95	-51.26	1,171.33	-8.52	8,522.19	8,462.13	60.06	141.902			
15,400.00	6,990.88	6,550.00	6,443.29	139.36	26.95	-51.26	1,171.33	-8.52	8,621.67	8,561.55	60.12	143.401			
15,500.00	6,990.91	6,550.00	6,443.29	140.93	26.95	-51.26	1,171.33	-8.52	8,721.17	8,660.98	60.19	144.896			
15,600.00	6,990.94	6,550.00	6,443.29	142.51	26.95	-51.26	1,171.33	-8.52	8,820.67	8,760.42	60.26	146.387			
15,700.00	6,990.97	6,550.00	6,443.29	144.09	26.95	-51.26	1,171.33	-8.52	8,920.19	8,859.87	60.32	147.874			
15,800.00	6,990.99	6,550.00	6,443.29	145.67	26.95	-51.26	1,171.33	-8.52	9,019.72	8,959.32	60.39	149.356			
15,900.00	6,991.02	6,550.00	6,443.29	147.24	26.95	-51.26	1,171.33	-8.52	9,119.25	9,058.79	60.46	150.833			
16,000.00	6,991.05	6,550.00	6,443.29	148.82	26.95	-51.26	1,171.33	-8.52	9,218.80	9,158.27	60.53	152.307			
16,100.00	6,991.07	6,550.00	6,443.29	150.40	26.95	-51.26	1,171.33	-8.52	9,318.36	9,257.76	60.60	153.776			
16,200.00	6,991.10	6,550.00	6,443.29	151.99	26.95	-51.26	1,171.33	-8.52	9,417.92	9,357.26	60.67	155.240			
16,300.00	6,991.13	6,550.00	6,443.29	153.57	26.95	-51.26	1,171.33	-8.52	9,517.50	9,456.76	60.74	156.700			
16,400.00	6,991.15	6,550.00	6,443.29	155.15	26.95	-51.26	1,171.33	-8.52	9,617.08	9,556.28	60.81	158.156			
16,500.00	6,991.18	6,550.00	6,443.29	156.73	26.95	-51.26	1,171.33	-8.52	9,716.68	9,655.80	60.88	159.607			
16,600.00	6,991.21	6,550.00	6,443.29	158.31	26.95	-51.26	1,171.33	-8.52	9,816.28	9,755.33	60.95	161.053			
16,700.00	6,991.24	6,550.00	6,443.29	159.90	26.95	-51.26	1,171.33	-8.52	9,915.89	9,854.87	61.02	162.495			
16,800.00	6,991.26	6,550.00	6,443.29	161.48	26.95	-51.26	1,171.33	-8.52	10,015.51	9,954.41	61.10	163.932			
16,900.00	6,991.29	6,550.00	6,443.29	163.06	26.95	-51.26	1,171.33	-8.52	10,115.13	10,053.96	61.17	165.365			
17,000.00	6,991.32	6,550.00	6,443.29	164.65	26.95	-51.26	1,171.33	-8.52	10,214.76	10,153.52	61.24	166.793			
17,100.00	6,991.34	6,550.00	6,443.29	166.23	26.95	-51.26	1,171.33	-8.52	10,314.40	10,253.08	61.32	168.217			
17,200.00	6,991.37	6,550.00	6,443.29	167.82	26.95	-51.26	1,171.33	-8.52	10,414.05	10,352.66	61.39	169.635			
17,300.00	6,991.40	6,550.00	6,443.29	169.40	26.95	-51.26	1,171.33	-8.52	10,513.70	10,452.23	61.47	171.050			
17,400.00	6,991.42	6,550.00	6,443.29	170.99	26.95	-51.26	1,171.33	-8.52	10,613.36	10,551.82	61.54	172.459			
17,500.00	6,991.45	6,526.49	6,420.07	172.57	26.86	-49.94	1,167.95	-7.11	10,712.60	10,651.08	61.52	174.133			
17,600.00	6,991.48	6,526.22	6,419.81	174.16	26.86	-49.93	1,167.91	-7.09	10,812.27	10,750.67	61.60	175.538			
17,700.00	6,991.51	6,525.96	6,419.55	175.75	26.86	-49.92	1,167.88	-7.08	10,911.93	10,850.26	61.67	176.938			
17,800.00	6,991.53	6,525.70	6,419.29	177.33	26.86	-49.90	1,167.84	-7.07	11,011.61	10,949.86	61.75	178.333			
17,900.00	6,991.56	6,525.45	6,419.04	178.92	26.85	-49.89	1,167.81	-7.06	11,111.29	11,049.46	61.82	179.723			
18,000.00	6,991.59	6,525.20	6,418.79	180.51	26.85	-49.87	1,167.77	-7.05	11,210.97	11,149.07	61.90	181.109			
18,100.00	6,991.61	6,524.95	6,418.55	182.10	26.85	-49.86	1,167.74	-7.04	11,310.67	11,248.69	61.98	182.489			
18,200.00	6,991.64	6,524.71	6,418.31	183.68	26.85	-49.85	1,167.71	-7.03	11,410.36	11,348.30	62.06	183.865			
18,300.00	6,991.67	6,524.47	6,418.07	185.27	26.85	-49.83	1,167.68	-7.02	11,510.06	11,447.93	62.14	185.236			
18,400.00	6,991.69	6,524.23	6,417.84	186.86	26.85	-49.82	1,167.64	-7.01	11,609.77	11,547.55	62.22	186.603			
18,500.00	6,991.72	6,524.00	6,417.61	188.45	26.85	-49.81	1,167.61	-7.00	11,709.48	11,647.19	62.30	187.964			
18,600.00	6,991.75	6,523.78	6,417.38	190.04	26.85	-49.80	1,167.58	-6.99	11,809.20	11,746.82	62.38	189.321			
18,700.00	6,991.78	6,500.00	6,393.80	191.63	26.76	-48.52	1,164.62	-6.43	11,909.34	11,846.98	62.36	190.964			
18,800.00	6,991.80	6,500.00	6,393.80	193.22	26.76	-48.52	1,164.62	-6.43	12,009.06	11,946.61	62.45	192.309			
18,900.00	6,991.83	6,500.00	6,393.80	194.81	26.76	-48.52	1,164.62	-6.43	12,108.78	12,046.25	62.53	193.650			
19,000.00	6,991.86	6,500.00	6,393.80	196.40	26.76	-48.52	1,164.62	-6.43	12,208.51	12,145.89	62.61	194.986			
19,100.00	6,991.88	6,500.00	6,393.80	197.99	26.76	-48.52	1,164.62	-6.43	12,308.24	12,245.54	62.70	196.316			
19,200.00	6,991.91	6,500.00	6,393.80	199.58	26.76	-48.52	1,164.62	-6.43	12,407.97	12,345.19	62.78	197.642			
19,300.00	6,991.94	6,500.00	6,393.80	201.17	26.76	-48.52	1,164.62	-6.43	12,507.71	12,444.85	62.86	198.964			

