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

5. Lease Serial No.: NMSF078773

6. If Indian, Allotee or Tribe Name:

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

7. If Unit or CA Agreement, Name and No.: NMNM078407E

8. Lease Name and Well No.: ROSA UNIT 754H

2. Name of Operator: LOGOS OPERATING LLC

9. API Well No.: 30-039-31459

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

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: SWNW / 2616 FNL / 950 FWL / LAT 36.856169 / LONG -107.373412

At proposed prod. zone: NWSE / 2275 FSL / 1406 FEL / LAT 36.855138 / LONG -107.327385

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 33/T31N/R5W/NMP

14. Distance in miles and direction from nearest town or post office*: 38 miles

12. County or Parish: RIO ARRIBA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 950 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 960.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 25 feet

19. Proposed Depth: 7109 feet / 20209 feet

20. BLM/BIA Bond No. in file: FED:

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 6534 feet

22. Approximate date work will start*: 04/01/2023

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)

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

25. Signature: (Electronic Submission)

Name *(Printed/Typed)*: DACYE SHULL / Ph: (505) 324-4145

Date: 01/20/2023

Title: REGULATORY TECH

Approved by *(Signature)*: (Electronic Submission)

Name *(Printed/Typed)*: DAVE J MANKIEWICZ / Ph: (505) 564-7761

Date: 03/28/2024

Title: AFM-Minerals

Office: Farmington Field Office

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

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

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 03/28/2024

Confidential

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 wen, 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 directionany 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 wen 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 win 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 conects this information to anow 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 Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Approval Date: 03/28/2024

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Additional Operator Remarks

Location of Well

0. SHL: SWNW / 2616 FNL / 950 FWL / TWSP: 31N / RANGE: 5W / SECTION: 33 / LAT: 36.856169 / LONG: -107.373412 (TVD: 0 feet, MD: 0 feet)

PPP: NWSW / 0 FSL / 0 FWL / TWSP: 31N / RANGE: 5W / SECTION: 35 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: NWSW / 2353 FSL / 1646 FWL / TWSP: 31N / RANGE: 5W / SECTION: 34 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: NESW / 2353 FSL / 1646 FWL / TWSP: 31N / RANGE: 5W / SECTION: 33 / LAT: 36.85537 / LONG: -107.371031 (TVD: 7104 feet, MD: 7439 feet)

BHL: NWSE / 2275 FSL / 1406 FEL / TWSP: 31N / RANGE: 5W / SECTION: 35 / LAT: 36.855138 / LONG: -107.327385 (TVD: 7109 feet, MD: 20209 feet)

BLM Point of Contact

Name: JEFFREY J TAFOYA
Title: Assistant Field Manager
Phone: (505) 564-7672
Email: JTAFOYA@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.

CONFIDENTIAL

Received by OCD: 3/28/2024 4:08:37 PM

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-039-31459	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	754H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6534'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	33	31N	5W		2616	NORTH	950	WEST	RIO ARRIBA

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	35	31N	5W		2275	SOUTH	1406	EAST	RIO ARRIBA

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
960.00	S/2 - Section 33 S/2 - Section 34 S/2 - Section 35			R-13457

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and 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 such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Etta Trujillo — Signature
12/9/2022 — Date
Etta Trujillo — Printed Name
etrujillo@logosresourcellc.com — E-mail Address

[18] 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.

Date Revised: DECEMBER 8, 2022
Date of Survey: JUNE 28, 2022

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

SURFACE LOCATION
2616' FNL 950' FWL
SEC 33, T31N, R5W
LAT: 36.856162 °N
LONG: 107.372810 °W
DATUM: NAD1927

LAT: 36.856169 °N
LONG: 107.373412 °W
DATUM: NAD1983

S66°47.9'E 754.5'

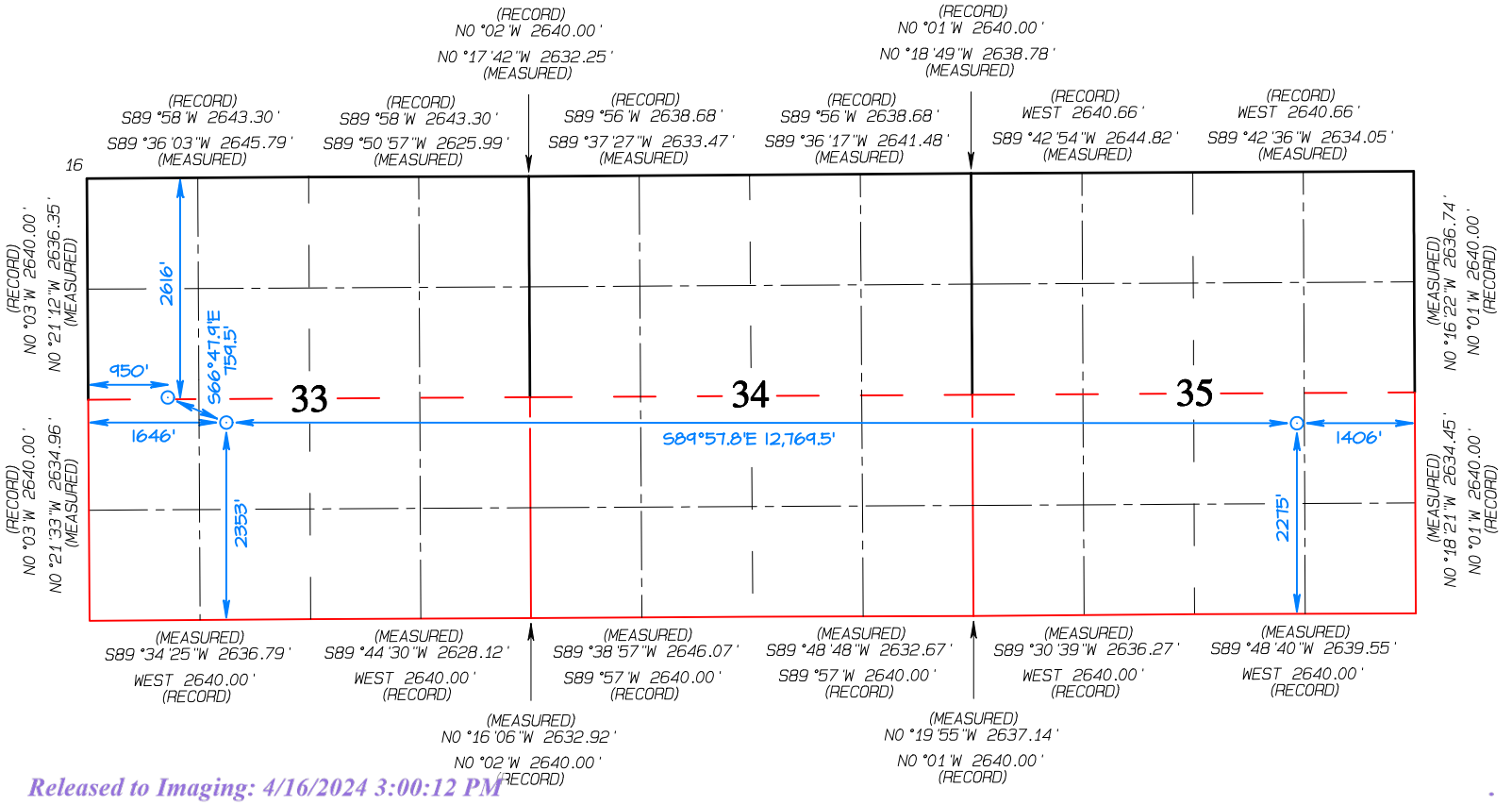
FIRST TAKE POINT
2353' FSL 1646' FWL
SEC 33, T31N, R5W
LAT: 36.855331 °N
LONG: 107.370429 °W
DATUM: NAD1927

LAT: 36.855337 °N
LONG: 107.371031 °W
DATUM: NAD1983

S89°57.8'E 12,764.5'

LAST TAKE POINT
2275' FSL 1406' FEL
SEC 35, T31N, R5W
LAT: 36.855131 °N
LONG: 107.326784 °W
DATUM: NAD1927

LAT: 36.855138 °N
LONG: 107.327385 °W
DATUM: NAD1983



Released to Imaging: 4/16/2024 3:00:12 PM

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:** 01/ 11 / 2023

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 750H	30-039-	L-33-T31N-R5W	2627 FSL 951 FWL	0	15,080	481
ROSA UNIT 752H	30-039-	L-33-T31N-R5W	2612 FSL 952 FWL	0	15,080	485
ROSA UNIT 754H	30-039-	E-33-T31N-R5W	2616 FNL 950 FWL	0	11,245	357
ROSA UNIT 756H	30-039-	E-33-T31N-R5W	2631 FNL 951 FWL	0	10,862	352

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 750H	30-039-	2023	Pending	Pending	Pending	Pending
ROSA UNIT 752H	30-039-	2023	Pending	Pending	Pending	Pending
ROSA UNIT 754H	30-039-	2023	Pending	Pending	Pending	Pending
ROSA UNIT 756H	30-039-	2023	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: Etta Trujillo
Printed Name: Etta Trujillo
Title: Regulatory Specialist
E-mail Address: etrujillo@logosresourcesllc.com
Date: 1/11/2023
Phone: (505) 324-4154

OIL CONSERVATION DIVISION **(Only applicable when submitted as a standalone form)**
Approved By:
Title:
Approval Date:
Conditions of Approval:

VI. Separation Equipment

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

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

VII. Operational Practices 19.15.27.8 NMAC A through F

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

    b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.

D. Venting and flaring during production operations:

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

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

   (a) If there is an emergency or malfunction, vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
   (b) If the wellbore requires liquids to be unloaded to atmosphere, the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
   (c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging with minor exceptions.
   (d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will utilize a LACT system when available to minimize gas vented during oil tank loading.
   (e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
   (f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
   (g) Storage tanks and other low-pressure vessel normal operational venting will be minimized during the early life of the well with the installation of a vapor recovery unit to limit the flash and working and breathing emissions to atmosphere.
   (h) No dehydration or amine units are anticipated to be set on location.
   (i) Compressors, compressor engines, turbines, flanges, connectors, valves, and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operation.
   (j) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
   (k) When natural gas does not meet gathering pipeline specifications, for example high nitrogen content after a nearby frac, gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
   (l) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

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

(a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
(b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
(c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
(d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.
(e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
(f) Electric controllers and pumps, or instrument air, will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
(g) No dehydration or amine units are anticipated to be set on location.
(h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
(i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
(j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
(k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:
a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.

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

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

LOGOS Operating, LLC
Operations Plan

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

Date:	December 20 2022	Pool:	Basin Mancos
Well Name:	**Rosa Unit 754H**	GL Elevation:	6,534’
Surface Location:	Sec 33, T31N, R5W 2616 FNL, 950 FWL (36.856169º N, 107.373412º W – NAD83)	Measured Depth:	20,209’ (KB)
Bottom Hole Location:	Sec 35, T31N, R5W 2275 FSL, 1406 FEL (36.855138º N, 107.327385º W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078773 CA Serial #NMNM78407E

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,705'	2,702'	*POINT LOOKOUT	5,826'	5,819'
KIRTLAND	2,850'	2,847'	*MANCOS	6,297'	6,290'
*FRUITLAND	3,250'	3,247'	KICKOFF POINT	6,551'	6,544'
*PICTURED CLIFFS	3,573'	3,569'	LANDING POINT	7,439'	7,104'
LEWIS	3,682'	3,678'			
CHACRA	4,751'	4,746'			
*CLIFF HOUSE	5,584'	5,578'			
MENEFEE	5,612'	5,606'	TD	20,209'	7,109'

* 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 surface 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) will be used to drill the 17-1/2" surface hole as well as the 12-1/4” directional vertical 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 **1500 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:** 7,109' TVD x 0.43 = 3057 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
SURFACE	17.5"	320' or greater	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,372'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	20,209'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

NOTE: All casing depths are approximate, based on GL 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. SURFACE CASING: 13-3/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
2. INTERMEDIATE CASING: 9-5/8" cement nose guide shoe with a self-fill insert 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., 2,300ft., 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 cancelation plugs for DV tools may be used if losses while cementing are not encountered.
3. 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. SURFACE: Casing shall be set at ~ 320' and cemented to surface. TOC at Surface. 263 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 223 sks of 14.6 ppg Type III with 1.39 cuf/sk yield, 30% excess.

2. 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 above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation 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 TOC.

	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,276	1,096	0.3132	1.3	464	83	1.15	403	15.8
Stage 1 Lead	4,902	374	0.31318	1.3	152	27	2.30	66	12.3
					616	**110**		**470**	
Stage 2 Tail	3,727	1,175	0.31318	1.3	478	85	1.50	319	13.5
Stage 2 Lead	3,300	427	0.31318	1.3	174	31	2.30	76	12.3
					652	**116**		**395**	
Stage 3 Tail	2,650	650	0.31318	1.3	265	47	1.99	133	12.8
Stage 3 Lead	320	2,330	0.31318	1.3	949	169	2.53	375	12
Stage 3 Lead	-	320	0.36268	1	116	21	2.53	46	12
					1,329	**237**		**554**	
All Stage Totals					**2,598**	**463**		**1,418**	

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

3. 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.

	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	**5,372**	**100**	**0.2531**	**1**	**25**	**5**	**1.56**	**16**	13
Open Hole Lead	**6,372**	**13,837**	**0.2291**	**1.15**	**3,656**	**651**	**1.56**	**2,344**	13
					3,681	**656**		**2,360**	

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 * 7,109 TVD=1564 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. STIMULATION

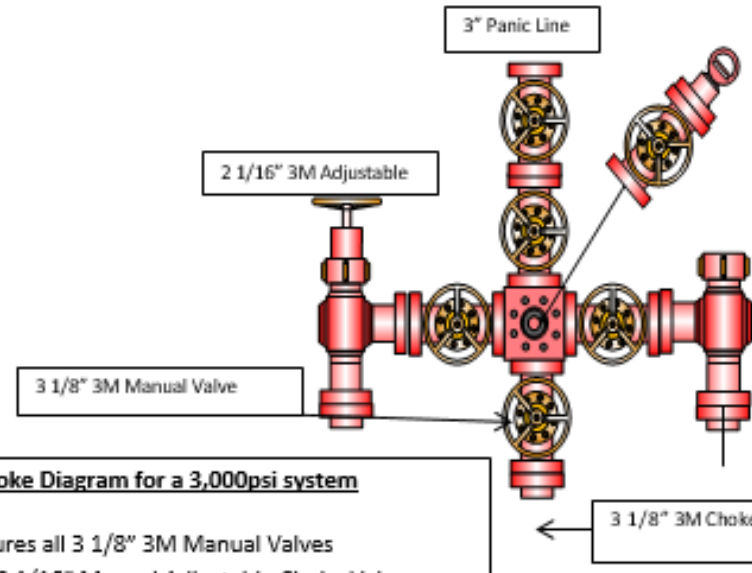
Stimulate with sand and water. Isolate stages with flow through or dissolvable frac plugs. Drill out frac plugs and flowback lateral.

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 12-18 months after completion.

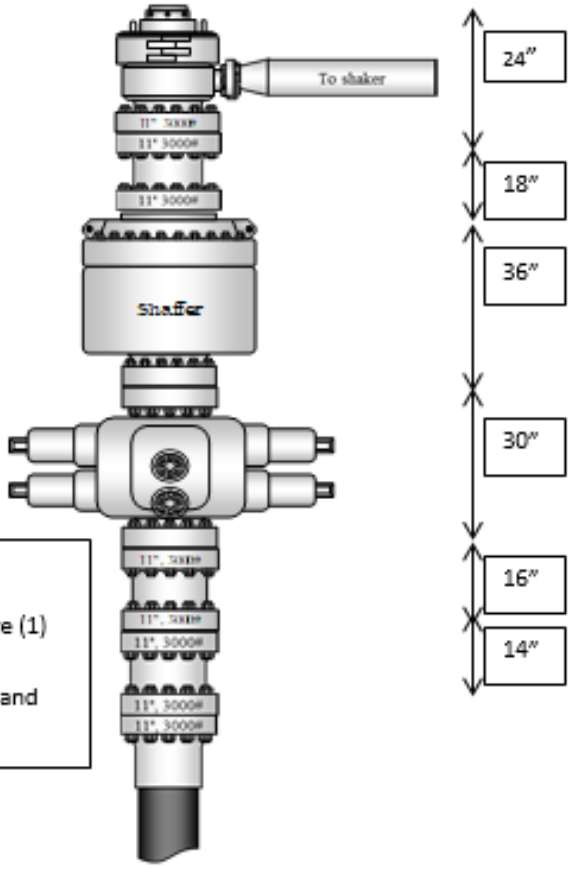
*NOTE: Although this horizontal well may be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 8(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable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

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



Choke Diagram for a 3,000psi system

- Features all 3 1/8" 3M Manual Valves
- Two 2 1/16" Manual Adjustable Choke Valves
- 3" Panic Line and 2" Vent lines
- (2) 3 1/8" 3M Coflex Hose f/Choke to BOP



11" 3,000psi BOP

- Choke Side has (1) manual 3 1/8" Valve (1) HCR
- Kill Side has (2) 2 1/16" Manual Valve and (1) check valve

ROSA UNIT 754H

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 32
Rosa Unit 754H - Slot B03

OH

Plan: Plan #3

Standard Planning Report

03 December, 2022

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Company:	Logos Operating LLC	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Project:	Rio Arriba, NM NAD83	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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 32				
Site Position:		**Northing:**	2,131,320.20 usft	**Latitude:**	36.856242
From:	Lat/Long	**Easting:**	2,857,795.25 usft	**Longitude:**	-107.372900
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.28 °

Well	Rosa Unit 754H - Slot B03					
Well Position	**+N/-S**	-26.61 usft	**Northing:**	2,131,292.87 usft	**Latitude:**	36.856169
	+E/-W	-149.91 usft	**Easting:**	2,857,645.47 usft	**Longitude:**	-107.373412
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	6,533.99 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	11/21/2022	8.56	63.43	49,565.16750881

Design	Plan #3			
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	90.31

Plan Survey Tool Program **Date** 12/3/2022

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,208.46	Plan #3 (OH)	MWD-SDI	

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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
644.12	2.88	155.61	644.06	-3.30	1.50	2.00	2.00	0.00	155.61	
6,551.20	2.88	155.61	6,543.67	-273.83	124.17	0.00	0.00	0.00	0.00	
7,438.94	89.98	90.31	7,104.00	-302.57	696.63	10.00	9.81	-7.36	-65.32	Rosa Unit 754H POE
20,208.46	89.98	90.31	7,109.00	-372.08	13,465.96	0.00	0.00	0.00	0.00	Rosa Unit 754H PBHl

Planning Report

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Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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	2.00	155.61	599.98	-1.59	0.72	0.73	2.00	2.00	0.00
644.12	2.88	155.61	644.06	-3.30	1.50	1.51	2.00	2.00	0.00
700.00	2.88	155.61	699.87	-5.86	2.66	2.69	0.00	0.00	0.00
800.00	2.88	155.61	799.74	-10.44	4.73	4.79	0.00	0.00	0.00
900.00	2.88	155.61	899.62	-15.02	6.81	6.89	0.00	0.00	0.00
1,000.00	2.88	155.61	999.49	-19.60	8.89	8.99	0.00	0.00	0.00
1,100.00	2.88	155.61	1,099.36	-24.18	10.96	11.09	0.00	0.00	0.00
1,200.00	2.88	155.61	1,199.24	-28.76	13.04	13.20	0.00	0.00	0.00
1,300.00	2.88	155.61	1,299.11	-33.34	15.12	15.30	0.00	0.00	0.00
1,400.00	2.88	155.61	1,398.98	-37.92	17.19	17.40	0.00	0.00	0.00
1,500.00	2.88	155.61	1,498.86	-42.50	19.27	19.50	0.00	0.00	0.00
1,600.00	2.88	155.61	1,598.73	-47.08	21.35	21.60	0.00	0.00	0.00
1,700.00	2.88	155.61	1,698.60	-51.66	23.42	23.70	0.00	0.00	0.00
1,800.00	2.88	155.61	1,798.48	-56.24	25.50	25.81	0.00	0.00	0.00
1,900.00	2.88	155.61	1,898.35	-60.82	27.58	27.91	0.00	0.00	0.00
2,000.00	2.88	155.61	1,998.22	-65.40	29.65	30.01	0.00	0.00	0.00
2,100.00	2.88	155.61	2,098.10	-69.98	31.73	32.11	0.00	0.00	0.00
2,200.00	2.88	155.61	2,197.97	-74.56	33.81	34.21	0.00	0.00	0.00
2,300.00	2.88	155.61	2,297.84	-79.14	35.88	36.31	0.00	0.00	0.00
2,400.00	2.88	155.61	2,397.72	-83.72	37.96	38.41	0.00	0.00	0.00
2,500.00	2.88	155.61	2,497.59	-88.30	40.04	40.52	0.00	0.00	0.00
2,600.00	2.88	155.61	2,597.46	-92.88	42.12	42.62	0.00	0.00	0.00
2,700.00	2.88	155.61	2,697.34	-97.46	44.19	44.72	0.00	0.00	0.00
2,800.00	2.88	155.61	2,797.21	-102.04	46.27	46.82	0.00	0.00	0.00
2,900.00	2.88	155.61	2,897.09	-106.61	48.35	48.92	0.00	0.00	0.00
3,000.00	2.88	155.61	2,996.96	-111.19	50.42	51.02	0.00	0.00	0.00
3,100.00	2.88	155.61	3,096.83	-115.77	52.50	53.12	0.00	0.00	0.00
3,200.00	2.88	155.61	3,196.71	-120.35	54.58	55.23	0.00	0.00	0.00
3,300.00	2.88	155.61	3,296.58	-124.93	56.65	57.33	0.00	0.00	0.00
3,400.00	2.88	155.61	3,396.45	-129.51	58.73	59.43	0.00	0.00	0.00
3,500.00	2.88	155.61	3,496.33	-134.09	60.81	61.53	0.00	0.00	0.00
3,600.00	2.88	155.61	3,596.20	-138.67	62.88	63.63	0.00	0.00	0.00
3,700.00	2.88	155.61	3,696.07	-143.25	64.96	65.73	0.00	0.00	0.00
3,800.00	2.88	155.61	3,795.95	-147.83	67.04	67.83	0.00	0.00	0.00
3,900.00	2.88	155.61	3,895.82	-152.41	69.11	69.94	0.00	0.00	0.00
4,000.00	2.88	155.61	3,995.69	-156.99	71.19	72.04	0.00	0.00	0.00
4,100.00	2.88	155.61	4,095.57	-161.57	73.27	74.14	0.00	0.00	0.00
4,200.00	2.88	155.61	4,195.44	-166.15	75.34	76.24	0.00	0.00	0.00
4,300.00	2.88	155.61	4,295.31	-170.73	77.42	78.34	0.00	0.00	0.00
4,400.00	2.88	155.61	4,395.19	-175.31	79.50	80.44	0.00	0.00	0.00
4,500.00	2.88	155.61	4,495.06	-179.89	81.57	82.55	0.00	0.00	0.00
4,600.00	2.88	155.61	4,594.93	-184.47	83.65	84.65	0.00	0.00	0.00
4,700.00	2.88	155.61	4,694.81	-189.05	85.73	86.75	0.00	0.00	0.00
4,800.00	2.88	155.61	4,794.68	-193.63	87.80	88.85	0.00	0.00	0.00
4,900.00	2.88	155.61	4,894.55	-198.21	89.88	90.95	0.00	0.00	0.00
5,000.00	2.88	155.61	4,994.43	-202.79	91.96	93.05	0.00	0.00	0.00
5,100.00	2.88	155.61	5,094.30	-207.37	94.03	95.15	0.00	0.00	0.00
5,200.00	2.88	155.61	5,194.18	-211.95	96.11	97.26	0.00	0.00	0.00

Planning Report

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Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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)
5,300.00	2.88	155.61	5,294.05	-216.53	98.19	99.36	0.00	0.00	0.00
5,400.00	2.88	155.61	5,393.92	-221.11	100.26	101.46	0.00	0.00	0.00
5,500.00	2.88	155.61	5,493.80	-225.69	102.34	103.56	0.00	0.00	0.00
5,600.00	2.88	155.61	5,593.67	-230.27	104.42	105.66	0.00	0.00	0.00
5,700.00	2.88	155.61	5,693.54	-234.85	106.49	107.76	0.00	0.00	0.00
5,800.00	2.88	155.61	5,793.42	-239.43	108.57	109.86	0.00	0.00	0.00
5,900.00	2.88	155.61	5,893.29	-244.01	110.65	111.97	0.00	0.00	0.00
6,000.00	2.88	155.61	5,993.16	-248.59	112.72	114.07	0.00	0.00	0.00
6,100.00	2.88	155.61	6,093.04	-253.17	114.80	116.17	0.00	0.00	0.00
6,200.00	2.88	155.61	6,192.91	-257.75	116.88	118.27	0.00	0.00	0.00
6,300.00	2.88	155.61	6,292.78	-262.33	118.95	120.37	0.00	0.00	0.00
6,400.00	2.88	155.61	6,392.66	-266.91	121.03	122.47	0.00	0.00	0.00
6,500.00	2.88	155.61	6,492.53	-271.49	123.11	124.57	0.00	0.00	0.00
6,551.20	2.88	155.61	6,543.67	-273.83	124.17	125.65	0.00	0.00	0.00
6,600.00	6.62	113.52	6,592.30	-276.07	127.26	128.75	10.00	7.66	-86.26
6,650.00	11.39	103.44	6,641.67	-278.37	134.71	136.21	10.00	9.53	-20.15
6,700.00	16.29	99.32	6,690.21	-280.66	146.43	147.95	10.00	9.81	-8.25
6,750.00	21.24	97.07	6,737.54	-282.91	162.35	163.88	10.00	9.90	-4.49
6,800.00	26.21	95.64	6,783.30	-285.11	182.34	183.88	10.00	9.93	-2.85
6,850.00	31.18	94.65	6,827.15	-287.24	206.24	207.79	10.00	9.95	-2.00
6,900.00	36.17	93.90	6,868.74	-289.30	233.88	235.44	10.00	9.97	-1.49
6,950.00	41.15	93.31	6,907.77	-291.25	265.04	266.62	10.00	9.97	-1.18
7,000.00	46.14	92.83	6,943.94	-293.09	299.49	301.08	10.00	9.98	-0.96
7,050.00	51.13	92.42	6,976.97	-294.81	336.97	338.56	10.00	9.98	-0.81
7,100.00	56.12	92.07	7,006.62	-296.38	377.19	378.78	10.00	9.98	-0.71
7,150.00	61.12	91.76	7,032.64	-297.80	419.83	421.44	10.00	9.99	-0.63
7,200.00	66.11	91.47	7,054.86	-299.06	464.59	466.20	10.00	9.99	-0.57
7,250.00	71.10	91.21	7,073.09	-300.15	511.12	512.74	10.00	9.99	-0.53
7,300.00	76.10	90.96	7,087.20	-301.05	559.06	560.68	10.00	9.99	-0.50
7,350.00	81.09	90.72	7,097.08	-301.77	608.06	609.68	10.00	9.99	-0.48
7,400.00	86.09	90.49	7,102.66	-302.30	657.72	659.35	10.00	9.99	-0.46
7,438.94	89.98	90.31	7,104.00	-302.57	696.63	698.26	10.00	9.99	-0.46
7,500.00	89.98	90.31	7,104.02	-302.90	757.69	759.32	0.00	0.00	0.00
7,600.00	89.98	90.31	7,104.06	-303.45	857.69	859.32	0.00	0.00	0.00
7,700.00	89.98	90.31	7,104.10	-303.99	957.69	959.32	0.00	0.00	0.00
7,800.00	89.98	90.31	7,104.14	-304.53	1,057.69	1,059.32	0.00	0.00	0.00
7,900.00	89.98	90.31	7,104.18	-305.08	1,157.69	1,159.32	0.00	0.00	0.00
8,000.00	89.98	90.31	7,104.22	-305.62	1,257.68	1,259.32	0.00	0.00	0.00
8,100.00	89.98	90.31	7,104.26	-306.17	1,357.68	1,359.32	0.00	0.00	0.00
8,200.00	89.98	90.31	7,104.30	-306.71	1,457.68	1,459.32	0.00	0.00	0.00
8,300.00	89.98	90.31	7,104.34	-307.26	1,557.68	1,559.32	0.00	0.00	0.00
8,400.00	89.98	90.31	7,104.38	-307.80	1,657.68	1,659.32	0.00	0.00	0.00
8,500.00	89.98	90.31	7,104.42	-308.34	1,757.68	1,759.32	0.00	0.00	0.00
8,600.00	89.98	90.31	7,104.45	-308.89	1,857.68	1,859.32	0.00	0.00	0.00
8,700.00	89.98	90.31	7,104.49	-309.43	1,957.67	1,959.32	0.00	0.00	0.00
8,800.00	89.98	90.31	7,104.53	-309.98	2,057.67	2,059.32	0.00	0.00	0.00
8,900.00	89.98	90.31	7,104.57	-310.52	2,157.67	2,159.32	0.00	0.00	0.00
9,000.00	89.98	90.31	7,104.61	-311.07	2,257.67	2,259.32	0.00	0.00	0.00
9,100.00	89.98	90.31	7,104.65	-311.61	2,357.67	2,359.32	0.00	0.00	0.00
9,200.00	89.98	90.31	7,104.69	-312.16	2,457.67	2,459.32	0.00	0.00	0.00
9,300.00	89.98	90.31	7,104.73	-312.70	2,557.67	2,559.32	0.00	0.00	0.00
9,400.00	89.98	90.31	7,104.77	-313.24	2,657.66	2,659.32	0.00	0.00	0.00
9,500.00	89.98	90.31	7,104.81	-313.79	2,757.66	2,759.32	0.00	0.00	0.00
9,600.00	89.98	90.31	7,104.85	-314.33	2,857.66	2,859.32	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Company:	Logos Operating LLC	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Project:	Rio Arriba, NM NAD83	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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)
9,700.00	89.98	90.31	7,104.89	-314.88	2,957.66	2,959.32	0.00	0.00	0.00
9,800.00	89.98	90.31	7,104.92	-315.42	3,057.66	3,059.32	0.00	0.00	0.00
9,900.00	89.98	90.31	7,104.96	-315.97	3,157.66	3,159.32	0.00	0.00	0.00
10,000.00	89.98	90.31	7,105.00	-316.51	3,257.66	3,259.32	0.00	0.00	0.00
10,100.00	89.98	90.31	7,105.04	-317.05	3,357.65	3,359.32	0.00	0.00	0.00
10,200.00	89.98	90.31	7,105.08	-317.60	3,457.65	3,459.32	0.00	0.00	0.00
10,300.00	89.98	90.31	7,105.12	-318.14	3,557.65	3,559.32	0.00	0.00	0.00
10,400.00	89.98	90.31	7,105.16	-318.69	3,657.65	3,659.32	0.00	0.00	0.00
10,500.00	89.98	90.31	7,105.20	-319.23	3,757.65	3,759.32	0.00	0.00	0.00
10,600.00	89.98	90.31	7,105.24	-319.78	3,857.65	3,859.32	0.00	0.00	0.00
10,700.00	89.98	90.31	7,105.28	-320.32	3,957.64	3,959.32	0.00	0.00	0.00
10,800.00	89.98	90.31	7,105.32	-320.86	4,057.64	4,059.32	0.00	0.00	0.00
10,900.00	89.98	90.31	7,105.36	-321.41	4,157.64	4,159.32	0.00	0.00	0.00
11,000.00	89.98	90.31	7,105.39	-321.95	4,257.64	4,259.32	0.00	0.00	0.00
11,100.00	89.98	90.31	7,105.43	-322.50	4,357.64	4,359.32	0.00	0.00	0.00
11,200.00	89.98	90.31	7,105.47	-323.04	4,457.64	4,459.32	0.00	0.00	0.00
11,300.00	89.98	90.31	7,105.51	-323.59	4,557.64	4,559.32	0.00	0.00	0.00
11,400.00	89.98	90.31	7,105.55	-324.13	4,657.63	4,659.32	0.00	0.00	0.00
11,500.00	89.98	90.31	7,105.59	-324.68	4,757.63	4,759.32	0.00	0.00	0.00
11,600.00	89.98	90.31	7,105.63	-325.22	4,857.63	4,859.32	0.00	0.00	0.00
11,700.00	89.98	90.31	7,105.67	-325.76	4,957.63	4,959.32	0.00	0.00	0.00
11,800.00	89.98	90.31	7,105.71	-326.31	5,057.63	5,059.32	0.00	0.00	0.00
11,900.00	89.98	90.31	7,105.75	-326.85	5,157.63	5,159.32	0.00	0.00	0.00
12,000.00	89.98	90.31	7,105.79	-327.40	5,257.63	5,259.32	0.00	0.00	0.00
12,100.00	89.98	90.31	7,105.83	-327.94	5,357.62	5,359.32	0.00	0.00	0.00
12,200.00	89.98	90.31	7,105.86	-328.49	5,457.62	5,459.32	0.00	0.00	0.00
12,300.00	89.98	90.31	7,105.90	-329.03	5,557.62	5,559.32	0.00	0.00	0.00
12,400.00	89.98	90.31	7,105.94	-329.57	5,657.62	5,659.32	0.00	0.00	0.00
12,500.00	89.98	90.31	7,105.98	-330.12	5,757.62	5,759.32	0.00	0.00	0.00
12,600.00	89.98	90.31	7,106.02	-330.66	5,857.62	5,859.32	0.00	0.00	0.00
12,700.00	89.98	90.31	7,106.06	-331.21	5,957.62	5,959.32	0.00	0.00	0.00
12,800.00	89.98	90.31	7,106.10	-331.75	6,057.61	6,059.32	0.00	0.00	0.00
12,900.00	89.98	90.31	7,106.14	-332.30	6,157.61	6,159.32	0.00	0.00	0.00
13,000.00	89.98	90.31	7,106.18	-332.84	6,257.61	6,259.32	0.00	0.00	0.00
13,100.00	89.98	90.31	7,106.22	-333.38	6,357.61	6,359.32	0.00	0.00	0.00
13,200.00	89.98	90.31	7,106.26	-333.93	6,457.61	6,459.32	0.00	0.00	0.00
13,300.00	89.98	90.31	7,106.30	-334.47	6,557.61	6,559.32	0.00	0.00	0.00
13,400.00	89.98	90.31	7,106.33	-335.02	6,657.60	6,659.32	0.00	0.00	0.00
13,500.00	89.98	90.31	7,106.37	-335.56	6,757.60	6,759.32	0.00	0.00	0.00
13,600.00	89.98	90.31	7,106.41	-336.11	6,857.60	6,859.32	0.00	0.00	0.00
13,700.00	89.98	90.31	7,106.45	-336.65	6,957.60	6,959.32	0.00	0.00	0.00
13,800.00	89.98	90.31	7,106.49	-337.20	7,057.60	7,059.32	0.00	0.00	0.00
13,900.00	89.98	90.31	7,106.53	-337.74	7,157.60	7,159.32	0.00	0.00	0.00
14,000.00	89.98	90.31	7,106.57	-338.28	7,257.60	7,259.32	0.00	0.00	0.00
14,100.00	89.98	90.31	7,106.61	-338.83	7,357.59	7,359.32	0.00	0.00	0.00
14,200.00	89.98	90.31	7,106.65	-339.37	7,457.59	7,459.32	0.00	0.00	0.00
14,300.00	89.98	90.31	7,106.69	-339.92	7,557.59	7,559.32	0.00	0.00	0.00
14,400.00	89.98	90.31	7,106.73	-340.46	7,657.59	7,659.32	0.00	0.00	0.00
14,500.00	89.98	90.31	7,106.76	-341.01	7,757.59	7,759.32	0.00	0.00	0.00
14,600.00	89.98	90.31	7,106.80	-341.55	7,857.59	7,859.32	0.00	0.00	0.00
14,700.00	89.98	90.31	7,106.84	-342.09	7,957.59	7,959.32	0.00	0.00	0.00
14,800.00	89.98	90.31	7,106.88	-342.64	8,057.58	8,059.32	0.00	0.00	0.00
14,900.00	89.98	90.31	7,106.92	-343.18	8,157.58	8,159.32	0.00	0.00	0.00
15,000.00	89.98	90.31	7,106.96	-343.73	8,257.58	8,259.32	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Company:	Logos Operating LLC	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Project:	Rio Arriba, NM NAD83	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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)
15,100.00	89.98	90.31	7,107.00	-344.27	8,357.58	8,359.32	0.00	0.00	0.00
15,200.00	89.98	90.31	7,107.04	-344.82	8,457.58	8,459.32	0.00	0.00	0.00
15,300.00	89.98	90.31	7,107.08	-345.36	8,557.58	8,559.32	0.00	0.00	0.00
15,400.00	89.98	90.31	7,107.12	-345.90	8,657.57	8,659.32	0.00	0.00	0.00
15,500.00	89.98	90.31	7,107.16	-346.45	8,757.57	8,759.32	0.00	0.00	0.00
15,600.00	89.98	90.31	7,107.20	-346.99	8,857.57	8,859.32	0.00	0.00	0.00
15,700.00	89.98	90.31	7,107.23	-347.54	8,957.57	8,959.32	0.00	0.00	0.00
15,800.00	89.98	90.31	7,107.27	-348.08	9,057.57	9,059.32	0.00	0.00	0.00
15,900.00	89.98	90.31	7,107.31	-348.63	9,157.57	9,159.32	0.00	0.00	0.00
16,000.00	89.98	90.31	7,107.35	-349.17	9,257.57	9,259.32	0.00	0.00	0.00
16,100.00	89.98	90.31	7,107.39	-349.72	9,357.56	9,359.32	0.00	0.00	0.00
16,200.00	89.98	90.31	7,107.43	-350.26	9,457.56	9,459.32	0.00	0.00	0.00
16,300.00	89.98	90.31	7,107.47	-350.80	9,557.56	9,559.32	0.00	0.00	0.00
16,400.00	89.98	90.31	7,107.51	-351.35	9,657.56	9,659.32	0.00	0.00	0.00
16,500.00	89.98	90.31	7,107.55	-351.89	9,757.56	9,759.32	0.00	0.00	0.00
16,600.00	89.98	90.31	7,107.59	-352.44	9,857.56	9,859.32	0.00	0.00	0.00
16,700.00	89.98	90.31	7,107.63	-352.98	9,957.56	9,959.32	0.00	0.00	0.00
16,800.00	89.98	90.31	7,107.67	-353.53	10,057.55	10,059.32	0.00	0.00	0.00
16,900.00	89.98	90.31	7,107.70	-354.07	10,157.55	10,159.32	0.00	0.00	0.00
17,000.00	89.98	90.31	7,107.74	-354.61	10,257.55	10,259.32	0.00	0.00	0.00
17,100.00	89.98	90.31	7,107.78	-355.16	10,357.55	10,359.32	0.00	0.00	0.00
17,200.00	89.98	90.31	7,107.82	-355.70	10,457.55	10,459.32	0.00	0.00	0.00
17,300.00	89.98	90.31	7,107.86	-356.25	10,557.55	10,559.32	0.00	0.00	0.00
17,400.00	89.98	90.31	7,107.90	-356.79	10,657.55	10,659.32	0.00	0.00	0.00
17,500.00	89.98	90.31	7,107.94	-357.34	10,757.54	10,759.32	0.00	0.00	0.00
17,600.00	89.98	90.31	7,107.98	-357.88	10,857.54	10,859.32	0.00	0.00	0.00
17,700.00	89.98	90.31	7,108.02	-358.42	10,957.54	10,959.32	0.00	0.00	0.00
17,800.00	89.98	90.31	7,108.06	-358.97	11,057.54	11,059.32	0.00	0.00	0.00
17,900.00	89.98	90.31	7,108.10	-359.51	11,157.54	11,159.32	0.00	0.00	0.00
18,000.00	89.98	90.31	7,108.14	-360.06	11,257.54	11,259.32	0.00	0.00	0.00
18,100.00	89.98	90.31	7,108.17	-360.60	11,357.53	11,359.32	0.00	0.00	0.00
18,200.00	89.98	90.31	7,108.21	-361.15	11,457.53	11,459.32	0.00	0.00	0.00
18,300.00	89.98	90.31	7,108.25	-361.69	11,557.53	11,559.32	0.00	0.00	0.00
18,400.00	89.98	90.31	7,108.29	-362.24	11,657.53	11,659.32	0.00	0.00	0.00
18,500.00	89.98	90.31	7,108.33	-362.78	11,757.53	11,759.32	0.00	0.00	0.00
18,600.00	89.98	90.31	7,108.37	-363.32	11,857.53	11,859.32	0.00	0.00	0.00
18,700.00	89.98	90.31	7,108.41	-363.87	11,957.53	11,959.32	0.00	0.00	0.00
18,800.00	89.98	90.31	7,108.45	-364.41	12,057.52	12,059.32	0.00	0.00	0.00
18,900.00	89.98	90.31	7,108.49	-364.96	12,157.52	12,159.32	0.00	0.00	0.00
19,000.00	89.98	90.31	7,108.53	-365.50	12,257.52	12,259.32	0.00	0.00	0.00
19,100.00	89.98	90.31	7,108.57	-366.05	12,357.52	12,359.32	0.00	0.00	0.00
19,200.00	89.98	90.31	7,108.61	-366.59	12,457.52	12,459.32	0.00	0.00	0.00
19,300.00	89.98	90.31	7,108.64	-367.13	12,557.52	12,559.32	0.00	0.00	0.00
19,400.00	89.98	90.31	7,108.68	-367.68	12,657.52	12,659.32	0.00	0.00	0.00
19,500.00	89.98	90.31	7,108.72	-368.22	12,757.51	12,759.32	0.00	0.00	0.00
19,600.00	89.98	90.31	7,108.76	-368.77	12,857.51	12,859.32	0.00	0.00	0.00
19,700.00	89.98	90.31	7,108.80	-369.31	12,957.51	12,959.32	0.00	0.00	0.00
19,800.00	89.98	90.31	7,108.84	-369.86	13,057.51	13,059.32	0.00	0.00	0.00
19,900.00	89.98	90.31	7,108.88	-370.40	13,157.51	13,159.32	0.00	0.00	0.00
20,000.00	89.98	90.31	7,108.92	-370.94	13,257.51	13,259.32	0.00	0.00	0.00
20,100.00	89.98	90.31	7,108.96	-371.49	13,357.50	13,359.32	0.00	0.00	0.00
20,208.46	89.98	90.31	7,109.00	-372.08	13,465.96	13,467.78	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Company:	Logos Operating LLC	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Project:	Rio Arriba, NM NAD83	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Rosa Unit 754H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,131,292.87	2,857,645.47	36.856169	-107.373412
Rosa Unit 754H POE - plan hits target center - Point	0.00	0.00	7,104.00	-302.57	696.63	2,130,993.66	2,858,343.55	36.855337	-107.371031
Rosa Unit 754H PBHL - plan hits target center - Point	0.00	0.00	7,109.00	-372.08	13,465.96	2,130,985.63	2,871,113.07	36.855138	-107.327385