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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		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		
19,342.28	6,991.95	6,500.00	6,393.80	201.84	26.76	-48.52	1,164.62	-6.43	12,549.88	12,486.98	62.90	199.521		
19,400.00	6,991.97	6,500.00	6,393.80	202.76	26.76	-48.52	1,164.62	-6.43	12,607.46	12,544.51	62.95	200.280		
19,500.00	6,991.99	6,500.00	6,393.80	204.35	26.76	-48.52	1,164.62	-6.43	12,707.21	12,644.17	63.03	201.591		
19,542.28	6,992.00	6,500.00	6,393.80	205.03	26.76	-48.52	1,164.62	-6.43	12,749.38	12,686.31	63.07	202.144		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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	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	
600.00	600.00	600.00	600.00	2.04	2.04	29.14	52.43	29.23	60.03	55.94	4.09	14.688	CC, ES
700.00	700.00	698.36	698.34	2.40	2.40	28.15	54.09	28.94	61.37	56.57	4.80	12.792	
800.00	799.98	796.58	796.43	2.76	2.75	56.61	59.07	28.06	64.52	59.01	5.50	11.723	
900.00	899.92	894.58	894.06	3.12	3.11	54.83	67.33	26.60	69.51	63.30	6.20	11.202	
1,000.00	999.86	992.11	990.88	3.47	3.46	51.94	78.81	24.58	77.43	70.53	6.90	11.218	
1,100.00	1,099.80	1,088.95	1,086.58	3.83	3.82	48.54	93.42	22.00	88.47	80.88	7.59	11.654	
1,200.00	1,199.74	1,184.89	1,180.83	4.19	4.19	45.11	111.02	18.90	102.78	94.51	8.27	12.426	
1,300.00	1,299.68	1,279.73	1,273.37	4.55	4.56	41.95	131.47	15.29	120.42	111.48	8.94	13.474	
1,400.00	1,399.61	1,373.29	1,363.93	4.91	4.95	39.18	154.58	11.22	141.39	131.80	9.59	14.741	
1,500.00	1,499.55	1,465.39	1,452.29	5.27	5.35	36.82	180.17	6.71	165.63	155.40	10.23	16.188	
1,600.00	1,599.49	1,558.56	1,540.88	5.63	5.77	34.82	208.58	1.70	192.76	181.87	10.90	17.689	
1,700.00	1,699.43	1,654.47	1,631.94	5.99	6.22	33.23	238.24	-3.53	220.51	208.90	11.61	18.988	
1,800.00	1,799.37	1,750.39	1,723.00	6.35	6.68	31.99	267.90	-8.76	248.39	236.05	12.33	20.138	
1,900.00	1,899.31	1,846.30	1,814.07	6.71	7.14	31.01	297.56	-13.99	276.34	263.29	13.06	21.161	
2,000.00	1,999.25	1,942.21	1,905.13	7.07	7.61	30.20	327.21	-19.22	304.36	290.58	13.79	22.077	
2,100.00	2,099.19	2,038.13	1,996.19	7.42	8.09	29.53	356.87	-24.45	332.43	317.91	14.52	22.899	
2,200.00	2,199.13	2,134.04	2,087.26	7.78	8.57	28.97	386.53	-29.68	360.53	345.28	15.25	23.642	
2,300.00	2,299.07	2,229.96	2,178.32	8.14	9.05	28.48	416.19	-34.91	388.66	372.67	15.98	24.315	
2,400.00	2,399.01	2,325.87	2,269.38	8.50	9.54	28.07	445.85	-40.14	416.81	400.09	16.72	24.928	
2,500.00	2,498.94	2,421.79	2,360.45	8.86	10.03	27.70	475.51	-45.37	444.98	427.52	17.46	25.488	
2,600.00	2,598.88	2,517.70	2,451.51	9.22	10.52	27.38	505.17	-50.60	473.16	454.96	18.20	26.001	
2,700.00	2,698.82	2,613.62	2,542.58	9.58	11.01	27.09	534.83	-55.83	501.36	482.42	18.94	26.474	
2,800.00	2,798.76	2,709.53	2,633.64	9.94	11.50	26.84	564.49	-61.06	529.56	509.88	19.68	26.910	
2,900.00	2,898.70	2,805.44	2,724.70	10.30	12.00	26.61	594.14	-66.29	557.78	537.36	20.42	27.314	
3,000.00	2,998.64	2,901.36	2,815.77	10.66	12.50	26.40	623.80	-71.52	586.00	564.84	21.16	27.689	
3,100.00	3,098.58	2,997.27	2,906.83	11.02	12.99	26.21	653.46	-76.75	614.23	592.32	21.91	28.037	
3,200.00	3,198.52	3,093.19	2,997.89	11.38	13.49	26.04	683.12	-81.98	642.46	619.81	22.65	28.363	
3,300.00	3,298.46	3,189.10	3,088.96	11.75	13.99	25.88	712.78	-87.21	670.70	647.30	23.40	28.667	
3,400.00	3,398.40	3,285.02	3,180.02	12.11	14.49	25.74	742.44	-92.44	698.94	674.80	24.14	28.951	
3,500.00	3,498.34	3,380.93	3,271.08	12.47	15.00	25.61	772.10	-97.67	727.19	702.30	24.89	29.219	
3,600.00	3,598.27	3,476.85	3,362.15	12.83	15.50	25.48	801.76	-102.90	755.44	729.81	25.63	29.470	
3,700.00	3,698.21	3,572.76	3,453.21	13.19	16.00	25.37	831.42	-108.13	783.69	757.31	26.38	29.707	
3,800.00	3,798.15	3,668.67	3,544.28	13.55	16.50	25.26	861.07	-113.36	811.95	784.82	27.13	29.930	
3,900.00	3,898.09	3,764.59	3,635.34	13.91	17.01	25.16	890.73	-118.58	840.21	812.33	27.88	30.141	
4,000.00	3,998.03	3,860.50	3,726.40	14.27	17.51	25.07	920.39	-123.81	868.47	839.85	28.62	30.341	
4,100.00	4,097.97	3,956.42	3,817.47	14.63	18.01	24.98	950.05	-129.04	896.73	867.36	29.37	30.530	
4,200.00	4,197.91	4,052.33	3,908.53	14.99	18.52	24.90	979.71	-134.27	925.00	894.88	30.12	30.710	
4,300.00	4,297.85	4,148.25	3,999.59	15.35	19.02	24.82	1,009.37	-139.50	953.26	922.39	30.87	30.881	
4,400.00	4,397.79	4,244.16	4,090.66	15.71	19.53	24.75	1,039.03	-144.73	981.53	949.91	31.62	31.043	
4,500.00	4,497.73	4,340.08	4,181.72	16.07	20.04	24.68	1,068.69	-149.96	1,009.80	977.43	32.37	31.198	
4,600.00	4,597.66	4,435.99	4,272.78	16.43	20.54	24.62	1,098.35	-155.19	1,038.07	1,004.95	33.12	31.345	
4,700.00	4,697.60	4,531.90	4,363.85	16.79	21.05	24.56	1,128.00	-160.42	1,066.34	1,032.47	33.87	31.486	
4,800.00	4,797.54	4,627.82	4,454.91	17.15	21.55	24.50	1,157.66	-165.65	1,094.61	1,059.99	34.62	31.620	
4,900.00	4,897.48	4,723.73	4,545.98	17.51	22.06	24.44	1,187.32	-170.88	1,122.88	1,087.52	35.37	31.749	
5,000.00	4,997.42	4,819.65	4,637.04	17.87	22.57	24.39	1,216.98	-176.11	1,151.16	1,115.04	36.12	31.872	
5,100.00	5,097.36	4,915.56	4,728.10	18.23	23.07	24.34	1,246.64	-181.34	1,179.43	1,142.56	36.87	31.990	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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			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)		
5,200.00	5,197.30	5,011.48	4,819.17	18.59	23.58	24.29	1,276.30	-186.57	1,207.71	1,170.09	37.62	32.103	
5,300.00	5,297.24	5,107.39	4,910.23	18.95	24.09	24.25	1,305.96	-191.80	1,235.99	1,197.61	38.37	32.211	
5,402.82	5,400.00	5,206.01	5,003.87	19.32	24.61	24.20	1,336.45	-197.18	1,265.06	1,225.92	39.14	32.318	
5,500.00	5,497.13	5,299.11	5,092.25	19.67	25.10	24.21	1,365.24	-202.25	1,292.90	1,253.03	39.87	32.425	
5,600.00	5,597.11	5,394.68	5,182.99	20.03	25.61	24.21	1,394.79	-207.46	1,322.30	1,281.68	40.62	32.552	
5,700.00	5,697.10	5,490.01	5,273.50	20.39	26.11	24.20	1,424.27	-212.66	1,352.46	1,311.09	41.37	32.693	
5,802.82	5,799.92	5,587.77	5,366.31	20.75	26.63	-5.82	1,454.50	-217.99	1,384.27	1,342.14	42.13	32.855	
5,900.00	5,897.09	5,698.58	5,471.68	21.10	27.21	-5.93	1,488.30	-223.95	1,414.34	1,371.33	43.00	32.889	
6,000.00	5,997.09	5,825.95	5,593.54	21.45	27.86	-6.04	1,524.79	-230.39	1,443.36	1,399.38	43.99	32.814	
6,100.00	6,097.09	5,955.00	5,717.81	21.81	28.50	-6.13	1,559.02	-236.42	1,470.24	1,425.29	44.95	32.706	
6,200.00	6,197.09	6,085.62	5,844.36	22.16	29.11	-6.22	1,590.86	-242.04	1,494.94	1,449.04	45.90	32.567	
6,300.00	6,297.09	6,217.70	5,973.05	22.52	29.72	-6.29	1,620.15	-247.20	1,517.42	1,470.59	46.83	32.401	
6,354.91	6,352.00	6,290.81	6,044.56	22.72	30.03	-6.33	1,635.11	-249.84	1,528.80	1,481.47	47.33	32.299	
6,400.00	6,397.06	6,351.09	6,103.67	22.87	30.29	-84.65	1,646.77	-251.89	1,537.51	1,489.78	47.73	32.211	
6,450.00	6,446.74	6,417.87	6,169.29	23.04	30.57	-84.16	1,658.96	-254.05	1,546.29	1,498.13	48.16	32.107	
6,500.00	6,495.84	6,484.16	6,234.57	23.20	30.84	-83.94	1,670.32	-256.05	1,554.15	1,505.57	48.58	31.995	
6,550.00	6,544.06	6,549.52	6,299.05	23.36	31.10	-83.97	1,680.80	-257.89	1,561.14	1,512.17	48.98	31.875	
6,600.00	6,591.08	6,613.51	6,362.30	23.51	31.35	-84.23	1,690.35	-259.58	1,567.35	1,517.98	49.36	31.750	
6,650.00	6,636.64	6,659.67	6,408.00	23.66	31.53	-84.41	1,696.80	-260.72	1,572.95	1,523.26	49.69	31.657	
6,700.00	6,680.44	6,682.43	6,430.50	23.82	31.62	-84.27	1,700.18	-260.97	1,578.85	1,528.92	49.93	31.622	
6,750.00	6,722.22	6,700.00	6,447.82	23.99	31.68	-84.01	1,703.18	-260.78	1,585.44	1,535.30	50.15	31.616	
6,800.00	6,761.71	6,717.19	6,464.69	24.16	31.76	-83.70	1,706.43	-260.25	1,592.73	1,542.36	50.36	31.624	
6,850.00	6,798.68	6,733.85	6,480.97	24.33	31.83	-83.35	1,709.88	-259.42	1,600.69	1,550.11	50.58	31.645	
6,900.00	6,832.89	6,750.00	6,496.66	24.50	31.90	-82.95	1,713.51	-258.33	1,609.33	1,558.52	50.81	31.675	
6,950.00	6,864.14	6,765.49	6,511.63	24.69	31.97	-82.49	1,717.25	-257.00	1,618.65	1,567.60	51.05	31.709	
7,000.00	6,892.23	6,780.34	6,525.90	24.88	32.04	-81.98	1,721.08	-255.49	1,628.62	1,577.32	51.30	31.747	
7,050.00	6,916.99	6,800.00	6,544.65	25.08	32.13	-81.56	1,726.49	-253.10	1,639.27	1,587.66	51.60	31.767	
7,100.00	6,938.27	6,800.00	6,544.65	25.29	32.13	-80.53	1,726.49	-253.10	1,650.54	1,598.73	51.81	31.858	
7,150.00	6,955.93	6,820.27	6,563.79	25.51	32.22	-80.05	1,732.48	-250.20	1,662.36	1,610.19	52.17	31.864	
7,200.00	6,969.87	6,831.76	6,574.55	25.75	32.28	-79.27	1,736.07	-248.36	1,674.79	1,622.29	52.50	31.901	
7,250.00	6,980.00	6,850.00	6,591.49	25.99	32.37	-78.67	1,742.02	-245.13	1,687.81	1,634.91	52.89	31.909	
7,300.00	6,986.25	6,850.00	6,591.49	26.25	32.37	-77.44	1,742.02	-245.13	1,701.26	1,648.06	53.20	31.981	
7,354.68	6,988.62	6,850.00	6,591.49	26.53	32.37	-76.04	1,742.02	-245.13	1,716.57	1,663.03	53.54	32.059	
7,400.00	6,988.64	6,866.65	6,606.78	26.78	32.45	-76.60	1,747.75	-241.88	1,729.90	1,675.94	53.96	32.060	
7,500.00	6,988.67	6,882.85	6,621.49	27.40	32.54	-77.13	1,753.57	-238.43	1,763.03	1,708.25	54.78	32.185	
7,600.00	6,988.71	6,900.00	6,636.89	28.08	32.62	-77.70	1,760.02	-234.47	1,800.82	1,745.18	55.64	32.366	
7,700.00	6,988.74	6,923.62	6,657.76	28.84	32.75	-78.46	1,769.35	-228.51	1,842.93	1,786.36	56.56	32.581	
7,800.00	6,988.78	6,950.00	6,680.57	29.67	32.89	-79.30	1,780.37	-221.18	1,888.96	1,831.45	57.51	32.846	
7,900.00	6,988.81	6,980.89	6,706.58	30.55	33.06	-80.26	1,794.06	-211.69	1,938.52	1,880.04	58.48	33.146	
8,000.00	6,988.85	7,018.78	6,737.35	31.49	33.27	-81.38	1,811.97	-198.75	1,991.17	1,931.68	59.49	33.468	
8,100.00	6,988.88	7,065.35	6,773.33	32.48	33.54	-82.69	1,835.57	-180.96	2,046.43	1,985.88	60.56	33.794	
8,200.00	6,988.91	7,123.27	6,814.95	33.51	33.89	-84.18	1,867.19	-156.07	2,103.76	2,042.07	61.70	34.098	
8,211.68	6,988.92	7,130.92	6,820.18	33.63	33.94	-84.37	1,871.55	-152.56	2,110.57	2,048.73	61.84	34.131	
8,300.00	6,988.95	7,194.94	6,861.19	34.58	34.34	-85.71	1,909.44	-121.30	2,163.61	2,100.66	62.95	34.373	
8,400.00	6,988.98	7,281.75	6,908.62	35.70	34.90	-87.31	1,964.48	-73.92	2,226.82	2,162.49	64.34	34.612	
8,500.00	6,989.01	7,384.83	6,951.61	36.84	35.61	-88.76	2,034.03	-11.32	2,292.54	2,226.61	65.92	34.776	
8,600.00	6,989.04	7,502.56	6,981.66	38.02	36.46	-89.77	2,116.79	66.58	2,359.92	2,292.23	67.69	34.865	
8,700.00	6,989.07	7,620.76	6,990.54	39.22	37.35	-90.06	2,200.74	149.08	2,428.41	2,358.87	69.55	34.917	
8,772.79	6,989.09	7,672.68	6,990.51	40.11	37.75	-90.06	2,237.45	185.79	2,479.42	2,408.83	70.60	35.121	
8,800.00	6,989.10	7,691.85	6,990.49	40.44	37.90	-90.06	2,251.01	199.34	2,498.74	2,427.75	70.99	35.197	
8,900.00	6,989.13	7,762.29	6,990.44	41.68	38.47	-90.06	2,300.81	249.15	2,569.73	2,497.27	72.46	35.465	
9,000.00	6,989.15	9,882.05	6,988.93	42.95	57.12	-90.00	3,117.36	2,097.24	2,634.91	2,548.53	86.37	30.506	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #690H - OH - Prelim 5												Offset Site Error:	0.00 usft		
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)				
9,100.00	6,989.18	9,982.00	6,988.86	44.24	58.03	-89.99	3,119.98	2,197.16	2,637.91	2,549.01	88.90	29.671			
9,200.00	6,989.21	10,081.96	6,988.79	45.55	58.97	-89.99	3,122.60	2,297.09	2,640.92	2,549.44	91.48	28.870			
9,300.00	6,989.24	10,181.91	6,988.72	46.88	59.94	-89.99	3,125.21	2,397.01	2,643.93	2,549.84	94.09	28.101			
9,400.00	6,989.26	10,281.87	6,988.65	48.23	60.93	-89.99	3,127.83	2,496.93	2,646.93	2,550.20	96.73	27.363			
9,500.00	6,989.29	10,381.82	6,988.58	49.59	61.95	-89.99	3,130.45	2,596.85	2,649.94	2,550.52	99.41	26.656			
9,600.00	6,989.32	10,481.78	6,988.51	50.96	63.00	-89.98	3,133.06	2,696.77	2,652.94	2,550.82	102.12	25.978			
9,700.00	6,989.34	10,581.73	6,988.44	52.35	64.06	-89.98	3,135.68	2,796.69	2,655.95	2,551.09	104.86	25.328			
9,800.00	6,989.37	10,681.69	6,988.37	53.75	65.16	-89.98	3,138.30	2,896.61	2,658.95	2,551.33	107.62	24.706			
9,900.00	6,989.40	10,781.64	6,988.30	55.16	66.27	-89.98	3,140.91	2,996.53	2,661.96	2,551.55	110.41	24.110			
10,000.00	6,989.42	10,881.59	6,988.23	56.58	67.40	-89.97	3,143.53	3,096.45	2,664.96	2,551.74	113.22	23.538			
10,100.00	6,989.45	10,981.55	6,988.16	58.01	68.56	-89.97	3,146.15	3,196.37	2,667.97	2,551.92	116.05	22.990			
10,200.00	6,989.48	11,081.50	6,988.09	59.45	69.73	-89.97	3,148.76	3,296.29	2,670.97	2,552.07	118.90	22.464			
10,300.00	6,989.51	11,181.46	6,988.02	60.90	70.92	-89.97	3,151.38	3,396.21	2,673.98	2,552.21	121.77	21.960			
10,400.00	6,989.53	11,281.41	6,987.95	62.35	72.12	-89.97	3,154.00	3,496.13	2,676.98	2,552.33	124.65	21.476			
10,500.00	6,989.56	11,381.37	6,987.88	63.81	73.34	-89.96	3,156.61	3,596.05	2,679.99	2,552.44	127.55	21.012			
10,600.00	6,989.59	11,481.32	6,987.81	65.28	74.58	-89.96	3,159.23	3,695.97	2,682.99	2,552.53	130.46	20.566			
10,700.00	6,989.61	11,581.28	6,987.74	66.76	75.83	-89.96	3,161.85	3,795.89	2,686.00	2,552.61	133.39	20.137			
10,800.00	6,989.64	11,768.88	6,987.61	68.24	78.19	-89.96	3,164.20	3,983.47	2,687.88	2,551.53	136.35	19.713			
10,900.00	6,989.67	11,868.88	6,987.54	69.73	79.46	-89.95	3,163.56	4,083.47	2,687.62	2,548.32	139.30	19.293			
11,000.00	6,989.70	11,968.88	6,987.48	71.22	80.74	-89.95	3,162.92	4,183.46	2,687.37	2,545.10	142.27	18.890			
11,100.00	6,989.72	12,068.88	6,987.41	72.71	82.03	-89.95	3,162.28	4,283.46	2,687.12	2,541.87	145.24	18.501			
11,200.00	6,989.75	12,168.88	6,987.34	74.22	83.33	-89.95	3,161.64	4,383.46	2,686.86	2,538.63	148.23	18.127			
11,300.00	6,989.78	12,268.88	6,987.28	75.72	84.64	-89.95	3,160.99	4,483.46	2,686.61	2,535.38	151.22	17.766			
11,400.00	6,989.80	12,368.88	6,987.21	77.23	85.96	-89.94	3,160.35	4,583.45	2,686.35	2,532.13	154.22	17.418			
11,500.00	6,989.83	12,468.88	6,987.14	78.74	87.29	-89.94	3,159.71	4,683.45	2,686.10	2,528.86	157.24	17.083			
11,600.00	6,989.86	12,568.88	6,987.08	80.26	88.64	-89.94	3,159.07	4,783.45	2,685.84	2,525.59	160.25	16.760			
11,700.00	6,989.88	12,668.88	6,987.01	81.78	89.99	-89.94	3,158.42	4,883.45	2,685.59	2,522.31	163.28	16.448			
11,800.00	6,989.91	12,768.88	6,986.94	83.30	91.35	-89.94	3,157.78	4,983.44	2,685.33	2,519.02	166.31	16.146			
11,900.00	6,989.94	12,868.88	6,986.88	84.83	92.71	-89.93	3,157.14	5,083.44	2,685.08	2,515.73	169.35	15.855			
12,000.00	6,989.97	12,968.88	6,986.81	86.36	94.09	-89.93	3,156.50	5,183.44	2,684.82	2,512.43	172.40	15.573			
12,100.00	6,989.99	13,068.88	6,986.74	87.89	95.47	-89.93	3,155.86	5,283.44	2,684.57	2,509.12	175.45	15.301			
12,200.00	6,990.02	13,168.88	6,986.68	89.42	96.86	-89.93	3,155.21	5,383.43	2,684.32	2,505.81	178.51	15.038			
12,300.00	6,990.05	13,268.88	6,986.61	90.96	98.26	-89.93	3,154.57	5,483.43	2,684.06	2,502.49	181.57	14.783			
12,400.00	6,990.07	13,368.88	6,986.54	92.50	99.66	-89.92	3,153.93	5,583.43	2,683.81	2,499.17	184.64	14.536			
12,500.00	6,990.10	13,468.88	6,986.48	94.04	101.07	-89.92	3,153.29	5,683.43	2,683.55	2,495.84	187.71	14.296			
12,600.00	6,990.13	13,568.88	6,986.41	95.58	102.49	-89.92	3,152.64	5,783.42	2,683.30	2,492.51	190.78	14.065			
12,700.00	6,990.15	13,668.88	6,986.34	97.13	103.91	-89.92	3,152.00	5,883.42	2,683.04	2,489.18	193.86	13.840			
12,800.00	6,990.18	13,768.88	6,986.28	98.68	105.33	-89.92	3,151.36	5,983.42	2,682.79	2,485.84	196.95	13.622			
12,900.00	6,990.21	13,868.88	6,986.21	100.22	106.77	-89.91	3,150.72	6,083.42	2,682.53	2,482.50	200.04	13.410			
13,000.00	6,990.24	13,968.88	6,986.14	101.78	108.20	-89.91	3,150.08	6,183.41	2,682.28	2,479.15	203.13	13.205			
13,100.00	6,990.26	14,068.88	6,986.08	103.33	109.65	-89.91	3,149.43	6,283.41	2,682.02	2,475.80	206.23	13.005			
13,200.00	6,990.29	14,168.88	6,986.01	104.88	111.09	-89.91	3,148.79	6,383.41	2,681.77	2,472.44	209.33	12.811			
13,300.00	6,990.32	14,268.88	6,985.94	106.44	112.54	-89.91	3,148.15	6,483.41	2,681.52	2,469.09	212.43	12.623			
13,400.00	6,990.34	14,368.88	6,985.88	107.99	114.00	-89.90	3,147.51	6,583.40	2,681.26	2,465.73	215.53	12.440			
13,500.00	6,990.37	14,468.87	6,985.81	109.55	115.46	-89.90	3,146.86	6,683.40	2,681.01	2,462.36	218.64	12.262			
13,600.00	6,990.40	14,568.87	6,985.74	111.11	116.92	-89.90	3,146.22	6,783.40	2,680.75	2,459.00	221.75	12.089			
13,700.00	6,990.42	14,668.87	6,985.68	112.67	118.39	-89.90	3,145.58	6,883.40	2,680.50	2,455.63	224.87	11.920			
13,800.00	6,990.45	14,768.87	6,985.61	114.23	119.86	-89.90	3,144.94	6,983.39	2,680.24	2,452.26	227.99	11.756			
13,900.00	6,990.48	14,868.87	6,985.54	115.80	121.33	-89.89	3,144.30	7,083.39	2,679.99	2,448.88	231.11	11.596			
14,000.00	6,990.51	14,968.87	6,985.47	117.36	122.81	-89.89	3,143.65	7,183.39	2,679.73	2,445.51	234.23	11.441			
14,100.00	6,990.53	15,068.87	6,985.41	118.93	124.29	-89.89	3,143.01	7,283.39	2,679.48	2,442.13	237.35	11.289			
14,200.00	6,990.56	15,168.87	6,985.34	120.49	125.77	-89.89	3,142.37	7,383.39	2,679.22	2,438.75	240.48	11.141			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #690H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:				Offset Well Error:		0.00 usft	
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
14,300.00	6,990.59	15,268.87	6,985.27	122.06	127.26	-89.89	3,141.73	7,483.38	2,678.97	2,435.36	243.61	10.997		
14,400.00	6,990.61	15,368.87	6,985.21	123.63	128.75	-89.88	3,141.08	7,583.38	2,678.72	2,431.98	246.74	10.856		
14,500.00	6,990.64	15,468.87	6,985.14	125.20	130.24	-89.88	3,140.44	7,683.38	2,678.46	2,428.59	249.87	10.719		
14,600.00	6,990.67	15,568.87	6,985.07	126.77	131.74	-89.88	3,139.80	7,783.38	2,678.21	2,425.20	253.01	10.586		
14,700.00	6,990.70	15,668.87	6,985.01	128.34	133.24	-89.88	3,139.16	7,883.37	2,677.95	2,421.81	256.14	10.455		
14,800.00	6,990.72	15,768.87	6,984.94	129.91	134.74	-89.88	3,138.52	7,983.37	2,677.70	2,418.42	259.28	10.327		
14,900.00	6,990.75	15,868.87	6,984.87	131.48	136.24	-89.87	3,137.87	8,083.37	2,677.44	2,415.02	262.42	10.203		
15,000.00	6,990.78	15,968.87	6,984.81	133.06	137.74	-89.87	3,137.23	8,183.37	2,677.19	2,411.63	265.56	10.081		
15,100.00	6,990.80	16,068.87	6,984.74	134.63	139.25	-89.87	3,136.59	8,283.36	2,676.93	2,408.23	268.71	9.962		
15,200.00	6,990.83	16,168.87	6,984.67	136.20	140.76	-89.87	3,135.95	8,383.36	2,676.68	2,404.83	271.85	9.846		
15,300.00	6,990.86	16,268.87	6,984.61	137.78	142.27	-89.87	3,135.30	8,483.36	2,676.43	2,401.43	275.00	9.733		
15,400.00	6,990.88	16,368.87	6,984.54	139.36	143.79	-89.86	3,134.66	8,583.36	2,676.17	2,398.03	278.15	9.621		
15,500.00	6,990.91	16,468.87	6,984.47	140.93	145.30	-89.86	3,134.02	8,683.35	2,675.92	2,394.62	281.29	9.513		
15,600.00	6,990.94	16,568.87	6,984.41	142.51	146.82	-89.86	3,133.38	8,783.35	2,675.66	2,391.22	284.45	9.407		
15,700.00	6,990.97	16,668.87	6,984.34	144.09	148.34	-89.86	3,132.74	8,883.35	2,675.41	2,387.81	287.60	9.303		
15,800.00	6,990.99	16,768.87	6,984.27	145.67	149.86	-89.86	3,132.09	8,983.35	2,675.15	2,384.40	290.75	9.201		
15,900.00	6,991.02	16,868.87	6,984.21	147.24	151.39	-89.85	3,131.45	9,083.34	2,674.90	2,380.99	293.90	9.101		
16,000.00	6,991.05	16,968.87	6,984.14	148.82	152.91	-89.85	3,130.81	9,183.34	2,674.64	2,377.58	297.06	9.004		
16,100.00	6,991.07	17,068.87	6,984.07	150.40	154.44	-89.85	3,130.17	9,283.34	2,674.39	2,374.17	300.22	8.908		
16,200.00	6,991.10	17,168.86	6,984.01	151.99	155.97	-89.85	3,129.52	9,383.34	2,674.14	2,370.76	303.37	8.815		
16,300.00	6,991.13	17,268.86	6,983.94	153.57	157.50	-89.85	3,128.88	9,483.33	2,673.88	2,367.35	306.53	8.723		
16,400.00	6,991.15	17,368.86	6,983.87	155.15	159.03	-89.84	3,128.24	9,583.33	2,673.63	2,363.93	309.69	8.633		
16,500.00	6,991.18	17,468.86	6,983.81	156.73	160.56	-89.84	3,127.60	9,683.33	2,673.37	2,360.52	312.85	8.545		
16,600.00	6,991.21	17,568.86	6,983.74	158.31	162.09	-89.84	3,126.96	9,783.33	2,673.12	2,357.10	316.02	8.459		
16,700.00	6,991.24	17,668.86	6,983.67	159.90	163.63	-89.84	3,126.31	9,883.32	2,672.86	2,353.68	319.18	8.374		
16,800.00	6,991.26	17,768.86	6,983.61	161.48	165.17	-89.84	3,125.67	9,983.32	2,672.61	2,350.27	322.34	8.291		
16,900.00	6,991.29	17,868.86	6,983.54	163.06	166.71	-89.83	3,125.03	10,083.32	2,672.35	2,346.85	325.51	8.210		
17,000.00	6,991.32	17,968.86	6,983.47	164.65	168.25	-89.83	3,124.39	10,183.32	2,672.10	2,343.43	328.67	8.130		
17,100.00	6,991.34	18,068.86	6,983.41	166.23	169.79	-89.83	3,123.74	10,283.31	2,671.85	2,340.01	331.84	8.052		
17,200.00	6,991.37	18,168.86	6,983.34	167.82	171.33	-89.83	3,123.10	10,383.31	2,671.59	2,336.59	335.01	7.975		
17,300.00	6,991.40	18,268.86	6,983.27	169.40	172.87	-89.83	3,122.46	10,483.31	2,671.34	2,333.16	338.17	7.899		
17,400.00	6,991.42	18,368.86	6,983.21	170.99	174.42	-89.82	3,121.82	10,583.31	2,671.08	2,329.74	341.34	7.825		
17,500.00	6,991.45	18,468.86	6,983.14	172.57	175.96	-89.82	3,121.18	10,683.30	2,670.83	2,326.32	344.51	7.752		
17,600.00	6,991.48	18,568.86	6,983.07	174.16	177.51	-89.82	3,120.53	10,783.30	2,670.57	2,322.89	347.68	7.681		
17,700.00	6,991.51	18,668.86	6,983.01	175.75	179.05	-89.82	3,119.89	10,883.30	2,670.32	2,319.47	350.85	7.611		
17,800.00	6,991.53	18,768.86	6,982.94	177.33	180.60	-89.82	3,119.25	10,983.30	2,670.07	2,316.04	354.02	7.542		
17,900.00	6,991.56	18,868.86	6,982.87	178.92	182.15	-89.81	3,118.61	11,083.29	2,669.81	2,312.61	357.20	7.474		
18,000.00	6,991.59	18,968.86	6,982.81	180.51	183.70	-89.81	3,117.96	11,183.29	2,669.56	2,309.19	360.37	7.408		
18,100.00	6,991.61	19,068.86	6,982.74	182.10	185.25	-89.81	3,117.32	11,283.29	2,669.30	2,305.76	363.54	7.342		
18,200.00	6,991.64	19,168.86	6,982.67	183.68	186.81	-89.81	3,116.68	11,383.29	2,669.05	2,302.33	366.72	7.278		
18,300.00	6,991.67	19,268.86	6,982.61	185.27	188.36	-89.81	3,116.04	11,483.28	2,668.79	2,298.90	369.89	7.215		
18,400.00	6,991.69	19,368.86	6,982.54	186.86	189.91	-89.80	3,115.40	11,583.28	2,668.54	2,295.47	373.07	7.153		
18,500.00	6,991.72	19,468.86	6,982.47	188.45	191.47	-89.80	3,114.75	11,683.28	2,668.28	2,292.04	376.24	7.092		
18,600.00	6,991.75	19,568.86	6,982.41	190.04	193.02	-89.80	3,114.11	11,783.28	2,668.03	2,288.61	379.42	7.032		
18,700.00	6,991.78	19,668.86	6,982.34	191.63	194.58	-89.80	3,113.47	11,883.27	2,667.78	2,285.18	382.60	6.973		
18,800.00	6,991.80	19,768.86	6,982.27	193.22	196.14	-89.80	3,112.83	11,983.27	2,667.52	2,281.75	385.78	6.915		
18,900.00	6,991.83	19,868.86	6,982.21	194.81	197.70	-89.79	3,112.18	12,083.27	2,667.27	2,278.31	388.95	6.858		
19,000.00	6,991.86	19,968.85	6,982.14	196.40	199.26	-89.79	3,111.54	12,183.27	2,667.01	2,274.88	392.13	6.801		
19,100.00	6,991.88	20,068.85	6,982.07	197.99	200.81	-89.79	3,110.90	12,283.26	2,666.76	2,271.45	395.31	6.746		
19,200.00	6,991.91	20,168.85	6,982.00	199.58	202.26	-89.79	3,110.26	12,383.26	2,666.50	2,268.23	398.27	6.695		
19,213.95	6,991.91	20,176.02	6,982.00	199.80	202.36	-89.79	3,110.21	12,390.42	2,666.48	2,267.79	398.69	6.688		
19,300.00	6,991.94	20,176.02	6,982.00	201.17	202.36	-89.79	3,110.21	12,390.42	2,667.87	2,266.63	401.24	6.649		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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		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		
19,342.28	6,991.95	20,176.02	6,982.00	201.84	202.36	-89.79	3,110.21	12,390.42	2,669.56	2,267.22	402.34	6.635		
19,400.00	6,991.97	20,176.02	6,982.00	202.76	202.36	-89.79	3,110.21	12,390.42	2,672.96	2,269.27	403.69	6.621		
19,500.00	6,991.99	20,176.02	6,982.00	204.35	202.36	-89.79	3,110.21	12,390.42	2,681.78	2,276.20	405.58	6.612 SF		
19,542.28	6,992.00	20,176.02	6,982.00	205.03	202.36	-89.79	3,110.21	12,390.42	2,686.62	2,280.40	406.21	6.614		

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	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	
600.00	600.00	600.00	600.00	2.04	2.04	29.27	34.95	19.59	40.06	35.98	4.09	9.804	
700.00	700.00	700.00	700.00	2.40	2.40	29.27	34.95	19.59	40.06	35.26	4.80	8.341 CC	
800.00	799.98	798.87	798.85	2.76	2.76	59.95	36.65	19.40	40.58	35.06	5.51	7.359 ES	
900.00	899.92	897.69	897.53	3.12	3.11	59.89	41.73	18.83	43.00	36.78	6.22	6.912	
1,000.00	999.86	996.25	995.72	3.47	3.47	57.44	50.16	17.88	48.24	41.32	6.92	6.967	
1,100.00	1,099.80	1,094.33	1,093.08	3.83	3.83	53.67	61.88	16.57	56.49	48.87	7.62	7.414	
1,200.00	1,199.74	1,192.51	1,190.13	4.19	4.18	49.65	76.66	14.91	67.73	59.41	8.32	8.143	
1,300.00	1,299.68	1,291.70	1,288.08	4.55	4.56	46.57	92.21	13.17	79.79	70.76	9.03	8.833	
1,400.00	1,399.61	1,390.89	1,386.03	4.91	4.94	44.30	107.76	11.43	92.02	82.27	9.75	9.437	
1,500.00	1,499.55	1,490.09	1,483.98	5.27	5.32	42.57	123.31	9.69	104.36	93.89	10.47	9.966	
1,600.00	1,599.49	1,589.28	1,581.93	5.63	5.70	41.20	138.86	7.95	116.77	105.58	11.19	10.432	
1,700.00	1,699.43	1,688.47	1,679.88	5.99	6.09	40.09	154.41	6.21	129.24	117.32	11.92	10.846	
1,800.00	1,799.37	1,787.66	1,777.83	6.35	6.48	39.18	169.96	4.47	141.74	129.10	12.64	11.214	
1,900.00	1,899.31	1,886.86	1,875.78	6.71	6.87	38.42	185.51	2.72	154.27	140.91	13.36	11.544	
2,000.00	1,999.25	1,986.05	1,973.73	7.07	7.26	37.77	201.06	0.98	166.83	152.74	14.09	11.842	
2,100.00	2,099.19	2,085.24	2,071.68	7.42	7.66	37.22	216.61	-0.76	179.40	164.59	14.81	12.110	
2,200.00	2,199.13	2,184.43	2,169.63	7.78	8.05	36.73	232.16	-2.50	191.99	176.45	15.54	12.355	
2,300.00	2,299.07	2,283.62	2,267.58	8.14	8.45	36.31	247.71	-4.24	204.59	188.33	16.27	12.578	
2,400.00	2,399.01	2,382.82	2,365.53	8.50	8.84	35.93	263.26	-5.98	217.20	200.21	16.99	12.782	
2,500.00	2,498.94	2,482.01	2,463.48	8.86	9.24	35.60	278.81	-7.72	229.82	212.10	17.72	12.969	
2,600.00	2,598.88	2,581.20	2,561.43	9.22	9.64	35.30	294.36	-9.47	242.45	224.00	18.45	13.142	
2,700.00	2,698.82	2,680.39	2,659.39	9.58	10.04	35.03	309.91	-11.21	255.08	235.90	19.18	13.303	
2,800.00	2,798.76	2,779.59	2,757.34	9.94	10.43	34.79	325.46	-12.95	267.71	247.81	19.90	13.451	
2,900.00	2,898.70	2,878.78	2,855.29	10.30	10.83	34.57	341.01	-14.69	280.35	259.72	20.63	13.589	
3,000.00	2,998.64	2,977.97	2,953.24	10.66	11.23	34.36	356.56	-16.43	293.00	271.64	21.36	13.718	
3,100.00	3,098.58	3,077.16	3,051.19	11.02	11.63	34.18	372.11	-18.17	305.65	283.56	22.09	13.838	
3,200.00	3,198.52	3,176.36	3,149.14	11.38	12.03	34.01	387.66	-19.91	318.30	295.48	22.82	13.951	
3,300.00	3,298.46	3,275.55	3,247.09	11.75	12.43	33.85	403.21	-21.66	330.95	307.40	23.54	14.056	
3,400.00	3,398.40	3,374.74	3,345.04	12.11	12.83	33.70	418.76	-23.40	343.60	319.33	24.27	14.156	
3,500.00	3,498.34	3,473.93	3,442.99	12.47	13.23	33.56	434.31	-25.14	356.26	331.26	25.00	14.249	
3,600.00	3,598.27	3,573.12	3,540.94	12.83	13.63	33.44	449.86	-26.88	368.92	343.19	25.73	14.337	
3,700.00	3,698.21	3,672.32	3,638.89	13.19	14.03	33.32	465.41	-28.62	381.58	355.12	26.46	14.421	
3,800.00	3,798.15	3,771.51	3,736.84	13.55	14.43	33.21	480.96	-30.36	394.24	367.05	27.19	14.500	
3,900.00	3,898.09	3,870.70	3,834.79	13.91	14.83	33.10	496.51	-32.11	406.91	378.99	27.92	14.575	
4,000.00	3,998.03	3,969.89	3,932.74	14.27	15.23	33.01	512.06	-33.85	419.57	390.92	28.65	14.646	
4,100.00	4,097.97	4,069.09	4,030.69	14.63	15.64	32.91	527.61	-35.59	432.24	402.86	29.38	14.713	
4,200.00	4,197.91	4,168.28	4,128.64	14.99	16.04	32.83	543.16	-37.33	444.91	414.80	30.11	14.778	
4,300.00	4,297.85	4,267.47	4,226.59	15.35	16.44	32.75	558.71	-39.07	457.57	426.74	30.84	14.839	
4,400.00	4,397.79	4,366.66	4,324.54	15.71	16.84	32.67	574.26	-40.81	470.24	438.68	31.57	14.897	
4,500.00	4,497.73	4,465.85	4,422.49	16.07	17.24	32.60	589.81	-42.55	482.91	450.62	32.30	14.953	
4,600.00	4,597.66	4,565.05	4,520.44	16.43	17.64	32.53	605.36	-44.30	495.58	462.56	33.03	15.006	
4,700.00	4,697.60	4,664.24	4,618.39	16.79	18.05	32.46	620.91	-46.04	508.26	474.50	33.76	15.057	
4,800.00	4,797.54	4,763.43	4,716.34	17.15	18.45	32.40	636.46	-47.78	520.93	486.44	34.49	15.106	
4,900.00	4,897.48	4,862.62	4,814.29	17.51	18.85	32.34	652.01	-49.52	533.60	498.38	35.22	15.153	
5,000.00	4,997.42	4,961.82	4,912.24	17.87	19.25	32.28	667.56	-51.26	546.27	510.33	35.95	15.197	
5,100.00	5,097.36	5,061.01	5,010.19	18.23	19.65	32.22	683.11	-53.00	558.95	522.27	36.68	15.240	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error:	0.00 usft	
Survey Program: 0-MWD+HRGM+MS				Offset		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		
5,200.00	5,197.30	5,160.20	5,108.15	18.59	20.06	32.17	698.66	-54.74	571.62	534.22	37.41	15.282			
5,300.00	5,297.24	5,259.39	5,206.10	18.95	20.46	32.12	714.21	-56.49	584.29	546.16	38.14	15.322			
5,402.82	5,400.00	5,361.39	5,306.81	19.32	20.87	32.07	730.20	-58.28	597.33	558.44	38.89	15.361			
5,500.00	5,497.13	5,457.96	5,402.18	19.67	21.26	32.04	745.33	-59.97	609.99	570.39	39.60	15.405			
5,600.00	5,597.11	5,568.95	5,511.95	20.03	21.71	31.97	761.64	-61.80	622.76	582.35	40.41	15.411			
5,700.00	5,697.10	5,680.37	5,622.44	20.39	22.14	31.88	775.87	-63.39	634.36	593.15	41.21	15.393			
5,802.82	5,799.92	5,795.33	5,736.71	20.75	22.58	1.78	788.32	-64.79	645.06	603.04	42.02	15.352			
5,900.00	5,897.09	5,904.35	5,845.30	21.10	22.98	1.65	798.02	-65.87	653.67	610.91	42.76	15.286			
6,000.00	5,997.09	6,016.89	5,957.55	21.45	23.39	1.56	805.87	-66.75	660.63	617.11	43.51	15.182			
6,100.00	6,097.09	6,129.69	6,070.21	21.81	23.78	1.49	811.54	-67.39	665.64	621.39	44.25	15.043			
6,200.00	6,197.09	6,242.68	6,183.14	22.16	24.16	1.45	815.01	-67.78	668.70	623.74	44.97	14.871			
6,300.00	6,297.09	6,355.76	6,296.22	22.52	24.53	1.43	816.27	-67.92	669.81	624.15	45.66	14.670			
6,352.47	6,349.56	6,415.10	6,355.56	22.71	24.71	1.44	816.05	-67.89	669.61	623.60	46.01	14.554			
6,354.91	6,352.00	6,408.05	6,348.50	22.72	24.69	1.44	816.10	-67.90	669.65	623.62	46.03	14.547			
6,400.00	6,397.06	6,450.00	6,390.43	22.87	24.82	-77.58	816.47	-66.66	669.73	623.39	46.34	14.453			
6,404.60	6,401.64	6,450.00	6,390.43	22.89	24.82	-77.58	816.47	-66.66	669.72	623.35	46.37	14.443			
6,450.00	6,446.74	6,475.05	6,415.39	23.04	24.91	-77.63	817.35	-64.79	670.18	623.53	46.65	14.366			
6,500.00	6,495.84	6,500.00	6,440.15	23.20	24.99	-77.68	818.71	-62.08	671.24	624.33	46.91	14.309			
6,550.00	6,544.06	6,539.62	6,479.18	23.36	25.13	-77.90	821.87	-56.05	672.67	625.48	47.20	14.253			
6,600.00	6,591.08	6,571.91	6,510.62	23.51	25.24	-78.10	825.34	-49.59	674.67	627.24	47.44	14.223			
6,650.00	6,636.64	6,600.00	6,537.64	23.66	25.34	-78.28	829.00	-42.86	677.22	629.59	47.63	14.219			
6,700.00	6,680.44	6,636.50	6,572.20	23.82	25.47	-78.62	834.65	-32.58	680.28	632.40	47.88	14.209			
6,750.00	6,722.22	6,668.81	6,602.19	23.99	25.59	-78.93	840.47	-22.06	683.93	635.83	48.09	14.221			
6,800.00	6,761.71	6,700.00	6,630.52	24.16	25.71	-79.24	846.81	-10.68	688.18	639.87	48.31	14.246			
6,850.00	6,798.68	6,733.51	6,660.21	24.33	25.83	-79.62	854.39	2.88	693.05	644.48	48.56	14.271			
6,900.00	6,832.89	6,765.93	6,688.12	24.50	25.95	-79.99	862.46	17.25	698.57	649.74	48.83	14.305			
6,950.00	6,864.14	6,800.00	6,716.50	24.69	26.08	-80.41	871.71	33.67	704.78	655.63	49.15	14.340			
7,000.00	6,892.23	6,830.96	6,741.39	24.88	26.20	-80.74	880.76	49.71	711.68	662.22	49.46	14.389			
7,050.00	6,916.99	6,863.64	6,766.65	25.08	26.33	-81.12	890.96	67.74	719.31	669.47	49.84	14.432			
7,100.00	6,938.27	6,900.00	6,793.47	25.29	26.48	-81.61	903.07	89.09	727.70	677.41	50.29	14.470			
7,150.00	6,955.93	6,929.44	6,814.13	25.51	26.60	-81.83	913.43	107.33	736.82	686.11	50.71	14.531			
7,200.00	6,969.87	6,962.66	6,836.25	25.75	26.74	-82.17	925.68	128.87	746.71	695.52	51.19	14.588			
7,250.00	6,980.00	7,000.00	6,859.53	25.99	26.91	-82.63	940.13	154.23	757.38	705.67	51.72	14.645			
7,300.00	6,986.25	7,029.99	6,876.96	26.25	27.04	-82.77	952.22	175.42	768.80	716.59	52.21	14.726			
7,354.68	6,988.62	7,067.47	6,897.10	26.53	27.22	-83.06	967.90	202.86	782.16	729.38	52.78	14.820			
7,400.00	6,988.64	7,100.00	6,913.05	26.78	27.38	-84.33	981.98	227.47	794.06	740.81	53.25	14.912			
7,500.00	6,988.67	7,177.09	6,944.90	27.40	27.79	-86.81	1,016.85	288.34	822.98	768.66	54.32	15.151			
7,600.00	6,988.71	7,262.34	6,969.97	28.08	28.28	-88.68	1,057.40	358.92	854.20	798.74	55.46	15.402			
7,700.00	6,988.74	7,353.22	6,984.48	28.84	28.85	-89.72	1,102.13	436.60	886.43	829.72	56.72	15.629			
7,800.00	6,988.78	7,446.90	6,987.00	29.67	29.48	-89.89	1,148.92	517.68	918.96	860.86	58.11	15.815			
7,900.00	6,988.81	7,541.45	6,987.00	30.55	30.16	-89.89	1,196.19	599.56	951.52	891.91	59.62	15.961			
8,000.00	6,988.85	7,636.00	6,987.00	31.49	30.89	-89.89	1,243.47	681.45	984.08	922.85	61.23	16.073			
8,100.00	6,988.88	7,730.55	6,987.00	32.48	31.67	-89.89	1,290.75	763.33	1,016.63	953.70	62.93	16.155			
8,200.00	6,988.91	7,825.10	6,987.00	33.51	32.49	-89.90	1,338.02	845.21	1,049.19	984.47	64.72	16.210			
8,211.68	6,988.92	7,836.15	6,987.00	33.63	32.59	-89.90	1,343.54	854.78	1,053.00	988.06	64.94	16.215			
8,300.00	6,988.95	7,919.20	6,987.00	34.58	33.35	-89.90	1,385.07	926.70	1,083.03	1,016.44	66.59	16.264			
8,400.00	6,988.98	8,012.06	6,987.00	35.70	34.23	-89.90	1,431.50	1,007.13	1,120.11	1,051.61	68.51	16.351			
8,500.00	6,989.01	8,103.58	6,987.00	36.84	35.14	-89.90	1,477.26	1,086.38	1,160.41	1,089.95	70.46	16.469			
8,600.00	6,989.04	8,193.63	6,987.00	38.02	36.05	-89.90	1,522.29	1,164.37	1,203.88	1,131.43	72.45	16.617			
8,700.00	6,989.07	8,282.11	6,987.00	39.22	36.98	-89.90	1,566.53	1,241.00	1,250.46	1,176.01	74.45	16.795			
8,772.79	6,989.09	8,610.37	6,987.00	40.11	40.57	-89.91	1,703.31	1,538.65	1,283.13	1,204.64	78.49	16.347			
8,800.00	6,989.10	8,870.41	6,987.00	40.44	43.43	-89.91	1,761.64	1,791.70	1,289.37	1,209.49	79.88	16.141			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:			Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,900.00	6,989.13	9,151.70	6,987.00	41.68	46.44	-89.91	1,774.42	2,072.39	1,290.69	1,208.81	81.88	15.762		
9,000.00	6,989.15	9,251.70	6,987.00	42.95	47.53	-89.90	1,773.94	2,172.39	1,290.60	1,206.19	84.41	15.290		
9,100.00	6,989.18	9,351.70	6,987.00	44.24	48.65	-89.90	1,773.47	2,272.39	1,290.51	1,203.53	86.98	14.837		
9,200.00	6,989.21	9,451.70	6,987.00	45.55	49.80	-89.90	1,772.99	2,372.39	1,290.42	1,200.83	89.59	14.404		
9,300.00	6,989.24	9,551.70	6,987.00	46.88	50.97	-89.90	1,772.51	2,472.39	1,290.33	1,198.09	92.24	13.989		
9,400.00	6,989.26	9,651.70	6,987.00	48.23	52.16	-89.90	1,772.03	2,572.39	1,290.24	1,195.32	94.92	13.593		
9,500.00	6,989.29	9,751.70	6,987.00	49.59	53.37	-89.90	1,771.55	2,672.38	1,290.15	1,192.51	97.64	13.214		
9,600.00	6,989.32	9,851.70	6,987.00	50.96	54.60	-89.90	1,771.08	2,772.38	1,290.06	1,189.68	100.38	12.852		
9,700.00	6,989.34	9,951.70	6,987.00	52.35	55.86	-89.90	1,770.60	2,872.38	1,289.97	1,186.82	103.15	12.505		
9,800.00	6,989.37	10,051.70	6,987.00	53.75	57.13	-89.89	1,770.12	2,972.38	1,289.88	1,183.93	105.95	12.175		
9,900.00	6,989.40	10,151.70	6,987.00	55.16	58.41	-89.89	1,769.64	3,072.38	1,289.79	1,181.02	108.77	11.858		
10,000.00	6,989.42	10,251.70	6,987.00	56.58	59.72	-89.89	1,769.16	3,172.38	1,289.70	1,178.09	111.61	11.556		
10,100.00	6,989.45	10,351.70	6,987.00	58.01	61.03	-89.89	1,768.69	3,272.38	1,289.61	1,175.14	114.47	11.266		
10,200.00	6,989.48	10,451.70	6,987.00	59.45	62.36	-89.89	1,768.21	3,372.38	1,289.52	1,172.17	117.34	10.989		
10,300.00	6,989.51	10,551.70	6,987.00	60.90	63.71	-89.89	1,767.73	3,472.38	1,289.43	1,169.19	120.24	10.724		
10,400.00	6,989.53	10,651.70	6,987.00	62.35	65.06	-89.89	1,767.25	3,572.37	1,289.34	1,166.19	123.15	10.470		
10,500.00	6,989.56	10,751.70	6,987.00	63.81	66.43	-89.89	1,766.77	3,672.37	1,289.25	1,163.17	126.07	10.226		
10,600.00	6,989.59	10,851.70	6,987.00	65.28	67.80	-89.89	1,766.30	3,772.37	1,289.16	1,160.15	129.01	9.993		
10,700.00	6,989.61	10,951.70	6,987.00	66.76	69.19	-89.88	1,765.82	3,872.37	1,289.07	1,157.11	131.96	9.769		
10,800.00	6,989.64	11,051.70	6,987.00	68.24	70.58	-89.88	1,765.34	3,972.37	1,288.98	1,154.05	134.92	9.553		
10,900.00	6,989.67	11,151.70	6,987.00	69.73	71.99	-89.88	1,764.86	4,072.37	1,288.89	1,150.99	137.90	9.347		
11,000.00	6,989.70	11,251.70	6,987.00	71.22	73.40	-89.88	1,764.38	4,172.37	1,288.79	1,147.91	140.88	9.148		
11,100.00	6,989.72	11,351.70	6,987.00	72.71	74.82	-89.88	1,763.91	4,272.37	1,288.70	1,144.83	143.87	8.957		
11,200.00	6,989.75	11,451.70	6,987.00	74.22	76.25	-89.88	1,763.43	4,372.36	1,288.61	1,141.74	146.88	8.774		
11,300.00	6,989.78	11,551.70	6,987.00	75.72	77.68	-89.88	1,762.95	4,472.36	1,288.52	1,138.64	149.89	8.597		
11,400.00	6,989.80	11,651.70	6,987.00	77.23	79.13	-89.88	1,762.47	4,572.36	1,288.43	1,135.53	152.91	8.426		
11,500.00	6,989.83	11,751.70	6,987.00	78.74	80.57	-89.87	1,761.99	4,672.36	1,288.34	1,132.41	155.93	8.262		
11,600.00	6,989.86	11,851.70	6,987.00	80.26	82.03	-89.87	1,761.52	4,772.36	1,288.25	1,129.29	158.97	8.104		
11,700.00	6,989.88	11,951.70	6,987.00	81.78	83.49	-89.87	1,761.04	4,872.36	1,288.16	1,126.15	162.01	7.951		
11,800.00	6,989.91	12,051.70	6,987.00	83.30	84.95	-89.87	1,760.56	4,972.36	1,288.07	1,123.02	165.05	7.804		
11,900.00	6,989.94	12,151.70	6,987.00	84.83	86.42	-89.87	1,760.08	5,072.36	1,287.98	1,119.87	168.11	7.662		
12,000.00	6,989.97	12,251.70	6,987.00	86.36	87.89	-89.87	1,759.60	5,172.35	1,287.89	1,116.72	171.17	7.524		
12,100.00	6,989.99	12,351.70	6,987.00	87.89	89.37	-89.87	1,759.13	5,272.35	1,287.80	1,113.57	174.23	7.391		
12,200.00	6,990.02	12,451.70	6,987.00	89.42	90.85	-89.87	1,758.65	5,372.35	1,287.71	1,110.41	177.30	7.263		
12,300.00	6,990.05	12,551.70	6,987.00	90.96	92.34	-89.86	1,758.17	5,472.35	1,287.62	1,107.25	180.37	7.139		
12,400.00	6,990.07	12,651.70	6,987.00	92.50	93.83	-89.86	1,757.69	5,572.35	1,287.53	1,104.08	183.45	7.018		
12,500.00	6,990.10	12,751.70	6,987.00	94.04	95.33	-89.86	1,757.21	5,672.35	1,287.44	1,100.90	186.54	6.902		
12,600.00	6,990.13	12,851.70	6,987.00	95.58	96.82	-89.86	1,756.74	5,772.35	1,287.35	1,097.72	189.62	6.789		
12,700.00	6,990.15	12,951.70	6,987.00	97.13	98.33	-89.86	1,756.26	5,872.35	1,287.26	1,094.54	192.71	6.680		
12,800.00	6,990.18	13,051.70	6,987.00	98.68	99.83	-89.86	1,755.78	5,972.35	1,287.17	1,091.36	195.81	6.574		
12,900.00	6,990.21	13,151.70	6,987.00	100.22	101.34	-89.86	1,755.30	6,072.34	1,287.08	1,088.17	198.91	6.471		
13,000.00	6,990.24	13,251.70	6,987.00	101.78	102.85	-89.86	1,754.82	6,172.34	1,286.99	1,084.98	202.01	6.371		
13,100.00	6,990.26	13,351.70	6,987.00	103.33	104.36	-89.85	1,754.35	6,272.34	1,286.90	1,081.78	205.12	6.274		
13,200.00	6,990.29	13,451.70	6,987.00	104.88	105.88	-89.85	1,753.87	6,372.34	1,286.81	1,078.58	208.22	6.180		
13,300.00	6,990.32	13,551.70	6,987.00	106.44	107.40	-89.85	1,753.39	6,472.34	1,286.72	1,075.38	211.34	6.088		
13,400.00	6,990.34	13,651.70	6,987.00	107.99	108.92	-89.85	1,752.91	6,572.34	1,286.62	1,072.17	214.45	6.000		
13,500.00	6,990.37	13,751.70	6,987.00	109.55	110.44	-89.85	1,752.43	6,672.34	1,286.53	1,068.97	217.57	5.913		
13,600.00	6,990.40	13,851.70	6,987.00	111.11	111.97	-89.85	1,751.96	6,772.34	1,286.44	1,065.76	220.69	5.829		
13,700.00	6,990.42	13,951.70	6,987.00	112.67	113.50	-89.85	1,751.48	6,872.33	1,286.35	1,062.54	223.81	5.748		
13,800.00	6,990.45	14,051.70	6,987.00	114.23	115.03	-89.85	1,751.00	6,972.33	1,286.26	1,059.33	226.94	5.668		
13,900.00	6,990.48	14,151.70	6,987.00	115.80	116.56	-89.85	1,750.52	7,072.33	1,286.17	1,056.11	230.06	5.591		
14,000.00	6,990.51	14,251.70	6,987.00	117.36	118.09	-89.84	1,750.04	7,172.33	1,286.08	1,052.89	233.19	5.515		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program:		0-MWD+HRGM+MS					Rule Assigned:				Offset Well Error:		0.00 usft	
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
14,100.00	6,990.53	14,351.70	6,987.00	118.93	119.63	-89.84	1,749.56	7,272.33	1,285.99	1,049.67	236.32	5.442		
14,200.00	6,990.56	14,451.70	6,987.00	120.49	121.17	-89.84	1,749.09	7,372.33	1,285.90	1,046.44	239.46	5.370		
14,300.00	6,990.59	14,551.70	6,987.00	122.06	122.71	-89.84	1,748.61	7,472.33	1,285.81	1,043.22	242.59	5.300		
14,400.00	6,990.61	14,651.70	6,987.00	123.63	124.25	-89.84	1,748.13	7,572.33	1,285.72	1,039.99	245.73	5.232		
14,500.00	6,990.64	14,751.70	6,987.00	125.20	125.79	-89.84	1,747.65	7,672.33	1,285.63	1,036.76	248.87	5.166		
14,600.00	6,990.67	14,851.70	6,987.00	126.77	127.33	-89.84	1,747.17	7,772.32	1,285.54	1,033.53	252.01	5.101		
14,700.00	6,990.70	14,951.70	6,987.00	128.34	128.88	-89.84	1,746.70	7,872.32	1,285.45	1,030.30	255.15	5.038		
14,800.00	6,990.72	15,051.70	6,987.00	129.91	130.43	-89.83	1,746.22	7,972.32	1,285.36	1,027.06	258.30	4.976		
14,900.00	6,990.75	15,151.70	6,987.00	131.48	131.97	-89.83	1,745.74	8,072.32	1,285.27	1,023.83	261.44	4.916		
15,000.00	6,990.78	15,251.70	6,987.00	133.06	133.52	-89.83	1,745.26	8,172.32	1,285.18	1,020.59	264.59	4.857		
15,100.00	6,990.80	15,351.70	6,987.00	134.63	135.08	-89.83	1,744.78	8,272.32	1,285.09	1,017.35	267.74	4.800		
15,200.00	6,990.83	15,451.70	6,987.00	136.20	136.63	-89.83	1,744.31	8,372.32	1,285.00	1,014.11	270.89	4.744		
15,300.00	6,990.86	15,551.70	6,987.00	137.78	138.18	-89.83	1,743.83	8,472.32	1,284.91	1,010.87	274.04	4.689		
15,400.00	6,990.88	15,651.70	6,987.00	139.36	139.74	-89.83	1,743.35	8,572.31	1,284.82	1,007.62	277.19	4.635		
15,500.00	6,990.91	15,751.70	6,987.00	140.93	141.29	-89.83	1,742.87	8,672.31	1,284.73	1,004.38	280.35	4.583		
15,600.00	6,990.94	15,851.70	6,987.00	142.51	142.85	-89.82	1,742.39	8,772.31	1,284.64	1,001.13	283.50	4.531		
15,700.00	6,990.97	15,951.70	6,987.00	144.09	144.41	-89.82	1,741.92	8,872.31	1,284.55	997.88	286.66	4.481		
15,800.00	6,990.99	16,051.70	6,987.00	145.67	145.97	-89.82	1,741.44	8,972.31	1,284.46	994.64	289.82	4.432		
15,900.00	6,991.02	16,151.70	6,987.00	147.24	147.53	-89.82	1,740.96	9,072.31	1,284.37	991.39	292.98	4.384		
16,000.00	6,991.05	16,251.70	6,987.00	148.82	149.09	-89.82	1,740.48	9,172.31	1,284.27	988.14	296.14	4.337		
16,100.00	6,991.07	16,351.70	6,987.00	150.40	150.65	-89.82	1,740.00	9,272.31	1,284.18	984.89	299.30	4.291		
16,200.00	6,991.10	16,451.70	6,987.00	151.99	152.21	-89.82	1,739.53	9,372.31	1,284.09	981.63	302.46	4.245		
16,300.00	6,991.13	16,551.70	6,987.00	153.57	153.78	-89.82	1,739.05	9,472.30	1,284.00	978.38	305.62	4.201		
16,400.00	6,991.15	16,651.70	6,987.00	155.15	155.34	-89.81	1,738.57	9,572.30	1,283.91	975.12	308.79	4.158		
16,500.00	6,991.18	16,751.70	6,987.00	156.73	156.91	-89.81	1,738.09	9,672.30	1,283.82	971.87	311.95	4.115		
16,600.00	6,991.21	16,851.70	6,987.00	158.31	158.47	-89.81	1,737.61	9,772.30	1,283.73	968.61	315.12	4.074		
16,700.00	6,991.24	16,951.70	6,987.00	159.90	160.04	-89.81	1,737.14	9,872.30	1,283.64	965.36	318.29	4.033		
16,800.00	6,991.26	17,051.70	6,987.00	161.48	161.61	-89.81	1,736.66	9,972.30	1,283.55	962.10	321.45	3.993		
16,900.00	6,991.29	17,151.70	6,987.00	163.06	163.17	-89.81	1,736.18	10,072.30	1,283.46	958.84	324.62	3.954		
17,000.00	6,991.32	17,251.70	6,987.00	164.65	164.74	-89.81	1,735.70	10,172.30	1,283.37	955.58	327.79	3.915		
17,100.00	6,991.34	17,351.70	6,987.00	166.23	166.31	-89.81	1,735.22	10,272.29	1,283.28	952.32	330.96	3.877		
17,200.00	6,991.37	17,451.70	6,987.00	167.82	167.88	-89.80	1,734.75	10,372.29	1,283.19	949.06	334.13	3.840		
17,300.00	6,991.40	17,551.70	6,987.00	169.40	169.45	-89.80	1,734.27	10,472.29	1,283.10	945.80	337.30	3.804		
17,400.00	6,991.42	17,651.70	6,987.00	170.99	171.03	-89.80	1,733.79	10,572.29	1,283.01	942.53	340.48	3.768		
17,500.00	6,991.45	17,751.70	6,987.00	172.57	172.60	-89.80	1,733.31	10,672.29	1,282.92	939.27	343.65	3.733		
17,600.00	6,991.48	17,851.70	6,987.00	174.16	174.17	-89.80	1,732.83	10,772.29	1,282.83	936.01	346.82	3.699		
17,700.00	6,991.51	17,951.70	6,987.00	175.75	175.74	-89.80	1,732.36	10,872.29	1,282.74	932.74	350.00	3.665		
17,800.00	6,991.53	18,051.70	6,987.00	177.33	177.32	-89.80	1,731.88	10,972.29	1,282.65	929.48	353.17	3.632		
17,900.00	6,991.56	18,151.70	6,987.00	178.92	178.89	-89.80	1,731.40	11,072.29	1,282.56	926.21	356.35	3.599		
18,000.00	6,991.59	18,251.70	6,987.00	180.51	180.47	-89.80	1,730.92	11,172.28	1,282.47	922.95	359.52	3.567		
18,100.00	6,991.61	18,351.70	6,987.00	182.10	182.04	-89.79	1,730.44	11,272.28	1,282.38	919.68	362.70	3.536		
18,200.00	6,991.64	18,451.70	6,987.00	183.68	183.62	-89.79	1,729.97	11,372.28	1,282.29	916.41	365.88	3.505		
18,300.00	6,991.67	18,551.70	6,987.00	185.27	185.20	-89.79	1,729.49	11,472.28	1,282.20	913.14	369.05	3.474		
18,400.00	6,991.69	18,651.70	6,987.00	186.86	186.77	-89.79	1,729.01	11,572.28	1,282.11	909.87	372.23	3.444		
18,500.00	6,991.72	18,751.70	6,987.00	188.45	188.35	-89.79	1,728.53	11,672.28	1,282.02	906.61	375.41	3.415		
18,600.00	6,991.75	18,851.70	6,987.00	190.04	189.93	-89.79	1,728.05	11,772.28	1,281.93	903.34	378.59	3.386		
18,700.00	6,991.78	18,951.70	6,987.00	191.63	191.51	-89.79	1,727.58	11,872.28	1,281.83	900.07	381.77	3.358		
18,800.00	6,991.80	19,051.70	6,987.00	193.22	193.08	-89.79	1,727.10	11,972.27	1,281.74	896.79	384.95	3.330		
18,900.00	6,991.83	19,151.70	6,987.00	194.81	194.66	-89.78	1,726.62	12,072.27	1,281.65	893.52	388.13	3.302		
19,000.00	6,991.86	19,251.70	6,987.00	196.40	196.24	-89.78	1,726.14	12,172.27	1,281.56	890.25	391.31	3.275		
19,100.00	6,991.88	19,351.70	6,987.00	197.99	197.82	-89.78	1,725.66	12,272.27	1,281.47	886.98	394.49	3.248		
19,200.00	6,991.91	19,451.70	6,987.00	199.58	199.27	-89.78	1,725.19	12,372.27	1,281.38	883.87	397.51	3.224		