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,704.67	2,702.00	Ojo Alamo		0.00	90.31
2,849.85	2,847.00	Kirtland		0.00	90.31
3,250.36	3,247.00	Fruitland		0.00	90.31
3,572.77	3,569.00	Pictured Cliffs		0.00	90.31
3,681.90	3,678.00	Lewis		0.00	90.31
4,751.26	4,746.00	Chacra		0.00	90.31
5,584.31	5,578.00	Cliff House		0.00	90.31
5,612.35	5,606.00	Menefee		0.00	90.31
5,825.62	5,819.00	Point Lookout		0.00	90.31
6,297.21	6,290.00	Mancos		0.00	90.31

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.00	500.00	0.00	0.00	Start Build 2.00
644.12	644.06	-3.30	1.50	Start 5907.08 hold at 644.12 MD
6,551.20	6,543.67	-273.83	124.17	Start DLS 10.00 TFO -65.32
7,438.94	7,104.00	-302.57	696.63	Start 12769.52 hold at 7438.94 MD
20,208.46	7,109.00	-372.08	13,465.96	TD at 20208.46

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 32
Rosa Unit 754H

OH
Plan #3

Anticollision Report

03 December, 2022

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference	Plan #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 19,999.96 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 12/3/2022

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	20,208.46	Plan #3 (OH)	MWD-SDI	

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Rosa Unit 32						
Rosa Unit 750H - OH - Plan #3	604.37	603.38	29.98	26.50	8.625	CC
Rosa Unit 750H - OH - Plan #3	644.12	642.72	30.01	26.30	8.083	ES
Rosa Unit 750H - OH - Plan #3	1,000.00	1,002.56	41.37	35.51	7.059	SF
Rosa Unit 752H - OH - Plan #3	500.00	500.00	45.00	42.15	15.772	CC
Rosa Unit 752H - OH - Plan #3	644.12	641.89	45.21	41.50	12.184	ES
Rosa Unit 752H - OH - Plan #3	800.00	795.11	50.09	45.45	10.803	SF
Rosa Unit 756H - OH - Plan #3	500.00	500.00	15.02	12.16	5.263	CC
Rosa Unit 756H - OH - Plan #3	644.12	643.36	15.30	11.59	4.119	ES
Rosa Unit 756H - OH - Plan #3	700.00	698.93	16.11	12.06	3.980	SF
RU #024 (Offset) - OH - OH	500.00	469.51	5,493.85	5,471.97	251.108	CC
RU #024 (Offset) - OH - OH	6,551.20	6,513.18	5,536.76	5,233.46	18.255	ES, SF
RU #024B (Offset) - OH - OH	550.97	510.49	4,613.48	4,603.65	469.301	CC
RU #024B (Offset) - OH - OH	6,551.20	6,504.30	4,630.52	4,473.39	29.468	ES
RU #024B (Offset) - OH - OH	6,900.00	6,829.40	4,729.23	4,565.02	28.801	SF
RU #026A (Offset) - OH - OH	6,552.98	6,473.43	2,959.05	2,804.83	19.186	CC, ES
RU #026A (Offset) - OH - OH	6,900.00	6,806.50	3,046.43	2,882.01	18.528	SF
RU #026C (Offset) - OH - OH	173.23	185.74	1,066.89	1,064.04	374.197	CC
RU #026C (Offset) - OH - OH	4,400.00	4,585.73	1,150.23	1,045.75	11.009	ES
RU #026C (Offset) - OH - OH	6,700.00	6,704.16	1,231.17	1,066.33	7.469	SF
RU #055 (Offset) - OH - OH	15,191.99	7,128.41	827.85	777.33	16.388	CC, ES
RU #055 (Offset) - OH - OH	15,200.00	7,128.42	827.89	777.35	16.383	SF
RU #077 (Offset) - OH - OH	6,560.81	6,521.47	725.12	698.14	26.883	CC, ES
RU #077 (Offset) - OH - OH	6,700.00	6,662.70	731.21	703.68	26.557	SF
RU #077A (Offset) - OH - OH	9,911.38	7,048.56	775.50	606.24	4.582	CC, ES, SF
RU #077B (Offset) - OH - OH	8,325.49	6,219.00	1,677.77	1,546.02	12.735	CC, ES
RU #077B (Offset) - OH - OH	8,400.00	6,219.00	1,679.42	1,547.42	12.723	SF
RU #077C (Offset) - OH - OH	10,536.16	7,249.52	1,656.80	1,620.22	45.292	CC, ES
RU #077C (Offset) - OH - OH	10,800.00	7,250.17	1,677.68	1,640.31	44.900	SF
RU #097 (Offset) - OH - OH	500.00	486.52	9,310.39	9,300.76	967.352	CC
RU #097 (Offset) - OH - OH	6,551.20	6,531.13	9,414.49	9,257.98	60.154	ES
RU #097 (Offset) - OH - OH	7,150.00	7,020.28	9,708.39	9,537.83	56.921	SF
RU #137 (Offset) - OH - OH	380.00	369.35	9,340.56	9,333.13	1,257.120	CC
RU #137 (Offset) - OH - OH	6,200.00	6,170.00	9,423.20	9,248.48	53.931	ES
RU #137 (Offset) - OH - OH	6,600.00	6,170.00	9,440.52	9,264.74	53.706	SF
RU #137A (Offset) - OH - OH	500.00	445.52	7,271.96	7,264.92	1,033.406	CC
RU #137A (Offset) - OH - OH	6,300.00	6,239.48	7,365.76	7,208.45	46.823	ES, SF
RU #137B (Offset) - OH - OH	500.00	398.52	6,789.33	6,783.31	1,127.714	CC

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Rosa Unit 32						
RU #137B (Offset) - OH - OH	6,300.00	6,191.89	6,831.60	6,687.33	47.352	ES, SF
RU #137C (Offset) - OH - OH	296.49	200.00	8,616.37	8,615.41	9,036.101	CC
RU #137C (Offset) - OH - OH	300.00	200.00	8,616.37	8,615.40	8,937.286	ES
RU #137C (Offset) - OH - OH	10,000.00	10,000.00	11,842.81	11,803.15	298.629	SF
RU #184 (Offset) - OH - OH	15,107.77	6,308.00	1,146.49	1,009.84	8.390	CC, ES
RU #184 (Offset) - OH - OH	15,200.00	6,308.00	1,150.20	1,012.98	8.382	SF
RU #184B (Offset) - OH - OH	16,112.75	6,298.00	1,852.62	1,599.89	7.331	CC, ES
RU #184B (Offset) - OH - OH	16,200.00	6,298.00	1,854.67	1,601.63	7.330	SF
RU #188 (Offset) - OH - OH	12,803.53	6,476.00	860.41	772.99	9.842	CC, ES
RU #188 (Offset) - OH - OH	13,400.00	6,476.00	1,046.94	922.80	8.434	SF
RU #188C (Offset) - OH - OH	13,622.55	7,267.79	1,419.63	1,373.74	30.935	CC, ES
RU #188C (Offset) - OH - OH	13,700.00	7,267.71	1,421.74	1,375.65	30.841	SF
RU #231 (Offset) - OH - OH	500.00	484.51	9,437.81	9,429.75	1,171.946	CC
RU #231 (Offset) - OH - OH	3,400.00	3,337.00	9,477.96	9,404.89	129.716	ES
RU #231 (Offset) - OH - OH	5,300.00	3,337.00	9,702.18	9,624.65	125.141	SF
RU #231A (Offset) - OH - OH	500.00	403.53	6,631.23	6,624.71	1,017.129	CC
RU #231A (Offset) - OH - OH	3,500.00	3,400.23	6,655.67	6,577.95	85.631	ES
RU #231A (Offset) - OH - OH	4,400.00	3,384.00	6,726.36	6,646.86	84.608	SF
RU #259 (Offset) - OH - OH	3,498.23	3,402.00	1,236.97	1,160.59	16.196	CC, ES
RU #259 (Offset) - OH - OH	3,500.00	3,402.00	1,236.97	1,160.59	16.196	SF
RU #259A (Offset) - OH - OH	3,572.38	3,414.00	3,283.31	3,206.10	42.529	CC, ES
RU #259A (Offset) - OH - OH	3,800.00	3,414.00	3,291.19	3,213.60	42.421	SF
RU #269A (Offset) - OH - OH	15,362.87	3,512.00	3,910.26	3,853.74	69.185	CC, ES
RU #269A (Offset) - OH - OH	16,200.00	3,512.00	3,998.86	3,939.83	67.740	SF
RU #270 (Offset) - OH - OH	12,686.18	3,597.00	3,687.82	3,637.58	73.415	CC
RU #270 (Offset) - OH - OH	12,700.00	3,597.00	3,687.84	3,637.57	73.351	ES
RU #270 (Offset) - OH - OH	15,500.00	3,597.00	4,638.71	4,549.08	51.757	SF
RU #271A (Offset) - OH - OH	20,208.46	3,527.00	3,917.96	3,846.90	55.132	CC, ES, SF
RU #272 (Offset) - OH - OH	17,141.08	3,569.00	3,703.97	3,640.98	58.805	CC, ES
RU #272 (Offset) - OH - OH	19,700.00	3,569.00	4,501.93	4,403.74	45.846	SF
RU #334A (Offset) - OH - OH	500.00	477.52	2,872.82	2,865.17	375.545	CC
RU #334A (Offset) - OH - OH	3,500.00	3,474.36	2,929.53	2,846.82	35.418	ES, SF
RU #337 (Offset) - OH - OH	335.47	301.99	4,812.68	4,807.24	885.930	CC
RU #337 (Offset) - OH - OH	3,400.00	3,363.34	4,856.21	4,778.59	62.565	ES
RU #337 (Offset) - OH - OH	3,800.00	3,351.00	4,880.07	4,801.75	62.307	SF

Offset Design Rosa Unit 32 - Rosa Unit 750H - OH - Plan #3

Survey Program: 0-MWD-SDI

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	177.66	-30.00	1.23	30.02				
100.00	100.00	100.00	100.00	0.23	0.23	177.66	-30.00	1.23	30.02	29.57	0.45	66.272	
200.00	200.00	200.00	200.00	0.53	0.53	177.66	-30.00	1.23	30.02	28.97	1.05	28.510	
300.00	300.00	300.00	300.00	0.83	0.83	177.66	-30.00	1.23	30.02	28.37	1.65	18.162	
400.00	400.00	400.00	400.00	1.13	1.13	177.66	-30.00	1.23	30.02	27.77	2.25	13.325	
500.00	500.00	500.00	500.00	1.43	1.43	177.66	-30.00	1.23	30.02	27.17	2.85	10.523	
600.00	599.98	599.05	599.03	1.73	1.72	24.77	-31.55	0.52	29.98	26.53	3.45	8.690	
604.37	604.35	603.38	603.36	1.74	1.74	25.01	-31.69	0.45	29.98	26.50	3.48	8.625	CC
644.12	644.06	642.72	642.67	1.86	1.85	27.69	-33.23	-0.25	30.01	26.30	3.71	8.083	ES

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 750H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
700.00	699.87	697.99	697.83	2.03	2.02	32.32	-36.22	-1.61	30.73	26.68	4.05	7.594	
800.00	799.74	802.26	797.32	2.33	2.33	40.38	-42.79	-4.59	33.75	29.10	4.66	7.245	
900.00	899.62	902.41	896.91	2.63	2.63	47.01	-49.38	-7.59	37.36	32.10	5.26	7.102	
1,000.00	999.49	1,002.56	996.50	2.93	2.93	52.43	-55.97	-10.59	41.37	35.51	5.86	7.059 SF	
1,100.00	1,099.36	1,102.71	1,096.08	3.23	3.23	56.86	-62.56	-13.59	45.68	39.22	6.46	7.071	
1,200.00	1,199.24	1,202.86	1,195.67	3.53	3.54	60.50	-69.15	-16.58	50.22	43.16	7.06	7.112	
1,300.00	1,299.11	1,296.99	1,295.26	3.83	3.82	63.53	-75.74	-19.58	54.93	47.28	7.64	7.186	
1,400.00	1,398.98	1,396.84	1,394.85	4.13	4.12	66.08	-82.33	-22.58	59.76	51.52	8.24	7.250	
1,500.00	1,498.86	1,503.31	1,494.43	4.43	4.44	68.24	-88.92	-25.58	64.70	55.84	8.86	7.300	
1,600.00	1,598.73	1,603.46	1,594.02	4.73	4.74	70.10	-95.51	-28.57	69.72	60.25	9.46	7.367	
1,700.00	1,698.60	1,703.61	1,693.61	5.03	5.04	71.70	-102.10	-31.57	74.80	64.73	10.06	7.432	
1,800.00	1,798.48	1,803.76	1,793.20	5.33	5.34	73.10	-108.70	-34.57	79.93	69.26	10.66	7.495	
1,900.00	1,898.35	1,903.90	1,892.78	5.63	5.64	74.33	-115.29	-37.57	85.10	73.83	11.26	7.555	
2,000.00	1,998.22	2,004.05	1,992.37	5.93	5.94	75.42	-121.88	-40.56	90.30	78.44	11.86	7.611	
2,100.00	2,098.10	2,104.20	2,091.96	6.23	6.24	76.39	-128.47	-43.56	95.54	83.07	12.47	7.664	
2,200.00	2,197.97	2,204.35	2,191.55	6.53	6.54	77.26	-135.06	-46.56	100.80	87.73	13.07	7.715	
2,300.00	2,297.84	2,304.50	2,291.14	6.83	6.84	78.04	-141.65	-49.56	106.08	92.41	13.67	7.762	
2,400.00	2,397.72	2,404.65	2,390.72	7.13	7.14	78.75	-148.24	-52.55	111.38	97.11	14.27	7.807	
2,500.00	2,497.59	2,504.80	2,490.31	7.43	7.44	79.39	-154.83	-55.55	116.69	101.82	14.87	7.849	
2,600.00	2,597.46	2,604.95	2,589.90	7.73	7.74	79.98	-161.42	-58.55	122.02	106.55	15.47	7.889	
2,700.00	2,697.34	2,705.10	2,689.49	8.03	8.04	80.51	-168.01	-61.55	127.36	111.29	16.07	7.926	
2,800.00	2,797.21	2,805.25	2,789.07	8.33	8.34	81.01	-174.60	-64.54	132.71	116.04	16.67	7.962	
2,900.00	2,897.09	2,905.40	2,888.66	8.63	8.64	81.47	-181.19	-67.54	138.07	120.80	17.27	7.995	
3,000.00	2,996.96	3,005.55	2,988.25	8.93	8.94	81.89	-187.78	-70.54	143.43	125.56	17.87	8.027	
3,100.00	3,096.83	3,105.70	3,087.84	9.23	9.24	82.28	-194.37	-73.54	148.81	130.34	18.47	8.057	
3,200.00	3,196.71	3,205.85	3,187.42	9.53	9.54	82.64	-200.96	-76.53	154.19	135.12	19.07	8.085	
3,300.00	3,296.58	3,294.00	3,287.01	9.83	9.81	82.98	-207.55	-79.53	159.57	139.94	19.63	8.127	
3,400.00	3,396.45	3,393.85	3,386.60	10.13	10.11	83.30	-214.14	-82.53	164.96	144.73	20.23	8.153	
3,500.00	3,496.33	3,506.30	3,486.19	10.43	10.45	83.60	-220.73	-85.53	170.36	149.49	20.87	8.162	
3,600.00	3,596.20	3,606.45	3,585.78	10.73	10.75	83.88	-227.33	-88.52	175.76	154.29	21.47	8.185	
3,700.00	3,696.07	3,706.60	3,685.36	11.03	11.05	84.14	-233.92	-91.52	181.16	159.09	22.07	8.208	
3,800.00	3,795.95	3,806.75	3,784.95	11.33	11.35	84.39	-240.51	-94.52	186.57	163.90	22.67	8.229	
3,900.00	3,895.82	3,906.89	3,884.54	11.63	11.65	84.62	-247.10	-97.52	191.98	168.71	23.27	8.249	
4,000.00	3,995.69	4,007.04	3,984.13	11.93	11.95	84.84	-253.69	-100.51	197.40	173.52	23.87	8.268	
4,100.00	4,095.57	4,107.19	4,083.71	12.23	12.25	85.05	-260.28	-103.51	202.81	178.34	24.47	8.287	
4,200.00	4,195.44	4,207.34	4,183.30	12.53	12.55	85.25	-266.87	-106.51	208.23	183.16	25.07	8.304	
4,300.00	4,295.31	4,307.49	4,282.89	12.83	12.85	85.44	-273.46	-109.51	213.66	187.98	25.68	8.321	
4,400.00	4,395.19	4,392.36	4,382.48	13.13	13.10	85.62	-280.05	-112.50	219.08	192.85	26.23	8.352	
4,500.00	4,495.06	4,507.79	4,482.06	13.43	13.45	85.79	-286.64	-115.50	224.50	197.63	26.88	8.353	
4,600.00	4,594.93	4,607.94	4,581.65	13.73	13.75	85.95	-293.23	-118.50	229.93	202.46	27.48	8.368	
4,700.00	4,694.81	4,708.09	4,681.24	14.03	14.05	86.10	-299.82	-121.50	235.36	207.29	28.08	8.383	
4,800.00	4,794.68	4,808.24	4,780.83	14.33	14.35	86.25	-306.41	-124.49	240.79	212.12	28.68	8.397	
4,900.00	4,894.55	4,908.39	4,880.42	14.63	14.65	86.39	-313.00	-127.49	246.23	216.95	29.28	8.410	
5,000.00	4,994.43	5,008.54	4,980.00	14.93	14.95	86.53	-319.59	-130.49	251.66	221.78	29.88	8.423	
5,100.00	5,094.30	5,108.69	5,079.59	15.23	15.25	86.66	-326.18	-133.49	257.10	226.62	30.48	8.435	
5,200.00	5,194.18	5,208.84	5,179.18	15.53	15.55	86.78	-332.77	-136.48	262.53	231.45	31.08	8.447	
5,300.00	5,294.05	5,308.99	5,278.77	15.83	15.85	86.90	-339.36	-139.48	267.97	236.29	31.68	8.459	
5,400.00	5,393.92	5,409.14	5,378.35	16.13	16.15	87.01	-345.96	-142.48	273.41	241.13	32.28	8.470	
5,500.00	5,493.80	5,509.29	5,477.94	16.43	16.46	87.12	-352.55	-145.48	278.85	245.97	32.88	8.481	
5,600.00	5,593.67	5,609.44	5,577.53	16.73	16.76	87.23	-359.14	-148.47	284.29	250.81	33.48	8.491	
5,700.00	5,693.54	5,709.59	5,677.12	17.03	17.06	87.33	-365.73	-151.47	289.73	255.65	34.08	8.501	
5,800.00	5,793.42	5,790.27	5,776.70	17.33	17.30	87.43	-372.32	-154.47	295.18	260.55	34.62	8.525	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 750H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,900.00	5,893.29	5,909.88	5,876.29	17.63	17.66	87.52	-378.91	-157.47	300.62	265.34	35.28	8.520	
6,000.00	5,993.16	5,989.97	5,975.88	17.93	17.90	87.61	-385.50	-160.46	306.06	270.24	35.82	8.544	
6,100.00	6,093.04	6,089.82	6,075.47	18.23	18.20	87.70	-392.09	-163.46	311.51	275.09	36.42	8.553	
6,200.00	6,192.91	6,189.67	6,175.06	18.53	18.50	87.79	-398.68	-166.46	316.95	279.93	37.02	8.561	
6,300.00	6,292.78	6,289.52	6,274.64	18.83	18.80	87.87	-405.27	-169.46	322.40	284.78	37.62	8.570	
6,400.00	6,392.66	6,389.37	6,374.23	19.13	19.10	87.95	-411.86	-172.45	327.85	289.63	38.22	8.578	
6,500.00	6,492.53	6,489.22	6,473.82	19.43	19.39	88.02	-418.45	-175.45	333.30	294.48	38.82	8.586	
6,551.20	6,543.67	6,540.35	6,524.81	19.58	19.55	88.06	-421.83	-176.99	336.09	296.96	39.13	8.589	
6,600.00	6,592.30	6,578.82	6,563.17	19.73	19.66	129.98	-424.36	-178.45	341.03	301.64	39.39	8.658	
6,650.00	6,641.67	6,610.26	6,594.41	19.88	19.76	139.90	-426.42	-181.29	352.15	312.52	39.63	8.885	
6,700.00	6,690.21	6,639.81	6,623.59	20.03	19.85	143.82	-428.34	-185.53	369.39	329.51	39.87	9.264	
6,750.00	6,737.54	6,666.82	6,650.04	20.18	19.93	145.72	-430.07	-190.71	392.38	352.28	40.10	9.784	
6,800.00	6,783.30	6,690.86	6,673.35	20.33	20.00	146.51	-431.60	-196.37	420.67	380.34	40.33	10.431	
6,850.00	6,827.15	6,711.70	6,693.35	20.48	20.06	146.45	-432.90	-202.06	453.68	413.14	40.54	11.191	
6,900.00	6,868.74	6,729.26	6,710.04	20.63	20.12	145.52	-433.98	-207.42	490.78	450.04	40.74	12.045	
6,950.00	6,907.77	6,750.00	6,729.53	20.78	20.18	144.10	-435.25	-214.41	531.40	490.44	40.96	12.974	
7,000.00	6,943.94	6,750.00	6,729.53	20.93	20.18	139.53	-435.25	-214.41	574.70	533.59	41.11	13.980	
7,050.00	6,976.97	6,763.33	6,741.91	21.08	20.22	134.53	-436.05	-219.28	620.17	578.87	41.30	15.016	
7,100.00	7,006.62	6,769.15	6,747.29	21.23	20.24	125.53	-436.39	-221.49	667.28	625.82	41.47	16.092	
7,150.00	7,032.64	6,772.60	6,750.45	21.38	20.25	111.10	-436.60	-222.82	715.48	673.85	41.63	17.187	
7,200.00	7,054.86	6,773.90	6,751.65	21.53	20.25	89.94	-436.68	-223.33	764.28	722.49	41.78	18.292	
7,250.00	7,073.09	6,773.28	6,751.08	21.68	20.25	65.93	-436.64	-223.09	813.26	771.33	41.93	19.395	
7,300.00	7,087.20	6,770.96	6,748.94	21.83	20.24	46.44	-436.50	-222.19	862.04	819.97	42.07	20.489	
7,350.00	7,097.08	6,767.10	6,745.40	21.98	20.23	33.45	-436.27	-220.70	910.28	868.07	42.21	21.564	
7,400.00	7,102.66	6,750.00	6,729.53	22.13	20.18	24.17	-435.25	-214.41	957.88	915.57	42.31	22.639	
7,438.94	7,104.00	6,750.00	6,729.53	22.25	20.18	20.20	-435.25	-214.41	993.90	951.47	42.43	23.426	
7,500.00	7,104.02	6,750.00	6,729.53	22.43	20.18	20.20	-435.25	-214.41	1,050.12	1,007.51	42.61	24.644	
7,600.00	7,104.06	6,750.00	6,729.53	22.74	20.18	20.20	-435.25	-214.41	1,143.26	1,100.35	42.91	26.641	
7,700.00	7,104.10	6,726.67	6,707.59	23.04	20.11	18.97	-433.82	-206.60	1,236.79	1,193.64	43.14	28.666	
7,800.00	7,104.14	6,717.15	6,698.55	23.34	20.08	18.50	-433.24	-203.67	1,331.20	1,287.78	43.42	30.661	
7,900.00	7,104.18	6,700.00	6,682.15	23.64	20.03	17.69	-432.17	-198.77	1,426.27	1,382.60	43.67	32.663	
8,000.00	7,104.22	6,700.00	6,682.15	23.94	20.03	17.69	-432.17	-198.77	1,521.65	1,477.69	43.97	34.609	
8,100.00	7,104.26	6,700.00	6,682.15	24.24	20.03	17.69	-432.17	-198.77	1,617.59	1,573.33	44.27	36.541	
8,200.00	7,104.30	6,700.00	6,682.15	24.54	20.03	17.69	-432.17	-198.77	1,714.00	1,669.43	44.57	38.457	
8,300.00	7,104.34	6,681.07	6,663.88	24.84	19.97	16.86	-430.98	-193.94	1,810.38	1,765.57	44.81	40.399	
8,400.00	7,104.38	6,675.55	6,658.53	25.14	19.95	16.62	-430.63	-192.65	1,907.24	1,862.15	45.10	42.292	
8,500.00	7,104.42	6,670.44	6,653.56	25.44	19.94	16.41	-430.30	-191.50	2,004.35	1,958.97	45.38	44.166	
8,600.00	7,104.45	6,650.00	6,633.60	25.74	19.88	15.60	-429.00	-187.33	2,101.95	2,056.33	45.62	46.073	
8,700.00	7,104.49	6,650.00	6,633.60	26.04	19.88	15.60	-429.00	-187.33	2,199.34	2,153.42	45.92	47.893	
8,800.00	7,104.53	6,650.00	6,633.60	26.34	19.88	15.60	-429.00	-187.33	2,296.96	2,250.73	46.22	49.693	
8,900.00	7,104.57	6,650.00	6,633.60	26.64	19.88	15.60	-429.00	-187.33	2,394.77	2,348.24	46.52	51.474	
9,000.00	7,104.61	6,650.00	6,633.60	26.95	19.88	15.60	-429.00	-187.33	2,492.75	2,445.93	46.82	53.237	
9,100.00	7,104.65	6,650.00	6,633.60	27.25	19.88	15.60	-429.00	-187.33	2,590.89	2,543.77	47.12	54.980	
9,200.00	7,104.69	6,650.00	6,633.60	27.55	19.88	15.60	-429.00	-187.33	2,689.17	2,641.74	47.42	56.704	
9,300.00	7,104.73	6,650.00	6,633.60	27.85	19.88	15.60	-429.00	-187.33	2,787.56	2,739.84	47.73	58.409	
9,400.00	7,104.77	6,650.00	6,633.60	28.15	19.88	15.60	-429.00	-187.33	2,886.07	2,838.05	48.03	60.094	
9,500.00	7,104.81	6,650.00	6,633.60	28.45	19.88	15.60	-429.00	-187.33	2,984.68	2,936.35	48.33	61.761	
9,600.00	7,104.85	6,650.00	6,633.60	28.75	19.88	15.60	-429.00	-187.33	3,083.38	3,034.75	48.63	63.409	
9,700.00	7,104.89	6,650.00	6,633.60	29.05	19.88	15.60	-429.00	-187.33	3,182.16	3,133.23	48.93	65.039	
9,800.00	7,104.92	6,627.76	6,611.72	29.35	19.81	14.78	-427.56	-183.62	3,280.50	3,231.34	49.16	66.730	
9,900.00	7,104.96	6,625.62	6,609.61	29.65	19.80	14.70	-427.42	-183.31	3,379.32	3,329.87	49.45	68.331	
10,000.00	7,105.00	6,623.59	6,607.60	29.95	19.80	14.63	-427.29	-183.02	3,478.20	3,428.46	49.75	69.915	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 750H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
10,100.00	7,105.04	6,621.66	6,605.69	30.25	19.79	14.56	-427.16	-182.75	3,577.14	3,527.09	50.04	71.480	
10,200.00	7,105.08	6,600.00	6,584.23	30.55	19.73	13.84	-425.75	-180.18	3,676.52	3,626.24	50.28	73.122	
10,300.00	7,105.12	6,600.00	6,584.23	30.85	19.73	13.84	-425.75	-180.18	3,775.48	3,724.90	50.58	74.644	
10,400.00	7,105.16	6,600.00	6,584.23	31.15	19.73	13.84	-425.75	-180.18	3,874.50	3,823.62	50.88	76.149	
10,500.00	7,105.20	6,600.00	6,584.23	31.45	19.73	13.84	-425.75	-180.18	3,973.57	3,922.39	51.18	77.638	
10,600.00	7,105.24	6,600.00	6,584.23	31.75	19.73	13.84	-425.75	-180.18	4,072.68	4,021.20	51.48	79.110	
10,700.00	7,105.28	6,600.00	6,584.23	32.05	19.73	13.84	-425.75	-180.18	4,171.83	4,120.05	51.78	80.566	
10,800.00	7,105.32	6,600.00	6,584.23	32.35	19.73	13.84	-425.75	-180.18	4,271.03	4,218.94	52.08	82.006	
10,900.00	7,105.36	6,600.00	6,584.23	32.66	19.73	13.84	-425.75	-180.18	4,370.26	4,317.87	52.38	83.431	
11,000.00	7,105.39	6,600.00	6,584.23	32.96	19.73	13.84	-425.75	-180.18	4,469.52	4,416.84	52.68	84.839	
11,100.00	7,105.43	6,600.00	6,584.23	33.26	19.73	13.84	-425.75	-180.18	4,568.82	4,515.84	52.98	86.232	
11,200.00	7,105.47	6,600.00	6,584.23	33.56	19.73	13.84	-425.75	-180.18	4,668.14	4,614.86	53.28	87.610	
11,300.00	7,105.51	6,600.00	6,584.23	33.86	19.73	13.84	-425.75	-180.18	4,767.50	4,713.92	53.58	88.974	
11,400.00	7,105.55	6,600.00	6,584.23	34.16	19.73	13.84	-425.75	-180.18	4,866.88	4,813.00	53.88	90.322	
11,500.00	7,105.59	6,600.00	6,584.23	34.46	19.73	13.84	-425.75	-180.18	4,966.29	4,912.10	54.18	91.656	
11,600.00	7,105.63	6,600.00	6,584.23	34.76	19.73	13.84	-425.75	-180.18	5,065.72	5,011.23	54.48	92.976	
11,700.00	7,105.67	6,600.00	6,584.23	35.06	19.73	13.84	-425.75	-180.18	5,165.17	5,110.38	54.78	94.281	
11,800.00	7,105.71	6,600.00	6,584.23	35.36	19.73	13.84	-425.75	-180.18	5,264.64	5,209.56	55.08	95.573	
11,900.00	7,105.75	6,600.00	6,584.23	35.66	19.73	13.84	-425.75	-180.18	5,364.13	5,308.75	55.39	96.851	
12,000.00	7,105.79	6,600.00	6,584.23	35.96	19.73	13.84	-425.75	-180.18	5,463.64	5,407.96	55.69	98.116	
12,100.00	7,105.83	6,600.00	6,584.23	36.26	19.73	13.84	-425.75	-180.18	5,563.17	5,507.19	55.99	99.367	
12,200.00	7,105.86	6,600.00	6,584.23	36.56	19.73	13.84	-425.75	-180.18	5,662.72	5,606.43	56.29	100.606	
12,300.00	7,105.90	6,600.00	6,584.23	36.86	19.73	13.84	-425.75	-180.18	5,762.28	5,705.69	56.59	101.831	
12,400.00	7,105.94	6,600.00	6,584.23	37.16	19.73	13.84	-425.75	-180.18	5,861.85	5,804.97	56.89	103.044	
12,500.00	7,105.98	6,600.00	6,584.23	37.46	19.73	13.84	-425.75	-180.18	5,961.44	5,904.26	57.19	104.245	
12,600.00	7,106.02	6,600.00	6,584.23	37.76	19.73	13.84	-425.75	-180.18	6,061.05	6,003.56	57.49	105.433	
12,700.00	7,106.06	6,600.00	6,584.23	38.06	19.73	13.84	-425.75	-180.18	6,160.66	6,102.87	57.79	106.609	
12,800.00	7,106.10	6,600.00	6,584.23	38.36	19.73	13.84	-425.75	-180.18	6,260.29	6,202.20	58.09	107.773	
12,900.00	7,106.14	6,600.00	6,584.23	38.66	19.73	13.84	-425.75	-180.18	6,359.93	6,301.54	58.39	108.925	
13,000.00	7,106.18	6,600.00	6,584.23	38.96	19.73	13.84	-425.75	-180.18	6,459.58	6,400.89	58.69	110.066	
13,100.00	7,106.22	6,600.00	6,584.23	39.26	19.73	13.84	-425.75	-180.18	6,559.24	6,500.25	58.99	111.195	
13,200.00	7,106.26	6,600.00	6,584.23	39.56	19.73	13.84	-425.75	-180.18	6,658.91	6,599.63	59.29	112.313	
13,300.00	7,106.30	6,600.00	6,584.23	39.86	19.73	13.84	-425.75	-180.18	6,758.60	6,699.01	59.59	113.420	
13,400.00	7,106.33	6,600.00	6,584.23	40.16	19.73	13.84	-425.75	-180.18	6,858.29	6,798.40	59.89	114.516	
13,500.00	7,106.37	6,600.00	6,584.23	40.46	19.73	13.84	-425.75	-180.18	6,957.99	6,897.80	60.19	115.601	
13,600.00	7,106.41	6,600.00	6,584.23	40.76	19.73	13.84	-425.75	-180.18	7,057.70	6,997.21	60.49	116.675	
13,700.00	7,106.45	6,600.00	6,584.23	41.06	19.73	13.84	-425.75	-180.18	7,157.41	7,096.62	60.79	117.739	
13,800.00	7,106.49	6,600.00	6,584.23	41.36	19.73	13.84	-425.75	-180.18	7,257.14	7,196.05	61.09	118.793	
13,900.00	7,106.53	6,600.00	6,584.23	41.67	19.73	13.84	-425.75	-180.18	7,356.87	7,295.48	61.39	119.837	
14,000.00	7,106.57	6,600.00	6,584.23	41.97	19.73	13.84	-425.75	-180.18	7,456.61	7,394.91	61.69	120.870	
14,100.00	7,106.61	6,600.00	6,584.23	42.27	19.73	13.84	-425.75	-180.18	7,556.35	7,494.36	61.99	121.894	
14,200.00	7,106.65	6,600.00	6,584.23	42.57	19.73	13.84	-425.75	-180.18	7,656.10	7,593.81	62.29	122.908	
14,300.00	7,106.69	6,600.00	6,584.23	42.87	19.73	13.84	-425.75	-180.18	7,755.86	7,693.27	62.59	123.912	
14,400.00	7,106.73	6,600.00	6,584.23	43.17	19.73	13.84	-425.75	-180.18	7,855.63	7,792.74	62.89	124.907	
14,500.00	7,106.76	6,581.22	6,565.56	43.47	19.67	13.25	-424.52	-178.61	7,955.07	7,891.93	63.14	125.999	
14,600.00	7,106.80	6,580.78	6,565.13	43.77	19.67	13.24	-424.49	-178.58	8,054.83	7,991.40	63.43	126.978	
14,700.00	7,106.84	6,580.35	6,564.70	44.07	19.67	13.22	-424.46	-178.55	8,154.60	8,090.86	63.73	127.948	
14,800.00	7,106.88	6,579.93	6,564.28	44.37	19.67	13.21	-424.44	-178.52	8,254.37	8,190.34	64.03	128.909	
14,900.00	7,106.92	6,579.52	6,563.87	44.67	19.67	13.20	-424.41	-178.50	8,354.15	8,289.81	64.33	129.861	
15,000.00	7,106.96	6,579.12	6,563.46	44.97	19.66	13.19	-424.38	-178.47	8,453.93	8,389.30	64.63	130.804	
15,100.00	7,107.00	6,578.72	6,563.07	45.27	19.66	13.18	-424.36	-178.45	8,553.71	8,488.78	64.93	131.738	
15,200.00	7,107.04	6,559.90	6,544.31	45.57	19.61	12.63	-423.12	-177.57	8,653.82	8,588.65	65.17	132.781	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 750H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
15,300.00	7,107.08	6,559.90	6,544.31	45.87	19.61	12.63	-423.12	-177.57	8,753.60	8,688.13	65.47	133.697	
15,400.00	7,107.12	6,559.90	6,544.31	46.17	19.61	12.63	-423.12	-177.57	8,853.39	8,787.62	65.77	134.604	
15,500.00	7,107.16	6,559.90	6,544.31	46.47	19.61	12.63	-423.12	-177.57	8,953.19	8,887.11	66.07	135.502	
15,600.00	7,107.20	6,559.90	6,544.31	46.77	19.61	12.63	-423.12	-177.57	9,052.98	8,986.61	66.37	136.393	
15,700.00	7,107.23	6,559.90	6,544.31	47.07	19.61	12.63	-423.12	-177.57	9,152.78	9,086.11	66.67	137.276	
15,800.00	7,107.27	6,559.90	6,544.31	47.37	19.61	12.63	-423.12	-177.57	9,252.59	9,185.61	66.97	138.151	
15,900.00	7,107.31	6,559.90	6,544.31	47.67	19.61	12.63	-423.12	-177.57	9,352.40	9,285.12	67.27	139.018	
16,000.00	7,107.35	6,559.90	6,544.31	47.97	19.61	12.63	-423.12	-177.57	9,452.21	9,384.64	67.57	139.877	
16,100.00	7,107.39	6,559.90	6,544.31	48.27	19.61	12.63	-423.12	-177.57	9,552.03	9,484.16	67.88	140.729	
16,200.00	7,107.43	6,559.90	6,544.31	48.57	19.61	12.63	-423.12	-177.57	9,651.85	9,583.68	68.18	141.574	
16,300.00	7,107.47	6,559.90	6,544.31	48.87	19.61	12.63	-423.12	-177.57	9,751.68	9,683.20	68.48	142.411	
16,400.00	7,107.51	6,559.90	6,544.31	49.17	19.61	12.63	-423.12	-177.57	9,851.51	9,782.73	68.78	143.241	
16,500.00	7,107.55	6,559.90	6,544.31	49.47	19.61	12.63	-423.12	-177.57	9,951.34	9,882.26	69.08	144.064	
16,600.00	7,107.59	6,559.90	6,544.31	49.77	19.61	12.63	-423.12	-177.57	10,051.18	9,981.80	69.38	144.880	
16,700.00	7,107.63	6,559.90	6,544.31	50.07	19.61	12.63	-423.12	-177.57	10,151.01	10,081.34	69.68	145.688	
16,800.00	7,107.67	6,559.90	6,544.31	50.37	19.61	12.63	-423.12	-177.57	10,250.86	10,180.88	69.98	146.490	
16,900.00	7,107.70	6,559.90	6,544.31	50.67	19.61	12.63	-423.12	-177.57	10,350.70	10,280.42	70.28	147.285	
17,000.00	7,107.74	6,559.90	6,544.31	50.97	19.61	12.63	-423.12	-177.57	10,450.55	10,379.97	70.58	148.073	
17,100.00	7,107.78	6,559.90	6,544.31	51.27	19.61	12.63	-423.12	-177.57	10,550.40	10,479.52	70.88	148.855	
17,200.00	7,107.82	6,559.90	6,544.31	51.57	19.61	12.63	-423.12	-177.57	10,650.25	10,579.08	71.18	149.630	
17,300.00	7,107.86	6,559.90	6,544.31	51.87	19.61	12.63	-423.12	-177.57	10,750.11	10,678.63	71.48	150.399	
17,400.00	7,107.90	6,559.90	6,544.31	52.17	19.61	12.63	-423.12	-177.57	10,849.97	10,778.19	71.78	151.161	
17,500.00	7,107.94	6,559.90	6,544.31	52.47	19.61	12.63	-423.12	-177.57	10,949.83	10,877.75	72.08	151.917	
17,600.00	7,107.98	6,559.90	6,544.31	52.77	19.61	12.63	-423.12	-177.57	11,049.69	10,977.32	72.38	152.667	
17,700.00	7,108.02	6,559.90	6,544.31	53.07	19.61	12.63	-423.12	-177.57	11,149.56	11,076.88	72.68	153.411	
17,800.00	7,108.06	6,559.90	6,544.31	53.37	19.61	12.63	-423.12	-177.57	11,249.43	11,176.45	72.98	154.148	
17,900.00	7,108.10	6,559.90	6,544.31	53.67	19.61	12.63	-423.12	-177.57	11,349.30	11,276.02	73.28	154.880	
18,000.00	7,108.14	6,559.90	6,544.31	53.97	19.61	12.63	-423.12	-177.57	11,449.17	11,375.60	73.58	155.605	
18,100.00	7,108.17	6,559.90	6,544.31	54.27	19.61	12.63	-423.12	-177.57	11,549.05	11,475.17	73.88	156.325	
18,200.00	7,108.21	6,559.90	6,544.31	54.57	19.61	12.63	-423.12	-177.57	11,648.93	11,574.75	74.18	157.039	
18,300.00	7,108.25	6,559.90	6,544.31	54.87	19.61	12.63	-423.12	-177.57	11,748.81	11,674.33	74.48	157.747	
18,400.00	7,108.29	6,559.90	6,544.31	55.17	19.61	12.63	-423.12	-177.57	11,848.69	11,773.91	74.78	158.449	
18,500.00	7,108.33	6,559.90	6,544.31	55.47	19.61	12.63	-423.12	-177.57	11,948.57	11,873.50	75.08	159.146	
18,600.00	7,108.37	6,559.90	6,544.31	55.77	19.61	12.63	-423.12	-177.57	12,048.46	11,973.08	75.38	159.838	
18,700.00	7,108.41	6,559.90	6,544.31	56.07	19.61	12.63	-423.12	-177.57	12,148.35	12,072.67	75.68	160.524	
18,800.00	7,108.45	6,559.90	6,544.31	56.37	19.61	12.63	-423.12	-177.57	12,248.24	12,172.26	75.98	161.204	
18,900.00	7,108.49	6,559.90	6,544.31	56.67	19.61	12.63	-423.12	-177.57	12,348.13	12,271.85	76.28	161.880	
19,000.00	7,108.53	6,559.90	6,544.31	56.97	19.61	12.63	-423.12	-177.57	12,448.02	12,371.44	76.58	162.550	
19,100.00	7,108.57	6,559.90	6,544.31	57.28	19.61	12.63	-423.12	-177.57	12,547.92	12,471.04	76.88	163.214	
19,200.00	7,108.61	6,559.90	6,544.31	57.58	19.61	12.63	-423.12	-177.57	12,647.81	12,570.63	77.18	163.874	
19,300.00	7,108.64	6,559.90	6,544.31	57.88	19.61	12.63	-423.12	-177.57	12,747.71	12,670.23	77.48	164.529	
19,400.00	7,108.68	6,559.90	6,544.31	58.18	19.61	12.63	-423.12	-177.57	12,847.61	12,769.83	77.78	165.178	
19,500.00	7,108.72	6,559.90	6,544.31	58.48	19.61	12.63	-423.12	-177.57	12,947.51	12,869.43	78.08	165.823	
19,600.00	7,108.76	6,559.90	6,544.31	58.78	19.61	12.63	-423.12	-177.57	13,047.41	12,969.03	78.38	166.462	
19,700.00	7,108.80	6,559.90	6,544.31	59.08	19.61	12.63	-423.12	-177.57	13,147.32	13,068.64	78.68	167.097	
19,800.00	7,108.84	6,559.90	6,544.31	59.38	19.61	12.63	-423.12	-177.57	13,247.22	13,168.24	78.98	167.727	
19,900.00	7,108.88	6,559.90	6,544.31	59.68	19.61	12.63	-423.12	-177.57	13,347.13	13,267.85	79.28	168.352	
20,000.00	7,108.92	6,559.90	6,544.31	59.98	19.61	12.63	-423.12	-177.57	13,447.04	13,367.46	79.58	168.973	
20,100.00	7,108.96	6,559.90	6,544.31	60.28	19.61	12.63	-423.12	-177.57	13,546.95	13,467.07	79.88	169.589	
20,208.46	7,109.00	6,559.90	6,544.31	60.60	19.61	12.63	-423.12	-177.57	13,655.31	13,575.10	80.21	170.251	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 752H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	177.61	-44.96	1.87	45.00				
100.00	100.00	100.00	100.00	0.23	0.23	177.61	-44.96	1.87	45.00	44.55	0.45	99.334	
200.00	200.00	200.00	200.00	0.53	0.53	177.61	-44.96	1.87	45.00	43.95	1.05	42.734	
300.00	300.00	300.00	300.00	0.83	0.83	177.61	-44.96	1.87	45.00	43.35	1.65	27.222	
400.00	400.00	400.00	400.00	1.13	1.13	177.61	-44.96	1.87	45.00	42.75	2.25	19.973	
500.00	500.00	500.00	500.00	1.43	1.43	177.61	-44.96	1.87	45.00	42.15	2.85	15.772	CC
600.00	599.98	598.46	598.44	1.73	1.72	23.12	-46.64	1.71	45.09	41.64	3.45	13.077	
644.12	644.06	641.89	641.83	1.86	1.85	24.32	-48.46	1.53	45.21	41.50	3.71	12.184	ES
700.00	699.87	696.87	696.72	2.03	2.02	26.14	-51.69	1.22	45.96	41.92	4.04	11.369	
800.00	799.74	795.11	794.59	2.33	2.31	29.27	-60.07	0.40	50.09	45.45	4.64	10.803	SF
900.00	899.62	892.95	891.72	2.63	2.61	31.80	-71.74	-0.74	57.76	52.53	5.23	11.046	
1,000.00	999.49	990.17	987.78	2.93	2.90	33.54	-86.59	-2.20	68.91	63.09	5.82	11.840	
1,100.00	1,099.36	1,086.55	1,082.46	3.23	3.19	34.60	-104.51	-3.95	83.44	77.03	6.41	13.022	
1,200.00	1,199.24	1,181.88	1,175.46	3.53	3.47	35.17	-125.35	-5.98	101.27	94.28	6.99	14.484	
1,300.00	1,299.11	1,278.90	1,269.57	3.83	3.77	35.46	-148.83	-8.28	121.49	113.91	7.58	16.021	
1,400.00	1,398.98	1,376.81	1,364.51	4.13	4.06	35.66	-172.65	-10.61	141.82	133.64	8.18	17.344	
1,500.00	1,498.86	1,474.72	1,459.45	4.43	4.35	35.82	-196.46	-12.93	162.16	153.38	8.77	18.487	
1,600.00	1,598.73	1,572.63	1,554.39	4.73	4.65	35.94	-220.27	-15.26	182.49	173.13	9.37	19.486	
1,700.00	1,698.60	1,670.54	1,649.33	5.03	4.94	36.03	-244.09	-17.59	202.83	192.87	9.96	20.366	
1,800.00	1,798.48	1,768.45	1,744.27	5.33	5.24	36.11	-267.90	-19.92	223.16	212.61	10.55	21.147	
1,900.00	1,898.35	1,866.36	1,839.21	5.63	5.53	36.18	-291.71	-22.24	243.50	232.35	11.15	21.844	
2,000.00	1,998.22	1,964.27	1,934.16	5.93	5.82	36.23	-315.53	-24.57	263.84	252.10	11.74	22.471	
2,100.00	2,098.10	2,062.18	2,029.10	6.23	6.12	36.28	-339.34	-26.90	284.18	271.84	12.33	23.038	
2,200.00	2,197.97	2,160.09	2,124.04	6.53	6.41	36.32	-363.15	-29.23	304.51	291.58	12.93	23.553	
2,300.00	2,297.84	2,258.00	2,218.98	6.83	6.71	36.36	-386.97	-31.55	324.85	311.33	13.52	24.023	
2,400.00	2,397.72	2,355.91	2,313.92	7.13	7.00	36.39	-410.78	-33.88	345.19	331.07	14.12	24.453	
2,500.00	2,497.59	2,453.82	2,408.86	7.43	7.29	36.42	-434.59	-36.21	365.53	350.82	14.71	24.848	
2,600.00	2,597.46	2,551.73	2,503.80	7.73	7.59	36.44	-458.41	-38.53	385.86	370.56	15.30	25.213	
2,700.00	2,697.34	2,649.64	2,598.75	8.03	7.88	36.46	-482.22	-40.86	406.20	390.30	15.90	25.550	
2,800.00	2,797.21	2,747.55	2,693.69	8.33	8.18	36.48	-506.04	-43.19	426.54	410.05	16.49	25.863	
2,900.00	2,897.09	2,845.46	2,788.63	8.63	8.47	36.50	-529.85	-45.52	446.88	429.79	17.09	26.155	
3,000.00	2,996.96	2,943.37	2,883.57	8.93	8.76	36.52	-553.66	-47.84	467.22	449.54	17.68	26.427	
3,100.00	3,096.83	3,041.28	2,978.51	9.23	9.06	36.53	-577.48	-50.17	487.55	469.28	18.27	26.681	
3,200.00	3,196.71	3,139.19	3,073.45	9.53	9.35	36.55	-601.29	-52.50	507.89	489.03	18.87	26.919	
3,300.00	3,296.58	3,237.10	3,168.39	9.83	9.64	36.56	-625.10	-54.83	528.23	508.77	19.46	27.143	
3,400.00	3,396.45	3,335.01	3,263.33	10.13	9.94	36.57	-648.92	-57.15	548.57	528.51	20.05	27.353	
3,500.00	3,496.33	3,432.92	3,358.28	10.43	10.23	36.59	-672.73	-59.48	568.91	548.26	20.65	27.552	
3,600.00	3,596.20	3,530.83	3,453.22	10.73	10.53	36.60	-696.54	-61.81	589.25	568.00	21.24	27.739	
3,700.00	3,696.07	3,628.74	3,548.16	11.03	10.82	36.61	-720.36	-64.14	609.58	587.75	21.84	27.916	
3,800.00	3,795.95	3,726.65	3,643.10	11.33	11.11	36.62	-744.17	-66.46	629.92	607.49	22.43	28.084	
3,900.00	3,895.82	3,824.56	3,738.04	11.63	11.41	36.62	-767.98	-68.79	650.26	627.24	23.02	28.243	
4,000.00	3,995.69	3,922.47	3,832.98	11.93	11.70	36.63	-791.80	-71.12	670.60	646.98	23.62	28.394	
4,100.00	4,095.57	4,020.38	3,927.92	12.23	11.99	36.64	-815.61	-73.45	690.94	666.73	24.21	28.538	
4,200.00	4,195.44	4,118.29	4,022.86	12.53	12.29	36.65	-839.42	-75.77	711.28	686.47	24.81	28.675	
4,300.00	4,295.31	4,216.20	4,117.81	12.83	12.58	36.65	-863.24	-78.10	731.61	706.21	25.40	28.805	
4,400.00	4,395.19	4,314.11	4,212.75	13.13	12.88	36.66	-887.05	-80.43	751.95	725.96	25.99	28.929	
4,500.00	4,495.06	4,412.02	4,307.69	13.43	13.17	36.67	-910.86	-82.75	772.29	745.70	26.59	29.048	
4,600.00	4,594.93	4,509.93	4,402.63	13.73	13.46	36.67	-934.68	-85.08	792.63	765.45	27.18	29.162	
4,700.00	4,694.81	4,607.84	4,497.57	14.03	13.76	36.68	-958.49	-87.41	812.97	785.19	27.77	29.271	
4,800.00	4,794.68	4,705.75	4,592.51	14.33	14.05	36.68	-982.30	-89.74	833.31	804.94	28.37	29.375	
4,900.00	4,894.55	4,803.66	4,687.45	14.63	14.35	36.69	-1,006.12	-92.06	853.64	824.68	28.96	29.475	
5,000.00	4,994.43	4,901.57	4,782.39	14.93	14.64	36.69	-1,029.93	-94.39	873.98	844.43	29.56	29.571	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 752H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	4,999.48	4,877.34	15.23	14.93	36.70	-1,053.74	-96.72	894.32	864.17	30.15	29.663	
5,200.00	5,194.18	5,102.61	4,972.28	15.53	15.24	36.70	-1,077.56	-99.05	914.66	883.90	30.76	29.737	
5,300.00	5,294.05	5,204.70	5,067.22	15.83	15.55	36.71	-1,101.37	-101.37	935.00	903.63	31.36	29.810	
5,400.00	5,393.92	5,306.79	5,162.16	16.13	15.85	36.71	-1,125.18	-103.70	955.34	923.36	31.97	29.881	
5,500.00	5,493.80	5,391.12	5,257.10	16.43	16.11	36.71	-1,149.00	-106.03	975.67	943.15	32.52	29.999	
5,600.00	5,593.67	5,489.03	5,352.04	16.73	16.40	36.72	-1,172.81	-108.36	996.01	962.90	33.12	30.075	
5,700.00	5,693.54	5,586.94	5,446.98	17.03	16.70	36.72	-1,196.62	-110.68	1,016.35	982.64	33.71	30.148	
5,800.00	5,793.42	5,684.85	5,541.93	17.33	16.99	36.72	-1,220.44	-113.01	1,036.69	1,002.38	34.31	30.220	
5,900.00	5,893.29	5,782.76	5,636.87	17.63	17.28	36.73	-1,244.25	-115.34	1,057.03	1,022.13	34.90	30.288	
6,000.00	5,993.16	5,880.67	5,731.81	17.93	17.58	36.73	-1,268.06	-117.67	1,077.37	1,041.87	35.49	30.355	
6,100.00	6,093.04	5,978.58	5,826.75	18.23	17.87	36.73	-1,291.88	-119.99	1,097.71	1,061.62	36.09	30.419	
6,200.00	6,192.91	6,076.49	5,921.69	18.53	18.16	36.74	-1,315.69	-122.32	1,118.04	1,081.36	36.68	30.481	
6,300.00	6,292.78	6,174.40	6,016.63	18.83	18.46	36.74	-1,339.50	-124.65	1,138.38	1,101.11	37.27	30.541	
6,400.00	6,392.66	6,272.31	6,111.57	19.13	18.75	36.74	-1,363.32	-126.98	1,158.72	1,120.85	37.87	30.599	
6,500.00	6,492.53	6,370.22	6,206.51	19.43	19.05	36.74	-1,387.13	-129.30	1,179.06	1,140.60	38.46	30.656	
6,551.20	6,543.67	6,420.35	6,255.13	19.58	19.20	36.75	-1,399.32	-130.49	1,189.47	1,150.71	38.77	30.684	
6,600.00	6,592.30	6,467.98	6,301.31	19.73	19.34	77.79	-1,410.91	-131.63	1,199.81	1,160.76	39.06	30.721	
6,650.00	6,641.67	6,516.24	6,348.11	19.88	19.48	86.90	-1,422.65	-132.77	1,211.24	1,171.89	39.35	30.781	
6,700.00	6,690.21	6,563.58	6,394.01	20.03	19.63	90.16	-1,434.16	-133.90	1,223.48	1,183.83	39.64	30.863	
6,750.00	6,737.54	6,609.64	6,438.68	20.18	19.76	91.61	-1,445.36	-134.99	1,236.54	1,196.61	39.93	30.967	
6,800.00	6,783.30	6,654.07	6,481.77	20.33	19.90	92.29	-1,456.17	-136.05	1,250.47	1,210.26	40.21	31.095	
6,850.00	6,827.15	6,696.54	6,522.95	20.48	20.02	92.55	-1,466.50	-137.06	1,265.32	1,224.83	40.49	31.249	
6,900.00	6,868.74	6,728.34	6,553.78	20.63	20.12	92.30	-1,474.23	-137.96	1,281.23	1,240.49	40.74	31.451	
6,950.00	6,907.77	6,750.00	6,574.74	20.78	20.18	91.57	-1,479.49	-139.38	1,298.61	1,257.65	40.95	31.710	
7,000.00	6,943.94	6,768.43	6,592.52	20.93	20.24	90.51	-1,483.94	-141.23	1,317.52	1,276.36	41.16	32.011	
7,050.00	6,976.97	6,783.60	6,607.12	21.08	20.29	89.12	-1,487.60	-143.19	1,337.94	1,296.59	41.35	32.354	
7,100.00	7,006.62	6,800.00	6,622.83	21.23	20.33	87.57	-1,491.53	-145.76	1,359.83	1,318.28	41.55	32.725	
7,150.00	7,032.64	6,800.00	6,622.83	21.38	20.33	85.12	-1,491.53	-145.76	1,383.05	1,341.35	41.70	33.165	
7,200.00	7,054.86	6,811.31	6,633.62	21.53	20.37	82.95	-1,494.23	-147.80	1,407.44	1,365.55	41.89	33.601	
7,250.00	7,073.09	6,815.36	6,637.48	21.68	20.38	80.30	-1,495.19	-148.59	1,432.87	1,390.82	42.05	34.076	
7,300.00	7,087.20	6,817.22	6,639.24	21.83	20.39	77.40	-1,495.63	-148.96	1,459.10	1,416.90	42.20	34.572	
7,350.00	7,097.08	6,817.11	6,639.14	21.98	20.39	74.33	-1,495.61	-148.94	1,485.93	1,443.58	42.35	35.083	
7,400.00	7,102.66	6,815.25	6,637.37	22.13	20.38	71.14	-1,495.17	-148.57	1,513.12	1,470.62	42.50	35.604	
7,438.94	7,104.00	6,800.00	6,622.83	22.25	20.33	68.06	-1,491.53	-145.76	1,534.53	1,491.96	42.57	36.047	
7,500.00	7,104.02	6,800.00	6,622.83	22.43	20.33	68.06	-1,491.53	-145.76	1,568.63	1,525.88	42.75	36.690	
7,600.00	7,104.06	6,800.00	6,622.83	22.74	20.33	68.06	-1,491.53	-145.76	1,627.90	1,584.84	43.06	37.809	
7,700.00	7,104.10	6,800.00	6,622.83	23.04	20.33	68.06	-1,491.53	-145.76	1,691.00	1,647.64	43.36	39.002	
7,800.00	7,104.14	6,800.00	6,622.83	23.34	20.33	68.06	-1,491.53	-145.76	1,757.53	1,713.87	43.66	40.256	
7,900.00	7,104.18	6,800.00	6,622.83	23.64	20.33	68.06	-1,491.53	-145.76	1,827.11	1,783.15	43.96	41.563	
8,000.00	7,104.22	6,781.73	6,605.33	23.94	20.28	67.26	-1,487.15	-142.93	1,899.11	1,854.90	44.21	42.961	
8,100.00	7,104.26	6,777.95	6,601.69	24.24	20.27	67.10	-1,486.24	-142.41	1,973.69	1,929.19	44.50	44.357	
8,200.00	7,104.30	6,774.50	6,598.37	24.54	20.26	66.95	-1,485.41	-141.97	2,050.40	2,005.62	44.79	45.782	
8,300.00	7,104.34	6,771.36	6,595.35	24.84	20.25	66.81	-1,484.65	-141.58	2,129.04	2,083.96	45.08	47.230	
8,400.00	7,104.38	6,768.48	6,592.57	25.14	20.24	66.69	-1,483.95	-141.23	2,209.38	2,164.01	45.37	48.697	
8,500.00	7,104.42	6,750.00	6,574.74	25.44	20.18	65.88	-1,479.49	-139.38	2,291.50	2,245.88	45.62	50.235	
8,600.00	7,104.45	6,750.00	6,574.74	25.74	20.18	65.88	-1,479.49	-139.38	2,374.69	2,328.77	45.92	51.718	
8,700.00	7,104.49	6,750.00	6,574.74	26.04	20.18	65.88	-1,479.49	-139.38	2,459.13	2,412.91	46.22	53.208	
8,800.00	7,104.53	6,750.00	6,574.74	26.34	20.18	65.88	-1,479.49	-139.38	2,544.70	2,498.18	46.52	54.704	
8,900.00	7,104.57	6,750.00	6,574.74	26.64	20.18	65.88	-1,479.49	-139.38	2,631.28	2,584.46	46.82	56.202	
9,000.00	7,104.61	6,750.00	6,574.74	26.95	20.18	65.88	-1,479.49	-139.38	2,718.79	2,671.67	47.12	57.700	
9,100.00	7,104.65	6,750.00	6,574.74	27.25	20.18	65.88	-1,479.49	-139.38	2,807.13	2,759.71	47.42	59.197	
9,200.00	7,104.69	6,750.00	6,574.74	27.55	20.18	65.88	-1,479.49	-139.38	2,896.23	2,848.51	47.72	60.691	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 752H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	6,750.00	6,574.74	27.85	20.18	65.88	-1,479.49	-139.38	2,986.02	2,938.00	48.02	62.181	
9,400.00	7,104.77	6,750.00	6,574.74	28.15	20.18	65.88	-1,479.49	-139.38	3,076.45	3,028.12	48.32	63.666	
9,500.00	7,104.81	6,750.00	6,574.74	28.45	20.18	65.88	-1,479.49	-139.38	3,167.44	3,118.82	48.62	65.144	
9,600.00	7,104.85	6,750.00	6,574.74	28.75	20.18	65.88	-1,479.49	-139.38	3,258.97	3,210.04	48.92	66.614	
9,700.00	7,104.89	6,750.00	6,574.74	29.05	20.18	65.88	-1,479.49	-139.38	3,350.97	3,301.75	49.22	68.077	
9,800.00	7,104.92	6,750.00	6,574.74	29.35	20.18	65.88	-1,479.49	-139.38	3,443.43	3,393.91	49.52	69.530	
9,900.00	7,104.96	6,750.00	6,574.74	29.65	20.18	65.88	-1,479.49	-139.38	3,536.29	3,486.47	49.82	70.975	
10,000.00	7,105.00	6,750.00	6,574.74	29.95	20.18	65.88	-1,479.49	-139.38	3,629.54	3,579.41	50.13	72.409	
10,100.00	7,105.04	6,750.00	6,574.74	30.25	20.18	65.88	-1,479.49	-139.38	3,723.13	3,672.71	50.43	73.834	
10,200.00	7,105.08	6,750.00	6,574.74	30.55	20.18	65.88	-1,479.49	-139.38	3,817.05	3,766.33	50.73	75.248	
10,300.00	7,105.12	6,750.00	6,574.74	30.85	20.18	65.88	-1,479.49	-139.38	3,911.27	3,860.25	51.03	76.651	
10,400.00	7,105.16	6,750.00	6,574.74	31.15	20.18	65.88	-1,479.49	-139.38	4,005.78	3,954.45	51.33	78.044	
10,500.00	7,105.20	6,750.00	6,574.74	31.45	20.18	65.88	-1,479.49	-139.38	4,100.54	4,048.91	51.63	79.425	
10,600.00	7,105.24	6,750.00	6,574.74	31.75	20.18	65.88	-1,479.49	-139.38	4,195.54	4,143.62	51.93	80.795	
10,700.00	7,105.28	6,750.00	6,574.74	32.05	20.18	65.88	-1,479.49	-139.38	4,290.78	4,238.55	52.23	82.154	
10,800.00	7,105.32	6,750.00	6,574.74	32.35	20.18	65.88	-1,479.49	-139.38	4,386.22	4,333.69	52.53	83.501	
10,900.00	7,105.36	6,734.74	6,559.98	32.66	20.14	65.22	-1,475.79	-138.30	4,481.64	4,428.86	52.78	84.906	
11,000.00	7,105.39	6,734.10	6,559.35	32.96	20.14	65.19	-1,475.63	-138.26	4,577.45	4,524.37	53.08	86.233	
11,100.00	7,105.43	6,733.48	6,558.75	33.26	20.13	65.17	-1,475.48	-138.23	4,673.44	4,620.06	53.38	87.549	
11,200.00	7,105.47	6,732.88	6,558.17	33.56	20.13	65.14	-1,475.33	-138.19	4,769.59	4,715.91	53.68	88.853	
11,300.00	7,105.51	6,732.31	6,557.62	33.86	20.13	65.11	-1,475.20	-138.16	4,865.89	4,811.91	53.98	90.146	
11,400.00	7,105.55	6,731.75	6,557.08	34.16	20.13	65.09	-1,475.06	-138.13	4,962.34	4,908.07	54.28	91.427	
11,500.00	7,105.59	6,731.22	6,556.57	34.46	20.13	65.07	-1,474.93	-138.11	5,058.93	5,004.35	54.58	92.696	
11,600.00	7,105.63	6,730.71	6,556.07	34.76	20.13	65.05	-1,474.81	-138.08	5,155.65	5,100.77	54.87	93.954	
11,700.00	7,105.67	6,715.28	6,541.12	35.06	20.08	64.38	-1,471.06	-137.51	5,252.70	5,197.57	55.13	95.281	
11,800.00	7,105.71	6,715.28	6,541.12	35.36	20.08	64.38	-1,471.06	-137.51	5,349.64	5,294.21	55.43	96.514	
11,900.00	7,105.75	6,715.28	6,541.12	35.66	20.08	64.38	-1,471.06	-137.51	5,446.69	5,390.96	55.73	97.735	
12,000.00	7,105.79	6,715.28	6,541.12	35.96	20.08	64.38	-1,471.06	-137.51	5,543.85	5,487.82	56.03	98.945	
12,100.00	7,105.83	6,715.28	6,541.12	36.26	20.08	64.38	-1,471.06	-137.51	5,641.10	5,584.77	56.33	100.144	
12,200.00	7,105.86	6,715.28	6,541.12	36.56	20.08	64.38	-1,471.06	-137.51	5,738.45	5,681.82	56.63	101.332	
12,300.00	7,105.90	6,715.28	6,541.12	36.86	20.08	64.38	-1,471.06	-137.51	5,835.90	5,778.96	56.93	102.509	
12,400.00	7,105.94	6,715.28	6,541.12	37.16	20.08	64.38	-1,471.06	-137.51	5,933.42	5,876.19	57.23	103.675	
12,500.00	7,105.98	6,715.28	6,541.12	37.46	20.08	64.38	-1,471.06	-137.51	6,031.03	5,973.50	57.53	104.830	
12,600.00	7,106.02	6,715.28	6,541.12	37.76	20.08	64.38	-1,471.06	-137.51	6,128.71	6,070.88	57.83	105.975	
12,700.00	7,106.06	6,715.28	6,541.12	38.06	20.08	64.38	-1,471.06	-137.51	6,226.47	6,168.34	58.13	107.109	
12,800.00	7,106.10	6,715.28	6,541.12	38.36	20.08	64.38	-1,471.06	-137.51	6,324.30	6,265.86	58.43	108.233	
12,900.00	7,106.14	6,715.28	6,541.12	38.66	20.08	64.38	-1,471.06	-137.51	6,422.19	6,363.46	58.73	109.346	
13,000.00	7,106.18	6,715.28	6,541.12	38.96	20.08	64.38	-1,471.06	-137.51	6,520.15	6,461.12	59.03	110.449	
13,100.00	7,106.22	6,715.28	6,541.12	39.26	20.08	64.38	-1,471.06	-137.51	6,618.17	6,558.83	59.33	111.543	
13,200.00	7,106.26	6,715.28	6,541.12	39.56	20.08	64.38	-1,471.06	-137.51	6,716.25	6,656.61	59.63	112.625	
13,300.00	7,106.30	6,715.28	6,541.12	39.86	20.08	64.38	-1,471.06	-137.51	6,814.38	6,754.45	59.93	113.699	
13,400.00	7,106.33	6,715.28	6,541.12	40.16	20.08	64.38	-1,471.06	-137.51	6,912.57	6,852.33	60.23	114.762	
13,500.00	7,106.37	6,715.28	6,541.12	40.46	20.08	64.38	-1,471.06	-137.51	7,010.80	6,950.27	60.53	115.815	
13,600.00	7,106.41	6,715.28	6,541.12	40.76	20.08	64.38	-1,471.06	-137.51	7,109.09	7,048.26	60.83	116.859	
13,700.00	7,106.45	6,715.28	6,541.12	41.06	20.08	64.38	-1,471.06	-137.51	7,207.43	7,146.29	61.13	117.894	
13,800.00	7,106.49	6,715.28	6,541.12	41.36	20.08	64.38	-1,471.06	-137.51	7,305.81	7,244.37	61.44	118.919	
13,900.00	7,106.53	6,715.28	6,541.12	41.67	20.08	64.38	-1,471.06	-137.51	7,404.23	7,342.49	61.74	119.935	
14,000.00	7,106.57	6,715.28	6,541.12	41.97	20.08	64.38	-1,471.06	-137.51	7,502.69	7,440.66	62.04	120.942	
14,100.00	7,106.61	6,715.28	6,541.12	42.27	20.08	64.38	-1,471.06	-137.51	7,601.20	7,538.86	62.34	121.939	
14,200.00	7,106.65	6,715.28	6,541.12	42.57	20.08	64.38	-1,471.06	-137.51	7,699.74	7,637.11	62.64	122.928	
14,300.00	7,106.69	6,715.28	6,541.12	42.87	20.08	64.38	-1,471.06	-137.51	7,798.32	7,735.39	62.94	123.908	
14,400.00	7,106.73	6,715.28	6,541.12	43.17	20.08	64.38	-1,471.06	-137.51	7,896.94	7,833.70	63.24	124.879	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 752H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	6,715.28	6,541.12	43.47	20.08	64.38	-1,471.06	-137.51	7,995.59	7,932.05	63.54	125.842	
14,600.00	7,106.80	6,715.28	6,541.12	43.77	20.08	64.38	-1,471.06	-137.51	8,094.27	8,030.44	63.84	126.796	
14,700.00	7,106.84	6,715.28	6,541.12	44.07	20.08	64.38	-1,471.06	-137.51	8,192.99	8,128.85	64.14	127.741	
14,800.00	7,106.88	6,715.28	6,541.12	44.37	20.08	64.38	-1,471.06	-137.51	8,291.74	8,227.30	64.44	128.678	
14,900.00	7,106.92	6,715.28	6,541.12	44.67	20.08	64.38	-1,471.06	-137.51	8,390.51	8,325.78	64.74	129.608	
15,000.00	7,106.96	6,715.28	6,541.12	44.97	20.08	64.38	-1,471.06	-137.51	8,489.32	8,424.28	65.04	130.528	
15,100.00	7,107.00	6,715.28	6,541.12	45.27	20.08	64.38	-1,471.06	-137.51	8,588.15	8,522.81	65.34	131.441	
15,200.00	7,107.04	6,715.28	6,541.12	45.57	20.08	64.38	-1,471.06	-137.51	8,687.01	8,621.37	65.64	132.346	
15,300.00	7,107.08	6,715.28	6,541.12	45.87	20.08	64.38	-1,471.06	-137.51	8,785.89	8,719.96	65.94	133.243	
15,400.00	7,107.12	6,715.28	6,541.12	46.17	20.08	64.38	-1,471.06	-137.51	8,884.80	8,818.57	66.24	134.133	
15,500.00	7,107.16	6,715.28	6,541.12	46.47	20.08	64.38	-1,471.06	-137.51	8,983.74	8,917.20	66.54	135.014	
15,600.00	7,107.20	6,715.28	6,541.12	46.77	20.08	64.38	-1,471.06	-137.51	9,082.70	9,015.86	66.84	135.888	
15,700.00	7,107.23	6,715.28	6,541.12	47.07	20.08	64.38	-1,471.06	-137.51	9,181.68	9,114.54	67.14	136.755	
15,800.00	7,107.27	6,715.28	6,541.12	47.37	20.08	64.38	-1,471.06	-137.51	9,280.68	9,213.24	67.44	137.614	
15,900.00	7,107.31	6,715.28	6,541.12	47.67	20.08	64.38	-1,471.06	-137.51	9,379.70	9,311.96	67.74	138.466	
16,000.00	7,107.35	6,715.28	6,541.12	47.97	20.08	64.38	-1,471.06	-137.51	9,478.75	9,410.71	68.04	139.311	
16,100.00	7,107.39	6,715.28	6,541.12	48.27	20.08	64.38	-1,471.06	-137.51	9,577.81	9,509.47	68.34	140.148	
16,200.00	7,107.43	6,715.28	6,541.12	48.57	20.08	64.38	-1,471.06	-137.51	9,676.89	9,608.25	68.64	140.979	
16,300.00	7,107.47	6,715.28	6,541.12	48.87	20.08	64.38	-1,471.06	-137.51	9,775.99	9,707.05	68.94	141.803	
16,400.00	7,107.51	6,715.28	6,541.12	49.17	20.08	64.38	-1,471.06	-137.51	9,875.11	9,805.87	69.24	142.619	
16,500.00	7,107.55	6,715.28	6,541.12	49.47	20.08	64.38	-1,471.06	-137.51	9,974.25	9,904.71	69.54	143.429	
16,600.00	7,107.59	6,715.28	6,541.12	49.77	20.08	64.38	-1,471.06	-137.51	10,073.40	10,003.56	69.84	144.233	
16,700.00	7,107.63	6,715.28	6,541.12	50.07	20.08	64.38	-1,471.06	-137.51	10,172.57	10,102.43	70.14	145.029	
16,800.00	7,107.67	6,715.28	6,541.12	50.37	20.08	64.38	-1,471.06	-137.51	10,271.76	10,201.32	70.44	145.819	
16,900.00	7,107.70	6,715.28	6,541.12	50.67	20.08	64.38	-1,471.06	-137.51	10,370.96	10,300.22	70.74	146.603	
17,000.00	7,107.74	6,715.28	6,541.12	50.97	20.08	64.38	-1,471.06	-137.51	10,470.18	10,399.14	71.04	147.380	
17,100.00	7,107.78	6,715.28	6,541.12	51.27	20.08	64.38	-1,471.06	-137.51	10,569.41	10,498.07	71.34	148.151	
17,200.00	7,107.82	6,715.28	6,541.12	51.57	20.08	64.38	-1,471.06	-137.51	10,668.66	10,597.02	71.64	148.915	
17,300.00	7,107.86	6,715.28	6,541.12	51.87	20.08	64.38	-1,471.06	-137.51	10,767.92	10,695.98	71.94	149.674	
17,400.00	7,107.90	6,715.28	6,541.12	52.17	20.08	64.38	-1,471.06	-137.51	10,867.20	10,794.95	72.24	150.426	
17,500.00	7,107.94	6,715.28	6,541.12	52.47	20.08	64.38	-1,471.06	-137.51	10,966.48	10,893.94	72.54	151.172	
17,600.00	7,107.98	6,715.28	6,541.12	52.77	20.08	64.38	-1,471.06	-137.51	11,065.78	10,992.94	72.84	151.912	
17,700.00	7,108.02	6,715.28	6,541.12	53.07	20.08	64.38	-1,471.06	-137.51	11,165.10	11,091.95	73.14	152.647	
17,800.00	7,108.06	6,715.28	6,541.12	53.37	20.08	64.38	-1,471.06	-137.51	11,264.42	11,190.98	73.44	153.375	
17,900.00	7,108.10	6,715.28	6,541.12	53.67	20.08	64.38	-1,471.06	-137.51	11,363.76	11,290.01	73.74	154.098	
18,000.00	7,108.14	6,715.28	6,541.12	53.97	20.08	64.38	-1,471.06	-137.51	11,463.11	11,389.06	74.04	154.815	
18,100.00	7,108.17	6,715.28	6,541.12	54.27	20.08	64.38	-1,471.06	-137.51	11,562.47	11,488.12	74.34	155.526	
18,200.00	7,108.21	6,715.28	6,541.12	54.57	20.08	64.38	-1,471.06	-137.51	11,661.84	11,587.19	74.64	156.232	
18,300.00	7,108.25	6,715.28	6,541.12	54.87	20.08	64.38	-1,471.06	-137.51	11,761.22	11,686.27	74.94	156.933	
18,400.00	7,108.29	6,715.20	6,541.04	55.17	20.08	64.37	-1,471.04	-137.50	11,860.61	11,785.36	75.24	157.628	
18,500.00	7,108.33	6,712.99	6,538.90	55.47	20.07	64.28	-1,470.50	-137.45	11,960.01	11,884.47	75.54	158.332	
18,600.00	7,108.37	6,710.78	6,536.76	55.77	20.07	64.18	-1,469.96	-137.40	12,059.42	11,983.59	75.83	159.030	
18,700.00	7,108.41	6,708.58	6,534.62	56.07	20.06	64.09	-1,469.43	-137.35	12,158.84	12,082.72	76.12	159.722	
18,800.00	7,108.45	6,706.37	6,532.48	56.37	20.05	63.99	-1,468.89	-137.29	12,258.27	12,181.85	76.42	160.410	
18,900.00	7,108.49	6,704.16	6,530.34	56.67	20.05	63.90	-1,468.35	-137.24	12,357.71	12,281.00	76.71	161.093	
19,000.00	7,108.53	6,701.96	6,528.20	56.97	20.04	63.80	-1,467.82	-137.19	12,457.16	12,380.15	77.01	161.770	
19,100.00	7,108.57	6,700.25	6,526.06	57.28	20.04	63.71	-1,467.28	-137.14	12,556.61	12,479.31	77.30	162.439	
19,200.00	7,108.61	6,697.54	6,523.92	57.58	20.03	63.62	-1,466.74	-137.08	12,656.07	12,578.48	77.59	163.110	
19,300.00	7,108.64	6,695.34	6,521.78	57.88	20.02	63.52	-1,466.21	-137.03	12,755.54	12,677.66	77.89	163.772	
19,400.00	7,108.68	6,693.13	6,519.64	58.18	20.01	63.43	-1,465.67	-136.98	12,855.02	12,776.84	78.18	164.430	
19,500.00	7,108.72	6,690.92	6,517.50	58.48	20.01	63.33	-1,465.13	-136.93	12,954.51	12,876.04	78.47	165.082	
19,600.00	7,108.76	6,688.72	6,515.36	58.78	20.00	63.24	-1,464.60	-136.87	13,054.00	12,975.24	78.77	165.730	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 752H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,700.00	7,108.80	6,686.51	6,513.22	59.08	19.99	63.14	-1,464.06	-136.82	13,153.51	13,074.45	79.06	166.374	
19,800.00	7,108.84	6,684.30	6,511.08	59.38	19.99	63.05	-1,463.52	-136.77	13,253.01	13,173.66	79.35	167.012	
19,900.00	7,108.88	6,682.10	6,508.94	59.68	19.98	62.95	-1,462.99	-136.72	13,352.53	13,272.88	79.65	167.646	
20,000.00	7,108.92	6,679.89	6,506.80	59.98	19.97	62.86	-1,462.45	-136.66	13,452.05	13,372.11	79.94	168.276	
20,100.00	7,108.96	6,677.68	6,504.66	60.28	19.97	62.77	-1,461.91	-136.61	13,551.58	13,471.35	80.23	168.901	
20,208.46	7,109.00	6,675.29	6,502.34	60.60	19.96	62.66	-1,461.33	-136.55	13,659.54	13,578.98	80.55	169.573	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 756H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	177.64	-15.00	0.62	15.02				
100.00	100.00	100.00	100.00	0.23	0.23	177.64	-15.00	0.62	15.02	14.56	0.45	33.148	
200.00	200.00	200.00	200.00	0.53	0.53	177.64	-15.00	0.62	15.02	13.96	1.05	14.260	
300.00	300.00	300.00	300.00	0.83	0.83	177.64	-15.00	0.62	15.02	13.36	1.65	9.084	
400.00	400.00	400.00	400.00	1.13	1.13	177.64	-15.00	0.62	15.02	12.76	2.25	6.665	
500.00	500.00	500.00	500.00	1.43	1.43	177.64	-15.00	0.62	15.02	12.16	2.85	5.263	CC
600.00	599.98	599.48	599.46	1.73	1.72	24.15	-16.72	0.78	15.14	11.69	3.45	4.388	
644.12	644.06	643.36	643.30	1.86	1.86	26.38	-18.57	0.96	15.30	11.59	3.71	4.119	ES
700.00	699.87	698.93	698.77	2.03	2.02	29.27	-21.88	1.27	16.11	12.06	4.05	3.980	SF
800.00	799.74	798.23	797.69	2.33	2.32	31.81	-30.44	2.08	20.28	15.64	4.65	4.365	
900.00	899.62	897.14	895.87	2.63	2.62	31.70	-42.36	3.22	27.83	22.59	5.24	5.310	