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Prelim 5	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 34 - Rosa Unit #692H - OH - Prelim 5													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HRGM+MS													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		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	
19,218.26	6,991.92	19,468.80	6,987.00	199.87	199.49	-89.78	1,725.10	12,389.37	1,281.37	883.32	398.04	3.219		
19,300.00	6,991.94	19,468.80	6,987.00	201.17	199.49	-89.78	1,725.10	12,389.37	1,283.97	883.61	400.36	3.207 SF		
19,342.28	6,991.95	19,468.80	6,987.00	201.84	199.49	-89.78	1,725.10	12,389.37	1,287.35	886.41	400.94	3.211		
19,400.00	6,991.97	19,468.80	6,987.00	202.76	199.49	-89.78	1,725.10	12,389.37	1,294.19	893.13	401.06	3.227		
19,500.00	6,991.99	19,468.80	6,987.00	204.35	199.49	-89.78	1,725.10	12,389.37	1,311.97	912.47	399.50	3.284		
19,542.28	6,992.00	19,468.80	6,987.00	205.03	199.49	-89.78	1,725.10	12,389.37	1,321.70	923.49	398.21	3.319		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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	29.63	17.48	9.94	20.10				
100.00	100.00	100.00	100.00	0.25	0.25	29.63	17.48	9.94	20.10	19.60	0.50	40.059	
200.00	200.00	200.00	200.00	0.61	0.61	29.63	17.48	9.94	20.10	18.89	1.22	16.495	
300.00	300.00	300.00	300.00	0.97	0.97	29.63	17.48	9.94	20.10	18.17	1.94	10.386	
400.00	400.00	400.00	400.00	1.33	1.33	29.63	17.48	9.94	20.10	17.45	2.65	7.579	
500.00	500.00	500.00	500.00	1.68	1.68	29.63	17.48	9.94	20.10	16.73	3.37	5.966	
600.00	600.00	600.00	600.00	2.04	2.04	29.63	17.48	9.94	20.10	16.02	4.09	4.920	
700.00	700.00	700.00	700.00	2.40	2.40	29.63	17.48	9.94	20.10	15.30	4.80	4.185 CC	
800.00	799.98	799.47	799.45	2.76	2.76	60.68	19.17	9.62	20.55	15.03	5.52	3.725 ES	
900.00	899.92	899.17	899.04	3.12	3.12	60.36	23.86	8.73	22.43	16.20	6.23	3.600	
1,000.00	999.86	999.15	998.87	3.47	3.48	59.41	29.00	7.75	24.64	17.70	6.94	3.549	
1,100.00	1,099.80	1,099.12	1,098.71	3.83	3.83	58.62	34.13	6.78	26.87	19.21	7.66	3.507	
1,200.00	1,199.74	1,199.10	1,198.55	4.19	4.19	57.95	39.27	5.80	29.10	20.72	8.38	3.472	
1,300.00	1,299.68	1,299.07	1,298.39	4.55	4.55	57.38	44.41	4.82	31.33	22.23	9.10	3.443	
1,400.00	1,399.61	1,399.04	1,398.22	4.91	4.91	56.88	49.54	3.85	33.56	23.74	9.82	3.418	
1,500.00	1,499.55	1,499.02	1,498.06	5.27	5.27	56.45	54.68	2.87	35.80	25.26	10.54	3.397	
1,600.00	1,599.49	1,598.99	1,597.90	5.63	5.64	56.06	59.82	1.90	38.04	26.78	11.26	3.379	
1,700.00	1,699.43	1,698.97	1,697.74	5.99	6.00	55.72	64.95	0.92	40.28	28.30	11.98	3.363	
1,800.00	1,799.37	1,798.94	1,797.58	6.35	6.36	55.42	70.09	-0.05	42.52	29.82	12.70	3.349	
1,900.00	1,899.31	1,898.92	1,897.41	6.71	6.72	55.14	75.23	-1.03	44.76	31.34	13.42	3.336	
2,000.00	1,999.25	1,998.89	1,997.25	7.07	7.08	54.89	80.36	-2.01	47.01	32.87	14.14	3.325	
2,100.00	2,099.19	2,098.87	2,097.09	7.42	7.44	54.67	85.50	-2.98	49.25	34.39	14.86	3.315	
2,200.00	2,199.13	2,198.84	2,196.93	7.78	7.81	54.46	90.64	-3.96	51.49	35.92	15.58	3.305	
2,300.00	2,299.07	2,298.82	2,296.76	8.14	8.17	54.27	95.77	-4.93	53.74	37.44	16.30	3.297	
2,400.00	2,399.01	2,398.79	2,396.60	8.50	8.53	54.10	100.91	-5.91	55.99	38.97	17.02	3.289	
2,500.00	2,498.94	2,498.77	2,496.44	8.86	8.89	53.94	106.05	-6.88	58.23	40.49	17.74	3.282	
2,600.00	2,598.88	2,598.74	2,596.28	9.22	9.25	53.79	111.18	-7.86	60.48	42.02	18.46	3.276	
2,700.00	2,698.82	2,698.71	2,696.12	9.58	9.62	53.65	116.32	-8.84	62.73	43.54	19.18	3.270	
2,800.00	2,798.76	2,798.69	2,795.95	9.94	9.98	53.52	121.46	-9.81	64.97	45.07	19.90	3.264	
2,900.00	2,898.70	2,898.66	2,895.79	10.30	10.34	53.40	126.59	-10.79	67.22	46.60	20.63	3.259	
3,000.00	2,998.64	2,998.64	2,995.63	10.66	10.70	53.29	131.73	-11.76	69.47	48.12	21.35	3.254	
3,100.00	3,098.58	3,098.61	3,095.47	11.02	11.07	53.18	136.87	-12.74	71.72	49.65	22.07	3.250	
3,200.00	3,198.52	3,198.59	3,195.31	11.38	11.43	53.09	142.00	-13.71	73.97	51.18	22.79	3.246	
3,300.00	3,298.46	3,298.56	3,295.14	11.75	11.79	52.99	147.14	-14.69	76.22	52.71	23.51	3.242	
3,400.00	3,398.40	3,398.54	3,394.98	12.11	12.15	52.90	152.28	-15.67	78.47	54.24	24.23	3.238	
3,500.00	3,498.34	3,498.51	3,494.82	12.47	12.52	52.82	157.41	-16.64	80.71	55.76	24.95	3.235	
3,600.00	3,598.27	3,598.49	3,594.66	12.83	12.88	52.74	162.55	-17.62	82.96	57.29	25.67	3.232	
3,700.00	3,698.21	3,698.46	3,694.49	13.19	13.24	52.67	167.69	-18.59	85.21	58.82	26.39	3.229	
3,800.00	3,798.15	3,798.44	3,794.33	13.55	13.60	52.60	172.82	-19.57	87.46	60.35	27.12	3.226	
3,900.00	3,898.09	3,898.41	3,894.17	13.91	13.97	52.53	177.96	-20.54	89.71	61.88	27.84	3.223	
4,000.00	3,998.03	3,998.38	3,994.01	14.27	14.33	52.47	183.10	-21.52	91.96	63.41	28.56	3.220	
4,100.00	4,097.97	4,098.36	4,093.85	14.63	14.69	52.41	188.23	-22.50	94.21	64.93	29.28	3.218	
4,200.00	4,197.91	4,198.33	4,193.68	14.99	15.05	52.35	193.37	-23.47	96.46	66.46	30.00	3.215	
4,300.00	4,297.85	4,298.31	4,293.52	15.35	15.42	52.30	198.51	-24.45	98.71	67.99	30.72	3.213	
4,400.00	4,397.79	4,398.28	4,393.36	15.71	15.78	52.24	203.64	-25.42	100.96	69.52	31.44	3.211	
4,500.00	4,497.73	4,498.26	4,493.20	16.07	16.14	52.19	208.78	-26.40	103.21	71.05	32.16	3.209	
4,600.00	4,597.66	4,598.23	4,593.03	16.43	16.51	52.15	213.92	-27.37	105.46	72.58	32.89	3.207	
4,700.00	4,697.60	4,698.21	4,692.87	16.79	16.87	52.10	219.05	-28.35	107.72	74.11	33.61	3.205	
4,800.00	4,797.54	4,798.18	4,792.71	17.15	17.23	52.06	224.19	-29.32	109.97	75.64	34.33	3.203	
4,900.00	4,897.48	4,898.16	4,892.55	17.51	17.59	52.01	229.33	-30.30	112.22	77.17	35.05	3.202	
5,000.00	4,997.42	4,998.13	4,992.39	17.87	17.96	51.97	234.46	-31.28	114.47	78.70	35.77	3.200	
5,100.00	5,097.36	5,098.11	5,092.22	18.23	18.32	51.93	239.60	-32.25	116.72	80.23	36.49	3.199	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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)	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)			
5,200.00	5,197.30	5,198.08	5,192.06	18.59	18.68	51.90	244.74	-33.23	118.97	81.76	37.21	3.197	
5,300.00	5,297.24	5,298.06	5,291.90	18.95	19.04	51.86	249.87	-34.20	121.22	83.29	37.93	3.196	
5,402.82	5,400.00	5,401.44	5,395.15	19.32	19.42	51.87	255.01	-35.18	123.38	84.70	38.68	3.190	
5,500.00	5,497.13	5,499.50	5,493.12	19.67	19.77	51.93	259.09	-35.95	125.01	85.63	39.38	3.174	
5,600.00	5,597.11	5,600.42	5,593.98	20.03	20.14	51.90	262.43	-36.59	126.49	86.39	40.11	3.154	
5,700.00	5,697.10	5,701.35	5,694.89	20.39	20.50	51.77	264.91	-37.06	127.77	86.94	40.82	3.130	
5,802.82	5,799.92	5,805.15	5,798.67	20.75	20.87	21.54	266.54	-37.37	128.87	87.31	41.56	3.101	
5,900.00	5,897.09	5,903.26	5,896.78	21.10	21.22	21.37	267.23	-37.50	129.46	87.21	42.25	3.064	
6,000.00	5,997.09	6,003.58	5,997.09	21.45	21.57	21.36	267.28	-37.51	129.50	86.54	42.96	3.015	
6,100.00	6,097.09	6,103.58	6,097.09	21.81	21.93	21.36	267.28	-37.51	129.50	85.83	43.67	2.965	
6,200.00	6,197.09	6,203.58	6,197.09	22.16	22.28	21.36	267.28	-37.51	129.50	85.12	44.38	2.918	
6,300.00	6,297.09	6,303.58	6,297.09	22.52	22.63	21.36	267.28	-37.51	129.50	84.41	45.09	2.872	
6,354.91	6,352.00	6,358.48	6,352.00	22.72	22.83	21.36	267.28	-37.51	129.50	84.02	45.48	2.847	
6,400.00	6,397.06	6,404.33	6,397.81	22.87	22.99	-59.05	267.71	-39.10	128.51	82.72	45.79	2.806	
6,450.00	6,446.74	6,453.58	6,446.74	23.04	23.16	-63.85	269.16	-44.34	125.65	79.52	46.13	2.724	
6,500.00	6,495.84	6,500.00	6,492.36	23.20	23.33	-71.64	271.43	-52.61	122.71	76.25	46.46	2.641	
6,527.32	6,522.32	6,523.09	6,514.78	23.28	23.41	-76.65	272.89	-57.91	122.09	75.49	46.60	2.620 SF	
6,550.00	6,544.06	6,541.45	6,532.46	23.36	23.48	-81.07	274.21	-62.68	122.64	75.96	46.67	2.628	
6,600.00	6,591.08	6,578.23	6,567.41	23.51	23.61	-90.56	277.25	-73.71	128.75	82.17	46.58	2.764	
6,650.00	6,636.64	6,609.75	6,596.79	23.66	23.73	-98.45	280.27	-84.70	143.27	97.18	46.09	3.108	
6,700.00	6,680.44	6,636.06	6,620.87	23.82	23.83	-103.96	283.09	-94.93	166.37	121.00	45.37	3.667	
6,750.00	6,722.22	6,657.45	6,640.10	23.99	23.91	-106.94	285.58	-103.96	196.73	152.07	44.65	4.406	
6,800.00	6,761.71	6,674.32	6,655.04	24.16	23.97	-107.49	287.66	-111.50	232.62	188.56	44.06	5.279	
6,850.00	6,798.68	6,687.09	6,666.21	24.33	24.02	-105.66	289.30	-117.48	272.54	228.92	43.62	6.247	
6,900.00	6,832.89	6,700.00	6,677.37	24.50	24.07	-102.62	291.02	-123.73	315.34	271.78	43.56	7.239	
6,950.00	6,864.14	6,700.00	6,677.37	24.69	24.07	-93.72	291.02	-123.73	360.03	316.99	43.04	8.365	
7,000.00	6,892.23	6,700.00	6,677.37	24.88	24.07	-83.12	291.02	-123.73	406.06	363.23	42.82	9.482	
7,050.00	6,916.99	6,700.00	6,677.37	25.08	24.07	-71.64	291.02	-123.73	452.76	409.93	42.83	10.571	
7,100.00	6,938.27	6,700.00	6,677.37	25.29	24.07	-60.43	291.02	-123.73	499.72	456.71	43.00	11.620	
7,150.00	6,955.93	6,700.00	6,677.37	25.51	24.07	-50.45	291.02	-123.73	546.60	503.31	43.29	12.626	
7,200.00	6,969.87	6,700.00	6,677.37	25.75	24.07	-42.14	291.02	-123.73	593.18	549.52	43.65	13.588	
7,250.00	6,980.00	6,700.00	6,677.37	25.99	24.07	-35.45	291.02	-123.73	639.25	595.19	44.07	14.505	
7,300.00	6,986.25	6,680.69	6,660.63	26.25	23.99	-27.86	288.47	-114.46	684.12	640.17	43.95	15.566	
7,354.68	6,988.62	6,670.50	6,651.68	26.53	23.96	-22.97	287.18	-109.76	732.20	687.96	44.24	16.552	
7,400.00	6,988.64	6,650.00	6,633.44	26.78	23.88	-21.32	284.69	-100.74	771.88	727.71	44.17	17.475	
7,500.00	6,988.67	6,650.00	6,633.44	27.40	23.88	-21.32	284.69	-100.74	860.26	815.18	45.08	19.082	
7,600.00	6,988.71	6,628.01	6,613.55	28.08	23.80	-19.72	282.20	-91.70	950.33	904.99	45.34	20.959	
7,700.00	6,988.74	6,600.00	6,587.77	28.84	23.69	-17.91	279.30	-81.15	1,041.95	996.51	45.44	22.932	
7,800.00	6,988.78	6,600.00	6,587.77	29.67	23.69	-17.91	279.30	-81.15	1,134.14	1,088.19	45.95	24.684	
7,900.00	6,988.81	6,600.00	6,587.77	30.55	23.69	-17.91	279.30	-81.15	1,227.55	1,181.20	46.35	26.484	
8,000.00	6,988.85	6,578.22	6,567.40	31.49	23.61	-16.67	277.25	-73.71	1,321.40	1,274.99	46.41	28.473	
8,100.00	6,988.88	6,568.42	6,558.15	32.48	23.58	-16.16	276.38	-70.58	1,415.99	1,369.40	46.59	30.391	
8,200.00	6,988.91	6,550.00	6,540.64	33.51	23.51	-15.25	274.87	-65.07	1,511.20	1,464.54	46.65	32.392	
8,211.68	6,988.92	6,550.00	6,540.64	33.63	23.51	-15.25	274.87	-65.07	1,522.32	1,475.64	46.68	32.610	
8,300.00	6,988.95	6,550.00	6,540.64	34.58	23.51	-9.63	274.87	-65.07	1,606.75	1,559.86	46.89	34.268	
8,400.00	6,988.98	6,550.00	6,540.64	35.70	23.51	-2.61	274.87	-65.07	1,702.96	1,655.87	47.09	36.165	
8,500.00	6,989.01	6,550.00	6,540.64	36.84	23.51	4.93	274.87	-65.07	1,799.63	1,752.37	47.26	38.077	
8,600.00	6,989.04	6,529.14	6,520.62	38.02	23.44	12.42	273.31	-59.43	1,896.14	1,848.89	47.25	40.130	
8,700.00	6,989.07	6,522.71	6,514.41	39.22	23.41	19.65	272.87	-57.82	1,992.90	1,945.56	47.35	42.093	
8,772.79	6,989.09	6,500.00	6,492.36	40.11	23.33	23.96	271.43	-52.61	2,063.63	2,016.36	47.28	43.650	
8,800.00	6,989.10	6,500.00	6,492.36	40.44	23.33	23.96	271.43	-52.61	2,089.90	2,042.59	47.31	44.171	
8,900.00	6,989.13	6,500.00	6,492.36	41.68	23.33	23.96	271.43	-52.61	2,186.62	2,139.18	47.44	46.091	