1,000.00	999.49	995.43	992.96	2.93	2.91	30.53	-57.54	4.66	38.73	32.90	5.84	6.638	
1,100.00	1,099.36	1,092.87	1,088.65	3.23	3.21	29.18	-75.86	6.40	52.97	46.55	6.43	8.243	
1,200.00	1,199.24	1,209.96	1,183.43	3.53	3.56	27.97	-97.16	8.42	70.35	63.27	7.08	9.941	
1,300.00	1,299.11	1,288.38	1,279.19	3.83	3.79	27.16	-119.42	10.54	88.48	80.86	7.61	11.622	
1,400.00	1,398.98	1,386.72	1,374.95	4.13	4.09	26.63	-141.69	12.66	106.61	98.40	8.21	12.989	
1,500.00	1,498.86	1,485.06	1,470.71	4.43	4.39	26.25	-163.95	14.77	124.75	115.95	8.80	14.172	
1,600.00	1,598.73	1,583.39	1,566.48	4.73	4.68	25.96	-186.22	16.89	142.90	133.50	9.40	15.205	
1,700.00	1,698.60	1,681.73	1,662.24	5.03	4.98	25.74	-208.49	19.00	161.05	151.06	9.99	16.115	
1,800.00	1,798.48	1,780.07	1,758.00	5.33	5.27	25.57	-230.75	21.12	179.20	168.61	10.59	16.924	
1,900.00	1,898.35	1,878.41	1,853.76	5.63	5.57	25.43	-253.02	23.24	197.35	186.17	11.18	17.646	
2,000.00	1,998.22	1,976.74	1,949.52	5.93	5.86	25.31	-275.28	25.35	215.51	203.73	11.78	18.296	
2,100.00	2,098.10	2,075.08	2,045.28	6.23	6.16	25.21	-297.55	27.47	233.66	221.29	12.37	18.883	
2,200.00	2,197.97	2,173.42	2,141.04	6.53	6.45	25.12	-319.82	29.58	251.82	238.85	12.97	19.416	
2,300.00	2,297.84	2,271.76	2,236.80	6.83	6.75	25.05	-342.08	31.70	269.97	256.41	13.56	19.903	
2,400.00	2,397.72	2,370.10	2,332.56	7.13	7.04	24.98	-364.35	33.82	288.13	273.97	14.16	20.348	
2,500.00	2,497.59	2,468.43	2,428.32	7.43	7.34	24.93	-386.62	35.93	306.28	291.53	14.75	20.758	
2,600.00	2,597.46	2,566.77	2,524.08	7.73	7.63	24.88	-408.88	38.05	324.44	309.09	15.35	21.136	
2,700.00	2,697.34	2,665.11	2,619.84	8.03	7.93	24.83	-431.15	40.16	342.60	326.65	15.95	21.486	
2,800.00	2,797.21	2,763.45	2,715.60	8.33	8.22	24.79	-453.41	42.28	360.75	344.21	16.54	21.811	
2,900.00	2,897.09	2,861.78	2,811.36	8.63	8.52	24.75	-475.68	44.39	378.91	361.78	17.14	22.113	
3,000.00	2,996.96	2,960.12	2,907.12	8.93	8.81	24.72	-497.95	46.51	397.07	379.34	17.73	22.395	
3,100.00	3,096.83	3,058.46	3,002.88	9.23	9.11	24.69	-520.21	48.63	415.23	396.90	18.33	22.658	
3,200.00	3,196.71	3,156.80	3,098.64	9.53	9.40	24.66	-542.48	50.74	433.38	414.46	18.92	22.905	
3,300.00	3,296.58	3,255.13	3,194.40	9.83	9.70	24.63	-564.74	52.86	451.54	432.02	19.52	23.137	
3,400.00	3,396.45	3,353.47	3,290.16	10.13	9.99	24.61	-587.01	54.97	469.70	449.59	20.11	23.356	
3,500.00	3,496.33	3,451.81	3,385.92	10.43	10.29	24.59	-609.28	57.09	487.85	467.15	20.71	23.561	
3,600.00	3,596.20	3,550.15	3,481.68	10.73	10.58	24.57	-631.54	59.21	506.01	484.71	21.30	23.756	
3,700.00	3,696.07	3,648.48	3,577.44	11.03	10.88	24.55	-653.81	61.32	524.17	502.27	21.90	23.939	
3,800.00	3,795.95	3,746.82	3,673.20	11.33	11.17	24.53	-676.07	63.44	542.33	519.84	22.49	24.113	
3,900.00	3,895.82	3,845.16	3,768.96	11.63	11.47	24.52	-698.34	65.55	560.48	537.40	23.09	24.278	
4,000.00	3,995.69	3,943.50	3,864.72	11.93	11.76	24.50	-720.61	67.67	578.64	554.96	23.68	24.435	
4,100.00	4,095.57	4,041.83	3,960.48	12.23	12.06	24.49	-742.87	69.79	596.80	572.52	24.28	24.584	
4,200.00	4,195.44	4,140.17	4,056.24	12.53	12.35	24.47	-765.14	71.90	614.96	590.09	24.87	24.726	
4,300.00	4,295.31	4,238.51	4,152.00	12.83	12.65	24.46	-787.40	74.02	633.12	607.65	25.47	24.861	
4,400.00	4,395.19	4,336.85	4,247.76	13.13	12.94	24.45	-809.67	76.13	651.27	625.21	26.06	24.990	
4,500.00	4,495.06	4,435.18	4,343.52	13.43	13.24	24.43	-831.94	78.25	669.43	642.78	26.66	25.114	
4,600.00	4,594.93	4,533.52	4,439.28	13.73	13.53	24.42	-854.20	80.37	687.59	660.34	27.25	25.232	
4,700.00	4,694.81	4,631.86	4,535.04	14.03	13.83	24.41	-876.47	82.48	705.75	677.90	27.85	25.344	
4,800.00	4,794.68	4,730.20	4,630.80	14.33	14.12	24.40	-898.74	84.60	723.91	695.46	28.44	25.453	
4,900.00	4,894.55	4,828.53	4,726.56	14.63	14.42	24.39	-921.00	86.71	742.06	713.03	29.04	25.556	
5,000.00	4,994.43	4,926.87	4,822.32	14.93	14.71	24.38	-943.27	88.83	760.22	730.59	29.63	25.656	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 756H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,025.21	4,918.08	15.23	15.01	24.38	-965.53	90.94	778.38	748.15	30.23	25.752	
5,200.00	5,194.18	5,123.55	5,013.84	15.53	15.30	24.37	-987.80	93.06	796.54	765.72	30.82	25.844	
5,300.00	5,294.05	5,221.88	5,109.60	15.83	15.60	24.36	-1,010.07	95.18	814.70	783.28	31.42	25.932	
5,400.00	5,393.92	5,320.22	5,205.36	16.13	15.89	24.35	-1,032.33	97.29	832.85	800.84	32.01	26.017	
5,500.00	5,493.80	5,418.56	5,301.12	16.43	16.19	24.35	-1,054.60	99.41	851.01	818.41	32.61	26.099	
5,600.00	5,593.67	5,516.90	5,396.88	16.73	16.48	24.34	-1,076.86	101.52	869.17	835.97	33.20	26.179	
5,700.00	5,693.54	5,615.23	5,492.64	17.03	16.78	24.33	-1,099.13	103.64	887.33	853.53	33.80	26.255	
5,800.00	5,793.42	5,713.57	5,588.40	17.33	17.07	24.33	-1,121.40	105.76	905.49	871.09	34.39	26.329	
5,900.00	5,893.29	5,811.91	5,684.16	17.63	17.37	24.32	-1,143.66	107.87	923.64	888.66	34.99	26.400	
6,000.00	5,993.16	5,910.25	5,779.92	17.93	17.66	24.31	-1,165.93	109.99	941.80	906.22	35.58	26.469	
6,100.00	6,093.04	6,008.58	5,875.68	18.23	17.96	24.31	-1,188.19	112.10	959.96	923.78	36.18	26.535	
6,200.00	6,192.91	6,106.92	5,971.44	18.53	18.25	24.30	-1,210.46	114.22	978.12	941.35	36.77	26.600	
6,300.00	6,292.78	6,205.26	6,067.21	18.83	18.55	24.30	-1,232.73	116.34	996.28	958.91	37.37	26.662	
6,400.00	6,392.66	6,303.60	6,162.97	19.13	18.84	24.29	-1,254.99	118.45	1,014.44	976.47	37.96	26.722	
6,500.00	6,492.53	6,401.93	6,258.73	19.43	19.14	24.29	-1,277.26	120.57	1,032.59	994.04	38.56	26.781	
6,551.20	6,543.67	6,452.29	6,307.76	19.58	19.29	24.29	-1,288.66	121.65	1,041.89	1,003.03	38.86	26.810	
6,600.00	6,592.30	6,500.22	6,354.43	19.73	19.43	65.48	-1,299.51	122.68	1,050.73	1,011.58	39.15	26.837	
6,650.00	6,641.67	6,548.98	6,401.91	19.88	19.58	74.87	-1,310.55	123.73	1,059.72	1,020.27	39.45	26.864	
6,700.00	6,690.21	6,602.99	6,448.69	20.03	19.74	78.54	-1,321.43	124.76	1,068.65	1,028.89	39.76	26.877	
6,750.00	6,737.54	6,643.95	6,494.40	20.18	19.86	80.52	-1,332.06	125.77	1,077.58	1,037.54	40.03	26.917	
6,800.00	6,783.30	6,689.44	6,538.70	20.33	20.00	81.84	-1,342.36	126.75	1,086.60	1,046.28	40.32	26.950	
6,850.00	6,827.15	6,738.87	6,586.74	20.48	20.15	82.91	-1,353.54	129.55	1,095.74	1,055.12	40.62	26.977	
6,900.00	6,868.74	6,791.05	6,637.02	20.63	20.31	83.77	-1,365.25	137.08	1,104.87	1,063.95	40.93	26.997	
6,950.00	6,907.77	6,845.85	6,688.86	20.78	20.47	84.51	-1,377.35	150.01	1,113.89	1,072.65	41.24	27.010	
7,000.00	6,943.94	6,903.59	6,741.91	20.93	20.65	85.18	-1,389.75	169.07	1,122.71	1,081.15	41.56	27.012	
7,050.00	6,976.97	6,964.64	6,795.66	21.08	20.83	85.81	-1,402.34	195.06	1,131.21	1,089.31	41.90	26.999	
7,100.00	7,006.62	7,029.34	6,849.33	21.23	21.02	86.41	-1,414.94	228.86	1,139.26	1,097.02	42.24	26.970	
7,150.00	7,032.64	7,097.99	6,901.84	21.38	21.23	86.99	-1,427.30	271.26	1,146.71	1,104.11	42.60	26.919	
7,200.00	7,054.86	7,170.81	6,951.69	21.53	21.45	87.55	-1,439.08	322.93	1,153.41	1,110.44	42.97	26.844	
7,250.00	7,073.09	7,247.82	6,997.02	21.68	21.68	88.08	-1,449.84	384.18	1,159.18	1,115.83	43.35	26.741	
7,300.00	7,087.20	7,328.81	7,035.62	21.83	21.92	88.53	-1,459.08	454.71	1,163.86	1,120.12	43.74	26.607	
7,350.00	7,097.08	7,413.27	7,065.13	21.98	22.18	88.90	-1,466.23	533.44	1,167.28	1,123.14	44.15	26.442	
7,400.00	7,102.66	7,500.33	7,083.42	22.13	22.44	89.16	-1,470.79	618.35	1,169.32	1,124.76	44.56	26.243	
7,438.94	7,104.00	7,569.20	7,088.87	22.25	22.65	89.26	-1,472.32	686.94	1,169.89	1,125.01	44.88	26.067	
7,500.00	7,104.02	7,635.41	7,089.04	22.43	22.85	89.27	-1,472.60	753.15	1,169.81	1,124.54	45.26	25.845	
7,600.00	7,104.06	7,735.41	7,089.12	22.74	23.15	89.27	-1,472.99	853.15	1,169.65	1,123.79	45.86	25.504	
7,700.00	7,104.10	7,835.41	7,089.20	23.04	23.45	89.27	-1,473.38	953.15	1,169.49	1,123.03	46.46	25.171	
7,800.00	7,104.14	7,935.41	7,089.28	23.34	23.75	89.27	-1,473.77	1,053.15	1,169.34	1,122.28	47.06	24.847	
7,900.00	7,104.18	8,035.41	7,089.36	23.64	24.05	89.27	-1,474.16	1,153.15	1,169.18	1,121.52	47.66	24.531	
8,000.00	7,104.22	8,135.41	7,089.44	23.94	24.35	89.28	-1,474.55	1,253.15	1,169.03	1,120.77	48.26	24.222	
8,100.00	7,104.26	8,235.41	7,089.51	24.24	24.65	89.28	-1,474.94	1,353.15	1,168.87	1,120.01	48.86	23.922	
8,200.00	7,104.30	8,335.41	7,089.59	24.54	24.95	89.28	-1,475.33	1,453.15	1,168.72	1,119.25	49.46	23.629	
8,300.00	7,104.34	8,435.41	7,089.67	24.84	25.25	89.28	-1,475.72	1,553.14	1,168.56	1,118.50	50.06	23.342	
8,400.00	7,104.38	8,535.41	7,089.75	25.14	25.55	89.28	-1,476.10	1,653.14	1,168.40	1,117.74	50.66	23.063	
8,500.00	7,104.42	8,635.41	7,089.83	25.44	25.85	89.28	-1,476.49	1,753.14	1,168.25	1,116.99	51.26	22.790	
8,600.00	7,104.45	8,735.41	7,089.91	25.74	26.15	89.29	-1,476.88	1,853.14	1,168.09	1,116.23	51.86	22.523	
8,700.00	7,104.49	8,835.41	7,089.98	26.04	26.45	89.29	-1,477.27	1,953.14	1,167.94	1,115.48	52.46	22.263	
8,800.00	7,104.53	8,935.41	7,090.06	26.34	26.75	89.29	-1,477.66	2,053.14	1,167.78	1,114.72	53.06	22.008	
8,900.00	7,104.57	9,035.41	7,090.14	26.64	27.05	89.29	-1,478.05	2,153.14	1,167.63	1,113.96	53.66	21.759	
9,000.00	7,104.61	9,135.41	7,090.22	26.95	27.35	89.29	-1,478.44	2,253.14	1,167.47	1,113.21	54.26	21.516	
9,100.00	7,104.65	9,235.41	7,090.30	27.25	27.66	89.30	-1,478.83	2,353.14	1,167.32	1,112.45	54.86	21.277	
9,200.00	7,104.69	9,335.41	7,090.38	27.55	27.96	89.30	-1,479.22	2,453.14	1,167.16	1,111.70	55.46	21.044	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 756H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	9,435.41	7,090.45	27.85	28.26	89.30	-1,479.61	2,553.14	1,167.00	1,110.94	56.06	20.816	
9,400.00	7,104.77	9,535.41	7,090.53	28.15	28.56	89.30	-1,480.00	2,653.13	1,166.85	1,110.19	56.66	20.593	
9,500.00	7,104.81	9,635.41	7,090.61	28.45	28.86	89.30	-1,480.39	2,753.13	1,166.69	1,109.43	57.26	20.375	
9,600.00	7,104.85	9,735.41	7,090.69	28.75	29.16	89.30	-1,480.78	2,853.13	1,166.54	1,108.68	57.86	20.161	
9,700.00	7,104.89	9,835.41	7,090.77	29.05	29.46	89.31	-1,481.16	2,953.13	1,166.38	1,107.92	58.46	19.951	
9,800.00	7,104.92	9,935.41	7,090.85	29.35	29.76	89.31	-1,481.55	3,053.13	1,166.23	1,107.16	59.06	19.746	
9,900.00	7,104.96	10,035.41	7,090.93	29.65	30.06	89.31	-1,481.94	3,153.13	1,166.07	1,106.41	59.66	19.545	
10,000.00	7,105.00	10,135.41	7,091.00	29.95	30.36	89.31	-1,482.33	3,253.13	1,165.91	1,105.65	60.26	19.348	
10,100.00	7,105.04	10,235.41	7,091.08	30.25	30.66	89.31	-1,482.72	3,353.13	1,165.76	1,104.90	60.86	19.154	
10,200.00	7,105.08	10,335.41	7,091.16	30.55	30.96	89.32	-1,483.11	3,453.13	1,165.60	1,104.14	61.46	18.965	
10,300.00	7,105.12	10,435.41	7,091.24	30.85	31.26	89.32	-1,483.50	3,553.13	1,165.45	1,103.39	62.06	18.779	
10,400.00	7,105.16	10,535.41	7,091.32	31.15	31.56	89.32	-1,483.89	3,653.13	1,165.29	1,102.63	62.66	18.597	
10,500.00	7,105.20	10,635.41	7,091.40	31.45	31.86	89.32	-1,484.28	3,753.12	1,165.14	1,101.88	63.26	18.418	
10,600.00	7,105.24	10,735.41	7,091.47	31.75	32.16	89.32	-1,484.67	3,853.12	1,164.98	1,101.12	63.86	18.242	
10,700.00	7,105.28	10,835.41	7,091.55	32.05	32.46	89.32	-1,485.06	3,953.12	1,164.83	1,100.36	64.46	18.070	
10,800.00	7,105.32	10,935.41	7,091.63	32.35	32.76	89.33	-1,485.45	4,053.12	1,164.67	1,099.61	65.06	17.901	
10,900.00	7,105.36	11,035.41	7,091.71	32.66	33.06	89.33	-1,485.83	4,153.12	1,164.51	1,098.85	65.66	17.735	
11,000.00	7,105.39	11,135.41	7,091.79	32.96	33.36	89.33	-1,486.22	4,253.12	1,164.36	1,098.10	66.26	17.572	
11,100.00	7,105.43	11,235.41	7,091.87	33.26	33.66	89.33	-1,486.61	4,353.12	1,164.20	1,097.34	66.86	17.412	
11,200.00	7,105.47	11,335.41	7,091.95	33.56	33.96	89.33	-1,487.00	4,453.12	1,164.05	1,096.59	67.46	17.255	
11,300.00	7,105.51	11,435.41	7,092.02	33.86	34.26	89.34	-1,487.39	4,553.12	1,163.89	1,095.83	68.06	17.101	
11,400.00	7,105.55	11,535.41	7,092.10	34.16	34.57	89.34	-1,487.78	4,653.12	1,163.74	1,095.07	68.66	16.949	
11,500.00	7,105.59	11,635.41	7,092.18	34.46	34.87	89.34	-1,488.17	4,753.12	1,163.58	1,094.32	69.26	16.800	
11,600.00	7,105.63	11,735.41	7,092.26	34.76	35.17	89.34	-1,488.56	4,853.11	1,163.42	1,093.56	69.86	16.653	
11,700.00	7,105.67	11,835.41	7,092.34	35.06	35.47	89.34	-1,488.95	4,953.11	1,163.27	1,092.81	70.46	16.509	
11,800.00	7,105.71	11,935.41	7,092.42	35.36	35.77	89.35	-1,489.34	5,053.11	1,163.11	1,092.05	71.06	16.368	
11,900.00	7,105.75	12,035.41	7,092.49	35.66	36.07	89.35	-1,489.73	5,153.11	1,162.96	1,091.30	71.66	16.229	
12,000.00	7,105.79	12,135.41	7,092.57	35.96	36.37	89.35	-1,490.12	5,253.11	1,162.80	1,090.54	72.26	16.092	
12,100.00	7,105.83	12,235.41	7,092.65	36.26	36.67	89.35	-1,490.50	5,353.11	1,162.65	1,089.79	72.86	15.957	
12,200.00	7,105.86	12,335.41	7,092.73	36.56	36.97	89.35	-1,490.89	5,453.11	1,162.49	1,089.03	73.46	15.825	
12,300.00	7,105.90	12,435.41	7,092.81	36.86	37.27	89.35	-1,491.28	5,553.11	1,162.34	1,088.27	74.06	15.694	
12,400.00	7,105.94	12,535.41	7,092.89	37.16	37.57	89.36	-1,491.67	5,653.11	1,162.18	1,087.52	74.66	15.566	
12,500.00	7,105.98	12,635.41	7,092.97	37.46	37.87	89.36	-1,492.06	5,753.11	1,162.02	1,086.76	75.26	15.440	
12,600.00	7,106.02	12,735.41	7,093.04	37.76	38.17	89.36	-1,492.45	5,853.11	1,161.87	1,086.01	75.86	15.316	
12,700.00	7,106.06	12,835.41	7,093.12	38.06	38.47	89.36	-1,492.84	5,953.10	1,161.71	1,085.25	76.46	15.194	
12,800.00	7,106.10	12,935.41	7,093.20	38.36	38.77	89.36	-1,493.23	6,053.10	1,161.56	1,084.50	77.06	15.073	
12,900.00	7,106.14	13,035.40	7,093.28	38.66	39.07	89.37	-1,493.62	6,153.10	1,161.40	1,083.74	77.66	14.955	
13,000.00	7,106.18	13,135.40	7,093.36	38.96	39.37	89.37	-1,494.01	6,253.10	1,161.25	1,082.99	78.26	14.838	
13,100.00	7,106.22	13,235.40	7,093.44	39.26	39.67	89.37	-1,494.40	6,353.10	1,161.09	1,082.23	78.86	14.723	
13,200.00	7,106.26	13,335.40	7,093.51	39.56	39.97	89.37	-1,494.79	6,453.10	1,160.94	1,081.47	79.46	14.610	
13,300.00	7,106.30	13,435.40	7,093.59	39.86	40.27	89.37	-1,495.18	6,553.10	1,160.78	1,080.72	80.06	14.499	
13,400.00	7,106.33	13,535.40	7,093.67	40.16	40.57	89.37	-1,495.56	6,653.10	1,160.62	1,079.96	80.66	14.389	
13,500.00	7,106.37	13,635.40	7,093.75	40.46	40.87	89.38	-1,495.95	6,753.10	1,160.47	1,079.21	81.26	14.281	
13,600.00	7,106.41	13,735.40	7,093.83	40.76	41.17	89.38	-1,496.34	6,853.10	1,160.31	1,078.45	81.86	14.174	
13,700.00	7,106.45	13,835.40	7,093.91	41.06	41.47	89.38	-1,496.73	6,953.10	1,160.16	1,077.70	82.46	14.069	
13,800.00	7,106.49	13,935.40	7,093.99	41.36	41.77	89.38	-1,497.12	7,053.09	1,160.00	1,076.94	83.06	13.966	
13,900.00	7,106.53	14,035.40	7,094.06	41.67	42.07	89.38	-1,497.51	7,153.09	1,159.85	1,076.19	83.66	13.864	
14,000.00	7,106.57	14,135.40	7,094.14	41.97	42.37	89.39	-1,497.90	7,253.09	1,159.69	1,075.43	84.26	13.763	
14,100.00	7,106.61	14,235.40	7,094.22	42.27	42.67	89.39	-1,498.29	7,353.09	1,159.54	1,074.67	84.86	13.664	
14,200.00	7,106.65	14,335.40	7,094.30	42.57	42.97	89.39	-1,498.68	7,453.09	1,159.38	1,073.92	85.46	13.566	
14,300.00	7,106.69	14,435.40	7,094.38	42.87	43.27	89.39	-1,499.07	7,553.09	1,159.22	1,073.16	86.06	13.470	
14,400.00	7,106.73	14,535.40	7,094.46	43.17	43.57	89.39	-1,499.46	7,653.09	1,159.07	1,072.41	86.66	13.375	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 756H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	14,635.40	7,094.53	43.47	43.87	89.40	-1,499.85	7,753.09	1,158.91	1,071.65	87.26	13.281	
14,600.00	7,106.80	14,735.40	7,094.61	43.77	44.17	89.40	-1,500.23	7,853.09	1,158.76	1,070.90	87.86	13.189	
14,700.00	7,106.84	14,835.40	7,094.69	44.07	44.47	89.40	-1,500.62	7,953.09	1,158.60	1,070.14	88.46	13.097	
14,800.00	7,106.88	14,935.40	7,094.77	44.37	44.77	89.40	-1,501.01	8,053.08	1,158.45	1,069.39	89.06	13.007	
14,900.00	7,106.92	15,035.40	7,094.85	44.67	45.07	89.40	-1,501.40	8,153.08	1,158.29	1,068.63	89.66	12.919	
15,000.00	7,106.96	15,135.40	7,094.93	44.97	45.38	89.40	-1,501.79	8,253.08	1,158.14	1,067.87	90.26	12.831	
15,100.00	7,107.00	15,235.40	7,095.00	45.27	45.68	89.41	-1,502.18	8,353.08	1,157.98	1,067.12	90.86	12.745	
15,200.00	7,107.04	15,335.40	7,095.08	45.57	45.98	89.41	-1,502.57	8,453.08	1,157.82	1,066.36	91.46	12.659	
15,300.00	7,107.08	15,435.40	7,095.16	45.87	46.28	89.41	-1,502.96	8,553.08	1,157.67	1,065.61	92.06	12.575	
15,400.00	7,107.12	15,535.40	7,095.24	46.17	46.58	89.41	-1,503.35	8,653.08	1,157.51	1,064.85	92.66	12.492	
15,500.00	7,107.16	15,635.40	7,095.32	46.47	46.88	89.41	-1,503.74	8,753.08	1,157.36	1,064.10	93.26	12.410	
15,600.00	7,107.20	15,735.40	7,095.40	46.77	47.18	89.42	-1,504.13	8,853.08	1,157.20	1,063.34	93.86	12.329	
15,700.00	7,107.23	15,835.40	7,095.48	47.07	47.48	89.42	-1,504.52	8,953.08	1,157.05	1,062.59	94.46	12.249	
15,800.00	7,107.27	15,935.40	7,095.55	47.37	47.78	89.42	-1,504.90	9,053.08	1,156.89	1,061.83	95.06	12.170	
15,900.00	7,107.31	16,035.40	7,095.63	47.67	48.08	89.42	-1,505.29	9,153.07	1,156.74	1,061.07	95.66	12.092	
16,000.00	7,107.35	16,135.40	7,095.71	47.97	48.38	89.42	-1,505.68	9,253.07	1,156.58	1,060.32	96.26	12.015	
16,100.00	7,107.39	16,235.40	7,095.79	48.27	48.68	89.43	-1,506.07	9,353.07	1,156.42	1,059.56	96.86	11.939	
16,200.00	7,107.43	16,335.40	7,095.87	48.57	48.98	89.43	-1,506.46	9,453.07	1,156.27	1,058.81	97.46	11.864	
16,300.00	7,107.47	16,435.40	7,095.95	48.87	49.28	89.43	-1,506.85	9,553.07	1,156.11	1,058.05	98.06	11.790	
16,400.00	7,107.51	16,535.40	7,096.02	49.17	49.58	89.43	-1,507.24	9,653.07	1,155.96	1,057.30	98.66	11.717	
16,500.00	7,107.55	16,635.40	7,096.10	49.47	49.88	89.43	-1,507.63	9,753.07	1,155.80	1,056.54	99.26	11.644	
16,600.00	7,107.59	16,735.40	7,096.18	49.77	50.18	89.43	-1,508.02	9,853.07	1,155.65	1,055.79	99.86	11.573	
16,700.00	7,107.63	16,835.40	7,096.26	50.07	50.48	89.44	-1,508.41	9,953.07	1,155.49	1,055.03	100.46	11.502	
16,800.00	7,107.67	16,935.40	7,096.34	50.37	50.78	89.44	-1,508.80	10,053.07	1,155.34	1,054.27	101.06	11.432	
16,900.00	7,107.70	17,035.40	7,096.42	50.67	51.08	89.44	-1,509.19	10,153.07	1,155.18	1,053.52	101.66	11.363	
17,000.00	7,107.74	17,135.40	7,096.50	50.97	51.38	89.44	-1,509.58	10,253.06	1,155.02	1,052.76	102.26	11.295	
17,100.00	7,107.78	17,235.40	7,096.57	51.27	51.68	89.44	-1,509.96	10,353.06	1,154.87	1,052.01	102.86	11.228	
17,200.00	7,107.82	17,335.40	7,096.65	51.57	51.98	89.45	-1,510.35	10,453.06	1,154.71	1,051.25	103.46	11.161	
17,300.00	7,107.86	17,435.40	7,096.73	51.87	52.28	89.45	-1,510.74	10,553.06	1,154.56	1,050.50	104.06	11.095	
17,400.00	7,107.90	17,535.40	7,096.81	52.17	52.58	89.45	-1,511.13	10,653.06	1,154.40	1,049.74	104.66	11.030	
17,500.00	7,107.94	17,635.40	7,096.89	52.47	52.88	89.45	-1,511.52	10,753.06	1,154.25	1,048.99	105.26	10.966	
17,600.00	7,107.98	17,735.40	7,096.97	52.77	53.18	89.45	-1,511.91	10,853.06	1,154.09	1,048.23	105.86	10.902	
17,700.00	7,108.02	17,835.40	7,097.04	53.07	53.48	89.46	-1,512.30	10,953.06	1,153.94	1,047.48	106.46	10.839	
17,800.00	7,108.06	17,935.40	7,097.12	53.37	53.78	89.46	-1,512.69	11,053.06	1,153.78	1,046.72	107.06	10.777	
17,900.00	7,108.10	18,035.40	7,097.20	53.67	54.08	89.46	-1,513.08	11,153.06	1,153.62	1,045.96	107.66	10.715	
18,000.00	7,108.14	18,135.40	7,097.28	53.97	54.38	89.46	-1,513.47	11,253.06	1,153.47	1,045.21	108.26	10.655	
18,100.00	7,108.17	18,235.40	7,097.36	54.27	54.68	89.46	-1,513.86	11,353.05	1,153.31	1,044.45	108.86	10.594	
18,200.00	7,108.21	18,335.40	7,097.44	54.57	54.98	89.46	-1,514.25	11,453.05	1,153.16	1,043.70	109.46	10.535	
18,300.00	7,108.25	18,435.40	7,097.52	54.87	55.28	89.47	-1,514.63	11,553.05	1,153.00	1,042.94	110.06	10.476	
18,400.00	7,108.29	18,535.40	7,097.59	55.17	55.58	89.47	-1,515.02	11,653.05	1,152.85	1,042.19	110.66	10.418	
18,500.00	7,108.33	18,635.40	7,097.67	55.47	55.88	89.47	-1,515.41	11,753.05	1,152.69	1,041.43	111.26	10.360	
18,600.00	7,108.37	18,735.40	7,097.75	55.77	56.18	89.47	-1,515.80	11,853.05	1,152.54	1,040.68	111.86	10.303	
18,700.00	7,108.41	18,835.40	7,097.83	56.07	56.48	89.47	-1,516.19	11,953.05	1,152.38	1,039.92	112.46	10.247	
18,800.00	7,108.45	18,935.40	7,097.91	56.37	56.78	89.48	-1,516.58	12,053.05	1,152.22	1,039.16	113.06	10.191	
18,900.00	7,108.49	19,035.40	7,097.99	56.67	57.08	89.48	-1,516.97	12,153.05	1,152.07	1,038.41	113.66	10.136	
19,000.00	7,108.53	19,135.40	7,098.06	56.97	57.38	89.48	-1,517.36	12,253.05	1,151.91	1,037.65	114.26	10.081	
19,100.00	7,108.57	19,235.40	7,098.14	57.28	57.68	89.48	-1,517.75	12,353.05	1,151.76	1,036.90	114.86	10.027	
19,200.00	7,108.61	19,335.40	7,098.22	57.58	57.98	89.48	-1,518.14	12,453.04	1,151.60	1,036.14	115.46	9.974	
19,300.00	7,108.64	19,435.40	7,098.30	57.88	58.28	89.49	-1,518.53	12,553.04	1,151.45	1,035.39	116.06	9.921	
19,400.00	7,108.68	19,535.40	7,098.38	58.18	58.58	89.49	-1,518.92	12,653.04	1,151.29	1,034.63	116.66	9.869	
19,500.00	7,108.72	19,635.40	7,098.46	58.48	58.88	89.49	-1,519.30	12,753.04	1,151.14	1,033.88	117.26	9.817	
19,600.00	7,108.76	19,735.40	7,098.54	58.78	59.18	89.49	-1,519.69	12,853.04	1,150.98	1,033.12	117.86	9.766	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - Rosa Unit 756H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,700.00	7,108.80	19,835.40	7,098.61	59.08	59.48	89.49	-1,520.08	12,953.04	1,150.83	1,032.36	118.46	9.715	
19,800.00	7,108.84	19,935.40	7,098.69	59.38	59.78	89.49	-1,520.47	13,053.04	1,150.67	1,031.61	119.06	9.665	
19,900.00	7,108.88	20,035.40	7,098.77	59.68	60.08	89.50	-1,520.86	13,153.04	1,150.51	1,030.85	119.66	9.615	
20,000.00	7,108.92	20,135.40	7,098.85	59.98	60.38	89.50	-1,521.25	13,253.04	1,150.36	1,030.10	120.26	9.566	
20,100.00	7,108.96	20,235.40	7,098.93	60.28	60.68	89.50	-1,521.64	13,353.04	1,150.20	1,029.34	120.86	9.517	
20,195.45	7,109.00	20,330.84	7,099.00	60.56	60.97	89.50	-1,522.01	13,448.48	1,150.05	1,028.62	121.43	9.471	
20,208.46	7,109.00	20,328.16	7,099.00	60.60	60.96	89.50	-1,522.00	13,445.80	1,150.14	1,028.68	121.46	9.469	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024 (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	30.49	-30.49	0.00	1.33	-107.74	-1,673.63	-5,232.72	5,493.85				
100.00	100.00	69.51	69.51	0.23	3.03	-107.74	-1,673.63	-5,232.72	5,493.85	5,490.59	3.25	1,688.085	
200.00	200.00	169.51	169.51	0.53	7.38	-107.74	-1,673.63	-5,232.72	5,493.85	5,485.94	7.91	694.503	
300.00	300.00	269.51	269.51	0.83	11.74	-107.74	-1,673.63	-5,232.72	5,493.85	5,481.28	12.57	437.183	
400.00	400.00	369.51	369.51	1.13	16.10	-107.74	-1,673.63	-5,232.72	5,493.85	5,476.63	17.22	318.993	
500.00	500.00	469.51	469.51	1.43	20.45	-107.74	-1,673.63	-5,232.72	5,493.85	5,471.97	21.88	251.108	CC
600.00	599.98	569.49	569.49	1.73	24.81	96.67	-1,673.63	-5,232.72	5,494.05	5,467.52	26.53	207.060	
644.12	644.06	613.57	613.57	1.86	26.73	96.69	-1,673.63	-5,232.72	5,494.27	5,465.68	28.59	192.201	
700.00	699.87	669.38	669.38	2.03	29.16	96.71	-1,673.63	-5,232.72	5,494.60	5,463.41	31.18	176.195	
800.00	799.74	769.26	769.26	2.33	33.51	96.77	-1,673.63	-5,232.72	5,495.19	5,459.35	35.84	153.346	
900.00	899.62	869.13	869.13	2.63	37.86	96.82	-1,673.63	-5,232.72	5,495.78	5,455.30	40.49	135.746	
1,000.00	999.49	969.00	969.00	2.93	42.21	96.87	-1,673.63	-5,232.72	5,496.38	5,451.25	45.14	121.773	
1,100.00	1,099.36	1,068.88	1,068.88	3.23	46.56	96.92	-1,673.63	-5,232.72	5,496.99	5,447.20	49.79	110.411	
1,200.00	1,199.24	1,168.75	1,168.75	3.53	50.91	96.97	-1,673.63	-5,232.72	5,497.60	5,443.16	54.44	100.990	
1,300.00	1,299.11	1,268.62	1,268.62	3.83	55.26	97.03	-1,673.63	-5,232.72	5,498.21	5,439.12	59.09	93.052	
1,400.00	1,398.98	1,368.50	1,368.50	4.13	59.61	97.08	-1,673.63	-5,232.72	5,498.83	5,435.09	63.74	86.272	
1,500.00	1,498.86	1,468.37	1,468.37	4.43	63.96	97.13	-1,673.63	-5,232.72	5,499.45	5,431.06	68.39	80.415	
1,600.00	1,598.73	1,568.24	1,568.24	4.73	68.31	97.18	-1,673.63	-5,232.72	5,500.08	5,427.04	73.04	75.303	
1,700.00	1,698.60	1,668.12	1,668.12	5.03	72.66	97.23	-1,673.63	-5,232.72	5,500.71	5,423.02	77.69	70.804	
1,800.00	1,798.48	1,767.99	1,767.99	5.33	77.01	97.29	-1,673.63	-5,232.72	5,501.35	5,419.01	82.34	66.813	
1,900.00	1,898.35	1,867.86	1,867.86	5.63	81.36	97.34	-1,673.63	-5,232.72	5,501.99	5,415.00	86.99	63.248	
2,000.00	1,998.22	1,967.74	1,967.74	5.93	85.71	97.39	-1,673.63	-5,232.72	5,502.63	5,410.99	91.64	60.046	
2,100.00	2,098.10	2,067.61	2,067.61	6.23	90.06	97.44	-1,673.63	-5,232.72	5,503.28	5,406.99	96.29	57.152	
2,200.00	2,197.97	2,167.48	2,167.48	6.53	94.42	97.49	-1,673.63	-5,232.72	5,503.94	5,403.00	100.94	54.526	
2,300.00	2,297.84	2,267.36	2,267.36	6.83	98.77	97.54	-1,673.63	-5,232.72	5,504.60	5,399.00	105.59	52.131	
2,400.00	2,397.72	2,367.23	2,367.23	7.13	103.12	97.60	-1,673.63	-5,232.72	5,505.26	5,395.02	110.24	49.938	
2,500.00	2,497.59	2,467.10	2,467.10	7.43	107.47	97.65	-1,673.63	-5,232.72	5,505.93	5,391.03	114.89	47.922	
2,600.00	2,597.46	2,566.98	2,566.98	7.73	111.82	97.70	-1,673.63	-5,232.72	5,506.60	5,387.06	119.54	46.063	
2,700.00	2,697.34	2,666.85	2,666.85	8.03	116.17	97.75	-1,673.63	-5,232.72	5,507.28	5,383.08	124.19	44.344	
2,800.00	2,797.21	2,766.72	2,766.72	8.33	120.52	97.80	-1,673.63	-5,232.72	5,507.96	5,379.11	128.84	42.749	
2,900.00	2,897.09	2,866.60	2,866.60	8.63	124.87	97.86	-1,673.63	-5,232.72	5,508.64	5,375.15	133.50	41.265	
3,000.00	2,996.96	2,966.47	2,966.47	8.93	129.22	97.91	-1,673.63	-5,232.72	5,509.33	5,371.19	138.15	39.881	
3,100.00	3,096.83	3,066.35	3,066.35	9.23	133.57	97.96	-1,673.63	-5,232.72	5,510.03	5,367.23	142.80	38.587	
3,200.00	3,196.71	3,166.22	3,166.22	9.53	137.92	98.01	-1,673.63	-5,232.72	5,510.73	5,363.28	147.45	37.374	
3,300.00	3,296.58	3,266.09	3,266.09	9.83	142.27	98.06	-1,673.63	-5,232.72	5,511.43	5,359.34	152.10	36.236	
3,400.00	3,396.45	3,365.97	3,365.97	10.13	146.62	98.11	-1,673.63	-5,232.72	5,512.14	5,355.39	156.75	35.166	
3,500.00	3,496.33	3,465.84	3,465.84	10.43	150.97	98.17	-1,673.63	-5,232.72	5,512.85	5,351.46	161.40	34.157	
3,600.00	3,596.20	3,565.71	3,565.71	10.73	155.32	98.22	-1,673.63	-5,232.72	5,513.57	5,347.52	166.05	33.205	
3,700.00	3,696.07	3,665.59	3,665.59	11.03	159.67	98.27	-1,673.63	-5,232.72	5,514.29	5,343.59	170.70	32.304	
3,800.00	3,795.95	3,765.46	3,765.46	11.33	164.02	98.32	-1,673.63	-5,232.72	5,515.02	5,339.67	175.35	31.452	
3,900.00	3,895.82	3,865.33	3,865.33	11.63	168.37	98.37	-1,673.63	-5,232.72	5,515.75	5,335.75	180.00	30.643	
4,000.00	3,995.69	3,965.21	3,965.21	11.93	172.72	98.42	-1,673.63	-5,232.72	5,516.49	5,331.84	184.65	29.875	
4,100.00	4,095.57	4,065.08	4,065.08	12.23	177.07	98.48	-1,673.63	-5,232.72	5,517.23	5,327.92	189.30	29.145	
4,200.00	4,195.44	4,164.95	4,164.95	12.53	181.43	98.53	-1,673.63	-5,232.72	5,517.97	5,324.02	193.95	28.450	
4,300.00	4,295.31	4,264.83	4,264.83	12.83	185.78	98.58	-1,673.63	-5,232.72	5,518.72	5,320.12	198.60	27.788	
4,400.00	4,395.19	4,364.70	4,364.70	13.13	190.13	98.63	-1,673.63	-5,232.72	5,519.47	5,316.22	203.25	27.156	
4,500.00	4,495.06	4,464.57	4,464.57	13.43	194.48	98.68	-1,673.63	-5,232.72	5,520.23	5,312.33	207.90	26.552	
4,600.00	4,594.93	4,564.45	4,564.45	13.73	198.83	98.73	-1,673.63	-5,232.72	5,520.99	5,308.44	212.55	25.975	
4,700.00	4,694.81	4,664.32	4,664.32	14.03	203.18	98.78	-1,673.63	-5,232.72	5,521.76	5,304.56	217.20	25.422	
4,800.00	4,794.68	4,764.19	4,764.19	14.33	207.53	98.84	-1,673.63	-5,232.72	5,522.53	5,300.68	221.85	24.893	
4,900.00	4,894.55	4,864.07	4,864.07	14.63	211.88	98.89	-1,673.63	-5,232.72	5,523.31	5,296.80	226.50	24.385	
5,000.00	4,994.43	4,963.94	4,963.94	14.93	216.23	98.94	-1,673.63	-5,232.72	5,524.09	5,292.93	231.16	23.898	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024 (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,063.82	5,063.82	15.23	220.58	98.99	-1,673.63	-5,232.72	5,524.87	5,289.06	235.81	23.430	
5,200.00	5,194.18	5,163.69	5,163.69	15.53	224.93	99.04	-1,673.63	-5,232.72	5,525.66	5,285.20	240.46	22.980	
5,300.00	5,294.05	5,263.56	5,263.56	15.83	229.28	99.09	-1,673.63	-5,232.72	5,526.45	5,281.35	245.11	22.547	
5,400.00	5,393.92	5,363.44	5,363.44	16.13	233.63	99.14	-1,673.63	-5,232.72	5,527.25	5,277.49	249.76	22.130	
5,500.00	5,493.80	5,463.31	5,463.31	16.43	237.98	99.20	-1,673.63	-5,232.72	5,528.05	5,273.65	254.41	21.729	
5,600.00	5,593.67	5,563.18	5,563.18	16.73	242.33	99.25	-1,673.63	-5,232.72	5,528.86	5,269.80	259.06	21.342	
5,700.00	5,693.54	5,663.06	5,663.06	17.03	246.68	99.30	-1,673.63	-5,232.72	5,529.67	5,265.96	263.71	20.969	
5,800.00	5,793.42	5,762.93	5,762.93	17.33	251.03	99.35	-1,673.63	-5,232.72	5,530.49	5,262.13	268.36	20.609	
5,900.00	5,893.29	5,862.80	5,862.80	17.63	255.38	99.40	-1,673.63	-5,232.72	5,531.31	5,258.30	273.01	20.260	
6,000.00	5,993.16	5,962.68	5,962.68	17.93	259.73	99.45	-1,673.63	-5,232.72	5,532.13	5,254.47	277.66	19.924	
6,100.00	6,093.04	6,062.55	6,062.55	18.23	264.08	99.50	-1,673.63	-5,232.72	5,532.96	5,250.65	282.31	19.599	
6,200.00	6,192.91	6,162.42	6,162.42	18.53	268.43	99.56	-1,673.63	-5,232.72	5,533.80	5,246.83	286.96	19.284	
6,300.00	6,292.78	6,262.30	6,262.30	18.83	272.79	99.61	-1,673.63	-5,232.72	5,534.63	5,243.02	291.61	18.979	
6,400.00	6,392.66	6,362.17	6,362.17	19.13	277.14	99.66	-1,673.63	-5,232.72	5,535.48	5,239.21	296.26	18.684	
6,500.00	6,492.53	6,462.04	6,462.04	19.43	281.49	99.71	-1,673.63	-5,232.72	5,536.32	5,235.41	300.91	18.398	
6,551.20	6,543.67	6,513.18	6,513.18	19.58	283.71	99.74	-1,673.63	-5,232.72	5,536.76	5,233.46	303.29	18.255	ES, SF
6,600.00	6,592.30	5,952.00	5,952.00	19.73	259.27	141.23	-1,673.63	-5,232.72	5,572.65	5,295.21	277.44	20.086	
6,650.00	6,641.67	5,952.00	5,952.00	19.88	259.27	150.85	-1,673.63	-5,232.72	5,584.85	5,307.51	277.34	20.137	
6,700.00	6,690.21	5,952.00	5,952.00	20.03	259.27	154.37	-1,673.63	-5,232.72	5,601.48	5,324.25	277.22	20.206	
6,750.00	6,737.54	5,952.00	5,952.00	20.18	259.27	155.84	-1,673.63	-5,232.72	5,622.37	5,345.26	277.10	20.290	
6,800.00	6,783.30	5,952.00	5,952.00	20.33	259.27	156.29	-1,673.63	-5,232.72	5,647.31	5,370.33	276.98	20.389	
6,850.00	6,827.15	5,952.00	5,952.00	20.48	259.27	156.06	-1,673.63	-5,232.72	5,676.07	5,399.20	276.87	20.501	
6,900.00	6,868.74	5,952.00	5,952.00	20.63	259.27	155.26	-1,673.63	-5,232.72	5,708.37	5,431.61	276.76	20.626	
6,950.00	6,907.77	5,952.00	5,952.00	20.78	259.27	153.89	-1,673.63	-5,232.72	5,743.91	5,467.24	276.67	20.761	
7,000.00	6,943.94	5,952.00	5,952.00	20.93	259.27	151.85	-1,673.63	-5,232.72	5,782.36	5,505.76	276.60	20.905	
7,050.00	6,976.97	5,952.00	5,952.00	21.08	259.27	148.97	-1,673.63	-5,232.72	5,823.36	5,546.81	276.55	21.057	
7,100.00	7,006.62	5,952.00	5,952.00	21.23	259.27	144.90	-1,673.63	-5,232.72	5,866.57	5,590.04	276.53	21.215	
7,150.00	7,032.64	5,952.00	5,952.00	21.38	259.27	139.12	-1,673.63	-5,232.72	5,911.61	5,635.07	276.54	21.377	
7,200.00	7,054.86	5,952.00	5,952.00	21.53	259.27	130.78	-1,673.63	-5,232.72	5,958.08	5,681.51	276.58	21.542	
7,250.00	7,073.09	5,952.00	5,952.00	21.68	259.27	118.71	-1,673.63	-5,232.72	6,005.63	5,728.97	276.65	21.708	
7,300.00	7,087.20	5,952.00	5,952.00	21.83	259.27	102.04	-1,673.63	-5,232.72	6,053.85	5,777.09	276.76	21.874	
7,350.00	7,097.08	5,952.00	5,952.00	21.98	259.27	82.14	-1,673.63	-5,232.72	6,102.37	5,825.47	276.90	22.038	
7,400.00	7,102.66	5,952.00	5,952.00	22.13	259.27	63.25	-1,673.63	-5,232.72	6,150.83	5,873.75	277.08	22.199	
7,438.94	7,104.00	5,952.00	5,952.00	22.25	259.27	51.43	-1,673.63	-5,232.72	6,188.28	5,911.04	277.24	22.321	
7,500.00	7,104.02	5,952.00	5,952.00	22.43	259.27	51.43	-1,673.63	-5,232.72	6,246.74	5,969.24	277.50	22.511	
7,600.00	7,104.06	5,952.00	5,952.00	22.74	259.27	51.43	-1,673.63	-5,232.72	6,342.59	6,064.66	277.93	22.821	
7,700.00	7,104.10	5,952.00	5,952.00	23.04	259.27	51.43	-1,673.63	-5,232.72	6,438.56	6,160.21	278.35	23.131	
7,800.00	7,104.14	5,952.00	5,952.00	23.34	259.27	51.43	-1,673.63	-5,232.72	6,534.66	6,255.89	278.77	23.441	
7,900.00	7,104.18	5,952.00	5,952.00	23.64	259.27	51.43	-1,673.63	-5,232.72	6,630.87	6,351.69	279.18	23.751	
8,000.00	7,104.22	5,952.00	5,952.00	23.94	259.27	51.43	-1,673.63	-5,232.72	6,727.19	6,447.60	279.59	24.061	
8,100.00	7,104.26	5,952.00	5,952.00	24.24	259.27	51.43	-1,673.63	-5,232.72	6,823.61	6,543.62	279.99	24.371	
8,200.00	7,104.30	5,952.00	5,952.00	24.54	259.27	51.43	-1,673.63	-5,232.72	6,920.14	6,639.75	280.39	24.681	
8,300.00	7,104.34	5,952.00	5,952.00	24.84	259.27	51.43	-1,673.63	-5,232.72	7,016.77	6,735.99	280.78	24.990	
8,400.00	7,104.38	5,952.00	5,952.00	25.14	259.27	51.43	-1,673.63	-5,232.72	7,113.49	6,832.31	281.17	25.299	
8,500.00	7,104.42	5,952.00	5,952.00	25.44	259.27	51.43	-1,673.63	-5,232.72	7,210.29	6,928.73	281.56	25.608	
8,600.00	7,104.45	5,952.00	5,952.00	25.74	259.27	51.43	-1,673.63	-5,232.72	7,307.19	7,025.24	281.94	25.917	
8,700.00	7,104.49	5,952.00	5,952.00	26.04	259.27	51.43	-1,673.63	-5,232.72	7,404.17	7,121.84	282.33	26.226	
8,800.00	7,104.53	5,952.00	5,952.00	26.34	259.27	51.43	-1,673.63	-5,232.72	7,501.22	7,218.52	282.70	26.534	
8,900.00	7,104.57	5,952.00	5,952.00	26.64	259.27	51.43	-1,673.63	-5,232.72	7,598.35	7,315.28	283.08	26.842	
9,000.00	7,104.61	5,952.00	5,952.00	26.95	259.27	51.43	-1,673.63	-5,232.72	7,695.56	7,412.11	283.45	27.150	
9,100.00	7,104.65	5,952.00	5,952.00	27.25	259.27	51.43	-1,673.63	-5,232.72	7,792.84	7,509.02	283.82	27.457	
9,200.00	7,104.69	5,952.00	5,952.00	27.55	259.27	51.43	-1,673.63	-5,232.72	7,890.18	7,606.00	284.19	27.764	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	5,952.00	5,952.00	27.85	259.27	51.43	-1,673.63	-5,232.72	7,987.59	7,703.04	284.55	28.071	
9,400.00	7,104.77	5,952.00	5,952.00	28.15	259.27	51.43	-1,673.63	-5,232.72	8,085.07	7,800.15	284.91	28.377	
9,500.00	7,104.81	5,952.00	5,952.00	28.45	259.27	51.43	-1,673.63	-5,232.72	8,182.60	7,897.33	285.27	28.684	
9,600.00	7,104.85	5,952.00	5,952.00	28.75	259.27	51.43	-1,673.63	-5,232.72	8,280.19	7,994.56	285.63	28.989	
9,700.00	7,104.89	5,952.00	5,952.00	29.05	259.27	51.43	-1,673.63	-5,232.72	8,377.84	8,091.86	285.99	29.295	
9,800.00	7,104.92	5,952.00	5,952.00	29.35	259.27	51.43	-1,673.63	-5,232.72	8,475.55	8,189.21	286.34	29.600	
9,900.00	7,104.96	5,952.00	5,952.00	29.65	259.27	51.43	-1,673.63	-5,232.72	8,573.31	8,286.62	286.69	29.904	
10,000.00	7,105.00	5,952.00	5,952.00	29.95	259.27	51.43	-1,673.63	-5,232.72	8,671.12	8,384.07	287.04	30.209	
10,100.00	7,105.04	5,952.00	5,952.00	30.25	259.27	51.43	-1,673.63	-5,232.72	8,768.97	8,481.58	287.39	30.512	
10,200.00	7,105.08	5,952.00	5,952.00	30.55	259.27	51.43	-1,673.63	-5,232.72	8,866.88	8,579.14	287.74	30.816	
10,300.00	7,105.12	5,952.00	5,952.00	30.85	259.27	51.43	-1,673.63	-5,232.72	8,964.83	8,676.75	288.08	31.119	
10,400.00	7,105.16	5,952.00	5,952.00	31.15	259.27	51.43	-1,673.63	-5,232.72	9,062.83	8,774.40	288.43	31.421	
10,500.00	7,105.20	5,952.00	5,952.00	31.45	259.27	51.43	-1,673.63	-5,232.72	9,160.87	8,872.10	288.77	31.724	
10,600.00	7,105.24	5,952.00	5,952.00	31.75	259.27	51.43	-1,673.63	-5,232.72	9,258.95	8,969.84	289.11	32.025	
10,700.00	7,105.28	5,952.00	5,952.00	32.05	259.27	51.43	-1,673.63	-5,232.72	9,357.08	9,067.62	289.45	32.327	
10,800.00	7,105.32	5,952.00	5,952.00	32.35	259.27	51.43	-1,673.63	-5,232.72	9,455.24	9,165.45	289.79	32.628	
10,900.00	7,105.36	5,952.00	5,952.00	32.66	259.27	51.43	-1,673.63	-5,232.72	9,553.44	9,263.31	290.13	32.928	
11,000.00	7,105.39	5,952.00	5,952.00	32.96	259.27	51.43	-1,673.63	-5,232.72	9,651.68	9,361.21	290.47	33.228	
11,100.00	7,105.43	5,952.00	5,952.00	33.26	259.27	51.43	-1,673.63	-5,232.72	9,749.95	9,459.15	290.80	33.528	
11,200.00	7,105.47	5,952.00	5,952.00	33.56	259.27	51.43	-1,673.63	-5,232.72	9,848.26	9,557.12	291.14	33.827	
11,300.00	7,105.51	5,952.00	5,952.00	33.86	259.27	51.43	-1,673.63	-5,232.72	9,946.60	9,655.13	291.47	34.126	
11,400.00	7,105.55	5,952.00	5,952.00	34.16	259.27	51.43	-1,673.63	-5,232.72	10,044.97	9,753.17	291.80	34.424	
11,500.00	7,105.59	5,952.00	5,952.00	34.46	259.27	51.43	-1,673.63	-5,232.72	10,143.38	9,851.25	292.13	34.722	
11,600.00	7,105.63	5,952.00	5,952.00	34.76	259.27	51.43	-1,673.63	-5,232.72	10,241.82	9,949.35	292.46	35.019	
11,700.00	7,105.67	5,952.00	5,952.00	35.06	259.27	51.43	-1,673.63	-5,232.72	10,340.28	10,047.49	292.79	35.316	
11,800.00	7,105.71	5,952.00	5,952.00	35.36	259.27	51.43	-1,673.63	-5,232.72	10,438.78	10,145.66	293.12	35.612	
11,900.00	7,105.75	5,952.00	5,952.00	35.66	259.27	51.43	-1,673.63	-5,232.72	10,537.30	10,243.85	293.45	35.908	
12,000.00	7,105.79	5,952.00	5,952.00	35.96	259.27	51.43	-1,673.63	-5,232.72	10,635.86	10,342.08	293.78	36.204	
12,100.00	7,105.83	5,952.00	5,952.00	36.26	259.27	51.43	-1,673.63	-5,232.72	10,734.43	10,440.33	294.11	36.499	
12,200.00	7,105.86	5,952.00	5,952.00	36.56	259.27	51.43	-1,673.63	-5,232.72	10,833.04	10,538.61	294.43	36.793	
12,300.00	7,105.90	5,952.00	5,952.00	36.86	259.27	51.43	-1,673.63	-5,232.72	10,931.67	10,636.91	294.76	37.087	
12,400.00	7,105.94	5,952.00	5,952.00	37.16	259.27	51.43	-1,673.63	-5,232.72	11,030.33	10,735.24	295.08	37.381	
12,500.00	7,105.98	5,952.00	5,952.00	37.46	259.27	51.43	-1,673.63	-5,232.72	11,129.00	10,833.60	295.41	37.674	
12,600.00	7,106.02	5,952.00	5,952.00	37.76	259.27	51.43	-1,673.63	-5,232.72	11,227.71	10,931.98	295.73	37.966	
12,700.00	7,106.06	5,952.00	5,952.00	38.06	259.27	51.43	-1,673.63	-5,232.72	11,326.43	11,030.38	296.05	38.258	
12,800.00	7,106.10	5,952.00	5,952.00	38.36	259.27	51.43	-1,673.63	-5,232.72	11,425.18	11,128.80	296.37	38.550	
12,900.00	7,106.14	5,952.00	5,952.00	38.66	259.27	51.43	-1,673.63	-5,232.72	11,523.95	11,227.25	296.70	38.841	
13,000.00	7,106.18	5,952.00	5,952.00	38.96	259.27	51.43	-1,673.63	-5,232.72	11,622.74	11,325.72	297.02	39.132	
13,100.00	7,106.22	5,952.00	5,952.00	39.26	259.27	51.43	-1,673.63	-5,232.72	11,721.55	11,424.21	297.34	39.422	
13,200.00	7,106.26	5,952.00	5,952.00	39.56	259.27	51.43	-1,673.63	-5,232.72	11,820.38	11,522.72	297.66	39.711	
13,300.00	7,106.30	5,952.00	5,952.00	39.86	259.27	51.43	-1,673.63	-5,232.72	11,919.23	11,621.25	297.98	40.000	
13,400.00	7,106.33	5,952.00	5,952.00	40.16	259.27	51.43	-1,673.63	-5,232.72	12,018.10	11,719.80	298.30	40.289	
13,500.00	7,106.37	5,952.00	5,952.00	40.46	259.27	51.43	-1,673.63	-5,232.72	12,116.99	11,818.37	298.62	40.577	
13,600.00	7,106.41	5,952.00	5,952.00	40.76	259.27	51.43	-1,673.63	-5,232.72	12,215.89	11,916.96	298.93	40.865	
13,700.00	7,106.45	5,952.00	5,952.00	41.06	259.27	51.43	-1,673.63	-5,232.72	12,314.81	12,015.56	299.25	41.152	
13,800.00	7,106.49	5,952.00	5,952.00	41.36	259.27	51.43	-1,673.63	-5,232.72	12,413.75	12,114.19	299.57	41.439	
13,900.00	7,106.53	5,952.00	5,952.00	41.67	259.27	51.43	-1,673.63	-5,232.72	12,512.71	12,212.83	299.89	41.725	
14,000.00	7,106.57	5,952.00	5,952.00	41.97	259.27	51.43	-1,673.63	-5,232.72	12,611.69	12,311.48	300.20	42.011	
14,100.00	7,106.61	5,952.00	5,952.00	42.27	259.27	51.43	-1,673.63	-5,232.72	12,710.68	12,410.16	300.52	42.296	
14,200.00	7,106.65	5,952.00	5,952.00	42.57	259.27	51.43	-1,673.63	-5,232.72	12,809.68	12,508.85	300.83	42.581	
14,300.00	7,106.69	5,952.00	5,952.00	42.87	259.27	51.43	-1,673.63	-5,232.72	12,908.70	12,607.55	301.15	42.865	
14,400.00	7,106.73	5,952.00	5,952.00	43.17	259.27	51.43	-1,673.63	-5,232.72	13,007.74	12,706.27	301.46	43.149	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	5,952.00	5,952.00	43.47	259.27	51.43	-1,673.63	-5,232.72	13,106.79	12,805.01	301.78	43.432	
14,600.00	7,106.80	5,952.00	5,952.00	43.77	259.27	51.43	-1,673.63	-5,232.72	13,205.85	12,903.76	302.09	43.714	
14,700.00	7,106.84	5,952.00	5,952.00	44.07	259.27	51.43	-1,673.63	-5,232.72	13,304.93	13,002.53	302.41	43.997	
14,800.00	7,106.88	5,952.00	5,952.00	44.37	259.27	51.43	-1,673.63	-5,232.72	13,404.03	13,101.30	302.72	44.278	
14,900.00	7,106.92	5,952.00	5,952.00	44.67	259.27	51.43	-1,673.63	-5,232.72	13,503.13	13,200.10	303.04	44.560	
15,000.00	7,106.96	5,952.00	5,952.00	44.97	259.27	51.43	-1,673.63	-5,232.72	13,602.25	13,298.90	303.35	44.840	
15,100.00	7,107.00	5,952.00	5,952.00	45.27	259.27	51.43	-1,673.63	-5,232.72	13,701.38	13,397.72	303.66	45.121	
15,200.00	7,107.04	5,952.00	5,952.00	45.57	259.27	51.43	-1,673.63	-5,232.72	13,800.53	13,496.55	303.97	45.400	
15,300.00	7,107.08	5,952.00	5,952.00	45.87	259.27	51.43	-1,673.63	-5,232.72	13,899.68	13,595.40	304.29	45.680	
15,400.00	7,107.12	5,952.00	5,952.00	46.17	259.27	51.43	-1,673.63	-5,232.72	13,998.85	13,694.25	304.60	45.958	
15,500.00	7,107.16	5,952.00	5,952.00	46.47	259.27	51.43	-1,673.63	-5,232.72	14,098.03	13,793.12	304.91	46.237	
15,600.00	7,107.20	5,952.00	5,952.00	46.77	259.27	51.43	-1,673.63	-5,232.72	14,197.22	13,892.00	305.22	46.514	
15,700.00	7,107.23	5,952.00	5,952.00	47.07	259.27	51.43	-1,673.63	-5,232.72	14,296.43	13,990.89	305.53	46.792	
15,800.00	7,107.27	5,952.00	5,952.00	47.37	259.27	51.43	-1,673.63	-5,232.72	14,395.64	14,089.80	305.84	47.068	
15,900.00	7,107.31	5,952.00	5,952.00	47.67	259.27	51.43	-1,673.63	-5,232.72	14,494.87	14,188.71	306.16	47.345	
16,000.00	7,107.35	5,952.00	5,952.00	47.97	259.27	51.43	-1,673.63	-5,232.72	14,594.10	14,287.64	306.47	47.621	
16,100.00	7,107.39	5,952.00	5,952.00	48.27	259.27	51.43	-1,673.63	-5,232.72	14,693.35	14,386.57	306.78	47.896	
16,200.00	7,107.43	5,952.00	5,952.00	48.57	259.27	51.43	-1,673.63	-5,232.72	14,792.60	14,485.52	307.09	48.171	
16,300.00	7,107.47	5,952.00	5,952.00	48.87	259.27	51.43	-1,673.63	-5,232.72	14,891.87	14,584.47	307.40	48.445	
16,400.00	7,107.51	5,952.00	5,952.00	49.17	259.27	51.43	-1,673.63	-5,232.72	14,991.15	14,683.44	307.71	48.719	
16,500.00	7,107.55	5,952.00	5,952.00	49.47	259.27	51.43	-1,673.63	-5,232.72	15,090.43	14,782.41	308.02	48.992	
16,600.00	7,107.59	5,952.00	5,952.00	49.77	259.27	51.43	-1,673.63	-5,232.72	15,189.73	14,881.40	308.33	49.265	
16,700.00	7,107.63	5,952.00	5,952.00	50.07	259.27	51.43	-1,673.63	-5,232.72	15,289.03	14,980.39	308.64	49.537	
16,800.00	7,107.67	5,952.00	5,952.00	50.37	259.27	51.43	-1,673.63	-5,232.72	15,388.34	15,079.40	308.94	49.809	
16,900.00	7,107.70	5,952.00	5,952.00	50.67	259.27	51.43	-1,673.63	-5,232.72	15,487.66	15,178.41	309.25	50.081	
17,000.00	7,107.74	5,952.00	5,952.00	50.97	259.27	51.43	-1,673.63	-5,232.72	15,586.99	15,277.43	309.56	50.352	
17,100.00	7,107.78	5,952.00	5,952.00	51.27	259.27	51.43	-1,673.63	-5,232.72	15,686.33	15,376.46	309.87	50.622	
17,200.00	7,107.82	5,952.00	5,952.00	51.57	259.27	51.43	-1,673.63	-5,232.72	15,785.68	15,475.50	310.18	50.892	
17,300.00	7,107.86	5,952.00	5,952.00	51.87	259.27	51.43	-1,673.63	-5,232.72	15,885.04	15,574.55	310.49	51.161	
17,400.00	7,107.90	5,952.00	5,952.00	52.17	259.27	51.43	-1,673.63	-5,232.72	15,984.40	15,673.60	310.80	51.430	
17,500.00	7,107.94	5,952.00	5,952.00	52.47	259.27	51.43	-1,673.63	-5,232.72	16,083.77	15,772.67	311.10	51.699	
17,600.00	7,107.98	5,952.00	5,952.00	52.77	259.27	51.43	-1,673.63	-5,232.72	16,183.15	15,871.74	311.41	51.967	
17,700.00	7,108.02	5,952.00	5,952.00	53.07	259.27	51.43	-1,673.63	-5,232.72	16,282.54	15,970.82	311.72	52.234	
17,800.00	7,108.06	5,952.00	5,952.00	53.37	259.27	51.43	-1,673.63	-5,232.72	16,381.93	16,069.90	312.03	52.502	
17,900.00	7,108.10	5,952.00	5,952.00	53.67	259.27	51.43	-1,673.63	-5,232.72	16,481.33	16,169.00	312.34	52.768	
18,000.00	7,108.14	5,952.00	5,952.00	53.97	259.27	51.43	-1,673.63	-5,232.72	16,580.74	16,268.10	312.64	53.034	
18,100.00	7,108.17	5,952.00	5,952.00	54.27	259.27	51.43	-1,673.63	-5,232.72	16,680.16	16,367.21	312.95	53.300	
18,200.00	7,108.21	5,952.00	5,952.00	54.57	259.27	51.43	-1,673.63	-5,232.72	16,779.58	16,466.32	313.26	53.565	
18,300.00	7,108.25	5,952.00	5,952.00	54.87	259.27	51.43	-1,673.63	-5,232.72	16,879.01	16,565.45	313.56	53.830	
18,400.00	7,108.29	5,952.00	5,952.00	55.17	259.27	51.43	-1,673.63	-5,232.72	16,978.45	16,664.58	313.87	54.094	
18,500.00	7,108.33	5,952.00	5,952.00	55.47	259.27	51.43	-1,673.63	-5,232.72	17,077.89	16,763.71	314.18	54.357	
18,600.00	7,108.37	5,952.00	5,952.00	55.77	259.27	51.43	-1,673.63	-5,232.72	17,177.34	16,862.85	314.48	54.621	
18,700.00	7,108.41	5,952.00	5,952.00	56.07	259.27	51.43	-1,673.63	-5,232.72	17,276.79	16,962.00	314.79	54.883	
18,800.00	7,108.45	5,952.00	5,952.00	56.37	259.27	51.43	-1,673.63	-5,232.72	17,376.26	17,061.16	315.10	55.146	
18,900.00	7,108.49	5,952.00	5,952.00	56.67	259.27	51.43	-1,673.63	-5,232.72	17,475.72	17,160.32	315.40	55.408	
19,000.00	7,108.53	5,952.00	5,952.00	56.97	259.27	51.43	-1,673.63	-5,232.72	17,575.20	17,259.49	315.71	55.669	
19,100.00	7,108.57	5,952.00	5,952.00	57.28	259.27	51.43	-1,673.63	-5,232.72	17,674.68	17,358.66	316.02	55.930	
19,200.00	7,108.61	5,952.00	5,952.00	57.58	259.27	51.43	-1,673.63	-5,232.72	17,774.16	17,457.84	316.32	56.190	
19,300.00	7,108.64	5,952.00	5,952.00	57.88	259.27	51.43	-1,673.63	-5,232.72	17,873.66	17,557.03	316.63	56.450	
19,400.00	7,108.68	5,952.00	5,952.00	58.18	259.27	51.43	-1,673.63	-5,232.72	17,973.15	17,656.22	316.93	56.710	
19,500.00	7,108.72	5,952.00	5,952.00	58.48	259.27	51.43	-1,673.63	-5,232.72	18,072.66	17,755.42	317.24	56.969	
19,600.00	7,108.76	5,952.00	5,952.00	58.78	259.27	51.43	-1,673.63	-5,232.72	18,172.16	17,854.62	317.54	57.227	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024 (Offset) - OH - OH