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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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
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
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Warning
9,000.00	6,989.15	6,500.00	6,492.36	42.95	23.33	23.96	271.43	-52.61	2,283.62	2,236.07	47.56	48.018
9,100.00	6,989.18	6,500.00	6,492.36	44.24	23.33	23.96	271.43	-52.61	2,380.87	2,333.21	47.66	49.952
9,200.00	6,989.21	6,500.00	6,492.36	45.55	23.33	23.96	271.43	-52.61	2,478.34	2,430.58	47.76	51.890
9,300.00	6,989.24	6,500.00	6,492.36	46.88	23.33	23.96	271.43	-52.61	2,576.01	2,528.16	47.85	53.833
9,400.00	6,989.26	6,500.00	6,492.36	48.23	23.33	23.96	271.43	-52.61	2,673.84	2,625.91	47.94	55.780
9,500.00	6,989.29	6,500.00	6,492.36	49.59	23.33	23.96	271.43	-52.61	2,771.83	2,723.82	48.02	57.728
9,600.00	6,989.32	6,500.00	6,492.36	50.96	23.33	23.96	271.43	-52.61	2,869.96	2,821.87	48.09	59.679
9,700.00	6,989.34	6,477.15	6,469.98	52.35	23.25	23.15	270.20	-48.14	2,967.74	2,919.69	48.05	61.764
9,800.00	6,989.37	6,473.93	6,466.82	53.75	23.24	23.04	270.05	-47.57	3,065.97	3,017.86	48.11	63.734
9,900.00	6,989.40	6,470.89	6,463.82	55.16	23.23	22.93	269.90	-47.05	3,164.29	3,116.13	48.16	65.702
10,000.00	6,989.42	6,450.00	6,443.20	56.58	23.15	22.23	269.02	-43.84	3,262.99	3,214.85	48.13	67.789
10,100.00	6,989.45	6,450.00	6,443.20	58.01	23.15	22.23	269.02	-43.84	3,361.39	3,313.19	48.20	69.736
10,200.00	6,989.48	6,450.00	6,443.20	59.45	23.15	22.23	269.02	-43.84	3,459.89	3,411.62	48.27	71.682
10,300.00	6,989.51	6,450.00	6,443.20	60.90	23.15	22.23	269.02	-43.84	3,558.47	3,510.14	48.33	73.627
10,400.00	6,989.53	6,450.00	6,443.20	62.35	23.15	22.23	269.02	-43.84	3,657.13	3,608.73	48.39	75.571
10,500.00	6,989.56	6,450.00	6,443.20	63.81	23.15	22.23	269.02	-43.84	3,755.86	3,707.40	48.45	77.514
10,600.00	6,989.59	6,450.00	6,443.20	65.28	23.15	22.23	269.02	-43.84	3,854.65	3,806.14	48.51	79.454
10,700.00	6,989.61	6,450.00	6,443.20	66.76	23.15	22.23	269.02	-43.84	3,953.50	3,904.93	48.57	81.393
10,800.00	6,989.64	6,450.00	6,443.20	68.24	23.15	22.23	269.02	-43.84	4,052.42	4,003.78	48.63	83.329
10,900.00	6,989.67	6,450.00	6,443.20	69.73	23.15	22.23	269.02	-43.84	4,151.38	4,102.69	48.69	85.263
11,000.00	6,989.70	6,450.00	6,443.20	71.22	23.15	22.23	269.02	-43.84	4,250.39	4,201.64	48.75	87.193
11,100.00	6,989.72	6,450.00	6,443.20	72.71	23.15	22.23	269.02	-43.84	4,349.45	4,300.64	48.80	89.121
11,200.00	6,989.75	6,450.00	6,443.20	74.22	23.15	22.23	269.02	-43.84	4,448.55	4,399.69	48.86	91.046
11,300.00	6,989.78	6,450.00	6,443.20	75.72	23.15	22.23	269.02	-43.84	4,547.68	4,498.77	48.92	92.967
11,400.00	6,989.80	6,450.00	6,443.20	77.23	23.15	22.23	269.02	-43.84	4,646.86	4,597.89	48.97	94.884
11,500.00	6,989.83	6,450.00	6,443.20	78.74	23.15	22.23	269.02	-43.84	4,746.07	4,697.04	49.03	96.798
11,600.00	6,989.86	6,450.00	6,443.20	80.26	23.15	22.23	269.02	-43.84	4,845.31	4,796.23	49.09	98.708
11,700.00	6,989.88	6,450.00	6,443.20	81.78	23.15	22.23	269.02	-43.84	4,944.59	4,895.44	49.14	100.614
11,800.00	6,989.91	6,450.00	6,443.20	83.30	23.15	22.23	269.02	-43.84	5,043.89	4,994.69	49.20	102.516
11,900.00	6,989.94	6,450.00	6,443.20	84.83	23.15	22.23	269.02	-43.84	5,143.22	5,093.96	49.26	104.413
12,000.00	6,989.97	6,450.00	6,443.20	86.36	23.15	22.23	269.02	-43.84	5,242.57	5,193.25	49.32	106.306
12,100.00	6,989.99	6,450.00	6,443.20	87.89	23.15	22.23	269.02	-43.84	5,341.95	5,292.57	49.37	108.194
12,200.00	6,990.02	6,450.00	6,443.20	89.42	23.15	22.23	269.02	-43.84	5,441.35	5,391.92	49.43	110.078
12,300.00	6,990.05	6,427.19	6,420.58	90.96	23.07	21.49	268.26	-41.08	5,540.34	5,490.92	49.42	112.106
12,400.00	6,990.07	6,426.10	6,419.49	92.50	23.07	21.46	268.23	-40.97	5,639.74	5,590.26	49.48	113.988
12,500.00	6,990.10	6,425.03	6,418.43	94.04	23.06	21.42	268.20	-40.86	5,739.16	5,689.62	49.53	115.865
12,600.00	6,990.13	6,424.00	6,417.41	95.58	23.06	21.39	268.17	-40.76	5,838.59	5,789.00	49.59	117.736
12,700.00	6,990.15	6,423.01	6,416.41	97.13	23.06	21.36	268.14	-40.66	5,938.05	5,888.40	49.65	119.602
12,800.00	6,990.18	6,400.00	6,393.49	98.68	22.97	20.65	267.63	-38.81	6,037.93	5,988.28	49.64	121.627
12,900.00	6,990.21	6,400.00	6,393.49	100.22	22.97	20.65	267.63	-38.81	6,137.38	6,087.67	49.71	123.476
13,000.00	6,990.24	6,400.00	6,393.49	101.78	22.97	20.65	267.63	-38.81	6,236.85	6,187.08	49.77	125.320
13,100.00	6,990.26	6,400.00	6,393.49	103.33	22.97	20.65	267.63	-38.81	6,336.34	6,286.50	49.83	127.158
13,200.00	6,990.29	6,400.00	6,393.49	104.88	22.97	20.65	267.63	-38.81	6,435.84	6,385.94	49.89	128.991
13,300.00	6,990.32	6,400.00	6,393.49	106.44	22.97	20.65	267.63	-38.81	6,535.36	6,485.40	49.96	130.818
13,400.00	6,990.34	6,400.00	6,393.49	107.99	22.97	20.65	267.63	-38.81	6,634.89	6,584.87	50.02	132.639
13,500.00	6,990.37	6,400.00	6,393.49	109.55	22.97	20.65	267.63	-38.81	6,734.44	6,684.35	50.09	134.455
13,600.00	6,990.40	6,400.00	6,393.49	111.11	22.97	20.65	267.63	-38.81	6,834.00	6,783.84	50.15	136.265
13,700.00	6,990.42	6,400.00	6,393.49	112.67	22.97	20.65	267.63	-38.81	6,933.57	6,883.35	50.22	138.069
13,800.00	6,990.45	6,400.00	6,393.49	114.23	22.97	20.65	267.63	-38.81	7,033.15	6,982.87	50.28	139.867
13,900.00	6,990.48	6,400.00	6,393.49	115.80	22.97	20.65	267.63	-38.81	7,132.75	7,082.40	50.35	141.659
14,000.00	6,990.51	6,400.00	6,393.49	117.36	22.97	20.65	267.63	-38.81	7,232.36	7,181.94	50.42	143.445
14,100.00	6,990.53	6,400.00	6,393.49	118.93	22.97	20.65	267.63	-38.81	7,331.97	7,281.49	50.49	145.225