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,700.00	7,108.80	5,952.00	5,952.00	59.08	259.27	51.43	-1,673.63	-5,232.72	18,271.68	17,953.83	317.85	57.485	
19,800.00	7,108.84	5,952.00	5,952.00	59.38	259.27	51.43	-1,673.63	-5,232.72	18,371.20	18,053.04	318.16	57.743	
19,900.00	7,108.88	5,952.00	5,952.00	59.68	259.27	51.43	-1,673.63	-5,232.72	18,470.72	18,152.26	318.46	58.000	
20,000.00	7,108.92	5,952.00	5,952.00	59.98	259.27	51.43	-1,673.63	-5,232.72	18,570.25	18,251.48	318.77	58.257	
20,100.00	7,108.96	5,952.00	5,952.00	60.28	259.27	51.43	-1,673.63	-5,232.72	18,669.78	18,350.71	319.07	58.513	
20,208.46	7,109.00	5,952.00	5,952.00	60.60	259.27	51.43	-1,673.63	-5,232.72	18,777.74	18,458.34	319.40	58.790	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024B (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-113.02	-1,804.36	-4,246.10	4,613.75				
100.00	100.00	59.51	59.51	0.23	0.59	-113.02	-1,804.36	-4,246.10	4,613.57	4,612.76	0.81	5,676.075	
200.00	200.00	159.52	159.51	0.53	1.77	-113.02	-1,804.36	-4,246.10	4,613.57	4,611.27	2.30	2,006.665	
240.99	240.99	200.50	200.50	0.65	2.53	-113.02	-1,804.15	-4,246.10	4,613.49	4,610.31	3.18	1,452.263	
300.00	300.00	250.39	250.38	0.83	3.45	-113.02	-1,804.27	-4,246.10	4,613.55	4,609.28	4.27	1,079.852	
400.00	400.00	359.52	359.51	1.13	5.46	-113.02	-1,804.36	-4,246.10	4,613.57	4,606.98	6.59	700.296	
500.00	500.00	459.52	459.51	1.43	7.31	-113.02	-1,804.36	-4,246.10	4,613.57	4,604.84	8.74	528.122	
550.97	550.97	510.49	510.48	1.58	8.25	91.38	-1,804.09	-4,246.10	4,613.48	4,603.65	9.83	469.301	CC
600.00	599.98	558.73	558.72	1.73	9.14	91.39	-1,804.10	-4,246.10	4,613.51	4,602.64	10.87	424.468	
644.12	644.06	602.12	602.11	1.86	9.94	91.41	-1,804.13	-4,246.10	4,613.57	4,601.77	11.80	390.882	
700.00	699.87	657.05	657.04	2.03	10.96	91.45	-1,804.18	-4,246.10	4,613.66	4,600.68	12.99	355.289	
800.00	799.74	759.28	759.26	2.33	12.85	91.51	-1,804.36	-4,246.10	4,613.86	4,598.68	15.18	303.974	
900.00	899.62	859.16	859.13	2.63	14.81	91.57	-1,804.36	-4,246.10	4,614.00	4,596.56	17.44	264.620	
1,000.00	999.49	959.03	959.00	2.93	16.77	91.63	-1,804.36	-4,246.10	4,614.14	4,594.44	19.69	234.290	
1,044.00	1,043.44	1,002.98	1,002.94	3.06	17.63	91.67	-1,803.55	-4,246.10	4,613.89	4,593.20	20.69	223.026	
1,100.00	1,099.36	1,056.39	1,056.35	3.23	18.68	91.70	-1,803.59	-4,246.10	4,613.99	4,592.08	21.90	210.658	
1,200.00	1,199.24	1,151.79	1,151.75	3.53	20.55	91.76	-1,803.84	-4,246.10	4,614.24	4,590.17	24.07	191.678	
1,300.00	1,299.11	1,258.69	1,258.62	3.83	22.65	91.82	-1,804.36	-4,246.10	4,614.59	4,588.12	26.47	174.302	
1,400.00	1,398.98	1,358.57	1,358.50	4.13	24.68	91.88	-1,804.36	-4,246.10	4,614.75	4,585.95	28.80	160.217	
1,500.00	1,498.86	1,458.44	1,458.37	4.43	26.71	91.95	-1,804.36	-4,246.10	4,614.92	4,583.79	31.13	148.240	
1,534.08	1,532.89	1,492.48	1,492.40	4.53	27.40	91.98	-1,803.56	-4,246.10	4,614.68	4,582.75	31.93	144.547	
1,600.00	1,598.73	1,555.34	1,555.26	4.73	28.67	92.02	-1,803.62	-4,246.10	4,614.82	4,581.42	33.40	138.170	
1,700.00	1,698.60	1,650.72	1,650.64	5.03	30.61	92.07	-1,803.90	-4,246.10	4,615.11	4,579.47	35.64	129.504	
1,800.00	1,798.48	1,758.12	1,757.99	5.33	32.79	92.13	-1,804.36	-4,246.10	4,615.46	4,577.34	38.12	121.079	
1,900.00	1,898.35	1,857.99	1,857.86	5.63	34.83	92.20	-1,804.36	-4,246.10	4,615.65	4,575.20	40.45	114.095	
2,000.00	1,998.22	1,957.87	1,957.74	5.93	36.86	92.26	-1,804.36	-4,246.10	4,615.85	4,573.06	42.79	107.873	
2,031.13	2,029.31	1,988.49	1,988.35	6.02	37.49	92.29	-1,803.28	-4,246.10	4,615.50	4,572.00	43.51	106.087	
2,100.00	2,098.10	2,053.30	2,053.16	6.23	38.81	92.33	-1,803.38	-4,246.10	4,615.68	4,570.65	45.03	102.493	
2,200.00	2,197.97	2,147.43	2,147.29	6.53	40.73	92.38	-1,803.77	-4,246.10	4,616.05	4,568.79	47.25	97.690	
2,300.00	2,297.84	2,257.54	2,257.36	6.83	42.95	92.44	-1,804.36	-4,246.10	4,616.47	4,566.69	49.78	92.747	
2,400.00	2,397.72	2,357.42	2,357.23	7.13	44.92	92.51	-1,804.36	-4,246.10	4,616.68	4,564.64	52.04	88.710	
2,500.00	2,497.59	2,457.29	2,457.10	7.43	46.88	92.57	-1,804.36	-4,246.10	4,616.91	4,562.60	54.31	85.010	
2,523.91	2,521.47	2,480.72	2,480.53	7.50	47.35	92.59	-1,803.56	-4,246.10	4,616.66	4,561.82	54.84	84.179	
2,600.00	2,597.46	2,553.39	2,553.19	7.73	48.78	92.64	-1,803.65	-4,246.10	4,616.87	4,560.37	56.50	81.710	
2,700.00	2,697.34	2,648.91	2,648.71	8.03	50.66	92.69	-1,803.98	-4,246.10	4,617.24	4,558.55	58.68	78.679	
2,800.00	2,797.21	2,756.95	2,756.72	8.33	52.94	92.76	-1,804.36	-4,246.10	4,617.61	4,556.34	61.27	75.368	
2,900.00	2,897.09	2,856.83	2,856.60	8.63	55.28	92.82	-1,804.36	-4,246.10	4,617.85	4,553.95	63.90	72.264	
3,000.00	2,996.96	2,956.70	2,956.47	8.93	57.61	92.88	-1,804.36	-4,246.10	4,618.10	4,551.56	66.54	69.405	
3,036.37	3,033.29	2,992.96	2,992.73	9.04	58.46	92.91	-1,803.45	-4,246.10	4,617.86	4,550.37	67.50	68.417	
3,100.00	3,096.83	3,054.07	3,053.84	9.23	59.89	92.95	-1,803.50	-4,246.10	4,618.05	4,548.93	69.12	66.817	
3,200.00	3,196.71	3,150.14	3,149.90	9.53	62.14	93.01	-1,803.75	-4,246.10	4,618.40	4,546.74	71.66	64.447	
3,300.00	3,296.58	3,246.22	3,245.98	9.83	64.38	93.06	-1,804.22	-4,246.10	4,618.85	4,544.64	74.21	62.242	
3,400.00	3,396.45	3,356.36	3,355.97	10.13	67.05	93.13	-1,804.36	-4,246.10	4,619.16	4,541.98	77.18	59.848	
3,500.00	3,496.33	3,456.24	3,455.84	10.43	69.50	93.19	-1,804.36	-4,246.10	4,619.44	4,539.51	79.93	57.796	
3,580.66	3,576.89	3,536.76	3,536.32	10.67	71.47	93.27	-1,802.01	-4,246.10	4,618.82	4,536.68	82.14	56.231	
3,600.00	3,596.20	3,554.20	3,553.75	10.73	71.90	93.28	-1,802.02	-4,246.10	4,618.88	4,536.25	82.62	55.902	
3,700.00	3,696.07	3,644.41	3,643.95	11.03	74.11	93.33	-1,802.39	-4,246.10	4,619.32	4,534.18	85.13	54.260	
3,800.00	3,795.95	3,734.69	3,734.21	11.33	76.32	93.38	-1,803.29	-4,246.10	4,619.97	4,532.33	87.64	52.714	
3,900.00	3,895.82	3,855.92	3,855.33	11.63	79.12	93.44	-1,804.36	-4,246.10	4,620.60	4,529.85	90.75	50.917	
4,000.00	3,995.69	3,955.80	3,955.21	11.93	81.25	93.50	-1,804.36	-4,246.10	4,620.91	4,527.73	93.17	49.595	
4,083.97	4,079.56	4,039.66	4,039.07	12.18	83.03	93.55	-1,804.36	-4,246.10	4,621.17	4,525.96	95.21	48.537	
4,100.00	4,095.57	4,055.63	4,055.03	12.23	83.37	93.58	-1,803.27	-4,246.10	4,620.83	4,525.23	95.60	48.336	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,200.00	4,195.44	4,150.12	4,149.51	12.53	85.38	93.63	-1,803.42	-4,246.10	4,621.20	4,523.30	97.91	47.200	
4,300.00	4,295.31	4,244.64	4,244.03	12.83	87.39	93.69	-1,803.89	-4,246.10	4,621.70	4,521.48	100.22	46.116	
4,400.00	4,395.19	4,355.37	4,354.70	13.13	89.75	93.75	-1,804.36	-4,246.10	4,622.18	4,519.30	102.87	44.930	
4,500.00	4,495.06	4,455.24	4,454.57	13.43	91.87	93.81	-1,804.36	-4,246.10	4,622.51	4,517.21	105.30	43.899	
4,581.91	4,576.86	4,537.04	4,536.38	13.67	93.61	93.86	-1,804.36	-4,246.10	4,622.79	4,515.50	107.29	43.088	
4,600.00	4,594.93	4,555.11	4,554.43	13.73	94.00	93.89	-1,803.27	-4,246.10	4,622.47	4,514.74	107.72	42.910	
4,700.00	4,694.81	4,649.66	4,648.98	14.03	96.01	93.94	-1,803.42	-4,246.10	4,622.87	4,512.83	110.04	42.012	
4,800.00	4,794.68	4,744.26	4,743.57	14.33	98.02	94.00	-1,803.89	-4,246.10	4,623.39	4,511.04	112.35	41.152	
4,900.00	4,894.55	4,854.81	4,854.07	14.63	100.38	94.06	-1,804.36	-4,246.10	4,623.89	4,508.89	115.00	40.207	
5,000.00	4,994.43	4,954.68	4,953.94	14.93	102.50	94.12	-1,804.36	-4,246.10	4,624.25	4,506.83	117.43	39.380	
5,100.00	5,094.30	5,054.56	5,053.82	15.23	104.63	94.19	-1,804.36	-4,246.10	4,624.62	4,504.77	119.85	38.586	
5,116.59	5,110.87	5,070.27	5,069.52	15.28	104.96	94.21	-1,803.27	-4,246.10	4,624.30	4,504.07	120.24	38.460	
5,200.00	5,194.18	5,149.21	5,148.45	15.53	106.64	94.26	-1,803.42	-4,246.10	4,624.67	4,502.50	122.17	37.856	
5,300.00	5,294.05	5,243.87	5,243.11	15.83	108.65	94.31	-1,803.89	-4,246.10	4,625.22	4,500.74	124.48	37.156	
5,400.00	5,393.92	5,354.25	5,353.44	16.13	111.13	94.37	-1,804.36	-4,246.10	4,625.75	4,498.49	127.26	36.350	
5,500.00	5,493.80	5,454.13	5,453.31	16.43	113.51	94.43	-1,804.36	-4,246.10	4,626.13	4,496.19	129.94	35.603	
5,600.00	5,593.67	5,554.00	5,553.18	16.73	115.89	94.50	-1,804.36	-4,246.10	4,626.52	4,493.90	132.62	34.885	
5,700.00	5,693.54	5,648.75	5,647.92	17.03	118.15	94.57	-1,803.42	-4,246.10	4,626.61	4,491.43	135.18	34.225	
5,800.00	5,793.42	5,743.49	5,742.65	17.33	120.41	94.62	-1,803.89	-4,246.10	4,627.18	4,489.44	137.74	33.594	
5,900.00	5,893.29	5,853.77	5,852.80	17.63	123.05	94.68	-1,804.36	-4,246.10	4,627.73	4,487.06	140.67	32.897	
6,000.00	5,993.16	5,953.64	5,952.68	17.93	125.44	94.74	-1,804.36	-4,246.10	4,628.15	4,484.78	143.36	32.283	
6,100.00	6,093.04	6,053.52	6,052.55	18.23	127.82	94.81	-1,804.36	-4,246.10	4,628.57	4,482.51	146.05	31.692	
6,126.01	6,119.01	6,077.37	6,076.38	18.30	128.39	94.84	-1,802.46	-4,246.10	4,628.04	4,481.34	146.70	31.548	
6,200.00	6,192.91	6,144.94	6,143.93	18.53	130.01	94.88	-1,802.70	-4,246.10	4,628.44	4,479.91	148.54	31.160	
6,300.00	6,292.78	6,236.30	6,235.28	18.83	132.20	94.93	-1,803.45	-4,246.10	4,629.15	4,478.13	151.02	30.652	
6,400.00	6,392.66	6,353.28	6,352.17	19.13	134.74	94.99	-1,804.36	-4,246.10	4,629.85	4,475.99	153.86	30.090	
6,500.00	6,492.53	6,453.16	6,452.04	19.43	136.60	95.05	-1,804.36	-4,246.10	4,630.30	4,474.27	156.03	29.676	
6,551.20	6,543.67	6,504.30	6,503.18	19.58	137.56	95.08	-1,804.36	-4,246.10	4,630.52	4,473.39	157.14	29.468 ES	
6,600.00	6,592.30	6,552.93	6,551.81	19.73	138.46	137.03	-1,804.36	-4,246.10	4,632.70	4,474.51	158.19	29.286	
6,650.00	6,641.67	6,599.91	6,598.79	19.88	139.34	146.84	-1,803.30	-4,246.10	4,638.63	4,479.41	159.21	29.134	
6,700.00	6,690.21	6,646.01	6,644.88	20.03	140.20	150.56	-1,803.41	-4,246.10	4,648.99	4,488.77	160.22	29.015	
6,750.00	6,737.54	6,690.97	6,689.84	20.18	141.04	152.26	-1,803.59	-4,246.10	4,663.36	4,502.15	161.21	28.927	
6,800.00	6,783.30	6,734.45	6,733.31	20.33	141.85	152.97	-1,803.83	-4,246.10	4,681.63	4,519.45	162.17	28.868	
6,850.00	6,827.15	6,776.11	6,774.98	20.48	142.63	153.07	-1,804.12	-4,246.10	4,703.66	4,540.55	163.10	28.839	
6,900.00	6,868.74	6,829.40	6,828.26	20.63	143.58	152.74	-1,804.36	-4,246.10	4,729.23	4,565.02	164.21	28.801 SF	
6,950.00	6,907.77	6,868.43	6,867.29	20.78	144.24	151.96	-1,804.36	-4,246.10	4,758.14	4,593.12	165.02	28.834	
7,000.00	6,943.94	6,904.60	6,903.46	20.93	144.86	150.73	-1,804.36	-4,246.10	4,790.23	4,624.45	165.78	28.894	
7,050.00	6,976.97	6,937.63	6,936.49	21.08	145.42	149.01	-1,804.36	-4,246.10	4,825.27	4,658.78	166.50	28.981	
7,100.00	7,006.62	6,967.28	6,966.13	21.23	145.92	146.66	-1,804.36	-4,246.10	4,863.00	4,695.85	167.15	29.094	
7,150.00	7,032.64	6,993.30	6,992.16	21.38	146.36	143.53	-1,804.36	-4,246.10	4,903.12	4,735.38	167.74	29.230	
7,200.00	7,054.86	7,015.35	7,014.20	21.53	146.74	139.32	-1,804.14	-4,246.10	4,945.29	4,777.02	168.27	29.389	
7,250.00	7,073.09	7,033.28	7,032.14	21.68	147.04	133.64	-1,804.14	-4,246.10	4,989.30	4,820.58	168.72	29.571	
7,300.00	7,087.20	7,047.17	7,046.02	21.83	147.28	125.93	-1,804.15	-4,246.10	5,034.77	4,865.66	169.11	29.772	
7,350.00	7,097.08	7,056.89	7,055.75	21.98	147.44	115.56	-1,804.15	-4,246.10	5,081.33	4,911.91	169.42	29.992	
7,400.00	7,102.66	7,062.38	7,061.24	22.13	147.54	102.16	-1,804.16	-4,246.10	5,128.65	4,958.98	169.67	30.227	
7,438.94	7,104.00	7,063.70	7,062.55	22.25	147.56	90.04	-1,804.16	-4,246.10	5,165.78	4,995.98	169.81	30.421	
7,500.00	7,104.02	7,063.72	7,062.57	22.43	147.56	90.04	-1,804.16	-4,246.10	5,224.14	5,054.15	169.99	30.732	
7,600.00	7,104.06	7,063.76	7,062.61	22.74	147.56	90.04	-1,804.16	-4,246.10	5,319.85	5,149.55	170.29	31.239	
7,700.00	7,104.10	7,063.80	7,062.65	23.04	147.56	90.04	-1,804.16	-4,246.10	5,415.71	5,245.11	170.60	31.746	
7,800.00	7,104.14	7,063.84	7,062.69	23.34	147.56	90.04	-1,804.16	-4,246.10	5,511.72	5,340.82	170.90	32.252	
7,900.00	7,104.18	7,063.88	7,062.73	23.64	147.56	90.04	-1,804.16	-4,246.10	5,607.86	5,436.66	171.20	32.757	
8,000.00	7,104.22	7,063.92	7,062.77	23.94	147.56	90.04	-1,804.16	-4,246.10	5,704.14	5,532.64	171.50	33.260	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
8,100.00	7,104.26	7,063.95	7,062.81	24.24	147.56	90.05	-1,804.16	-4,246.10	5,800.55	5,628.74	171.80	33.763	
8,200.00	7,104.30	7,063.99	7,062.85	24.54	147.56	90.05	-1,804.16	-4,246.10	5,897.07	5,724.97	172.10	34.265	
8,300.00	7,104.34	7,064.03	7,062.89	24.84	147.57	90.05	-1,804.16	-4,246.10	5,993.71	5,821.31	172.40	34.766	
8,400.00	7,104.38	7,064.07	7,062.92	25.14	147.57	90.05	-1,804.16	-4,246.10	6,090.46	5,917.75	172.71	35.265	
8,500.00	7,104.42	7,064.11	7,062.96	25.44	147.57	90.05	-1,804.16	-4,246.10	6,187.31	6,014.30	173.01	35.763	
8,600.00	7,104.45	7,064.15	7,063.00	25.74	147.57	90.05	-1,804.16	-4,246.10	6,284.26	6,110.95	173.31	36.261	
8,700.00	7,104.49	7,064.19	7,063.04	26.04	147.57	90.05	-1,804.16	-4,246.10	6,381.30	6,207.69	173.61	36.757	
8,800.00	7,104.53	7,064.23	7,063.08	26.34	147.57	90.06	-1,804.16	-4,246.10	6,478.43	6,304.52	173.91	37.252	
8,900.00	7,104.57	7,064.27	7,063.12	26.64	147.57	90.06	-1,804.16	-4,246.10	6,575.65	6,401.44	174.21	37.745	
9,000.00	7,104.61	7,064.30	7,063.16	26.95	147.57	90.06	-1,804.16	-4,246.10	6,672.95	6,498.44	174.51	38.238	
9,100.00	7,104.65	7,064.34	7,063.20	27.25	147.57	90.06	-1,804.16	-4,246.10	6,770.33	6,595.52	174.81	38.729	
9,200.00	7,104.69	7,064.38	7,063.24	27.55	147.57	90.06	-1,804.16	-4,246.10	6,867.79	6,692.67	175.12	39.219	
9,300.00	7,104.73	7,064.42	7,063.27	27.85	147.57	90.06	-1,804.16	-4,246.10	6,965.32	6,789.90	175.42	39.707	
9,400.00	7,104.77	7,064.46	7,063.31	28.15	147.57	90.06	-1,804.16	-4,246.10	7,062.91	6,887.20	175.72	40.195	
9,500.00	7,104.81	7,064.50	7,063.35	28.45	147.57	90.07	-1,804.16	-4,246.10	7,160.58	6,984.56	176.02	40.681	
9,600.00	7,104.85	7,064.54	7,063.39	28.75	147.57	90.07	-1,804.16	-4,246.10	7,258.30	7,081.98	176.32	41.165	
9,700.00	7,104.89	7,064.58	7,063.43	29.05	147.57	90.07	-1,804.16	-4,246.10	7,356.09	7,179.47	176.62	41.649	
9,800.00	7,104.92	7,064.62	7,063.47	29.35	147.58	90.07	-1,804.16	-4,246.10	7,453.94	7,277.01	176.92	42.131	
9,900.00	7,104.96	7,064.65	7,063.51	29.65	147.58	90.07	-1,804.16	-4,246.10	7,551.84	7,374.62	177.22	42.612	
10,000.00	7,105.00	7,064.69	7,063.55	29.95	147.58	90.07	-1,804.16	-4,246.10	7,649.80	7,472.27	177.53	43.091	
10,100.00	7,105.04	7,064.73	7,063.59	30.25	147.58	90.08	-1,804.16	-4,246.10	7,747.81	7,569.98	177.83	43.569	
10,200.00	7,105.08	7,064.77	7,063.62	30.55	147.58	90.08	-1,804.16	-4,246.10	7,845.87	7,667.74	178.13	44.046	
10,300.00	7,105.12	7,064.81	7,063.66	30.85	147.58	90.08	-1,804.16	-4,246.10	7,943.97	7,765.55	178.43	44.522	
10,400.00	7,105.16	7,064.85	7,063.70	31.15	147.58	90.08	-1,804.16	-4,246.10	8,042.13	7,863.40	178.73	44.996	
10,500.00	7,105.20	7,064.89	7,063.74	31.45	147.58	90.08	-1,804.16	-4,246.10	8,140.33	7,961.30	179.03	45.469	
10,600.00	7,105.24	7,064.93	7,063.78	31.75	147.58	90.08	-1,804.16	-4,246.10	8,238.57	8,059.24	179.33	45.940	
10,700.00	7,105.28	7,064.97	7,063.82	32.05	147.58	90.08	-1,804.16	-4,246.10	8,336.86	8,157.22	179.63	46.410	
10,800.00	7,105.32	7,065.00	7,063.86	32.35	147.58	90.09	-1,804.16	-4,246.10	8,435.18	8,255.25	179.93	46.879	
10,900.00	7,105.36	7,065.04	7,063.90	32.66	147.58	90.09	-1,804.16	-4,246.10	8,533.54	8,353.31	180.24	47.347	
11,000.00	7,105.39	7,065.08	7,063.94	32.96	147.58	90.09	-1,804.16	-4,246.10	8,631.95	8,451.41	180.54	47.813	
11,100.00	7,105.43	7,065.12	7,063.97	33.26	147.58	90.09	-1,804.16	-4,246.10	8,730.38	8,549.55	180.84	48.277	
11,200.00	7,105.47	7,065.16	7,064.01	33.56	147.58	90.09	-1,804.16	-4,246.10	8,828.86	8,647.72	181.14	48.741	
11,300.00	7,105.51	7,065.20	7,064.05	33.86	147.58	90.09	-1,804.16	-4,246.10	8,927.36	8,745.92	181.44	49.203	
11,400.00	7,105.55	7,065.24	7,064.09	34.16	147.59	90.09	-1,804.16	-4,246.10	9,025.90	8,844.16	181.74	49.664	
11,500.00	7,105.59	7,065.28	7,064.13	34.46	147.59	90.10	-1,804.16	-4,246.10	9,124.47	8,942.43	182.04	50.123	
11,600.00	7,105.63	7,065.32	7,064.17	34.76	147.59	90.10	-1,804.16	-4,246.10	9,223.08	9,040.73	182.34	50.581	
11,700.00	7,105.67	7,065.35	7,064.21	35.06	147.59	90.10	-1,804.16	-4,246.10	9,321.71	9,139.06	182.64	51.038	
11,800.00	7,105.71	7,065.39	7,064.25	35.36	147.59	90.10	-1,804.16	-4,246.10	9,420.37	9,237.42	182.95	51.493	
11,900.00	7,105.75	7,065.43	7,064.29	35.66	147.59	90.10	-1,804.16	-4,246.10	9,519.06	9,335.81	183.25	51.947	
12,000.00	7,105.79	7,065.47	7,064.32	35.96	147.59	90.10	-1,804.16	-4,246.10	9,617.77	9,434.23	183.55	52.399	
12,100.00	7,105.83	7,065.51	7,064.36	36.26	147.59	90.10	-1,804.16	-4,246.10	9,716.52	9,532.67	183.85	52.851	
12,200.00	7,105.86	7,065.55	7,064.40	36.56	147.59	90.11	-1,804.16	-4,246.10	9,815.28	9,631.13	184.15	53.301	
12,300.00	7,105.90	7,065.59	7,064.44	36.86	147.59	90.11	-1,804.16	-4,246.10	9,914.08	9,729.63	184.45	53.749	
12,400.00	7,105.94	7,065.63	7,064.48	37.16	147.59	90.11	-1,804.16	-4,246.10	10,012.89	9,828.14	184.75	54.197	
12,500.00	7,105.98	7,065.67	7,064.52	37.46	147.59	90.11	-1,804.16	-4,246.10	10,111.73	9,926.68	185.05	54.643	
12,600.00	7,106.02	7,065.70	7,064.56	37.76	147.59	90.11	-1,804.16	-4,246.10	10,210.59	10,025.24	185.35	55.087	
12,700.00	7,106.06	7,065.74	7,064.60	38.06	147.59	90.11	-1,804.16	-4,246.10	10,309.48	10,123.82	185.65	55.531	
12,800.00	7,106.10	7,065.78	7,064.64	38.36	147.59	90.11	-1,804.16	-4,246.10	10,408.38	10,222.43	185.96	55.973	
12,900.00	7,106.14	7,065.82	7,064.67	38.66	147.60	90.12	-1,804.16	-4,246.10	10,507.31	10,321.05	186.26	56.413	
13,000.00	7,106.18	7,065.86	7,064.71	38.96	147.60	90.12	-1,804.16	-4,246.10	10,606.26	10,419.70	186.56	56.853	
13,100.00	7,106.22	7,065.90	7,064.75	39.26	147.60	90.12	-1,804.16	-4,246.10	10,705.22	10,518.36	186.86	57.291	
13,200.00	7,106.26	7,065.94	7,064.79	39.56	147.60	90.12	-1,804.16	-4,246.10	10,804.21	10,617.05	187.16	57.727	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024B (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
13,300.00	7,106.30	7,065.98	7,064.83	39.86	147.60	90.12	-1,804.16	-4,246.10	10,903.21	10,715.75	187.46	58.163	
13,400.00	7,106.33	7,066.02	7,064.87	40.16	147.60	90.12	-1,804.16	-4,246.10	11,002.23	10,814.47	187.76	58.597	
13,500.00	7,106.37	7,066.05	7,064.91	40.46	147.60	90.12	-1,804.16	-4,246.10	11,101.27	10,913.21	188.06	59.030	
13,600.00	7,106.41	7,066.09	7,064.95	40.76	147.60	90.13	-1,804.16	-4,246.10	11,200.33	11,011.96	188.36	59.461	
13,700.00	7,106.45	7,066.13	7,064.98	41.06	147.60	90.13	-1,804.16	-4,246.10	11,299.40	11,110.73	188.66	59.892	
13,800.00	7,106.49	7,066.17	7,065.02	41.36	147.60	90.13	-1,804.16	-4,246.10	11,398.49	11,209.52	188.96	60.321	
13,900.00	7,106.53	7,066.21	7,065.06	41.67	147.60	90.13	-1,804.16	-4,246.10	11,497.59	11,308.33	189.27	60.748	
14,000.00	7,106.57	7,066.25	7,065.10	41.97	147.60	90.13	-1,804.16	-4,246.10	11,596.71	11,407.15	189.57	61.175	
14,100.00	7,106.61	7,066.29	7,065.14	42.27	147.60	90.13	-1,804.16	-4,246.10	11,695.85	11,505.98	189.87	61.600	
14,200.00	7,106.65	7,066.33	7,065.18	42.57	147.60	90.13	-1,804.16	-4,246.10	11,795.00	11,604.83	190.17	62.024	
14,300.00	7,106.69	7,066.37	7,065.22	42.87	147.60	90.14	-1,804.16	-4,246.10	11,894.16	11,703.69	190.47	62.447	
14,400.00	7,106.73	7,066.40	7,065.26	43.17	147.61	90.14	-1,804.16	-4,246.10	11,993.34	11,802.57	190.77	62.868	
14,500.00	7,106.76	7,066.44	7,065.30	43.47	147.61	90.14	-1,804.16	-4,246.10	12,092.53	11,901.46	191.07	63.288	
14,600.00	7,106.80	7,066.48	7,065.33	43.77	147.61	90.14	-1,804.16	-4,246.10	12,191.73	12,000.36	191.37	63.707	
14,700.00	7,106.84	7,066.52	7,065.37	44.07	147.61	90.14	-1,804.16	-4,246.10	12,290.95	12,099.28	191.67	64.125	
14,800.00	7,106.88	7,066.56	7,065.41	44.37	147.61	90.14	-1,804.16	-4,246.10	12,390.18	12,198.21	191.97	64.541	
14,900.00	7,106.92	7,066.60	7,065.45	44.67	147.61	90.15	-1,804.16	-4,246.10	12,489.42	12,297.15	192.27	64.956	
15,000.00	7,106.96	7,066.64	7,065.49	44.97	147.61	90.15	-1,804.16	-4,246.10	12,588.68	12,396.10	192.58	65.370	
15,100.00	7,107.00	7,066.68	7,065.53	45.27	147.61	90.15	-1,804.16	-4,246.10	12,687.94	12,495.07	192.88	65.783	
15,200.00	7,107.04	7,066.72	7,065.57	45.57	147.61	90.15	-1,804.16	-4,246.10	12,787.22	12,594.04	193.18	66.194	
15,300.00	7,107.08	7,066.75	7,065.61	45.87	147.61	90.15	-1,804.16	-4,246.10	12,886.51	12,693.03	193.48	66.604	
15,400.00	7,107.12	7,066.79	7,065.65	46.17	147.61	90.15	-1,804.16	-4,246.10	12,985.81	12,792.03	193.78	67.013	
15,500.00	7,107.16	7,066.83	7,065.68	46.47	147.61	90.15	-1,804.16	-4,246.10	13,085.12	12,891.04	194.08	67.421	
15,600.00	7,107.20	7,066.87	7,065.72	46.77	147.61	90.16	-1,804.16	-4,246.10	13,184.44	12,990.06	194.38	67.828	
15,700.00	7,107.23	7,066.91	7,065.76	47.07	147.61	90.16	-1,804.16	-4,246.10	13,283.77	13,089.09	194.68	68.233	
15,800.00	7,107.27	7,066.95	7,065.80	47.37	147.61	90.16	-1,804.16	-4,246.10	13,383.11	13,188.13	194.98	68.637	
15,900.00	7,107.31	7,066.99	7,065.84	47.67	147.62	90.16	-1,804.16	-4,246.10	13,482.46	13,287.18	195.28	69.040	
16,000.00	7,107.35	7,067.03	7,065.88	47.97	147.62	90.16	-1,804.16	-4,246.10	13,581.82	13,386.24	195.58	69.442	
16,100.00	7,107.39	7,067.07	7,065.92	48.27	147.62	90.16	-1,804.16	-4,246.10	13,681.19	13,485.31	195.89	69.843	
16,200.00	7,107.43	7,067.10	7,065.96	48.57	147.62	90.16	-1,804.16	-4,246.10	13,780.57	13,584.38	196.19	70.242	
16,300.00	7,107.47	7,067.14	7,066.00	48.87	147.62	90.17	-1,804.16	-4,246.10	13,879.96	13,683.47	196.49	70.641	
16,400.00	7,107.51	7,067.18	7,066.04	49.17	147.62	90.17	-1,804.16	-4,246.10	13,979.35	13,782.57	196.79	71.038	
16,500.00	7,107.55	7,067.22	7,066.07	49.47	147.62	90.17	-1,804.16	-4,246.10	14,078.76	13,881.67	197.09	71.434	
16,600.00	7,107.59	7,067.26	7,066.11	49.77	147.62	90.17	-1,804.16	-4,246.10	14,178.17	13,980.78	197.39	71.828	
16,700.00	7,107.63	7,067.30	7,066.15	50.07	147.62	90.17	-1,804.16	-4,246.10	14,277.59	14,079.90	197.69	72.222	
16,800.00	7,107.67	7,067.34	7,066.19	50.37	147.62	90.17	-1,804.16	-4,246.10	14,377.02	14,179.03	197.99	72.614	
16,900.00	7,107.70	7,067.38	7,066.23	50.67	147.62	90.17	-1,804.16	-4,246.10	14,476.46	14,278.17	198.29	73.006	
17,000.00	7,107.74	7,067.42	7,066.27	50.97	147.62	90.18	-1,804.16	-4,246.10	14,575.90	14,377.31	198.59	73.396	
17,100.00	7,107.78	7,067.45	7,066.31	51.27	147.62	90.18	-1,804.16	-4,246.10	14,675.36	14,476.46	198.89	73.785	
17,200.00	7,107.82	7,067.49	7,066.35	51.57	147.62	90.18	-1,804.16	-4,246.10	14,774.82	14,575.62	199.19	74.173	
17,300.00	7,107.86	7,067.53	7,066.39	51.87	147.62	90.18	-1,804.16	-4,246.10	14,874.28	14,674.79	199.50	74.559	
17,400.00	7,107.90	7,067.57	7,066.42	52.17	147.63	90.18	-1,804.16	-4,246.10	14,973.76	14,773.96	199.80	74.945	
17,500.00	7,107.94	7,067.61	7,066.46	52.47	147.63	90.18	-1,804.16	-4,246.10	15,073.24	14,873.14	200.10	75.330	
17,600.00	7,107.98	7,067.65	7,066.50	52.77	147.63	90.18	-1,804.16	-4,246.10	15,172.73	14,972.33	200.40	75.713	
17,700.00	7,108.02	7,067.69	7,066.54	53.07	147.63	90.19	-1,804.16	-4,246.10	15,272.22	15,071.52	200.70	76.095	
17,800.00	7,108.06	7,067.73	7,066.58	53.37	147.63	90.19	-1,804.16	-4,246.10	15,371.72	15,170.72	201.00	76.476	
17,900.00	7,108.10	7,067.77	7,066.62	53.67	147.63	90.19	-1,804.16	-4,246.10	15,471.23	15,269.93	201.30	76.856	
18,000.00	7,108.14	7,067.80	7,066.66	53.97	147.63	90.19	-1,804.16	-4,246.10	15,570.74	15,369.14	201.60	77.235	
18,100.00	7,108.17	7,067.84	7,066.70	54.27	147.63	90.19	-1,804.16	-4,246.10	15,670.26	15,468.36	201.90	77.613	
18,200.00	7,108.21	7,067.88	7,066.74	54.57	147.63	90.19	-1,804.16	-4,246.10	15,769.79	15,567.59	202.20	77.990	
18,300.00	7,108.25	7,067.92	7,066.77	54.87	147.63	90.19	-1,804.16	-4,246.10	15,869.32	15,666.82	202.50	78.366	
18,400.00	7,108.29	7,067.96	7,066.81	55.17	147.63	90.20	-1,804.16	-4,246.10	15,968.86	15,766.06	202.80	78.740	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #024B (Offset) - OH - OH

Survey Program: 136-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
18,500.00	7,108.33	7,068.00	7,066.85	55.47	147.63	90.20	-1,804.16	-4,246.10	16,068.40	15,865.30	203.11	79.114	
18,600.00	7,108.37	7,068.04	7,066.89	55.77	147.63	90.20	-1,804.16	-4,246.10	16,167.95	15,964.55	203.41	79.486	
18,700.00	7,108.41	7,068.08	7,066.93	56.07	147.63	90.20	-1,804.16	-4,246.10	16,267.51	16,063.80	203.71	79.857	
18,800.00	7,108.45	7,068.12	7,066.97	56.37	147.63	90.20	-1,804.16	-4,246.10	16,367.07	16,163.06	204.01	80.228	
18,900.00	7,108.49	7,068.15	7,067.01	56.67	147.64	90.20	-1,804.16	-4,246.10	16,466.63	16,262.33	204.31	80.597	
19,000.00	7,108.53	7,068.19	7,067.05	56.97	147.64	90.20	-1,804.16	-4,246.10	16,566.21	16,361.60	204.61	80.965	
19,100.00	7,108.57	7,068.23	7,067.09	57.28	147.64	90.21	-1,804.16	-4,246.10	16,665.78	16,460.87	204.91	81.332	
19,200.00	7,108.61	7,068.27	7,067.12	57.58	147.64	90.21	-1,804.16	-4,246.10	16,765.36	16,560.15	205.21	81.698	
19,300.00	7,108.64	7,068.31	7,067.16	57.88	147.64	90.21	-1,804.16	-4,246.10	16,864.95	16,659.44	205.51	82.063	
19,400.00	7,108.68	7,068.35	7,067.20	58.18	147.64	90.21	-1,804.16	-4,246.10	16,964.54	16,758.73	205.81	82.427	
19,500.00	7,108.72	7,068.39	7,067.24	58.48	147.64	90.21	-1,804.16	-4,246.10	17,064.13	16,858.02	206.11	82.790	
19,600.00	7,108.76	7,068.43	7,067.28	58.78	147.64	90.21	-1,804.16	-4,246.10	17,163.74	16,957.32	206.41	83.152	
19,700.00	7,108.80	7,068.47	7,067.32	59.08	147.64	90.22	-1,804.16	-4,246.10	17,263.34	17,056.63	206.72	83.513	
19,800.00	7,108.84	7,068.50	7,067.36	59.38	147.64	90.22	-1,804.16	-4,246.10	17,362.95	17,155.93	207.02	83.873	
19,900.00	7,108.88	7,068.54	7,067.40	59.68	147.64	90.22	-1,804.16	-4,246.10	17,462.56	17,255.25	207.32	84.231	
20,000.00	7,108.92	7,068.58	7,067.44	59.98	147.64	90.22	-1,804.16	-4,246.10	17,562.18	17,354.56	207.62	84.589	
20,100.00	7,108.96	7,068.62	7,067.47	60.28	147.64	90.22	-1,804.16	-4,246.10	17,661.80	17,453.89	207.92	84.946	
20,208.46	7,109.00	7,068.66	7,067.52	60.60	147.64	90.22	-1,804.16	-4,246.10	17,769.86	17,561.61	208.24	85.332	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-126.84	-1,804.58	-2,408.98	3,010.60				
100.00	100.00	36.51	36.51	0.23	0.32	-126.84	-1,804.58	-2,408.98	3,009.93	3,009.38	0.55	5,471.322	
200.00	200.00	136.51	136.51	0.53	1.21	-126.84	-1,804.58	-2,408.98	3,009.93	3,008.19	1.74	1,733.917	
300.00	300.00	236.51	236.51	0.83	2.10	-126.84	-1,804.58	-2,408.98	3,009.93	3,007.01	2.92	1,030.198	
400.00	400.00	336.51	336.51	1.13	3.22	-126.84	-1,804.58	-2,408.98	3,009.93	3,005.58	4.35	691.847	
500.00	500.00	436.51	436.51	1.43	5.03	-126.84	-1,804.58	-2,408.98	3,009.93	3,003.47	6.45	466.427	
600.00	599.98	536.49	536.49	1.73	6.83	77.59	-1,804.58	-2,408.98	3,009.55	3,001.00	8.56	351.773	
644.12	644.06	580.00	580.00	1.86	7.61	77.64	-1,804.33	-2,408.98	3,009.00	2,999.53	9.47	317.675	
700.00	699.87	634.89	634.89	2.03	8.60	77.69	-1,804.36	-2,408.98	3,008.42	2,997.79	10.63	283.035	
800.00	799.74	733.14	733.14	2.33	10.37	77.78	-1,804.48	-2,408.98	3,007.42	2,994.72	12.70	236.804	
900.00	899.62	836.14	836.13	2.63	12.25	77.88	-1,804.58	-2,408.98	3,006.42	2,991.54	14.88	202.055	
1,000.00	999.49	936.01	936.00	2.93	14.09	77.97	-1,804.58	-2,408.98	3,005.36	2,988.34	17.02	176.576	
1,100.00	1,099.36	1,035.22	1,035.20	3.23	15.92	78.07	-1,804.07	-2,408.98	3,004.02	2,984.87	19.15	156.878	
1,200.00	1,199.24	1,131.90	1,131.88	3.53	17.70	78.16	-1,804.19	-2,408.98	3,003.06	2,981.83	21.23	141.448	
1,300.00	1,299.11	1,228.59	1,228.57	3.83	19.49	78.25	-1,804.49	-2,408.98	3,002.21	2,978.90	23.31	128.777	
1,400.00	1,398.98	1,335.53	1,335.50	4.13	21.50	78.35	-1,804.58	-2,408.98	3,001.23	2,975.60	25.63	117.111	
1,500.00	1,498.86	1,435.40	1,435.37	4.43	23.39	78.44	-1,804.58	-2,408.98	3,000.22	2,972.40	27.82	107.853	
1,600.00	1,598.73	1,534.07	1,534.04	4.73	25.26	78.54	-1,804.05	-2,408.98	2,998.90	2,968.92	29.99	100.012	
1,700.00	1,698.60	1,630.95	1,630.92	5.03	27.09	78.63	-1,804.20	-2,408.98	2,998.00	2,965.88	32.12	93.340	
1,800.00	1,798.48	1,727.84	1,727.81	5.33	28.93	78.72	-1,804.52	-2,408.98	2,997.20	2,962.95	34.25	87.501	
1,900.00	1,898.35	1,834.92	1,834.86	5.63	31.06	78.82	-1,804.58	-2,408.98	2,996.25	2,959.56	36.68	81.676	
2,000.00	1,998.22	1,934.80	1,934.74	5.93	33.06	78.91	-1,804.58	-2,408.98	2,995.27	2,956.29	38.99	76.827	
2,100.00	2,098.10	2,031.70	2,031.63	6.23	35.00	79.01	-1,803.88	-2,408.98	2,993.91	2,952.68	41.23	72.614	
2,200.00	2,197.97	2,126.89	2,126.83	6.53	36.91	79.10	-1,804.17	-2,408.98	2,993.13	2,949.69	43.44	68.904	
2,300.00	2,297.84	2,234.47	2,234.36	6.83	39.10	79.19	-1,804.58	-2,408.98	2,992.40	2,946.48	45.92	65.162	
2,400.00	2,397.72	2,334.34	2,334.23	7.13	41.18	79.29	-1,804.58	-2,408.98	2,991.46	2,943.16	48.30	61.933	
2,500.00	2,497.59	2,433.44	2,433.32	7.43	43.24	79.40	-1,803.62	-2,408.98	2,989.98	2,939.32	50.67	59.015	
2,600.00	2,597.46	2,527.01	2,526.89	7.73	45.19	79.48	-1,803.83	-2,408.98	2,989.19	2,936.28	52.91	56.492	
2,700.00	2,697.34	2,620.62	2,620.49	8.03	47.14	79.56	-1,804.39	-2,408.98	2,988.62	2,933.46	55.16	54.179	
2,800.00	2,797.21	2,733.91	2,733.72	8.33	49.63	79.67	-1,804.58	-2,408.98	2,987.79	2,929.83	57.96	51.550	
2,900.00	2,897.09	2,833.78	2,833.60	8.63	51.86	79.76	-1,804.58	-2,408.98	2,986.89	2,926.40	60.49	49.378	
3,000.00	2,996.96	2,930.26	2,930.06	8.93	54.02	79.87	-1,803.61	-2,408.98	2,985.45	2,922.51	62.95	47.429	
3,100.00	3,096.83	3,024.23	3,024.03	9.23	56.12	79.95	-1,803.97	-2,408.98	2,984.78	2,919.44	65.35	45.677	
3,200.00	3,196.71	3,133.51	3,133.22	9.53	58.60	80.05	-1,804.58	-2,408.98	2,984.24	2,916.11	68.13	43.804	
3,300.00	3,296.58	3,233.39	3,233.09	9.83	61.01	80.14	-1,804.58	-2,408.98	2,983.37	2,912.54	70.83	42.118	
3,400.00	3,396.45	3,330.96	3,330.65	10.13	63.36	80.25	-1,803.28	-2,408.98	2,981.79	2,908.31	73.48	40.578	
3,500.00	3,496.33	3,421.04	3,420.71	10.43	65.53	80.33	-1,803.67	-2,408.98	2,981.18	2,905.23	75.95	39.250	
3,600.00	3,596.20	3,533.14	3,532.71	10.73	68.23	80.43	-1,804.58	-2,408.98	2,980.82	2,901.86	78.96	37.751	
3,700.00	3,696.07	3,633.02	3,632.59	11.03	70.67	80.52	-1,804.58	-2,408.98	2,979.99	2,898.30	81.69	36.478	
3,800.00	3,795.95	3,722.78	3,722.33	11.33	72.85	80.62	-1,803.84	-2,408.98	2,978.77	2,894.59	84.18	35.386	
3,900.00	3,895.82	3,832.86	3,832.33	11.63	75.51	80.71	-1,804.58	-2,408.98	2,978.35	2,891.21	87.14	34.179	
4,000.00	3,995.69	3,932.74	3,932.21	11.93	77.88	80.81	-1,804.58	-2,408.98	2,977.54	2,887.73	89.81	33.155	
4,100.00	4,095.57	4,032.61	4,032.08	12.23	80.25	80.90	-1,804.58	-2,408.98	2,976.74	2,884.26	92.48	32.189	
4,200.00	4,195.44	4,125.41	4,124.86	12.53	82.45	81.01	-1,803.15	-2,408.98	2,975.17	2,880.20	94.98	31.325	
4,300.00	4,295.31	4,217.32	4,216.75	12.83	84.63	81.09	-1,803.78	-2,408.98	2,974.76	2,877.31	97.46	30.524	
4,400.00	4,395.19	4,332.37	4,331.70	13.13	87.25	81.19	-1,804.58	-2,408.98	2,974.39	2,874.01	100.38	29.631	
4,500.00	4,495.06	4,432.24	4,431.57	13.43	89.38	81.29	-1,804.58	-2,408.98	2,973.62	2,870.82	102.81	28.925	
4,600.00	4,594.93	4,532.12	4,531.45	13.73	91.50	81.38	-1,804.58	-2,408.98	2,972.86	2,867.63	105.23	28.251	
4,700.00	4,694.81	4,625.49	4,624.79	14.03	93.49	81.49	-1,803.42	-2,408.98	2,971.49	2,863.98	107.52	27.638	
4,800.00	4,794.68	4,718.74	4,718.04	14.33	95.47	81.57	-1,803.99	-2,408.98	2,971.08	2,861.28	109.80	27.059	
4,900.00	4,894.55	4,831.81	4,831.07	14.63	97.71	81.67	-1,804.58	-2,408.98	2,970.64	2,858.30	112.33	26.444	
5,000.00	4,994.43	4,931.69	4,930.94	14.93	99.50	81.76	-1,804.58	-2,408.98	2,969.91	2,855.48	114.43	25.954	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026A (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,031.04	5,030.28	15.23	101.29	81.87	-1,803.80	-2,408.98	2,968.78	2,852.26	116.51	25.480	
5,200.00	5,194.18	5,126.75	5,125.99	15.53	103.01	81.96	-1,803.95	-2,408.98	2,968.16	2,849.62	118.53	25.041	
5,300.00	5,294.05	5,222.49	5,221.73	15.83	104.73	82.05	-1,804.36	-2,408.98	2,967.68	2,847.13	120.55	24.617	
5,400.00	5,393.92	5,331.20	5,330.44	16.13	106.86	82.15	-1,804.58	-2,408.98	2,967.09	2,844.11	122.99	24.125	
5,500.00	5,493.80	5,431.08	5,430.31	16.43	108.90	82.24	-1,804.58	-2,408.98	2,966.41	2,841.08	125.33	23.669	
5,600.00	5,593.67	5,530.13	5,529.37	16.73	110.93	82.34	-1,804.35	-2,408.98	2,965.62	2,837.96	127.65	23.232	
5,700.00	5,693.54	5,628.48	5,627.71	17.03	112.94	82.44	-1,804.45	-2,408.98	2,965.00	2,835.04	129.97	22.814	
5,800.00	5,793.42	5,730.76	5,729.93	17.33	115.19	82.53	-1,804.58	-2,408.98	2,964.41	2,831.89	132.52	22.370	
5,900.00	5,893.29	5,830.63	5,829.80	17.63	117.73	82.63	-1,804.58	-2,408.98	2,963.76	2,828.40	135.36	21.896	
6,000.00	5,993.16	5,930.50	5,929.68	17.93	120.27	82.73	-1,804.58	-2,408.98	2,963.12	2,824.92	138.20	21.441	
6,100.00	6,093.04	6,023.19	6,022.34	18.23	122.63	82.84	-1,803.21	-2,408.98	2,961.78	2,820.92	140.85	21.027	
6,200.00	6,192.91	6,115.37	6,114.50	18.53	124.97	82.92	-1,803.87	-2,408.98	2,961.53	2,818.03	143.50	20.638	
6,300.00	6,292.78	6,230.32	6,229.30	18.83	127.99	83.01	-1,804.58	-2,408.98	2,961.24	2,814.42	146.82	20.169	
6,400.00	6,392.66	6,330.19	6,329.17	19.13	130.73	83.11	-1,804.58	-2,408.98	2,960.64	2,810.78	149.85	19.757	
6,500.00	6,492.53	6,425.79	6,424.74	19.43	133.34	83.23	-1,803.03	-2,408.98	2,959.24	2,806.47	152.76	19.371	
6,551.20	6,543.67	6,471.83	6,470.77	19.58	134.60	83.27	-1,803.24	-2,408.98	2,959.05	2,804.88	154.18	19.193	
6,552.98	6,545.45	6,473.43	6,472.37	19.59	134.64	86.40	-1,803.25	-2,408.98	2,959.05	2,804.83	154.23	19.186	CC, ES
6,600.00	6,592.30	6,515.63	6,514.57	19.73	135.80	125.22	-1,803.58	-2,408.98	2,960.74	2,805.22	155.52	19.038	
6,650.00	6,641.67	6,560.11	6,559.04	19.88	137.01	134.98	-1,804.07	-2,408.98	2,966.21	2,809.33	156.89	18.907	
6,700.00	6,690.21	6,627.97	6,626.72	20.03	138.87	138.71	-1,804.58	-2,408.98	2,975.31	2,816.41	158.90	18.724	
6,750.00	6,737.54	6,675.30	6,674.05	20.18	140.18	140.35	-1,804.58	-2,408.98	2,987.84	2,827.49	160.35	18.633	
6,800.00	6,783.30	6,721.06	6,719.81	20.33	141.44	140.97	-1,804.58	-2,408.98	3,003.95	2,842.18	161.77	18.570	
6,850.00	6,827.15	6,764.90	6,763.66	20.48	142.65	140.94	-1,804.58	-2,408.98	3,023.52	2,860.39	163.12	18.535	
6,900.00	6,868.74	6,806.50	6,805.26	20.63	143.80	140.41	-1,804.58	-2,408.98	3,046.43	2,882.01	164.42	18.528	SF
6,950.00	6,907.77	6,842.48	6,841.19	20.78	144.79	139.42	-1,802.68	-2,408.98	3,071.61	2,906.05	165.56	18.552	
7,000.00	6,943.94	6,874.80	6,873.51	20.93	145.68	137.91	-1,802.79	-2,408.98	3,100.81	2,934.21	166.60	18.612	
7,050.00	6,976.97	6,904.33	6,903.03	21.08	146.49	135.88	-1,802.96	-2,408.98	3,132.87	2,965.30	167.57	18.696	
7,100.00	7,006.62	6,930.83	6,929.53	21.23	147.22	133.23	-1,803.17	-2,408.98	3,167.54	2,999.09	168.45	18.804	
7,150.00	7,032.64	6,954.12	6,952.81	21.38	147.86	129.86	-1,803.41	-2,408.98	3,204.57	3,035.33	169.24	18.935	
7,200.00	7,054.86	6,973.99	6,972.68	21.53	148.41	125.62	-1,803.64	-2,408.98	3,243.69	3,073.75	169.94	19.087	
7,250.00	7,073.09	6,990.31	6,988.99	21.68	148.86	120.33	-1,803.85	-2,408.98	3,284.59	3,114.05	170.54	19.260	
7,300.00	7,087.20	7,002.94	7,001.62	21.83	149.21	113.82	-1,804.03	-2,408.98	3,326.96	3,155.93	171.04	19.452	
7,350.00	7,097.08	7,011.79	7,010.47	21.98	149.45	105.99	-1,804.16	-2,408.98	3,370.49	3,199.06	171.43	19.661	
7,400.00	7,102.66	7,016.79	7,015.47	22.13	149.59	96.89	-1,804.24	-2,408.98	3,414.83	3,243.11	171.72	19.886	
7,438.94	7,104.00	7,017.99	7,016.67	22.25	149.63	89.15	-1,804.26	-2,408.98	3,449.70	3,277.83	171.87	20.072	
7,500.00	7,104.02	7,018.02	7,016.69	22.43	149.63	89.15	-1,804.26	-2,408.98	3,504.63	3,332.58	172.05	20.369	
7,600.00	7,104.06	7,018.06	7,016.74	22.74	149.63	89.15	-1,804.26	-2,408.98	3,595.01	3,422.66	172.36	20.858	
7,700.00	7,104.10	7,018.10	7,016.78	23.04	149.63	89.15	-1,804.26	-2,408.98	3,685.89	3,513.24	172.66	21.348	
7,800.00	7,104.14	7,018.15	7,016.82	23.34	149.63	89.15	-1,804.26	-2,408.98	3,777.24	3,604.28	172.96	21.839	
7,900.00	7,104.18	7,018.19	7,016.86	23.64	149.63	89.15	-1,804.27	-2,408.98	3,869.01	3,695.74	173.26	22.330	
8,000.00	7,104.22	7,018.23	7,016.91	23.94	149.63	89.16	-1,804.27	-2,408.98	3,961.17	3,787.61	173.56	22.822	
8,100.00	7,104.26	7,018.28	7,016.95	24.24	149.63	89.16	-1,804.27	-2,408.98	4,053.71	3,879.85	173.87	23.315	
8,200.00	7,104.30	7,018.32	7,016.99	24.54	149.63	89.16	-1,804.27	-2,408.98	4,146.60	3,972.43	174.17	23.808	
8,300.00	7,104.34	7,018.36	7,017.03	24.84	149.64	89.16	-1,804.27	-2,408.98	4,239.81	4,065.34	174.47	24.301	
8,400.00	7,104.38	7,018.40	7,017.08	25.14	149.64	89.16	-1,804.27	-2,408.98	4,333.32	4,158.55	174.77	24.794	
8,500.00	7,104.42	7,018.45	7,017.12	25.44	149.64	89.16	-1,804.27	-2,408.98	4,427.12	4,252.04	175.07	25.287	
8,600.00	7,104.45	7,018.49	7,017.16	25.74	149.64	89.16	-1,804.27	-2,408.98	4,521.18	4,345.80	175.38	25.780	
8,700.00	7,104.49	7,018.53	7,017.20	26.04	149.64	89.17	-1,804.27	-2,408.98	4,615.49	4,439.81	175.68	26.272	
8,800.00	7,104.53	7,018.57	7,017.25	26.34	149.64	89.17	-1,804.27	-2,408.98	4,710.03	4,534.05	175.98	26.765	
8,900.00	7,104.57	7,018.62	7,017.29	26.64	149.64	89.17	-1,804.27	-2,408.98	4,804.80	4,628.52	176.28	27.256	
9,000.00	7,104.61	7,018.66	7,017.33	26.95	149.64	89.17	-1,804.27	-2,408.98	4,899.78	4,723.19	176.58	27.747	
9,100.00	7,104.65	7,018.70	7,017.38	27.25	149.64	89.17	-1,804.27	-2,408.98	4,994.95	4,818.06	176.89	28.238	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,200.00	7,104.69	7,018.74	7,017.42	27.55	149.65	89.17	-1,804.27	-2,408.98	5,090.30	4,913.12	177.19	28.728	
9,300.00	7,104.73	7,018.79	7,017.46	27.85	149.65	89.18	-1,804.27	-2,408.98	5,185.83	5,008.34	177.49	29.218	
9,400.00	7,104.77	7,018.83	7,017.50	28.15	149.65	89.18	-1,804.28	-2,408.98	5,281.53	5,103.74	177.79	29.706	
9,500.00	7,104.81	7,018.87	7,017.55	28.45	149.65	89.18	-1,804.28	-2,408.98	5,377.38	5,199.29	178.09	30.194	
9,600.00	7,104.85	7,018.92	7,017.59	28.75	149.65	89.18	-1,804.28	-2,408.98	5,473.39	5,294.99	178.40	30.681	
9,700.00	7,104.89	7,018.96	7,017.63	29.05	149.65	89.18	-1,804.28	-2,408.98	5,569.53	5,390.83	178.70	31.167	
9,800.00	7,104.92	7,019.00	7,017.67	29.35	149.65	89.18	-1,804.28	-2,408.98	5,665.80	5,486.81	179.00	31.653	
9,900.00	7,104.96	7,019.04	7,017.72	29.65	149.65	89.19	-1,804.28	-2,408.98	5,762.21	5,582.91	179.30	32.137	
10,000.00	7,105.00	7,019.09	7,017.76	29.95	149.66	89.19	-1,804.28	-2,408.98	5,858.73	5,679.13	179.60	32.621	
10,100.00	7,105.04	7,019.13	7,017.80	30.25	149.66	89.19	-1,804.28	-2,408.98	5,955.37	5,775.46	179.90	33.103	
10,200.00	7,105.08	7,019.17	7,017.85	30.55	149.66	89.19	-1,804.28	-2,408.98	6,052.12	5,871.91	180.21	33.584	
10,300.00	7,105.12	7,019.22	7,017.89	30.85	149.66	89.19	-1,804.28	-2,408.98	6,148.97	5,968.46	180.51	34.065	
10,400.00	7,105.16	7,019.26	7,017.93	31.15	149.66	89.19	-1,804.28	-2,408.98	6,245.92	6,065.11	180.81	34.544	
10,500.00	7,105.20	7,019.30	7,017.97	31.45	149.66	89.20	-1,804.28	-2,408.98	6,342.96	6,161.85	181.11	35.022	
10,600.00	7,105.24	7,019.34	7,018.02	31.75	149.66	89.20	-1,804.28	-2,408.98	6,440.10	6,258.69	181.41	35.500	
10,700.00	7,105.28	7,019.39	7,018.06	32.05	149.66	89.20	-1,804.28	-2,408.98	6,537.32	6,355.61	181.71	35.976	
10,800.00	7,105.32	7,019.43	7,018.10	32.35	149.66	89.20	-1,804.28	-2,408.98	6,634.63	6,452.61	182.02	36.451	
10,900.00	7,105.36	7,019.47	7,018.14	32.66	149.67	89.20	-1,804.29	-2,408.98	6,732.01	6,549.69	182.32	36.925	
11,000.00	7,105.39	7,019.51	7,018.19	32.96	149.67	89.20	-1,804.29	-2,408.98	6,829.47	6,646.85	182.62	37.397	
11,100.00	7,105.43	7,019.56	7,018.23	33.26	149.67	89.21	-1,804.29	-2,408.98	6,927.00	6,744.08	182.92	37.869	
11,200.00	7,105.47	7,019.60	7,018.27	33.56	149.67	89.21	-1,804.29	-2,408.98	7,024.60	6,841.38	183.22	38.339	
11,300.00	7,105.51	7,019.64	7,018.32	33.86	149.67	89.21	-1,804.29	-2,408.98	7,122.27	6,938.74	183.52	38.808	
11,400.00	7,105.55	7,019.69	7,018.36	34.16	149.67	89.21	-1,804.29	-2,408.98	7,220.00	7,036.17	183.83	39.276	
11,500.00	7,105.59	7,019.73	7,018.40	34.46	149.67	89.21	-1,804.29	-2,408.98	7,317.79	7,133.67	184.13	39.743	
11,600.00	7,105.63	7,019.77	7,018.44	34.76	149.67	89.21	-1,804.29	-2,408.98	7,415.64	7,231.22	184.43	40.209	
11,700.00	7,105.67	7,019.81	7,018.49	35.06	149.68	89.21	-1,804.29	-2,408.98	7,513.55	7,328.82	184.73	40.673	
11,800.00	7,105.71	7,019.86	7,018.53	35.36	149.68	89.22	-1,804.29	-2,408.98	7,611.52	7,426.48	185.03	41.136	
11,900.00	7,105.75	7,019.90	7,018.57	35.66	149.68	89.22	-1,804.29	-2,408.98	7,709.53	7,524.20	185.33	41.598	
12,000.00	7,105.79	7,019.94	7,018.62	35.96	149.68	89.22	-1,804.29	-2,408.98	7,807.60	7,621.96	185.64	42.059	
12,100.00	7,105.83	7,019.99	7,018.66	36.26	149.68	89.22	-1,804.29	-2,408.98	7,905.71	7,719.77	185.94	42.518	
12,200.00	7,105.86	7,020.03	7,018.70	36.56	149.68	89.22	-1,804.29	-2,408.98	8,003.87	7,817.63	186.24	42.976	
12,300.00	7,105.90	7,020.07	7,018.74	36.86	149.68	89.22	-1,804.30	-2,408.98	8,102.08	7,915.54	186.54	43.433	
12,400.00	7,105.94	7,020.11	7,018.79	37.16	149.68	89.23	-1,804.30	-2,408.98	8,200.32	8,013.48	186.84	43.889	
12,500.00	7,105.98	7,020.16	7,018.83	37.46	149.69	89.23	-1,804.30	-2,408.98	8,298.61	8,111.47	187.14	44.344	
12,600.00	7,106.02	7,020.20	7,018.87	37.76	149.69	89.23	-1,804.30	-2,408.98	8,396.95	8,209.50	187.44	44.797	
12,700.00	7,106.06	7,020.24	7,018.91	38.06	149.69	89.23	-1,804.30	-2,408.98	8,495.32	8,307.57	187.75	45.249	
12,800.00	7,106.10	7,020.29	7,018.96	38.36	149.69	89.23	-1,804.30	-2,408.98	8,593.72	8,405.68	188.05	45.700	
12,900.00	7,106.14	7,020.33	7,019.00	38.66	149.69	89.23	-1,804.30	-2,408.98	8,692.17	8,503.82	188.35	46.149	
13,000.00	7,106.18	7,020.37	7,019.04	38.96	149.69	89.24	-1,804.30	-2,408.98	8,790.65	8,602.00	188.65	46.597	
13,100.00	7,106.22	7,020.41	7,019.09	39.26	149.69	89.24	-1,804.30	-2,408.98	8,889.16	8,700.21	188.95	47.044	
13,200.00	7,106.26	7,020.46	7,019.13	39.56	149.69	89.24	-1,804.30	-2,408.98	8,987.71	8,798.45	189.25	47.490	
13,300.00	7,106.30	7,020.50	7,019.17	39.86	149.69	89.24	-1,804.30	-2,408.98	9,086.28	8,896.73	189.56	47.935	
13,400.00	7,106.33	7,020.54	7,019.21	40.16	149.70	89.24	-1,804.30	-2,408.98	9,184.89	8,995.03	189.86	48.378	
13,500.00	7,106.37	7,020.59	7,019.26	40.46	149.70	89.24	-1,804.30	-2,408.98	9,283.53	9,093.37	190.16	48.820	
13,600.00	7,106.41	7,020.63	7,019.30	40.76	149.70	89.25	-1,804.30	-2,408.98	9,382.20	9,191.74	190.46	49.261	
13,700.00	7,106.45	7,020.67	7,019.34	41.06	149.70	89.25	-1,804.30	-2,408.98	9,480.89	9,290.13	190.76	49.700	
13,800.00	7,106.49	7,020.71	7,019.39	41.36	149.70	89.25	-1,804.31	-2,408.98	9,579.61	9,388.55	191.06	50.139	
13,900.00	7,106.53	7,020.76	7,019.43	41.67	149.70	89.25	-1,804.31	-2,408.98	9,678.36	9,487.00	191.36	50.576	
14,000.00	7,106.57	7,020.80	7,019.47	41.97	149.70	89.25	-1,804.31	-2,408.98	9,777.14	9,585.47	191.67	51.011	
14,100.00	7,106.61	7,020.84	7,019.51	42.27	149.70	89.25	-1,804.31	-2,408.98	9,875.93	9,683.97	191.97	51.446	
14,200.00	7,106.65	7,020.89	7,019.56	42.57	149.71	89.26	-1,804.31	-2,408.98	9,974.76	9,782.49	192.27	51.879	
14,300.00	7,106.69	7,020.93	7,019.60	42.87	149.71	89.26	-1,804.31	-2,408.98	10,073.60	9,881.03	192.57	52.311	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026A (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,400.00	7,106.73	7,020.97	7,019.64	43.17	149.71	89.26	-1,804.31	-2,408.98	10,172.47	9,979.60	192.87	52.742	
14,500.00	7,106.76	7,021.01	7,019.69	43.47	149.71	89.26	-1,804.31	-2,408.98	10,271.36	10,078.19	193.17	53.172	
14,600.00	7,106.80	7,021.06	7,019.73	43.77	149.71	89.26	-1,804.31	-2,408.98	10,370.27	10,176.80	193.47	53.600	
14,700.00	7,106.84	7,021.10	7,019.77	44.07	149.71	89.26	-1,804.31	-2,408.98	10,469.20	10,275.43	193.78	54.027	
14,800.00	7,106.88	7,021.14	7,019.82	44.37	149.71	89.26	-1,804.31	-2,408.98	10,568.16	10,374.08	194.08	54.453	
14,900.00	7,106.92	7,021.19	7,019.86	44.67	149.71	89.27	-1,804.31	-2,408.98	10,667.13	10,472.75	194.38	54.878	
15,000.00	7,106.96	7,021.23	7,019.90	44.97	149.71	89.27	-1,804.31	-2,408.98	10,766.12	10,571.44	194.68	55.302	
15,100.00	7,107.00	7,021.27	7,019.94	45.27	149.72	89.27	-1,804.31	-2,408.98	10,865.13	10,670.15	194.98	55.724	
15,200.00	7,107.04	7,021.31	7,019.99	45.57	149.72	89.27	-1,804.32	-2,408.98	10,964.15	10,768.87	195.28	56.145	
15,300.00	7,107.08	7,021.36	7,020.03	45.87	149.72	89.27	-1,804.32	-2,408.98	11,063.20	10,867.61	195.58	56.565	
15,400.00	7,107.12	7,021.40	7,020.07	46.17	149.72	89.27	-1,804.32	-2,408.98	11,162.26	10,966.37	195.89	56.983	
15,500.00	7,107.16	7,021.44	7,020.12	46.47	149.72	89.28	-1,804.32	-2,408.98	11,261.34	11,065.15	196.19	57.401	
15,600.00	7,107.20	7,021.49	7,020.16	46.77	149.72	89.28	-1,804.32	-2,408.98	11,360.43	11,163.94	196.49	57.817	
15,700.00	7,107.23	7,021.53	7,020.20	47.07	149.72	89.28	-1,804.32	-2,408.98	11,459.54	11,262.75	196.79	58.232	
15,800.00	7,107.27	7,021.57	7,020.24	47.37	149.72	89.28	-1,804.32	-2,408.98	11,558.67	11,361.58	197.09	58.646	
15,900.00	7,107.31	7,021.62	7,020.29	47.67	149.73	89.28	-1,804.32	-2,408.98	11,657.81	11,460.42	197.39	59.059	
16,000.00	7,107.35	7,021.66	7,020.33	47.97	149.73	89.28	-1,804.32	-2,408.98	11,756.96	11,559.27	197.69	59.470	
16,100.00	7,107.39	7,021.70	7,020.37	48.27	149.73	89.29	-1,804.32	-2,408.98	11,856.13	11,658.14	198.00	59.881	
16,200.00	7,107.43	7,021.74	7,020.42	48.57	149.73	89.29	-1,804.32	-2,408.98	11,955.32	11,757.02	198.30	60.290	
16,300.00	7,107.47	7,021.79	7,020.46	48.87	149.73	89.29	-1,804.32	-2,408.98	12,054.51	11,855.91	198.60	60.698	
16,400.00	7,107.51	7,021.83	7,020.50	49.17	149.73	89.29	-1,804.32	-2,408.98	12,153.72	11,954.82	198.90	61.105	
16,500.00	7,107.55	7,021.87	7,020.54	49.47	149.73	89.29	-1,804.32	-2,408.98	12,252.94	12,053.74	199.20	61.510	
16,600.00	7,107.59	7,021.92	7,020.59	49.77	149.73	89.29	-1,804.33	-2,408.98	12,352.18	12,152.68	199.50	61.915	
16,700.00	7,107.63	7,021.96	7,020.63	50.07	149.73	89.30	-1,804.33	-2,408.98	12,451.43	12,251.62	199.80	62.318	
16,800.00	7,107.67	7,022.00	7,020.67	50.37	149.74	89.30	-1,804.33	-2,408.98	12,550.69	12,350.58	200.11	62.720	
16,900.00	7,107.70	7,022.04	7,020.72	50.67	149.74	89.30	-1,804.33	-2,408.98	12,649.96	12,449.55	200.41	63.121	
17,000.00	7,107.74	7,022.09	7,020.76	50.97	149.74	89.30	-1,804.33	-2,408.98	12,749.24	12,548.53	200.71	63.521	
17,100.00	7,107.78	7,022.13	7,020.80	51.27	149.74	89.30	-1,804.33	-2,408.98	12,848.53	12,647.52	201.01	63.920	
17,200.00	7,107.82	7,022.17	7,020.85	51.57	149.74	89.30	-1,804.33	-2,408.98	12,947.84	12,746.53	201.31	64.318	
17,300.00	7,107.86	7,022.22	7,020.89	51.87	149.74	89.31	-1,804.33	-2,408.98	13,047.15	12,845.54	201.61	64.714	
17,400.00	7,107.90	7,022.26	7,020.93	52.17	149.74	89.31	-1,804.33	-2,408.98	13,146.48	12,944.56	201.91	65.109	
17,500.00	7,107.94	7,022.30	7,020.97	52.47	149.74	89.31	-1,804.33	-2,408.98	13,245.81	13,043.60	202.21	65.504	
17,600.00	7,107.98	7,022.35	7,021.02	52.77	149.75	89.31	-1,804.33	-2,408.98	13,345.16	13,142.64	202.52	65.897	
17,700.00	7,108.02	7,022.39	7,021.06	53.07	149.75	89.31	-1,804.33	-2,408.98	13,444.51	13,241.70	202.82	66.289	
17,800.00	7,108.06	7,022.43	7,021.10	53.37	149.75	89.31	-1,804.33	-2,408.98	13,543.88	13,340.76	203.12	66.679	
17,900.00	7,108.10	7,022.47	7,021.15	53.67	149.75	89.32	-1,804.33	-2,408.98	13,643.25	13,439.83	203.42	67.069	
18,000.00	7,108.14	7,022.52	7,021.19	53.97	149.75	89.32	-1,804.33	-2,408.98	13,742.64	13,538.91	203.72	67.458	
18,100.00	7,108.17	7,022.56	7,021.23	54.27	149.75	89.32	-1,804.34	-2,408.98	13,842.03	13,638.00	204.02	67.845	
18,200.00	7,108.21	7,022.60	7,021.28	54.57	149.75	89.32	-1,804.34	-2,408.98	13,941.43	13,737.10	204.32	68.232	
18,300.00	7,108.25	7,022.65	7,021.32	54.87	149.75	89.32	-1,804.34	-2,408.98	14,040.84	13,836.21	204.63	68.617	
18,400.00	7,108.29	7,022.69	7,021.36	55.17	149.75	89.32	-1,804.34	-2,408.98	14,140.25	13,935.33	204.93	69.001	
18,500.00	7,108.33	7,022.73	7,021.40	55.47	149.76	89.32	-1,804.34	-2,408.98	14,239.68	14,034.45	205.23	69.385	
18,600.00	7,108.37	7,022.78	7,021.45	55.77	149.76	89.33	-1,804.34	-2,408.98	14,339.11	14,133.58	205.53	69.767	
18,700.00	7,108.41	7,022.82	7,021.49	56.07	149.76	89.33	-1,804.34	-2,408.98	14,438.55	14,232.72	205.83	70.148	
18,800.00	7,108.45	7,022.86	7,021.53	56.37	149.76	89.33	-1,804.34	-2,408.98	14,538.00	14,331.87	206.13	70.527	
18,900.00	7,108.49	7,022.91	7,021.58	56.67	149.76	89.33	-1,804.34	-2,408.98	14,637.46	14,431.03	206.43	70.906	
19,000.00	7,108.53	7,022.95	7,021.62	56.97	149.76	89.33	-1,804.34	-2,408.98	14,736.92	14,530.19	206.74	71.284	
19,100.00	7,108.57	7,022.99	7,021.66	57.28	149.76	89.33	-1,804.34	-2,408.98	14,836.40	14,629.36	207.04	71.661	
19,200.00	7,108.61	7,023.03	7,021.71	57.58	149.76	89.34	-1,804.34	-2,408.98	14,935.87	14,728.54	207.34	72.036	
19,300.00	7,108.64	7,023.08	7,021.75	57.88	149.77	89.34	-1,804.34	-2,408.98	15,035.36	14,827.72	207.64	72.411	
19,400.00	7,108.68	7,023.12	7,021.79	58.18	149.77	89.34	-1,804.34	-2,408.98	15,134.85	14,926.91	207.94	72.785	
19,500.00	7,108.72	7,023.16	7,021.83	58.48	149.77	89.34	-1,804.35	-2,408.98	15,234.35	15,026.11	208.24	73.157	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026A (Offset) - OH - OH