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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		
14,200.00	6,990.56	6,400.00	6,393.49	120.49	22.97	20.65	267.63	-38.81	7,431.60	7,381.05	50.56	146.998		
14,300.00	6,990.59	6,400.00	6,393.49	122.06	22.97	20.65	267.63	-38.81	7,531.24	7,480.61	50.62	148.766		
14,400.00	6,990.61	6,400.00	6,393.49	123.63	22.97	20.65	267.63	-38.81	7,630.89	7,580.19	50.69	150.527		
14,500.00	6,990.64	6,400.00	6,393.49	125.20	22.97	20.65	267.63	-38.81	7,730.54	7,679.78	50.76	152.281		
14,600.00	6,990.67	6,400.00	6,393.49	126.77	22.97	20.65	267.63	-38.81	7,830.21	7,779.37	50.84	154.030		
14,700.00	6,990.70	6,400.00	6,393.49	128.34	22.97	20.65	267.63	-38.81	7,929.88	7,878.98	50.91	155.772		
14,800.00	6,990.72	6,400.00	6,393.49	129.91	22.97	20.65	267.63	-38.81	8,029.56	7,978.59	50.98	157.507		
14,900.00	6,990.75	6,400.00	6,393.49	131.48	22.97	20.65	267.63	-38.81	8,129.25	8,078.20	51.05	159.236		
15,000.00	6,990.78	6,400.00	6,393.49	133.06	22.97	20.65	267.63	-38.81	8,228.95	8,177.83	51.12	160.959		
15,100.00	6,990.80	6,400.00	6,393.49	134.63	22.97	20.65	267.63	-38.81	8,328.66	8,277.46	51.20	162.675		
15,200.00	6,990.83	6,400.00	6,393.49	136.20	22.97	20.65	267.63	-38.81	8,428.37	8,377.10	51.27	164.384		
15,300.00	6,990.86	6,400.00	6,393.49	137.78	22.97	20.65	267.63	-38.81	8,528.09	8,476.74	51.35	166.087		
15,400.00	6,990.88	6,400.00	6,393.49	139.36	22.97	20.65	267.63	-38.81	8,627.81	8,576.39	51.42	167.783		
15,500.00	6,990.91	6,400.00	6,393.49	140.93	22.97	20.65	267.63	-38.81	8,727.54	8,676.04	51.50	169.473		
15,600.00	6,990.94	6,400.00	6,393.49	142.51	22.97	20.65	267.63	-38.81	8,827.28	8,775.70	51.57	171.155		
15,700.00	6,990.97	6,400.00	6,393.49	144.09	22.97	20.65	267.63	-38.81	8,927.02	8,875.37	51.65	172.831		
15,800.00	6,990.99	6,400.00	6,393.49	145.67	22.97	20.65	267.63	-38.81	9,026.77	8,975.04	51.73	174.500		
15,900.00	6,991.02	6,400.00	6,393.49	147.24	22.97	20.65	267.63	-38.81	9,126.53	9,074.72	51.81	176.163		
16,000.00	6,991.05	6,400.00	6,393.49	148.82	22.97	20.65	267.63	-38.81	9,226.29	9,174.40	51.89	177.818		
16,100.00	6,991.07	6,400.00	6,393.49	150.40	22.97	20.65	267.63	-38.81	9,326.05	9,274.08	51.97	179.467		
16,200.00	6,991.10	6,400.00	6,393.49	151.99	22.97	20.65	267.63	-38.81	9,425.82	9,373.77	52.04	181.109		
16,300.00	6,991.13	6,400.00	6,393.49	153.57	22.97	20.65	267.63	-38.81	9,525.59	9,473.47	52.13	182.744		
16,400.00	6,991.15	6,400.00	6,393.49	155.15	22.97	20.65	267.63	-38.81	9,625.37	9,573.17	52.21	184.372		
16,500.00	6,991.18	6,400.00	6,393.49	156.73	22.97	20.65	267.63	-38.81	9,725.16	9,672.87	52.29	185.994		
16,600.00	6,991.21	6,400.00	6,393.49	158.31	22.97	20.65	267.63	-38.81	9,824.95	9,772.58	52.37	187.608		
16,700.00	6,991.24	6,400.00	6,393.49	159.90	22.97	20.65	267.63	-38.81	9,924.74	9,872.29	52.45	189.216		
16,800.00	6,991.26	6,400.00	6,393.49	161.48	22.97	20.65	267.63	-38.81	10,024.53	9,972.00	52.53	190.816		
16,900.00	6,991.29	6,400.00	6,393.49	163.06	22.97	20.65	267.63	-38.81	10,124.33	10,071.72	52.62	192.410		
17,000.00	6,991.32	6,400.00	6,393.49	164.65	22.97	20.65	267.63	-38.81	10,224.14	10,171.44	52.70	193.997		
17,100.00	6,991.34	6,400.00	6,393.49	166.23	22.97	20.65	267.63	-38.81	10,323.95	10,271.16	52.79	195.577		
17,200.00	6,991.37	6,400.00	6,393.49	167.82	22.97	20.65	267.63	-38.81	10,423.76	10,370.89	52.87	197.150		
17,300.00	6,991.40	6,400.00	6,393.49	169.40	22.97	20.65	267.63	-38.81	10,523.57	10,470.62	52.96	198.716		
17,400.00	6,991.42	6,400.00	6,393.49	170.99	22.97	20.65	267.63	-38.81	10,623.39	10,570.35	53.04	200.275		
17,500.00	6,991.45	6,400.00	6,393.49	172.57	22.97	20.65	267.63	-38.81	10,723.22	10,670.09	53.13	201.827		
17,600.00	6,991.48	6,400.00	6,393.49	174.16	22.97	20.65	267.63	-38.81	10,823.04	10,769.82	53.22	203.372		
17,700.00	6,991.51	6,400.00	6,393.49	175.75	22.97	20.65	267.63	-38.81	10,922.87	10,869.57	53.31	204.910		
17,800.00	6,991.53	6,400.00	6,393.49	177.33	22.97	20.65	267.63	-38.81	11,022.70	10,969.31	53.39	206.441		
17,900.00	6,991.56	6,400.00	6,393.49	178.92	22.97	20.65	267.63	-38.81	11,122.54	11,069.05	53.48	207.966		
18,000.00	6,991.59	6,400.00	6,393.49	180.51	22.97	20.65	267.63	-38.81	11,222.38	11,168.80	53.57	209.483		
18,100.00	6,991.61	6,400.00	6,393.49	182.10	22.97	20.65	267.63	-38.81	11,322.22	11,268.55	53.66	210.994		
18,200.00	6,991.64	6,400.00	6,393.49	183.68	22.97	20.65	267.63	-38.81	11,422.06	11,368.31	53.75	212.497		
18,300.00	6,991.67	6,400.00	6,393.49	185.27	22.97	20.65	267.63	-38.81	11,521.91	11,468.06	53.84	213.994		
18,400.00	6,991.69	6,400.00	6,393.49	186.86	22.97	20.65	267.63	-38.81	11,621.75	11,567.82	53.93	215.484		
18,500.00	6,991.72	6,400.00	6,393.49	188.45	22.97	20.65	267.63	-38.81	11,721.61	11,667.58	54.02	216.966		
18,600.00	6,991.75	6,400.00	6,393.49	190.04	22.97	20.65	267.63	-38.81	11,821.46	11,767.34	54.12	218.442		
18,700.00	6,991.78	6,400.00	6,393.49	191.63	22.97	20.65	267.63	-38.81	11,921.32	11,867.11	54.21	219.911		
18,800.00	6,991.80	6,400.00	6,393.49	193.22	22.97	20.65	267.63	-38.81	12,021.18	11,966.87	54.30	221.373		
18,900.00	6,991.83	6,400.00	6,393.49	194.81	22.97	20.65	267.63	-38.81	12,121.04	12,066.64	54.40	222.829		
19,000.00	6,991.86	6,400.00	6,393.49	196.40	22.97	20.65	267.63	-38.81	12,220.90	12,166.41	54.49	224.277		
19,100.00	6,991.88	6,400.00	6,393.49	197.99	22.97	20.65	267.63	-38.81	12,320.77	12,266.18	54.58	225.719		
19,200.00	6,991.91	6,400.00	6,393.49	199.58	22.97	20.65	267.63	-38.81	12,420.63	12,365.95	54.68	227.153		
19,300.00	6,991.94	6,400.00	6,393.49	201.17	22.97	20.65	267.63	-38.81	12,520.50	12,465.73	54.77	228.581		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 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		
19,342.28	6,991.95	6,400.00	6,393.49	201.84	22.97	20.65	267.63	-38.81	12,562.73	12,507.91	54.82	229.183		
19,400.00	6,991.97	6,400.00	6,393.49	202.76	22.97	20.65	267.63	-38.81	12,620.38	12,565.50	54.87	230.003		
19,500.00	6,991.99	6,400.00	6,393.49	204.35	22.97	20.65	267.63	-38.81	12,720.25	12,665.28	54.97	231.417		
19,542.28	6,992.00	6,400.00	6,393.49	205.03	22.97	20.65	267.63	-38.81	12,762.47	12,707.47	55.01	232.013		

SDT Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output 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 #696H

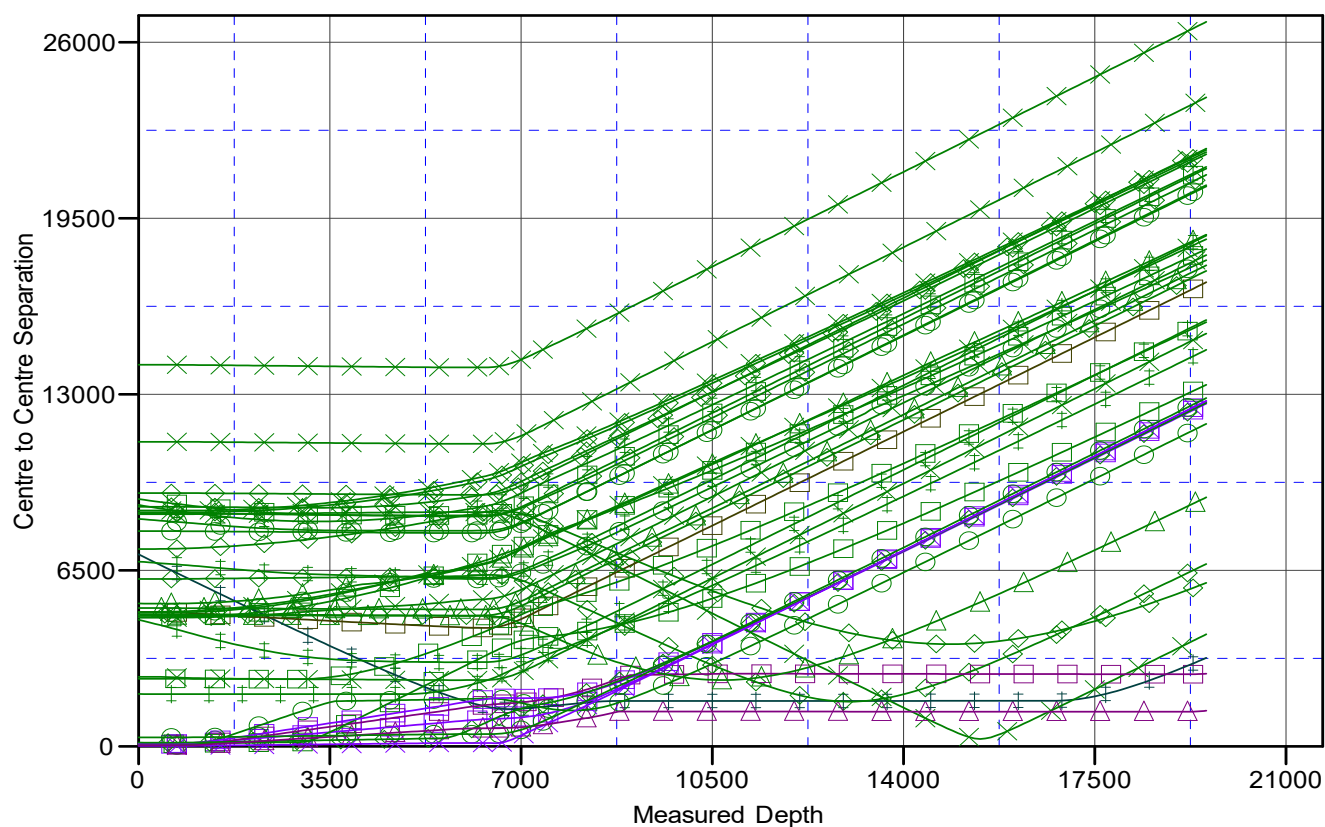
Offset Depths are relative to Offset Datum

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 704H, OH, Plan #6 V0	(C) Rosa Unit #226A, OH, CH-SVY V0	(C) Rosa Unit #226A, OH, CH-SVY V0
Rosa Unit 702H, OH, Plan #6 V0	(C) Rosa Unit #820A, OH, CH-SVY V0	(C) Rosa Unit #66, OH, CH-INC V0
Rosa Unit #674H, OH, Prelim 5 V0	(C) Rosa Unit #171B, OH, CH-SVY V0	Rosa Unit #694H, OH, Prelim 5 V0
(C) Rosa Unit #95, OH, CH-INC V0	(C) Rosa Unit 148 COM, OH, CH-INC V0	(C) Rosa Unit #692H, OH, Prelim 5 V0
(C) Rosa Unit #149B, OH, CH-INC V0	(C) Rosa Unit #336, OH, CH-INC V0	(C) Rosa Unit #149A, OH, CH-INC V0
(C) Rosa Unit #108, OH, CH-SVY V0	(C) Rosa Unit #041C, OH, CH-SVY V0	(C) Rosa Unit #171A, OH, CH-SVY V0
(C) Rosa Unit #64C, OH, CH-SVY V0	(C) Rosa Unit #164B, OH, CH-SVY V0	(C) Rosa Unit #149, OH, CH-INC V0
(C) Rosa Unit #149C, OH, CH-SVY V0	(C) Rosa Unit #107, OH, CH-INC V0	(C) Rosa Unit #171C, OH, CH-SVY V0
(C) Rosa Unit #16A, OH, CH-SVY V0	(C) Rosa Unit #164A, OH, CH-INC V0	(C) Rosa Unit #171, OH, CH-INC V0
(C) Rosa Unit #080A, OH, CH-INC V0	(C) Rosa Unit #041B, OH, CH-SVY V0	(C) Rosa Unit #053, OH, CH-INC V0
(C) Carson #1, OH, CH-INC V0	(C) Rosa Unit #336A, OH, CH-INC V0	(C) Rosa Unit #80B, OH, CH-SVY V0
Rosa Unit #690H, OH, Prelim 5 V0	Rosa Unit #672H, OH, Prelim 5 V0	(C) Rosa Unit #226, OH, CH-INC V0
(C) Rosa Unit #072C, OH, CH-SVY V0	(C) Rosa Unit 072B, OH, CH-SVY 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 #696H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6347+30 @ 6377.00usft (H&P 530)
Reference Site:	Rosa Unit 34	MD Reference:	6347+30 @ 6377.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #696H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output 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 #696H

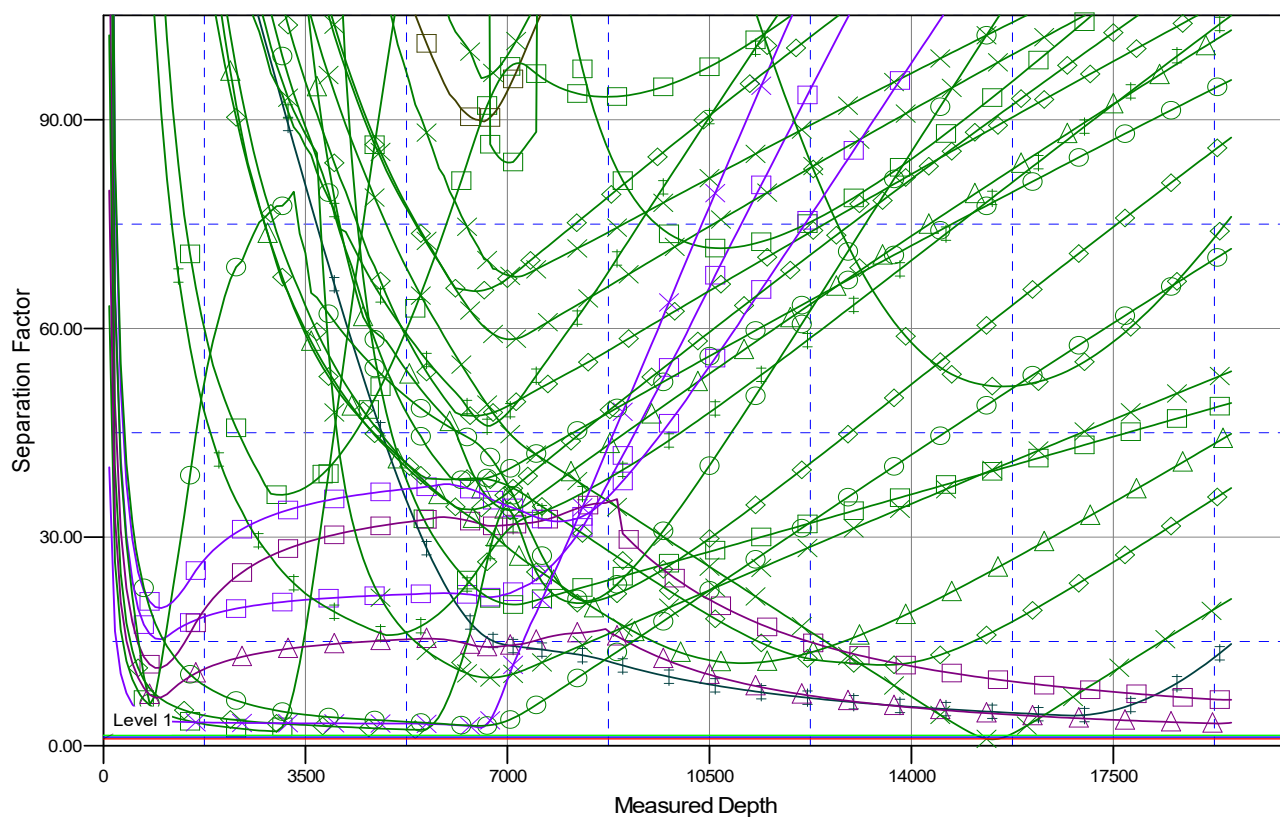
Offset Depths are relative to Offset Datum

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 #704H, OH, Plan #6 V0	(C) Rosa Unit #226A, OH, OH-SVY V0	(C) Rosa Unit #226A, OH, OH-SVY V0
Rosa Unit #704H, OH, Plan #6 V0	(C) Rosa Unit #226A, OH, OH-SVY V0	(C) Rosa Unit #226A, OH, OH-SVY V0
(C) Rosa Unit #95, OH, OH-INC V0	(C) Rosa Unit #171B, OH, OH-SVY V0	Rosa Unit #694H, OH, Prelim 5 V0
(C) Rosa Unit #149B, OH, OH-INC V0	(C) Rosa Unit #149 COM, OH, OH-INC V0	Rosa Unit #692H, OH, Prelim 5 V0
(C) Rosa Unit #106, OH, OH-SVY V0	(C) Rosa Unit #336, OH, OH-INC V0	(C) Rosa Unit #149A, OH, OH-INC V0
(C) Rosa Unit #164C, OH, OH-SVY V0	(C) Rosa Unit #041C, OH, OH-SVY V0	(C) Rosa Unit #171A, OH, OH-SVY V0
(C) Rosa Unit #164C, OH, OH-SVY V0	(C) Rosa Unit #164B, OH, OH-SVY V0	(C) Rosa Unit #149, OH, OH-INC V0
(C) Rosa Unit #164, OH, OH-SVY V0	(C) Rosa Unit #107, OH, OH-INC V0	(C) Rosa Unit #171C, OH, OH-SVY V0
(C) Rosa Unit #080A, OH, OH-INC V0	(C) Rosa Unit #164A, OH, OH-INC V0	(C) Rosa Unit #171, OH, OH-INC V0
Carson #1, OH, OH-INC V0	(C) Rosa Unit #041B, OH, OH-SVY V0	(C) Rosa Unit #053, OH, OH-INC V0
Rosa Unit #690H, OH, Prelim 5 V0	(C) Rosa Unit #336A, OH, OH-INC V0	(C) Rosa Unit #80B, OH, OH-SVY V0
(C) Rosa Unit #072C, OH, OH-SVY V0	Rosa Unit #672H, OH, Prelim 5 V0	(C) Rosa Unit #226, OH, OH-INC V0
	(C) Rosa Unit #072B, OH, OH-SVY 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 #696H

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 #696H
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 #696H	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 #696H					
Well Position	+N/-S	0.00 usft	Northing:	2,154,173.92 usft	Latitude:	36.919056
	+E/-W	0.00 usft	Easting:	2,854,579.71 usft	Longitude:	-107.383522
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	49,423.11229439