Survey Program: 310-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,600.00	7,108.76	7,023.21	7,021.88	58.78	149.77	89.34	-1,804.35	-2,408.98	15,333.85	15,125.31	208.54	73.528	
19,700.00	7,108.80	7,023.25	7,021.92	59.08	149.77	89.34	-1,804.35	-2,408.98	15,433.37	15,224.52	208.84	73.899	
19,800.00	7,108.84	7,023.29	7,021.96	59.38	149.77	89.35	-1,804.35	-2,408.98	15,532.88	15,323.74	209.15	74.268	
19,900.00	7,108.88	7,023.34	7,022.01	59.68	149.77	89.35	-1,804.35	-2,408.98	15,632.41	15,422.96	209.45	74.637	
20,000.00	7,108.92	7,023.38	7,022.05	59.98	149.77	89.35	-1,804.35	-2,408.98	15,731.94	15,522.19	209.75	75.004	
20,100.00	7,108.96	7,023.42	7,022.09	60.28	149.78	89.35	-1,804.35	-2,408.98	15,831.47	15,621.42	210.05	75.370	
20,208.46	7,109.00	7,023.47	7,022.14	60.60	149.78	89.35	-1,804.35	-2,408.98	15,939.43	15,729.06	210.38	75.766	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026C (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	12.51	12.51	0.00	0.11	-93.31	-61.69	-1,065.11	1,066.89				
100.00	100.00	112.51	112.51	0.23	1.11	-93.31	-61.69	-1,065.11	1,066.89	1,065.56	1.33	799.741	
173.23	173.23	185.74	185.74	0.45	2.40	-93.31	-61.60	-1,065.11	1,066.89	1,064.04	2.85	374.197	CC
200.00	200.00	212.46	212.46	0.53	2.88	-93.31	-61.61	-1,065.11	1,066.89	1,063.48	3.40	313.341	
300.00	300.00	312.52	312.51	0.83	4.74	-93.31	-61.69	-1,065.11	1,066.89	1,061.32	5.57	191.543	
330.00	330.00	342.51	342.51	0.92	5.33	-93.31	-61.60	-1,065.11	1,066.89	1,060.64	6.25	170.707	
400.00	400.00	412.39	412.39	1.13	6.71	-93.31	-61.67	-1,065.11	1,066.89	1,059.06	7.83	136.187	
500.00	500.00	512.54	512.51	1.43	9.09	-93.31	-61.69	-1,065.11	1,066.89	1,056.38	10.52	101.453	
600.00	599.98	612.50	612.46	1.73	11.50	111.22	-60.46	-1,065.11	1,067.45	1,054.23	13.23	80.697	
644.12	644.06	656.42	656.38	1.86	12.56	111.30	-60.54	-1,065.11	1,068.14	1,053.72	14.42	74.074	
700.00	699.87	712.05	712.00	2.03	13.90	111.42	-60.83	-1,065.11	1,069.18	1,053.25	15.93	67.118	
800.00	799.74	812.41	812.26	2.33	16.27	111.62	-61.69	-1,065.11	1,071.07	1,052.47	18.59	57.603	
900.00	899.62	912.28	912.13	2.63	18.31	111.87	-61.69	-1,065.11	1,072.93	1,052.00	20.93	51.255	
1,000.00	999.49	1,012.03	1,011.86	2.93	20.34	112.18	-60.64	-1,065.11	1,074.78	1,051.51	23.27	46.188	
1,100.00	1,099.36	1,111.69	1,111.51	3.23	22.38	112.39	-61.36	-1,065.11	1,076.71	1,051.11	25.60	42.051	
1,200.00	1,199.24	1,211.95	1,211.75	3.53	24.14	112.62	-61.69	-1,065.11	1,078.65	1,050.98	27.67	38.981	
1,300.00	1,299.11	1,311.82	1,311.62	3.83	25.80	112.86	-61.69	-1,065.11	1,080.60	1,050.97	29.63	36.475	
1,400.00	1,398.98	1,411.69	1,411.49	4.13	27.45	113.12	-61.44	-1,065.11	1,082.56	1,050.98	31.58	34.279	
1,500.00	1,498.86	1,511.55	1,511.35	4.43	29.11	113.36	-61.52	-1,065.11	1,084.55	1,051.01	33.54	32.340	
1,600.00	1,598.73	1,611.45	1,611.24	4.73	30.77	113.60	-61.69	-1,065.11	1,086.55	1,051.06	35.49	30.614	
1,700.00	1,698.60	1,711.32	1,711.12	5.03	32.53	113.84	-61.69	-1,065.11	1,088.58	1,051.02	37.56	28.984	
1,800.00	1,798.48	1,811.19	1,810.99	5.33	34.30	114.08	-61.69	-1,065.11	1,090.62	1,051.00	39.62	27.524	
1,900.00	1,898.35	1,911.07	1,910.86	5.63	36.06	114.33	-61.43	-1,065.11	1,092.69	1,051.00	41.69	26.210	
2,000.00	1,998.22	2,010.95	2,010.74	5.93	37.83	114.57	-61.52	-1,065.11	1,094.77	1,051.01	43.76	25.020	
2,100.00	2,098.10	2,110.84	2,110.63	6.23	39.60	114.80	-61.69	-1,065.11	1,096.87	1,051.05	45.82	23.937	
2,200.00	2,197.97	2,210.70	2,210.48	6.53	41.57	115.04	-61.69	-1,065.11	1,098.99	1,050.90	48.09	22.852	
2,300.00	2,297.84	2,310.57	2,310.36	6.83	43.53	115.27	-61.69	-1,065.11	1,101.13	1,050.77	50.36	21.867	
2,400.00	2,397.72	2,410.47	2,410.25	7.13	45.50	115.53	-61.18	-1,065.11	1,103.30	1,050.68	52.62	20.966	
2,500.00	2,497.59	2,510.40	2,510.18	7.43	47.46	115.76	-61.36	-1,065.11	1,105.47	1,050.59	54.89	20.140	
2,600.00	2,597.46	2,610.35	2,610.13	7.73	49.43	115.98	-61.73	-1,065.11	1,107.66	1,050.50	57.16	19.380	
2,700.00	2,697.34	2,710.11	2,709.85	8.03	51.61	116.21	-61.69	-1,065.11	1,109.88	1,050.24	59.64	18.609	
2,800.00	2,797.21	2,809.98	2,809.72	8.33	53.78	116.44	-61.69	-1,065.11	1,112.11	1,050.00	62.11	17.905	
2,900.00	2,897.09	2,910.00	2,909.73	8.63	55.96	116.72	-60.80	-1,065.11	1,114.40	1,049.81	64.58	17.255	
3,000.00	2,996.96	3,010.10	3,009.83	8.93	58.13	116.93	-61.28	-1,065.11	1,116.65	1,049.59	67.06	16.651	
3,100.00	3,096.83	3,109.69	3,109.35	9.23	60.20	117.13	-61.69	-1,065.11	1,118.91	1,049.49	69.43	16.116	
3,200.00	3,196.71	3,209.57	3,209.22	9.53	62.17	117.36	-61.69	-1,065.11	1,121.22	1,049.52	71.70	15.638	
3,300.00	3,296.58	3,309.44	3,309.09	9.83	64.14	117.59	-61.69	-1,065.11	1,123.54	1,049.58	73.96	15.190	
3,400.00	3,396.45	3,409.63	3,409.26	10.13	66.11	117.88	-60.54	-1,065.11	1,125.95	1,049.71	76.24	14.769	
3,500.00	3,496.33	3,509.88	3,509.50	10.43	68.09	118.07	-61.18	-1,065.11	1,128.27	1,049.76	78.51	14.371	
3,600.00	3,596.20	3,610.19	3,609.79	10.73	70.06	118.24	-62.27	-1,065.11	1,130.58	1,049.79	80.79	13.994	
3,700.00	3,696.07	3,708.98	3,708.59	11.03	72.11	118.49	-61.69	-1,065.11	1,133.01	1,049.87	83.14	13.628	
3,800.00	3,795.95	3,808.87	3,808.47	11.33	74.15	118.73	-61.44	-1,065.11	1,135.44	1,049.96	85.48	13.284	
3,900.00	3,895.82	3,908.83	3,908.44	11.63	76.19	118.94	-61.51	-1,065.11	1,137.86	1,050.04	87.82	12.957	
4,000.00	3,995.69	4,029.33	4,008.21	11.93	78.67	119.16	-61.69	-1,065.11	1,140.29	1,049.69	90.60	12.586	
4,100.00	4,095.57	4,108.54	4,108.08	12.23	80.46	119.38	-61.69	-1,065.11	1,142.75	1,050.06	92.69	12.329	
4,200.00	4,195.44	4,208.41	4,207.95	12.53	82.73	119.59	-61.69	-1,065.11	1,145.23	1,049.97	95.25	12.023	
4,300.00	4,295.31	4,308.61	4,308.12	12.83	84.99	119.89	-60.20	-1,065.11	1,147.86	1,050.04	97.82	11.735	
4,400.00	4,395.19	4,585.73	4,407.70	13.13	91.36	120.03	-61.69	-1,065.11	1,150.23	1,045.75	104.48	11.009	ES
4,500.00	4,495.06	4,509.81	4,509.29	13.43	89.55	120.24	-61.86	-1,065.11	1,152.74	1,049.77	102.97	11.195	
4,600.00	4,594.93	4,608.02	4,607.45	13.73	91.88	120.46	-61.69	-1,065.11	1,155.30	1,049.69	105.61	10.939	
4,700.00	4,694.81	4,707.90	4,707.32	14.03	94.25	120.68	-61.69	-1,065.11	1,157.86	1,049.58	108.28	10.694	
4,800.00	4,794.68	4,807.77	4,807.19	14.33	96.61	120.89	-61.69	-1,065.11	1,160.44	1,049.50	110.94	10.460	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,900.00	4,894.55	4,907.64	4,907.07	14.63	98.98	121.10	-61.69	-1,065.11	1,163.03	1,049.42	113.60	10.237	
5,000.00	4,994.43	5,007.52	5,006.94	14.93	101.34	121.31	-61.69	-1,065.11	1,165.64	1,049.37	116.27	10.025	
5,100.00	5,094.30	5,107.39	5,106.82	15.23	103.71	121.52	-61.69	-1,065.11	1,168.26	1,049.33	118.93	9.823	
5,200.00	5,194.18	5,207.26	5,206.69	15.53	106.07	121.73	-61.69	-1,065.11	1,170.90	1,049.30	121.60	9.629	
5,300.00	5,294.05	5,307.14	5,306.56	15.83	108.44	121.94	-61.69	-1,065.11	1,173.55	1,049.29	124.26	9.444	
5,400.00	5,393.92	5,407.13	5,406.52	16.13	110.81	122.33	-58.03	-1,065.11	1,176.73	1,049.80	126.93	9.271	
5,500.00	5,493.80	5,507.19	5,506.58	16.43	113.17	122.53	-58.15	-1,065.11	1,179.41	1,049.81	129.60	9.100	
5,600.00	5,593.67	5,607.27	5,606.65	16.73	115.54	122.72	-58.38	-1,065.11	1,182.09	1,049.82	132.27	8.937	
5,700.00	5,693.54	5,707.36	5,706.74	17.03	117.91	122.91	-58.70	-1,065.11	1,184.77	1,049.83	134.94	8.780	
5,800.00	5,793.42	5,807.46	5,806.83	17.33	120.28	123.09	-59.13	-1,065.11	1,187.45	1,049.84	137.61	8.629	
5,900.00	5,893.29	5,907.57	5,906.94	17.63	122.65	123.27	-59.67	-1,065.11	1,190.12	1,049.84	140.28	8.484	
6,000.00	5,993.16	6,007.70	6,007.05	17.93	125.02	123.44	-60.31	-1,065.11	1,192.79	1,049.84	142.95	8.344	
6,100.00	6,093.04	6,107.83	6,107.18	18.23	127.40	123.61	-61.05	-1,065.11	1,195.45	1,049.83	145.62	8.209	
6,200.00	6,192.91	6,207.98	6,207.32	18.53	129.77	123.77	-61.90	-1,065.11	1,198.10	1,049.81	148.29	8.079	
6,300.00	6,292.78	6,308.45	6,307.36	18.83	132.17	123.99	-61.38	-1,065.11	1,200.99	1,050.00	150.99	7.954	
6,400.00	6,392.66	6,407.27	6,406.15	19.13	134.59	124.18	-61.54	-1,065.11	1,203.79	1,050.07	153.71	7.831	
6,500.00	6,492.53	6,509.29	6,508.10	19.43	137.78	124.39	-61.45	-1,065.11	1,206.64	1,049.44	157.21	7.676	
6,551.20	6,543.67	6,557.44	6,556.18	19.58	139.51	124.47	-61.69	-1,065.11	1,208.05	1,048.97	159.09	7.594	
6,600.00	6,592.30	6,608.25	6,606.97	19.73	141.35	166.63	-60.99	-1,065.11	1,211.61	1,050.53	161.08	7.522	
6,650.00	6,641.67	6,662.74	6,661.41	19.88	143.34	176.71	-62.16	-1,065.11	1,219.16	1,055.95	163.21	7.470	
6,700.00	6,690.21	6,704.16	6,702.72	20.03	144.81	-179.03	-61.69	-1,065.11	1,231.17	1,066.33	164.84	7.469	SF
6,750.00	6,737.54	6,753.82	6,752.34	20.18	146.59	-176.58	-60.72	-1,065.11	1,247.41	1,080.64	166.77	7.480	
6,800.00	6,783.30	6,810.53	6,795.81	20.33	148.61	-174.98	-61.69	-1,065.11	1,267.30	1,098.36	168.94	7.502	
6,850.00	6,827.15	6,841.32	6,839.66	20.48	149.64	-173.68	-61.69	-1,065.11	1,291.20	1,121.09	170.12	7.590	
6,900.00	6,868.74	6,882.91	6,881.26	20.63	151.03	-172.53	-61.69	-1,065.11	1,318.78	1,147.12	171.66	7.683	
6,950.00	6,907.77	6,923.40	6,921.71	20.78	152.38	-171.37	-60.63	-1,065.11	1,350.00	1,176.84	173.16	7.796	
7,000.00	6,943.94	6,961.90	6,960.19	20.93	153.67	-170.23	-61.05	-1,065.11	1,384.19	1,209.60	174.60	7.928	
7,050.00	6,976.97	6,997.12	6,995.38	21.08	154.85	-168.96	-61.77	-1,065.11	1,421.32	1,245.40	175.92	8.079	
7,100.00	7,006.62	7,020.99	7,019.13	21.23	155.60	-167.28	-61.69	-1,065.11	1,461.26	1,284.43	176.83	8.264	
7,150.00	7,032.64	7,047.01	7,045.16	21.38	156.43	-165.19	-61.69	-1,065.11	1,503.60	1,325.79	177.81	8.456	
7,200.00	7,054.86	7,069.23	7,067.37	21.53	157.13	-162.34	-61.69	-1,065.11	1,548.01	1,369.35	178.66	8.664	
7,250.00	7,073.09	7,087.46	7,085.60	21.68	157.71	-158.16	-61.69	-1,065.11	1,594.16	1,414.77	179.39	8.887	
7,300.00	7,087.20	7,101.57	7,099.71	21.83	158.16	-151.53	-61.69	-1,065.11	1,641.72	1,461.73	179.99	9.121	
7,350.00	7,097.08	7,111.45	7,109.60	21.98	158.47	-139.84	-61.69	-1,065.11	1,690.30	1,509.85	180.45	9.367	
7,400.00	7,102.66	7,117.03	7,115.18	22.13	158.65	-117.52	-61.69	-1,065.11	1,739.55	1,558.77	180.78	9.622	
7,438.94	7,104.00	7,118.37	7,116.51	22.25	158.69	-90.17	-61.69	-1,065.11	1,778.13	1,597.19	180.94	9.827	
7,500.00	7,104.02	7,118.39	7,116.54	22.43	158.69	-90.18	-61.69	-1,065.11	1,838.69	1,657.57	181.13	10.151	
7,600.00	7,104.06	7,118.43	7,116.58	22.74	158.69	-90.19	-61.69	-1,065.11	1,937.94	1,756.51	181.43	10.682	
7,700.00	7,104.10	7,118.47	7,116.62	23.04	158.69	-90.20	-61.69	-1,065.11	2,037.26	1,855.53	181.73	11.210	
7,800.00	7,104.14	7,118.51	7,116.65	23.34	158.70	-90.21	-61.69	-1,065.11	2,136.64	1,954.61	182.03	11.738	
7,900.00	7,104.18	7,118.55	7,116.69	23.64	158.70	-90.22	-61.69	-1,065.11	2,236.08	2,053.75	182.33	12.264	
8,000.00	7,104.22	7,118.59	7,116.73	23.94	158.70	-90.23	-61.69	-1,065.11	2,335.57	2,152.93	182.64	12.788	
8,100.00	7,104.26	7,118.63	7,116.77	24.24	158.70	-90.24	-61.69	-1,065.11	2,435.09	2,252.16	182.94	13.311	
8,200.00	7,104.30	7,118.67	7,116.81	24.54	158.70	-90.24	-61.69	-1,065.11	2,534.66	2,351.42	183.24	13.832	
8,300.00	7,104.34	7,118.71	7,116.85	24.84	158.70	-90.25	-61.69	-1,065.11	2,634.26	2,450.72	183.54	14.352	
8,400.00	7,104.38	7,118.75	7,116.89	25.14	158.70	-90.26	-61.69	-1,065.11	2,733.89	2,550.04	183.84	14.871	
8,500.00	7,104.42	7,118.79	7,116.93	25.44	158.70	-90.27	-61.69	-1,065.11	2,833.54	2,649.40	184.15	15.387	
8,600.00	7,104.45	7,118.82	7,116.97	25.74	158.71	-90.28	-61.69	-1,065.11	2,933.22	2,748.77	184.45	15.903	
8,700.00	7,104.49	7,118.86	7,117.01	26.04	158.71	-90.29	-61.69	-1,065.11	3,032.92	2,848.17	184.75	16.416	
8,800.00	7,104.53	7,118.90	7,117.05	26.34	158.71	-90.30	-61.69	-1,065.11	3,132.64	2,947.58	185.05	16.928	
8,900.00	7,104.57	7,118.94	7,117.09	26.64	158.71	-90.31	-61.69	-1,065.11	3,232.37	3,047.02	185.35	17.439	
9,000.00	7,104.61	7,118.98	7,117.12	26.95	158.71	-90.32	-61.69	-1,065.11	3,332.12	3,146.47	185.66	17.948	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	7,119.02	7,117.16	27.25	158.71	-90.33	-61.69	-1,065.11	3,431.89	3,245.93	185.96	18.455	
9,200.00	7,104.69	7,119.06	7,117.20	27.55	158.71	-90.34	-61.69	-1,065.11	3,531.67	3,345.41	186.26	18.961	
9,300.00	7,104.73	7,119.10	7,117.24	27.85	158.71	-90.35	-61.69	-1,065.11	3,631.46	3,444.90	186.56	19.465	
9,400.00	7,104.77	7,119.14	7,117.28	28.15	158.72	-90.36	-61.69	-1,065.11	3,731.26	3,544.40	186.86	19.968	
9,500.00	7,104.81	7,119.18	7,117.32	28.45	158.72	-90.37	-61.69	-1,065.11	3,831.07	3,643.91	187.16	20.469	
9,600.00	7,104.85	7,119.22	7,117.36	28.75	158.72	-90.38	-61.69	-1,065.11	3,930.90	3,743.43	187.47	20.969	
9,700.00	7,104.89	7,119.26	7,117.40	29.05	158.72	-90.39	-61.69	-1,065.11	4,030.73	3,842.96	187.77	21.467	
9,800.00	7,104.92	7,119.29	7,117.44	29.35	158.72	-90.40	-61.69	-1,065.11	4,130.57	3,942.50	188.07	21.963	
9,900.00	7,104.96	7,119.33	7,117.48	29.65	158.72	-90.41	-61.69	-1,065.11	4,230.41	4,042.04	188.37	22.458	
10,000.00	7,105.00	7,119.37	7,117.52	29.95	158.72	-90.42	-61.69	-1,065.11	4,330.27	4,141.59	188.67	22.951	
10,100.00	7,105.04	7,119.41	7,117.56	30.25	158.72	-90.43	-61.69	-1,065.11	4,430.13	4,241.15	188.98	23.443	
10,200.00	7,105.08	7,119.45	7,117.59	30.55	158.73	-90.44	-61.69	-1,065.11	4,529.99	4,340.72	189.28	23.933	
10,300.00	7,105.12	7,119.49	7,117.63	30.85	158.73	-90.45	-61.69	-1,065.11	4,629.87	4,440.29	189.58	24.422	
10,400.00	7,105.16	7,119.53	7,117.67	31.15	158.73	-90.46	-61.69	-1,065.11	4,729.74	4,539.86	189.88	24.909	
10,500.00	7,105.20	7,119.57	7,117.71	31.45	158.73	-90.47	-61.69	-1,065.11	4,829.63	4,639.45	190.18	25.395	
10,600.00	7,105.24	7,119.61	7,117.75	31.75	158.73	-90.48	-61.69	-1,065.11	4,929.51	4,739.03	190.48	25.879	
10,700.00	7,105.28	7,119.65	7,117.79	32.05	158.73	-90.49	-61.69	-1,065.11	5,029.41	4,838.62	190.79	26.362	
10,800.00	7,105.32	7,119.69	7,117.83	32.35	158.73	-90.50	-61.69	-1,065.11	5,129.30	4,938.22	191.09	26.843	
10,900.00	7,105.36	7,119.73	7,117.87	32.66	158.73	-90.51	-61.69	-1,065.11	5,229.20	5,037.81	191.39	27.322	
11,000.00	7,105.39	7,119.76	7,117.91	32.96	158.74	-90.52	-61.69	-1,065.11	5,329.11	5,137.42	191.69	27.801	
11,100.00	7,105.43	7,119.80	7,117.95	33.26	158.74	-90.53	-61.69	-1,065.11	5,429.01	5,237.02	191.99	28.277	
11,200.00	7,105.47	7,119.84	7,117.99	33.56	158.74	-90.54	-61.69	-1,065.11	5,528.93	5,336.63	192.29	28.752	
11,300.00	7,105.51	7,119.88	7,118.03	33.86	158.74	-90.55	-61.69	-1,065.11	5,628.84	5,436.24	192.60	29.226	
11,400.00	7,105.55	7,119.92	7,118.06	34.16	158.74	-90.56	-61.69	-1,065.11	5,728.76	5,535.86	192.90	29.699	
11,500.00	7,105.59	7,119.96	7,118.10	34.46	158.74	-90.56	-61.69	-1,065.11	5,828.68	5,635.48	193.20	30.169	
11,600.00	7,105.63	7,120.00	7,118.14	34.76	158.74	-90.57	-61.69	-1,065.11	5,928.60	5,735.10	193.50	30.639	
11,700.00	7,105.67	7,120.04	7,118.18	35.06	158.74	-90.58	-61.69	-1,065.11	6,028.52	5,834.72	193.80	31.107	
11,800.00	7,105.71	7,120.08	7,118.22	35.36	158.75	-90.59	-61.69	-1,065.11	6,128.45	5,934.35	194.10	31.573	
11,900.00	7,105.75	7,120.12	7,118.26	35.66	158.75	-90.60	-61.69	-1,065.11	6,228.38	6,033.98	194.41	32.038	
12,000.00	7,105.79	7,120.16	7,118.30	35.96	158.75	-90.61	-61.69	-1,065.11	6,328.31	6,133.61	194.71	32.502	
12,100.00	7,105.83	7,120.20	7,118.34	36.26	158.75	-90.62	-61.69	-1,065.11	6,428.25	6,233.24	195.01	32.964	
12,200.00	7,105.86	7,120.23	7,118.38	36.56	158.75	-90.63	-61.69	-1,065.11	6,528.18	6,332.87	195.31	33.425	
12,300.00	7,105.90	7,120.27	7,118.42	36.86	158.75	-90.64	-61.69	-1,065.11	6,628.12	6,432.51	195.61	33.884	
12,400.00	7,105.94	7,120.31	7,118.46	37.16	158.75	-90.65	-61.69	-1,065.11	6,728.06	6,532.15	195.91	34.342	
12,500.00	7,105.98	7,120.35	7,118.49	37.46	158.75	-90.66	-61.69	-1,065.11	6,828.00	6,631.79	196.21	34.799	
12,600.00	7,106.02	7,120.39	7,118.53	37.76	158.76	-90.67	-61.69	-1,065.11	6,927.95	6,731.43	196.52	35.254	
12,700.00	7,106.06	7,120.43	7,118.55	38.06	158.76	-90.67	-60.31	-1,065.11	7,027.95	6,831.13	196.82	35.708	
12,800.00	7,106.10	7,120.47	7,118.59	38.36	158.76	-90.68	-60.31	-1,065.11	7,127.89	6,930.77	197.12	36.160	
12,900.00	7,106.14	7,120.51	7,118.63	38.66	158.76	-90.69	-60.31	-1,065.11	7,227.84	7,030.42	197.42	36.611	
13,000.00	7,106.18	7,120.56	7,118.67	38.96	158.76	-90.70	-60.31	-1,065.11	7,327.79	7,130.07	197.72	37.061	
13,100.00	7,106.22	7,120.60	7,118.71	39.26	158.76	-90.71	-60.31	-1,065.11	7,427.74	7,229.71	198.02	37.509	
13,200.00	7,106.26	7,120.64	7,118.75	39.56	158.76	-90.72	-60.31	-1,065.11	7,527.69	7,329.36	198.33	37.956	
13,300.00	7,106.30	7,120.68	7,118.79	39.86	158.76	-90.73	-60.31	-1,065.11	7,627.64	7,429.02	198.63	38.402	
13,400.00	7,106.33	7,120.72	7,118.83	40.16	158.77	-90.74	-60.31	-1,065.11	7,727.60	7,528.67	198.93	38.846	
13,500.00	7,106.37	7,120.76	7,118.87	40.46	158.77	-90.75	-60.31	-1,065.11	7,827.55	7,628.32	199.23	39.289	
13,600.00	7,106.41	7,120.80	7,118.92	40.76	158.77	-90.76	-60.31	-1,065.11	7,927.51	7,727.98	199.53	39.730	
13,700.00	7,106.45	7,120.84	7,118.96	41.06	158.77	-90.77	-60.31	-1,065.11	8,027.47	7,827.63	199.83	40.171	
13,800.00	7,106.49	7,120.88	7,119.00	41.36	158.77	-90.78	-60.31	-1,065.11	8,127.42	7,927.29	200.14	40.610	
13,900.00	7,106.53	7,120.93	7,119.04	41.67	158.77	-90.79	-60.31	-1,065.11	8,227.38	8,026.95	200.44	41.047	
14,000.00	7,106.57	7,120.97	7,119.08	41.97	158.77	-90.80	-60.31	-1,065.11	8,327.34	8,126.61	200.74	41.484	
14,100.00	7,106.61	7,121.01	7,119.12	42.27	158.78	-90.81	-60.31	-1,065.11	8,427.31	8,226.27	201.04	41.919	
14,200.00	7,106.65	7,121.05	7,119.16	42.57	158.78	-90.82	-60.31	-1,065.11	8,527.27	8,325.93	201.34	42.352	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	7,121.09	7,119.20	42.87	158.78	-90.83	-60.31	-1,065.11	8,627.23	8,425.59	201.64	42.785	
14,400.00	7,106.73	7,121.13	7,119.24	43.17	158.78	-90.84	-60.31	-1,065.11	8,727.20	8,525.25	201.94	43.216	
14,500.00	7,106.76	7,121.17	7,119.29	43.47	158.78	-90.85	-60.31	-1,065.11	8,827.16	8,624.91	202.25	43.646	
14,600.00	7,106.80	7,121.21	7,119.33	43.77	158.78	-90.86	-60.31	-1,065.11	8,927.13	8,724.58	202.55	44.074	
14,700.00	7,106.84	7,121.26	7,119.37	44.07	158.78	-90.87	-60.31	-1,065.11	9,027.09	8,824.24	202.85	44.501	
14,800.00	7,106.88	7,121.30	7,119.41	44.37	158.78	-90.88	-60.31	-1,065.11	9,127.06	8,923.91	203.15	44.927	
14,900.00	7,106.92	7,121.34	7,119.45	44.67	158.79	-90.89	-60.31	-1,065.11	9,227.03	9,023.57	203.45	45.352	
15,000.00	7,106.96	7,121.38	7,119.49	44.97	158.79	-90.90	-60.31	-1,065.11	9,327.00	9,123.24	203.75	45.776	
15,100.00	7,107.00	7,121.42	7,119.53	45.27	158.79	-90.91	-60.31	-1,065.11	9,426.96	9,222.91	204.06	46.198	
15,200.00	7,107.04	7,121.46	7,119.58	45.57	158.79	-90.92	-60.31	-1,065.11	9,526.93	9,322.58	204.36	46.619	
15,300.00	7,107.08	7,121.50	7,119.62	45.87	158.79	-90.93	-60.31	-1,065.11	9,626.91	9,422.25	204.66	47.039	
15,400.00	7,107.12	7,121.55	7,119.66	46.17	158.79	-90.94	-60.31	-1,065.11	9,726.88	9,521.92	204.96	47.457	
15,500.00	7,107.16	7,121.59	7,119.70	46.47	158.79	-90.95	-60.31	-1,065.11	9,826.85	9,621.59	205.26	47.875	
15,600.00	7,107.20	7,121.63	7,119.74	46.77	158.79	-90.96	-60.31	-1,065.11	9,926.82	9,721.26	205.56	48.291	
15,700.00	7,107.23	7,121.67	7,119.78	47.07	158.80	-90.97	-60.31	-1,065.11	10,026.79	9,820.93	205.86	48.706	
15,800.00	7,107.27	7,121.71	7,119.82	47.37	158.80	-90.98	-60.31	-1,065.11	10,126.77	9,920.60	206.17	49.119	
15,900.00	7,107.31	7,121.75	7,119.86	47.67	158.80	-91.00	-60.31	-1,065.11	10,226.74	10,020.27	206.47	49.532	
16,000.00	7,107.35	7,121.79	7,119.91	47.97	158.80	-91.01	-60.31	-1,065.11	10,326.71	10,119.95	206.77	49.943	
16,100.00	7,107.39	7,121.83	7,119.95	48.27	158.80	-91.02	-60.31	-1,065.11	10,426.69	10,219.62	207.07	50.353	
16,200.00	7,107.43	7,121.88	7,119.99	48.57	158.80	-91.03	-60.31	-1,065.11	10,526.66	10,319.29	207.37	50.762	
16,300.00	7,107.47	7,121.92	7,120.03	48.87	158.80	-91.04	-60.31	-1,065.11	10,626.64	10,418.97	207.67	51.170	
16,400.00	7,107.51	7,121.96	7,120.07	49.17	158.81	-91.05	-60.31	-1,065.11	10,726.62	10,518.64	207.98	51.576	
16,500.00	7,107.55	7,122.00	7,120.11	49.47	158.81	-91.06	-60.31	-1,065.11	10,826.59	10,618.32	208.28	51.982	
16,600.00	7,107.59	7,122.04	7,120.15	49.77	158.81	-91.07	-60.31	-1,065.11	10,926.57	10,717.99	208.58	52.386	
16,700.00	7,107.63	7,122.08	7,120.20	50.07	158.81	-91.08	-60.31	-1,065.11	11,026.55	10,817.67	208.88	52.789	
16,800.00	7,107.67	7,122.12	7,120.24	50.37	158.81	-91.09	-60.31	-1,065.11	11,126.53	10,917.34	209.18	53.191	
16,900.00	7,107.70	7,122.17	7,120.28	50.67	158.81	-91.10	-60.31	-1,065.11	11,226.50	11,017.02	209.48	53.592	
17,000.00	7,107.74	7,122.21	7,120.32	50.97	158.81	-91.11	-60.31	-1,065.11	11,326.48	11,116.70	209.78	53.991	
17,100.00	7,107.78	7,122.25	7,120.36	51.27	158.81	-91.12	-60.31	-1,065.11	11,426.46	11,216.38	210.09	54.390	
17,200.00	7,107.82	7,122.29	7,120.40	51.57	158.82	-91.13	-60.31	-1,065.11	11,526.44	11,316.05	210.39	54.787	
17,300.00	7,107.86	7,122.33	7,120.44	51.87	158.82	-91.14	-60.31	-1,065.11	11,626.42	11,415.73	210.69	55.183	
17,400.00	7,107.90	7,122.37	7,120.49	52.17	158.82	-91.15	-60.31	-1,065.11	11,726.40	11,515.41	210.99	55.578	
17,500.00	7,107.94	7,122.41	7,120.53	52.47	158.82	-91.16	-60.31	-1,065.11	11,826.38	11,615.09	211.29	55.972	
17,600.00	7,107.98	7,122.46	7,120.57	52.77	158.82	-91.17	-60.31	-1,065.11	11,926.36	11,714.77	211.59	56.365	
17,700.00	7,108.02	7,122.50	7,120.61	53.07	158.82	-91.18	-60.31	-1,065.11	12,026.34	11,814.45	211.89	56.756	
17,800.00	7,108.06	7,122.54	7,120.65	53.37	158.82	-91.19	-60.31	-1,065.11	12,126.33	11,914.13	212.20	57.147	
17,900.00	7,108.10	7,122.58	7,120.69	53.67	158.83	-91.20	-60.31	-1,065.11	12,226.31	12,013.81	212.50	57.536	
18,000.00	7,108.14	7,122.62	7,120.73	53.97	158.83	-91.21	-60.31	-1,065.11	12,326.29	12,113.49	212.80	57.925	
18,100.00	7,108.17	7,122.66	7,120.78	54.27	158.83	-91.22	-60.31	-1,065.11	12,426.27	12,213.17	213.10	58.312	
18,200.00	7,108.21	7,122.71	7,120.82	54.57	158.83	-91.23	-60.31	-1,065.11	12,526.25	12,312.85	213.40	58.698	
18,300.00	7,108.25	7,122.75	7,120.86	54.87	158.83	-91.24	-60.31	-1,065.11	12,626.24	12,412.53	213.70	59.083	
18,400.00	7,108.29	7,122.79	7,120.90	55.17	158.83	-91.25	-60.31	-1,065.11	12,726.22	12,512.22	214.00	59.467	
18,500.00	7,108.33	7,122.83	7,120.94	55.47	158.83	-91.26	-60.31	-1,065.11	12,826.20	12,611.90	214.31	59.850	
18,600.00	7,108.37	7,122.87	7,120.98	55.77	158.83	-91.27	-60.31	-1,065.11	12,926.19	12,711.58	214.61	60.232	
18,700.00	7,108.41	7,122.91	7,121.03	56.07	158.84	-91.28	-60.31	-1,065.11	13,026.17	12,811.26	214.91	60.612	
18,800.00	7,108.45	7,122.95	7,121.07	56.37	158.84	-91.29	-60.31	-1,065.11	13,126.16	12,910.94	215.21	60.992	
18,900.00	7,108.49	7,123.00	7,121.11	56.67	158.84	-91.30	-60.31	-1,065.11	13,226.14	13,010.63	215.51	61.371	
19,000.00	7,108.53	7,123.04	7,121.15	56.97	158.84	-91.31	-60.31	-1,065.11	13,326.12	13,110.31	215.81	61.748	
19,100.00	7,108.57	7,123.08	7,121.19	57.28	158.84	-91.32	-60.31	-1,065.11	13,426.11	13,209.99	216.12	62.125	
19,200.00	7,108.61	7,123.12	7,121.23	57.58	158.84	-91.33	-60.31	-1,065.11	13,526.09	13,309.68	216.42	62.500	
19,300.00	7,108.64	7,123.16	7,121.28	57.88	158.84	-91.34	-60.31	-1,065.11	13,626.08	13,409.36	216.72	62.875	
19,400.00	7,108.68	7,123.20	7,121.32	58.18	158.84	-91.35	-60.31	-1,065.11	13,726.07	13,509.05	217.02	63.248	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #026C (Offset) - OH - OH