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	90.22	

Plan Survey Tool Program	Date	11/22/2024			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	19,542.28 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 #696H
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 #696H	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	
800.00	2.00	330.00	799.98	1.51	-0.87	2.00	2.00	0.00	330.00	
5,402.82	2.00	330.00	5,400.00	140.63	-81.19	0.00	0.00	0.00	0.00	
5,802.82	0.00	0.00	5,799.92	146.67	-84.68	0.50	-0.50	0.00	180.00	
6,354.91	0.00	0.00	6,352.00	146.67	-84.68	0.00	0.00	0.00	0.00	
7,354.68	89.98	79.00	6,988.62	268.10	540.02	9.00	9.00	0.00	79.00	
8,211.68	89.98	79.00	6,988.92	431.63	1,381.28	0.00	0.00	0.00	0.00	
8,772.79	89.98	90.22	6,989.09	484.24	1,939.01	2.00	0.00	2.00	89.98	
19,342.28	89.98	90.22	6,991.95	443.28	12,508.42	0.00	0.00	0.00	0.00	RU #696 FPP
19,542.28	89.98	90.22	6,992.00	442.50	12,708.42	0.00	0.00	0.00	0.00	RU #696 PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #696H
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 #696H	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	330.00	799.98	1.51	-0.87	-0.88	2.00	2.00	0.00
Start 4602.82 hold at 800.00 MD									
900.00	2.00	330.00	899.92	4.53	-2.62	-2.63	0.00	0.00	0.00
1,000.00	2.00	330.00	999.86	7.56	-4.36	-4.39	0.00	0.00	0.00
1,100.00	2.00	330.00	1,099.80	10.58	-6.11	-6.15	0.00	0.00	0.00
1,200.00	2.00	330.00	1,199.74	13.60	-7.85	-7.90	0.00	0.00	0.00
1,300.00	2.00	330.00	1,299.68	16.62	-9.60	-9.66	0.00	0.00	0.00
1,400.00	2.00	330.00	1,399.61	19.65	-11.34	-11.42	0.00	0.00	0.00
1,500.00	2.00	330.00	1,499.55	22.67	-13.09	-13.17	0.00	0.00	0.00
1,600.00	2.00	330.00	1,599.49	25.69	-14.83	-14.93	0.00	0.00	0.00
1,700.00	2.00	330.00	1,699.43	28.71	-16.58	-16.69	0.00	0.00	0.00
1,800.00	2.00	330.00	1,799.37	31.74	-18.32	-18.44	0.00	0.00	0.00
1,900.00	2.00	330.00	1,899.31	34.76	-20.07	-20.20	0.00	0.00	0.00
2,000.00	2.00	330.00	1,999.25	37.78	-21.81	-21.96	0.00	0.00	0.00
2,100.00	2.00	330.00	2,099.19	40.80	-23.56	-23.71	0.00	0.00	0.00
2,200.00	2.00	330.00	2,199.13	43.82	-25.30	-25.47	0.00	0.00	0.00
2,300.00	2.00	330.00	2,299.07	46.85	-27.05	-27.23	0.00	0.00	0.00
2,400.00	2.00	330.00	2,399.01	49.87	-28.79	-28.98	0.00	0.00	0.00
2,440.02	2.00	330.00	2,439.00	51.08	-29.49	-29.69	0.00	0.00	0.00
Ojo Alamo									
2,500.00	2.00	330.00	2,498.94	52.89	-30.54	-30.74	0.00	0.00	0.00
2,560.09	2.00	330.00	2,559.00	54.71	-31.59	-31.80	0.00	0.00	0.00
Kirtland									
2,600.00	2.00	330.00	2,598.88	55.91	-32.28	-32.50	0.00	0.00	0.00
2,700.00	2.00	330.00	2,698.82	58.94	-34.03	-34.25	0.00	0.00	0.00
2,800.00	2.00	330.00	2,798.76	61.96	-35.77	-36.01	0.00	0.00	0.00
2,859.27	2.00	330.00	2,858.00	63.75	-36.81	-37.05	0.00	0.00	0.00
Fruitland									
2,900.00	2.00	330.00	2,898.70	64.98	-37.52	-37.77	0.00	0.00	0.00
3,000.00	2.00	330.00	2,998.64	68.00	-39.26	-39.52	0.00	0.00	0.00
3,002.36	2.00	330.00	3,001.00	68.08	-39.30	-39.56	0.00	0.00	0.00
Top of Coals									
3,100.00	2.00	330.00	3,098.58	71.03	-41.01	-41.28	0.00	0.00	0.00
3,168.46	2.00	330.00	3,167.00	73.10	-42.20	-42.48	0.00	0.00	0.00
Base of Coals									
3,200.00	2.00	330.00	3,198.52	74.05	-42.75	-43.04	0.00	0.00	0.00
3,300.00	2.00	330.00	3,298.46	77.07	-44.50	-44.79	0.00	0.00	0.00
3,369.59	2.00	330.00	3,368.00	79.17	-45.71	-46.01	0.00	0.00	0.00
Pictured Cliffs									
3,400.00	2.00	330.00	3,398.40	80.09	-46.24	-46.55	0.00	0.00	0.00
3,472.65	2.00	330.00	3,471.00	82.29	-47.51	-47.83	0.00	0.00	0.00
Lewis									
3,500.00	2.00	330.00	3,498.34	83.12	-47.99	-48.31	0.00	0.00	0.00
3,600.00	2.00	330.00	3,598.27	86.14	-49.73	-50.06	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #696H
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 #696H	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)
3,700.00	2.00	330.00	3,698.21	89.16	-51.48	-51.82	0.00	0.00	0.00
3,800.00	2.00	330.00	3,798.15	92.18	-53.22	-53.58	0.00	0.00	0.00
3,900.00	2.00	330.00	3,898.09	95.21	-54.97	-55.33	0.00	0.00	0.00
4,000.00	2.00	330.00	3,998.03	98.23	-56.71	-57.09	0.00	0.00	0.00
4,100.00	2.00	330.00	4,097.97	101.25	-58.46	-58.85	0.00	0.00	0.00
4,200.00	2.00	330.00	4,197.91	104.27	-60.20	-60.60	0.00	0.00	0.00
4,300.00	2.00	330.00	4,297.85	107.29	-61.95	-62.36	0.00	0.00	0.00
4,400.00	2.00	330.00	4,397.79	110.32	-63.69	-64.11	0.00	0.00	0.00
4,500.00	2.00	330.00	4,497.73	113.34	-65.44	-65.87	0.00	0.00	0.00
4,600.00	2.00	330.00	4,597.66	116.36	-67.18	-67.63	0.00	0.00	0.00
4,651.37	2.00	330.00	4,649.00	117.91	-68.08	-68.53	0.00	0.00	0.00
Chacra									
4,700.00	2.00	330.00	4,697.60	119.38	-68.93	-69.38	0.00	0.00	0.00
4,800.00	2.00	330.00	4,797.54	122.41	-70.67	-71.14	0.00	0.00	0.00
4,900.00	2.00	330.00	4,897.48	125.43	-72.42	-72.90	0.00	0.00	0.00
5,000.00	2.00	330.00	4,997.42	128.45	-74.16	-74.65	0.00	0.00	0.00
5,100.00	2.00	330.00	5,097.36	131.47	-75.91	-76.41	0.00	0.00	0.00
5,113.65	2.00	330.00	5,111.00	131.89	-76.14	-76.65	0.00	0.00	0.00
Upper Cliff House									
5,200.00	2.00	330.00	5,197.30	134.50	-77.65	-78.17	0.00	0.00	0.00
5,300.00	2.00	330.00	5,297.24	137.52	-79.40	-79.92	0.00	0.00	0.00
5,402.82	2.00	330.00	5,400.00	140.63	-81.19	-81.73	0.00	0.00	0.00
Start Drop -0.50									
5,428.84	1.87	330.00	5,426.00	141.39	-81.63	-82.17	0.50	-0.50	0.00
Cliff House									
5,463.86	1.69	330.00	5,461.00	142.33	-82.17	-82.72	0.50	-0.50	0.00
Menefee									
5,500.00	1.51	330.00	5,497.13	143.21	-82.68	-83.23	0.50	-0.50	0.00
5,600.00	1.01	330.00	5,597.11	145.12	-83.78	-84.34	0.50	-0.50	0.00
5,637.90	0.82	330.00	5,635.00	145.64	-84.09	-84.65	0.50	-0.50	0.00
Point Lookout									
5,700.00	0.51	330.00	5,697.10	146.27	-84.45	-85.01	0.50	-0.50	0.00
5,802.82	0.00	0.00	5,799.92	146.67	-84.68	-85.24	0.50	-0.50	0.00
Start 552.08 hold at 5802.82 MD									
5,900.00	0.00	0.00	5,897.09	146.67	-84.68	-85.24	0.00	0.00	0.00
6,000.00	0.00	0.00	5,997.09	146.67	-84.68	-85.24	0.00	0.00	0.00
6,100.00	0.00	0.00	6,097.09	146.67	-84.68	-85.24	0.00	0.00	0.00
6,200.00	0.00	0.00	6,197.09	146.67	-84.68	-85.24	0.00	0.00	0.00
6,240.91	0.00	0.00	6,238.00	146.67	-84.68	-85.24	0.00	0.00	0.00
Mancos									
6,300.00	0.00	0.00	6,297.09	146.67	-84.68	-85.24	0.00	0.00	0.00
6,354.91	0.00	0.00	6,352.00	146.67	-84.68	-85.24	0.00	0.00	0.00
Start Build 9.00									
6,400.00	4.06	79.00	6,397.06	146.98	-83.11	-83.68	9.00	9.00	0.00
6,450.00	8.56	79.00	6,446.74	148.02	-77.72	-78.29	9.00	9.00	0.00
6,500.00	13.06	79.00	6,495.84	149.81	-68.52	-69.10	9.00	9.00	0.00
6,550.00	17.56	79.00	6,544.06	152.33	-55.57	-56.15	9.00	9.00	0.00
6,600.00	22.06	79.00	6,591.08	155.56	-38.94	-39.53	9.00	9.00	0.00
6,650.00	26.56	79.00	6,636.64	159.49	-18.74	-19.35	9.00	9.00	0.00
6,700.00	31.06	79.00	6,680.44	164.09	4.91	4.28	9.00	9.00	0.00
6,750.00	35.56	79.00	6,722.22	169.32	31.85	31.20	9.00	9.00	0.00
6,800.00	40.06	79.00	6,761.71	175.17	61.93	61.26	9.00	9.00	0.00
6,850.00	44.56	79.00	6,798.68	181.59	94.96	94.27	9.00	9.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #696H
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 #696H	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)
6,876.26	46.92	79.00	6,817.00	185.18	113.42	112.71	9.00	9.00	0.00
Black Top									
6,900.00	49.06	79.00	6,832.89	188.54	130.74	130.01	9.00	9.00	0.00
6,950.00	53.56	79.00	6,864.14	195.99	169.04	168.28	9.00	9.00	0.00
7,000.00	58.06	79.00	6,892.23	203.88	209.62	208.84	9.00	9.00	0.00
7,050.00	62.56	79.00	6,916.99	212.16	252.25	251.43	9.00	9.00	0.00
7,100.00	67.06	79.00	6,938.27	220.80	296.65	295.80	9.00	9.00	0.00
7,150.00	71.56	79.00	6,955.93	229.72	342.56	341.67	9.00	9.00	0.00
7,200.00	76.06	79.00	6,969.87	238.88	389.68	388.76	9.00	9.00	0.00
7,250.00	80.56	79.00	6,980.00	248.22	437.73	436.77	9.00	9.00	0.00
7,300.00	85.06	79.00	6,986.25	257.68	486.41	485.42	9.00	9.00	0.00
7,354.68	89.98	79.00	6,988.62	268.10	540.02	538.99	9.00	9.00	0.00
Start 857.00 hold at 7354.68 MD									
7,400.00	89.98	79.00	6,988.64	276.75	584.51	583.44	0.00	0.00	0.00
7,500.00	89.98	79.00	6,988.67	295.83	682.67	681.53	0.00	0.00	0.00
7,600.00	89.98	79.00	6,988.71	314.91	780.83	779.62	0.00	0.00	0.00
7,700.00	89.98	79.00	6,988.74	333.99	879.00	877.71	0.00	0.00	0.00
7,800.00	89.98	79.00	6,988.78	353.07	977.16	975.80	0.00	0.00	0.00
7,900.00	89.98	79.00	6,988.81	372.15	1,075.32	1,073.88	0.00	0.00	0.00
8,000.00	89.98	79.00	6,988.85	391.23	1,173.48	1,171.97	0.00	0.00	0.00
8,100.00	89.98	79.00	6,988.88	410.32	1,271.65	1,270.06	0.00	0.00	0.00
8,200.00	89.98	79.00	6,988.91	429.40	1,369.81	1,368.15	0.00	0.00	0.00
8,211.68	89.98	79.00	6,988.92	431.63	1,381.28	1,379.61	0.00	0.00	0.00
Start DLS 2.00 TFO 89.98									
8,300.00	89.98	80.77	6,988.95	447.14	1,468.22	1,466.49	2.00	0.00	2.00
8,400.00	89.98	82.77	6,988.98	461.46	1,567.18	1,565.40	2.00	0.00	2.00
8,500.00	89.98	84.77	6,989.01	472.32	1,666.59	1,664.76	2.00	0.00	2.00
8,600.00	89.98	86.77	6,989.04	479.70	1,766.31	1,764.45	2.00	0.00	2.00
8,700.00	89.98	88.77	6,989.07	483.60	1,866.23	1,864.36	2.00	0.00	2.00
8,772.79	89.98	90.22	6,989.09	484.24	1,939.01	1,937.14	2.00	0.00	2.00
Start 10569.49 hold at 8772.79 MD									
8,800.00	89.98	90.22	6,989.10	484.13	1,966.22	1,964.35	0.00	0.00	0.00
8,900.00	89.98	90.22	6,989.13	483.75	2,066.22	2,064.35	0.00	0.00	0.00
9,000.00	89.98	90.22	6,989.15	483.36	2,166.22	2,164.35	0.00	0.00	0.00
9,100.00	89.98	90.22	6,989.18	482.97	2,266.22	2,264.35	0.00	0.00	0.00
9,200.00	89.98	90.22	6,989.21	482.58	2,366.22	2,364.35	0.00	0.00	0.00
9,300.00	89.98	90.22	6,989.24	482.19	2,466.22	2,464.35	0.00	0.00	0.00
9,400.00	89.98	90.22	6,989.26	481.81	2,566.22	2,564.35	0.00	0.00	0.00
9,500.00	89.98	90.22	6,989.29	481.42	2,666.22	2,664.35	0.00	0.00	0.00
9,600.00	89.98	90.22	6,989.32	481.03	2,766.22	2,764.35	0.00	0.00	0.00
9,700.00	89.98	90.22	6,989.34	480.64	2,866.22	2,864.35	0.00	0.00	0.00
9,800.00	89.98	90.22	6,989.37	480.26	2,966.22	2,964.35	0.00	0.00	0.00
9,900.00	89.98	90.22	6,989.40	479.87	3,066.21	3,064.35	0.00	0.00	0.00
10,000.00	89.98	90.22	6,989.42	479.48	3,166.21	3,164.35	0.00	0.00	0.00
10,100.00	89.98	90.22	6,989.45	479.09	3,266.21	3,264.35	0.00	0.00	0.00
10,200.00	89.98	90.22	6,989.48	478.71	3,366.21	3,364.35	0.00	0.00	0.00
10,300.00	89.98	90.22	6,989.51	478.32	3,466.21	3,464.35	0.00	0.00	0.00
10,400.00	89.98	90.22	6,989.53	477.93	3,566.21	3,564.35	0.00	0.00	0.00
10,500.00	89.98	90.22	6,989.56	477.54	3,666.21	3,664.35	0.00	0.00	0.00
10,600.00	89.98	90.22	6,989.59	477.16	3,766.21	3,764.35	0.00	0.00	0.00
10,700.00	89.98	90.22	6,989.61	476.77	3,866.21	3,864.35	0.00	0.00	0.00
10,800.00	89.98	90.22	6,989.64	476.38	3,966.21	3,964.35	0.00	0.00	0.00
10,900.00	89.98	90.22	6,989.67	475.99	4,066.21	4,064.35	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #696H
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 #696H	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)	
11,000.00	89.98	90.22	6,989.70	475.61	4,166.21	4,164.35	0.00	0.00	0.00	
11,100.00	89.98	90.22	6,989.72	475.22	4,266.21	4,264.35	0.00	0.00	0.00	
11,200.00	89.98	90.22	6,989.75	474.83	4,366.20	4,364.35	0.00	0.00	0.00	
11,300.00	89.98	90.22	6,989.78	474.44	4,466.20	4,464.35	0.00	0.00	0.00	
11,400.00	89.98	90.22	6,989.80	474.06	4,566.20	4,564.35	0.00	0.00	0.00	
11,500.00	89.98	90.22	6,989.83	473.67	4,666.20	4,664.35	0.00	0.00	0.00	
11,600.00	89.98	90.22	6,989.86	473.28	4,766.20	4,764.35	0.00	0.00	0.00	
11,700.00	89.98	90.22	6,989.88	472.89	4,866.20	4,864.35	0.00	0.00	0.00	
11,800.00	89.98	90.22	6,989.91	472.51	4,966.20	4,964.35	0.00	0.00	0.00	
11,900.00	89.98	90.22	6,989.94	472.12	5,066.20	5,064.35	0.00	0.00	0.00	
12,000.00	89.98	90.22	6,989.97	471.73	5,166.20	5,164.35	0.00	0.00	0.00	
12,100.00	89.98	90.22	6,989.99	471.34	5,266.20	5,264.35	0.00	0.00	0.00	
12,200.00	89.98	90.22	6,990.02	470.96	5,366.20	5,364.35	0.00	0.00	0.00	
12,300.00	89.98	90.22	6,990.05	470.57	5,466.20	5,464.35	0.00	0.00	0.00	
12,400.00	89.98	90.22	6,990.07	470.18	5,566.20	5,564.35	0.00	0.00	0.00	
12,500.00	89.98	90.22	6,990.10	469.79	5,666.19	5,664.35	0.00	0.00	0.00	
12,600.00	89.98	90.22	6,990.13	469.41	5,766.19	5,764.35	0.00	0.00	0.00	
12,700.00	89.98	90.22	6,990.15	469.02	5,866.19	5,864.35	0.00	0.00	0.00	
12,800.00	89.98	90.22	6,990.18	468.63	5,966.19	5,964.35	0.00	0.00	0.00	
12,900.00	89.98	90.22	6,990.21	468.24	6,066.19	6,064.35	0.00	0.00	0.00	
13,000.00	89.98	90.22	6,990.24	467.86	6,166.19	6,164.35	0.00	0.00	0.00	
13,100.00	89.98	90.22	6,990.26	467.47	6,266.19	6,264.35	0.00	0.00	0.00	
13,200.00	89.98	90.22	6,990.29	467.08	6,366.19	6,364.35	0.00	0.00	0.00	
13,300.00	89.98	90.22	6,990.32	466.69	6,466.19	6,464.35	0.00	0.00	0.00	
13,400.00	89.98	90.22	6,990.34	466.31	6,566.19	6,564.35	0.00	0.00	0.00	
13,500.00	89.98	90.22	6,990.37	465.92	6,666.19	6,664.35	0.00	0.00	0.00	
13,600.00	89.98	90.22	6,990.40	465.53	6,766.19	6,764.35	0.00	0.00	0.00	
13,700.00	89.98	90.22	6,990.42	465.14	6,866.19	6,864.35	0.00	0.00	0.00	
13,800.00	89.98	90.22	6,990.45	464.76	6,966.19	6,964.35	0.00	0.00	0.00	
13,900.00	89.98	90.22	6,990.48	464.37	7,066.18	7,064.35	0.00	0.00	0.00	
14,000.00	89.98	90.22	6,990.51	463.98	7,166.18	7,164.35	0.00	0.00	0.00	
14,100.00	89.98	90.22	6,990.53	463.59	7,266.18	7,264.35	0.00	0.00	0.00	
14,200.00	89.98	90.22	6,990.56	463.20	7,366.18	7,364.35	0.00	0.00	0.00	
14,300.00	89.98	90.22	6,990.59	462.82	7,466.18	7,464.35	0.00	0.00	0.00	
14,400.00	89.98	90.22	6,990.61	462.43	7,566.18	7,564.35	0.00	0.00	0.00	
14,500.00	89.98	90.22	6,990.64	462.04	7,666.18	7,664.35	0.00	0.00	0.00	
14,600.00	89.98	90.22	6,990.67	461.65	7,766.18	7,764.35	0.00	0.00	0.00	
14,700.00	89.98	90.22	6,990.70	461.27	7,866.18	7,864.35	0.00	0.00	0.00	
14,800.00	89.98	90.22	6,990.72	460.88	7,966.18	7,964.35	0.00	0.00	0.00	
14,900.00	89.98	90.22	6,990.75	460.49	8,066.18	8,064.35	0.00	0.00	0.00	
15,000.00	89.98	90.22	6,990.78	460.10	8,166.18	8,164.35	0.00	0.00	0.00	
15,100.00	89.98	90.22	6,990.80	459.72	8,266.18	8,264.35	0.00	0.00	0.00	
15,200.00	89.98	90.22	6,990.83	459.33	8,366.17	8,364.35	0.00	0.00	0.00	
15,300.00	89.98	90.22	6,990.86	458.94	8,466.17	8,464.35	0.00	0.00	0.00	
15,400.00	89.98	90.22	6,990.88	458.55	8,566.17	8,564.35	0.00	0.00	0.00	
15,500.00	89.98	90.22	6,990.91	458.17	8,666.17	8,664.35	0.00	0.00	0.00	
15,600.00	89.98	90.22	6,990.94	457.78	8,766.17	8,764.35	0.00	0.00	0.00	
15,700.00	89.98	90.22	6,990.97	457.39	8,866.17	8,864.35	0.00	0.00	0.00	
15,800.00	89.98	90.22	6,990.99	457.00	8,966.17	8,964.35	0.00	0.00	0.00	
15,900.00	89.98	90.22	6,991.02	456.62	9,066.17	9,064.35	0.00	0.00	0.00	
16,000.00	89.98	90.22	6,991.05	456.23	9,166.17	9,164.35	0.00	0.00	0.00	
16,100.00	89.98	90.22	6,991.07	455.84	9,266.17	9,264.35	0.00	0.00	0.00	
16,200.00	89.98	90.22	6,991.10	455.45	9,366.17	9,364.35	0.00	0.00	0.00	
16,300.00	89.98	90.22	6,991.13	455.07	9,466.17	9,464.35	0.00	0.00	0.00	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #696H
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 #696H	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)
16,400.00	89.98	90.22	6,991.15	454.68	9,566.17	9,564.35	0.00	0.00	0.00
16,500.00	89.98	90.22	6,991.18	454.29	9,666.16	9,664.35	0.00	0.00	0.00
16,600.00	89.98	90.22	6,991.21	453.90	9,766.16	9,764.35	0.00	0.00	0.00
16,700.00	89.98	90.22	6,991.24	453.52	9,866.16	9,864.35	0.00	0.00	0.00
16,800.00	89.98	90.22	6,991.26	453.13	9,966.16	9,964.35	0.00	0.00	0.00
16,900.00	89.98	90.22	6,991.29	452.74	10,066.16	10,064.35	0.00	0.00	0.00
17,000.00	89.98	90.22	6,991.32	452.35	10,166.16	10,164.35	0.00	0.00	0.00
17,100.00	89.98	90.22	6,991.34	451.97	10,266.16	10,264.35	0.00	0.00	0.00
17,200.00	89.98	90.22	6,991.37	451.58	10,366.16	10,364.35	0.00	0.00	0.00
17,300.00	89.98	90.22	6,991.40	451.19	10,466.16	10,464.35	0.00	0.00	0.00
17,400.00	89.98	90.22	6,991.42	450.80	10,566.16	10,564.35	0.00	0.00	0.00
17,500.00	89.98	90.22	6,991.45	450.42	10,666.16	10,664.35	0.00	0.00	0.00
17,600.00	89.98	90.22	6,991.48	450.03	10,766.16	10,764.35	0.00	0.00	0.00
17,700.00	89.98	90.22	6,991.51	449.64	10,866.16	10,864.35	0.00	0.00	0.00
17,800.00	89.98	90.22	6,991.53	449.25	10,966.15	10,964.35	0.00	0.00	0.00
17,900.00	89.98	90.22	6,991.56	448.87	11,066.15	11,064.35	0.00	0.00	0.00
18,000.00	89.98	90.22	6,991.59	448.48	11,166.15	11,164.35	0.00	0.00	0.00
18,100.00	89.98	90.22	6,991.61	448.09	11,266.15	11,264.35	0.00	0.00	0.00
18,200.00	89.98	90.22	6,991.64	447.70	11,366.15	11,364.35	0.00	0.00	0.00
18,300.00	89.98	90.22	6,991.67	447.32	11,466.15	11,464.35	0.00	0.00	0.00
18,400.00	89.98	90.22	6,991.69	446.93	11,566.15	11,564.35	0.00	0.00	0.00
18,500.00	89.98	90.22	6,991.72	446.54	11,666.15	11,664.35	0.00	0.00	0.00
18,600.00	89.98	90.22	6,991.75	446.15	11,766.15	11,764.35	0.00	0.00	0.00
18,700.00	89.98	90.22	6,991.78	445.76	11,866.15	11,864.35	0.00	0.00	0.00
18,800.00	89.98	90.22	6,991.80	445.38	11,966.15	11,964.35	0.00	0.00	0.00
18,900.00	89.98	90.22	6,991.83	444.99	12,066.15	12,064.35	0.00	0.00	0.00
19,000.00	89.98	90.22	6,991.86	444.60	12,166.15	12,164.35	0.00	0.00	0.00
19,100.00	89.98	90.22	6,991.88	444.21	12,266.15	12,264.35	0.00	0.00	0.00
19,200.00	89.98	90.22	6,991.91	443.83	12,366.14	12,364.35	0.00	0.00	0.00
19,300.00	89.98	90.22	6,991.94	443.44	12,466.14	12,464.35	0.00	0.00	0.00
19,342.28	89.98	90.22	6,991.95	443.28	12,508.42	12,506.63	0.00	0.00	0.00
FPP @ 0' FEL									
19,400.00	89.98	90.22	6,991.97	443.05	12,566.14	12,564.35	0.00	0.00	0.00
19,500.00	89.98	90.22	6,991.99	442.66	12,666.14	12,664.35	0.00	0.00	0.00
19,542.28	89.98	90.22	6,992.00	442.50	12,708.42	12,706.63	0.00	0.00	0.00
TD at 19542.28' MD @ 200' FWL									

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #696H
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 #696H	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 #696 SHL	0.00	0.00	0.00	0.00	0.00	2,154,173.92	2,854,579.71	36.919056	-107.383522
- plan hits target center									
- Point									
RU #696 KOP	0.00	0.00	6,352.00	146.67	-84.68	2,154,320.19	2,854,494.34	36.919459	-107.383812
- plan hits target center									
- Point									
RU #696 POE	0.00	0.00	6,988.62	268.10	540.02	2,154,444.57	2,855,118.47	36.919792	-107.381675
- plan hits target center									
- Point									
RU #696 IP1	0.00	0.00	6,988.92	431.63	1,381.28	2,154,612.06	2,855,958.94	36.920242	-107.378797
- plan hits target center									
- Point									
RU #696 IP2	0.00	0.00	6,989.09	484.24	1,939.01	2,154,667.30	2,856,516.42	36.920386	-107.376889
- plan hits target center									
- Point									
RU #696 FPP	0.00	0.00	6,991.95	443.28	12,508.42	2,154,676.19	2,867,085.90	36.920266	-107.340732
- plan hits target center									
- Point									
RU #696 PBHL	0.00	0.00	6,992.00	442.50	12,708.42	2,154,676.35	2,867,285.90	36.920264	-107.340048
- plan hits target center									
- Point									

Formations						
	Measured Depth	Vertical Depth				
	(usft)	(usft)	Name	Lithology	Dip (°)	Dip Direction (°)
	2,440.02	2,439.00	Ojo Alamo			
	2,560.09	2,559.00	Kirtland			
	2,859.27	2,858.00	Fruitland			
	3,002.36	3,001.00	Top of Coals			
	3,168.46	3,167.00	Base of Coals			
	3,369.59	3,368.00	Pictured Cliffs			
	3,472.65	3,471.00	Lewis			
	4,651.37	4,649.00	Chacra			
	5,113.65	5,111.00	Upper Cliff House			
	5,428.84	5,426.00	Cliff House			
	5,463.86	5,461.00	Menefee			
	5,637.90	5,635.00	Point Lookout			
	6,240.91	6,238.00	Mancos			
	6,876.26	6,817.00	Black Top			

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit #696H
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 #696H	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
800.00	799.98	1.51	-0.87	Start 4602.82 hold at 800.00 MD
5,402.82	5,400.00	140.63	-81.19	Start Drop -0.50
5,802.82	5,799.92	146.67	-84.68	Start 552.08 hold at 5802.82 MD
6,354.91	6,352.00	146.67	-84.68	Start Build 9.00
7,354.68	6,988.62	268.10	540.02	Start 857.00 hold at 7354.68 MD
8,211.68	6,988.92	431.63	1,381.28	Start DLS 2.00 TFO 89.98
8,772.79	6,989.09	484.24	1,939.01	Start 10569.49 hold at 8772.79 MD
19,342.28	6,991.95	443.28	12,508.42	FPP @ 0' FEL
19,542.28	6,992.00	442.50	12,708.42	TD at 19542.28' MD @ 200' FWL

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 471365

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 471365
	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