Survey Program: 100-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,500.00	7,108.72	7,123.25	7,121.36	58.48	158.85	-91.36	-60.31	-1,065.11	13,826.05	13,608.73	217.32	63.620	
19,600.00	7,108.76	7,123.29	7,121.40	58.78	158.85	-91.37	-60.31	-1,065.11	13,926.04	13,708.41	217.62	63.992	
19,700.00	7,108.80	7,123.33	7,121.44	59.08	158.85	-91.38	-60.31	-1,065.11	14,026.02	13,808.10	217.92	64.362	
19,800.00	7,108.84	7,123.37	7,121.48	59.38	158.85	-91.39	-60.31	-1,065.11	14,126.01	13,907.78	218.23	64.731	
19,900.00	7,108.88	7,123.41	7,121.53	59.68	158.85	-91.40	-60.31	-1,065.11	14,226.00	14,007.47	218.53	65.100	
20,000.00	7,108.92	7,123.45	7,121.57	59.98	158.85	-91.41	-60.31	-1,065.11	14,325.98	14,107.15	218.83	65.467	
20,100.00	7,108.96	7,123.50	7,121.61	60.28	158.85	-91.42	-60.31	-1,065.11	14,425.97	14,206.84	219.13	65.833	
20,208.46	7,109.00	7,123.54	7,121.65	60.60	158.86	-91.44	-60.31	-1,065.11	14,534.41	14,314.96	219.46	66.229	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #055 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	30.12	30.12	0.00	0.02	97.80	-1,156.21	8,441.69	8,520.50				
100.00	100.00	129.20	129.20	0.23	0.10	97.80	-1,156.21	8,441.70	8,520.51	8,520.20	0.31	N/A	
200.00	200.00	227.89	227.89	0.53	0.23	97.80	-1,156.20	8,441.72	8,520.53	8,519.80	0.73	N/A	
300.00	300.00	327.75	327.75	0.83	0.36	97.80	-1,156.19	8,441.75	8,520.56	8,519.41	1.15	7,381.999	
400.00	400.00	426.58	426.58	1.13	0.49	97.80	-1,156.17	8,441.80	8,520.61	8,519.03	1.57	5,414.592	
500.00	500.00	525.27	525.27	1.43	0.62	97.80	-1,156.15	8,441.86	8,520.66	8,518.67	1.99	4,275.594	
600.00	599.98	626.06	623.94	1.73	0.75	-57.83	-1,156.12	8,441.93	8,519.80	8,517.38	2.41	3,528.347	
644.12	644.06	668.02	668.02	1.86	0.81	-57.86	-1,156.11	8,441.96	8,518.83	8,516.23	2.60	3,279.288	
700.00	699.87	723.83	723.83	2.03	0.88	-57.88	-1,156.09	8,442.01	8,517.38	8,514.54	2.83	3,006.575	
800.00	799.74	822.39	822.39	2.33	1.01	-57.91	-1,156.06	8,442.10	8,514.79	8,511.54	3.25	2,618.188	
900.00	899.62	920.95	920.95	2.63	1.14	-57.93	-1,156.02	8,442.21	8,512.22	8,508.55	3.67	2,318.486	
1,000.00	999.49	1,019.79	1,019.79	2.93	1.27	-57.96	-1,155.98	8,442.32	8,509.66	8,505.57	4.09	2,080.036	
1,100.00	1,099.36	1,119.39	1,119.39	3.23	1.40	-57.99	-1,155.93	8,442.45	8,507.11	8,502.60	4.51	1,885.556	
1,200.00	1,199.24	1,217.95	1,217.95	3.53	1.53	-58.02	-1,155.88	8,442.59	8,504.58	8,499.65	4.93	1,724.675	
1,300.00	1,299.11	1,316.51	1,316.51	3.83	1.66	-58.05	-1,155.82	8,442.74	8,502.06	8,496.71	5.35	1,589.006	
1,400.00	1,398.98	1,415.57	1,415.57	4.13	1.79	-58.08	-1,155.76	8,442.91	8,499.55	8,493.78	5.77	1,472.901	
1,500.00	1,498.86	1,514.95	1,514.95	4.43	1.92	-58.11	-1,155.69	8,443.09	8,497.06	8,490.87	6.19	1,372.461	
1,600.00	1,598.73	1,613.51	1,613.51	4.73	2.05	-58.14	-1,155.62	8,443.28	8,494.59	8,487.98	6.61	1,284.984	
1,700.00	1,698.60	1,712.08	1,712.07	5.03	2.18	-58.17	-1,155.55	8,443.47	8,492.12	8,485.09	7.03	1,207.942	
1,800.00	1,798.48	1,811.36	1,811.35	5.33	2.31	-58.20	-1,155.47	8,443.69	8,489.67	8,482.22	7.45	1,139.443	
1,900.00	1,898.35	1,910.51	1,910.51	5.63	2.44	-58.23	-1,155.39	8,443.91	8,487.23	8,479.36	7.87	1,078.279	
2,000.00	1,998.22	2,009.08	2,009.07	5.93	2.57	-58.25	-1,155.30	8,444.15	8,484.81	8,476.51	8.29	1,023.402	
2,100.00	2,098.10	2,107.64	2,107.64	6.23	2.70	-58.28	-1,155.21	8,444.39	8,482.39	8,473.68	8.71	973.811	
2,200.00	2,197.97	2,207.14	2,207.14	6.53	2.83	-58.31	-1,155.11	8,444.65	8,480.00	8,470.86	9.13	928.662	
2,300.00	2,297.84	2,306.08	2,306.07	6.83	2.96	-58.34	-1,155.01	8,444.93	8,477.62	8,468.06	9.55	887.553	
2,400.00	2,397.72	2,404.64	2,404.64	7.13	3.09	-58.37	-1,154.91	8,445.21	8,475.24	8,465.27	9.97	849.946	
2,500.00	2,497.59	2,503.20	2,503.20	7.43	3.22	-58.40	-1,154.80	8,445.50	8,472.89	8,462.50	10.39	815.376	
2,600.00	2,597.46	2,602.92	2,602.92	7.73	3.35	-58.43	-1,154.68	8,445.81	8,470.55	8,459.73	10.81	783.388	
2,700.00	2,697.34	2,701.64	2,701.64	8.03	3.48	-58.46	-1,154.56	8,446.13	8,468.22	8,456.99	11.23	753.880	
2,800.00	2,797.21	2,800.20	2,800.20	8.33	3.61	-58.49	-1,154.44	8,446.46	8,465.90	8,454.25	11.65	726.510	
2,900.00	2,897.09	2,901.23	2,898.76	8.63	3.75	-58.52	-1,154.32	8,446.80	8,463.60	8,451.53	12.08	700.869	
3,000.00	2,996.96	3,001.36	2,998.63	8.93	3.88	-58.55	-1,154.18	8,447.16	8,461.32	8,448.82	12.50	677.023	
3,100.00	3,096.83	3,097.21	3,097.20	9.23	4.01	-58.58	-1,154.05	8,447.52	8,459.04	8,446.13	12.91	654.996	
3,200.00	3,196.71	3,195.77	3,195.76	9.53	4.13	-58.61	-1,153.91	8,447.90	8,456.78	8,443.45	13.33	634.190	
3,300.00	3,296.58	3,294.61	3,294.60	9.83	4.26	-58.64	-1,153.76	8,448.29	8,454.53	8,440.78	13.76	614.638	
3,400.00	3,396.45	3,394.21	3,394.20	10.13	4.40	-58.67	-1,153.61	8,448.70	8,452.30	8,438.13	14.18	596.208	
3,500.00	3,496.33	3,492.77	3,492.76	10.43	4.53	-58.70	-1,153.46	8,449.11	8,450.08	8,435.49	14.60	578.890	
3,600.00	3,596.20	3,591.33	3,591.32	10.73	4.66	-58.73	-1,153.30	8,449.53	8,447.88	8,432.86	15.02	562.542	
3,700.00	3,696.07	3,690.40	3,690.39	11.03	4.79	-58.76	-1,153.14	8,449.97	8,445.69	8,430.25	15.44	547.061	
3,800.00	3,795.95	3,789.77	3,789.75	11.33	4.92	-58.79	-1,152.97	8,450.43	8,443.51	8,427.65	15.86	532.390	
3,900.00	3,895.82	3,888.33	3,888.32	11.63	5.05	-58.82	-1,152.80	8,450.89	8,441.35	8,425.07	16.28	518.509	
4,000.00	3,995.69	3,986.90	3,986.88	11.93	5.18	-58.85	-1,152.62	8,451.36	8,439.20	8,422.50	16.70	505.326	
4,100.00	4,095.57	4,079.21	4,079.19	12.23	5.30	-58.88	-1,152.46	8,451.87	8,437.12	8,420.01	17.11	492.982	
4,200.00	4,195.44	4,189.11	4,189.08	12.53	5.44	-58.92	-1,152.18	8,452.45	8,435.02	8,417.47	17.54	480.799	
4,300.00	4,295.31	4,290.82	4,290.80	12.83	5.57	-58.95	-1,152.08	8,452.82	8,432.77	8,414.80	17.97	469.347	
4,400.00	4,395.19	4,404.18	4,404.15	13.13	5.71	-58.98	-1,152.02	8,453.09	8,430.40	8,411.99	18.40	458.052	
4,500.00	4,495.06	4,526.66	4,526.64	13.43	5.84	-59.02	-1,152.09	8,453.36	8,428.04	8,409.19	18.85	447.051	
4,600.00	4,594.93	4,630.06	4,630.03	13.73	5.88	-59.04	-1,152.34	8,453.47	8,425.59	8,406.36	19.24	438.031	
4,700.00	4,694.81	4,729.16	4,729.14	14.03	5.89	-59.07	-1,152.63	8,453.47	8,423.04	8,403.46	19.58	430.118	
4,800.00	4,794.68	4,821.68	4,821.66	14.33	5.91	-59.10	-1,152.91	8,453.49	8,420.50	8,400.57	19.94	422.356	
4,900.00	4,894.55	4,932.93	4,932.91	14.63	5.91	-59.13	-1,153.30	8,453.44	8,417.92	8,397.63	20.28	415.001	
5,000.00	4,994.43	5,035.80	5,035.77	14.93	5.91	-59.15	-1,153.72	8,453.29	8,415.25	8,394.63	20.61	408.295	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #055 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,125.89	5,125.86	15.23	5.90	-59.18	-1,154.14	8,453.15	8,412.57	8,391.63	20.93	401.883	
5,200.00	5,194.18	5,251.52	5,251.49	15.53	5.90	-59.21	-1,154.73	8,452.92	8,409.87	8,388.60	21.26	395.530	
5,300.00	5,294.05	5,353.68	5,353.65	15.83	5.88	-59.24	-1,155.30	8,452.54	8,406.98	8,385.41	21.57	389.800	
5,400.00	5,393.92	5,445.09	5,445.06	16.13	5.87	-59.26	-1,155.83	8,452.21	8,404.12	8,382.24	21.88	384.149	
5,500.00	5,493.80	5,568.19	5,568.15	16.43	5.85	-59.29	-1,156.50	8,451.68	8,401.17	8,378.99	22.18	378.789	
5,600.00	5,593.67	5,658.02	5,657.98	16.73	5.83	-59.31	-1,156.94	8,451.25	8,398.19	8,375.71	22.48	373.636	
5,700.00	5,693.54	5,700.00	5,765.38	17.03	5.83	-59.34	-1,157.55	8,450.74	8,395.21	8,372.43	22.78	368.605	
5,800.00	5,793.42	5,882.02	5,881.97	17.33	5.81	-59.37	-1,158.33	8,450.00	8,392.09	8,369.01	23.08	363.593	
5,900.00	5,893.29	5,963.02	5,962.97	17.63	5.80	-59.39	-1,158.88	8,449.40	8,388.88	8,365.50	23.38	358.803	
6,000.00	5,993.16	6,000.00	6,100.89	17.93	5.80	-59.42	-1,159.86	8,448.44	8,385.74	8,362.04	23.69	353.962	
6,100.00	6,093.04	6,200.00	6,199.94	18.23	5.79	-59.45	-1,160.60	8,447.73	8,382.54	8,358.54	24.00	349.291	
6,200.00	6,192.91	6,200.00	6,274.93	18.53	5.80	-59.46	-1,161.23	8,447.33	8,379.46	8,355.16	24.30	344.844	
6,300.00	6,292.78	6,350.00	6,349.93	18.83	5.82	-59.48	-1,162.01	8,446.91	8,376.46	8,351.82	24.63	340.031	
6,400.00	6,392.66	6,450.00	6,449.92	19.13	5.84	-59.50	-1,163.12	8,446.42	8,373.53	8,348.56	24.97	335.403	
6,500.00	6,492.53	6,541.29	6,541.20	19.43	5.88	-59.52	-1,164.42	8,446.00	8,370.68	8,345.38	25.30	330.838	
6,551.20	6,543.67	6,551.20	6,597.53	19.58	5.88	-59.53	-1,165.20	8,445.80	8,369.27	8,343.81	25.46	328.705	
6,600.00	6,592.30	6,627.70	6,627.60	19.73	5.91	-17.52	-1,165.59	8,445.70	8,365.86	8,340.23	25.64	326.302	
6,650.00	6,641.67	6,675.82	6,675.72	19.88	5.94	-7.49	-1,166.36	8,445.60	8,358.19	8,332.38	25.81	323.788	
6,700.00	6,690.21	6,715.98	6,715.87	20.03	5.96	-3.35	-1,166.88	8,445.51	8,346.26	8,320.28	25.98	321.199	
6,750.00	6,737.54	6,775.00	6,774.88	20.18	5.99	-1.04	-1,167.67	8,445.38	8,330.16	8,303.99	26.16	318.374	
6,800.00	6,783.30	6,793.22	6,793.10	20.33	6.00	0.51	-1,167.88	8,445.38	8,310.09	8,283.76	26.33	315.658	
6,850.00	6,827.15	6,854.47	6,854.35	20.48	6.04	1.71	-1,168.74	8,445.38	8,286.16	8,259.64	26.51	312.522	
6,900.00	6,868.74	6,888.04	6,887.91	20.63	6.06	2.74	-1,169.27	8,445.37	8,258.51	8,231.83	26.68	309.490	
6,950.00	6,907.77	6,936.05	6,935.92	20.78	6.09	3.74	-1,169.96	8,445.32	8,227.33	8,200.47	26.86	306.278	
7,000.00	6,943.94	6,959.37	6,959.23	20.93	6.11	4.77	-1,170.29	8,445.30	8,192.92	8,165.89	27.03	303.140	
7,050.00	6,976.97	7,022.55	7,022.41	21.08	6.15	5.97	-1,171.22	8,445.23	8,155.50	8,128.29	27.21	299.680	
7,100.00	7,006.62	7,035.87	7,035.72	21.23	6.15	7.36	-1,171.43	8,445.20	8,115.33	8,087.95	27.37	296.481	
7,150.00	7,032.64	7,050.00	7,049.86	21.38	6.16	9.14	-1,171.62	8,445.20	8,072.80	8,045.27	27.53	293.225	
7,200.00	7,054.86	7,200.00	7,101.99	21.53	6.25	11.70	-1,172.26	8,445.09	8,028.14	8,000.39	27.75	289.275	
7,250.00	7,073.09	7,110.22	7,110.07	21.68	6.20	15.34	-1,172.35	8,445.07	7,981.75	7,953.88	27.86	286.451	
7,300.00	7,087.20	7,115.50	7,115.35	21.83	6.20	21.26	-1,172.41	8,445.06	7,933.99	7,905.97	28.02	283.177	
7,350.00	7,097.08	7,125.00	7,124.85	21.98	6.21	32.37	-1,172.52	8,445.06	7,885.23	7,857.05	28.17	279.879	
7,400.00	7,102.66	7,125.00	7,124.85	22.13	6.21	56.09	-1,172.52	8,445.06	7,835.81	7,807.49	28.32	276.645	
7,438.94	7,104.00	7,125.00	7,124.85	22.25	6.21	89.12	-1,172.52	8,445.06	7,797.12	7,768.68	28.44	274.144	
7,500.00	7,104.02	7,125.00	7,124.85	22.43	6.21	89.12	-1,172.52	8,445.06	7,736.40	7,707.78	28.63	270.261	
7,600.00	7,104.06	7,125.00	7,124.85	22.74	6.21	89.12	-1,172.52	8,445.06	7,636.98	7,608.06	28.93	264.009	
7,700.00	7,104.10	7,125.00	7,124.85	23.04	6.21	89.12	-1,172.52	8,445.06	7,537.58	7,508.35	29.23	257.887	
7,800.00	7,104.14	7,125.00	7,124.85	23.34	6.21	89.12	-1,172.52	8,445.06	7,438.19	7,408.67	29.53	251.891	
7,900.00	7,104.18	7,125.00	7,124.85	23.64	6.21	89.12	-1,172.52	8,445.06	7,338.82	7,308.99	29.83	246.016	
8,000.00	7,104.22	7,125.00	7,124.85	23.94	6.21	89.12	-1,172.52	8,445.06	7,239.47	7,209.34	30.13	240.260	
8,100.00	7,104.26	7,125.00	7,124.85	24.24	6.21	89.12	-1,172.52	8,445.06	7,140.14	7,109.70	30.43	234.618	
8,200.00	7,104.30	7,125.00	7,124.85	24.54	6.21	89.12	-1,172.52	8,445.06	7,040.82	7,010.09	30.73	229.087	
8,300.00	7,104.34	7,125.00	7,124.85	24.84	6.21	89.12	-1,172.52	8,445.06	6,941.52	6,910.49	31.04	223.665	
8,400.00	7,104.38	7,125.00	7,124.85	25.14	6.21	89.12	-1,172.52	8,445.06	6,842.25	6,810.91	31.34	218.347	
8,500.00	7,104.42	7,125.00	7,124.85	25.44	6.21	89.12	-1,172.52	8,445.06	6,742.99	6,711.36	31.64	213.131	
8,600.00	7,104.45	7,125.00	7,124.85	25.74	6.21	89.12	-1,172.52	8,445.06	6,643.76	6,611.82	31.94	208.015	
8,700.00	7,104.49	7,125.00	7,124.85	26.04	6.21	89.12	-1,172.52	8,445.06	6,544.55	6,512.31	32.24	202.995	
8,800.00	7,104.53	7,125.00	7,124.85	26.34	6.21	89.12	-1,172.52	8,445.06	6,445.37	6,412.83	32.54	198.069	
8,900.00	7,104.57	7,125.00	7,124.85	26.64	6.21	89.12	-1,172.52	8,445.06	6,346.21	6,313.37	32.84	193.233	
9,000.00	7,104.61	7,125.00	7,124.85	26.95	6.21	89.12	-1,172.52	8,445.06	6,247.08	6,213.93	33.14	188.487	
9,100.00	7,104.65	7,125.00	7,124.85	27.25	6.21	89.12	-1,172.52	8,445.06	6,147.97	6,114.53	33.44	183.827	
9,200.00	7,104.69	7,125.00	7,124.85	27.55	6.21	89.12	-1,172.52	8,445.06	6,048.90	6,015.15	33.75	179.251	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #055 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	7,125.00	7,124.85	27.85	6.21	89.12	-1,172.52	8,445.06	5,949.86	5,915.81	34.05	174.757	
9,400.00	7,104.77	7,125.00	7,124.85	28.15	6.21	89.12	-1,172.52	8,445.06	5,850.85	5,816.50	34.35	170.342	
9,500.00	7,104.81	7,125.00	7,124.85	28.45	6.21	89.12	-1,172.52	8,445.06	5,751.87	5,717.22	34.65	166.006	
9,600.00	7,104.85	7,125.00	7,124.85	28.75	6.21	89.12	-1,172.52	8,445.06	5,652.93	5,617.98	34.95	161.745	
9,700.00	7,104.89	7,125.00	7,124.85	29.05	6.21	89.12	-1,172.52	8,445.06	5,554.03	5,518.78	35.25	157.558	
9,800.00	7,104.92	7,125.00	7,124.85	29.35	6.21	89.12	-1,172.52	8,445.06	5,455.16	5,419.61	35.55	153.443	
9,900.00	7,104.96	7,125.00	7,124.85	29.65	6.21	89.12	-1,172.52	8,445.06	5,356.34	5,320.49	35.85	149.399	
10,000.00	7,105.00	7,125.00	7,124.85	29.95	6.21	89.12	-1,172.52	8,445.06	5,257.57	5,221.41	36.15	145.423	
10,100.00	7,105.04	7,125.00	7,124.85	30.25	6.21	89.12	-1,172.52	8,445.06	5,158.84	5,122.38	36.45	141.514	
10,200.00	7,105.08	7,125.00	7,124.85	30.55	6.21	89.12	-1,172.52	8,445.06	5,060.16	5,023.41	36.76	137.670	
10,300.00	7,105.12	7,125.00	7,124.85	30.85	6.21	89.12	-1,172.52	8,445.06	4,961.54	4,924.48	37.06	133.891	
10,400.00	7,105.16	7,125.00	7,124.85	31.15	6.21	89.12	-1,172.52	8,445.06	4,862.97	4,825.61	37.36	130.174	
10,500.00	7,105.20	7,125.00	7,124.85	31.45	6.21	89.12	-1,172.52	8,445.06	4,764.46	4,726.80	37.66	126.518	
10,600.00	7,105.24	7,125.00	7,124.85	31.75	6.21	89.12	-1,172.52	8,445.06	4,666.01	4,628.05	37.96	122.921	
10,700.00	7,105.28	7,125.00	7,124.85	32.05	6.21	89.12	-1,172.52	8,445.06	4,567.63	4,529.37	38.26	119.384	
10,800.00	7,105.32	7,125.00	7,124.85	32.35	6.21	89.12	-1,172.52	8,445.06	4,469.32	4,430.76	38.56	115.903	
10,900.00	7,105.36	7,125.00	7,124.85	32.66	6.21	89.12	-1,172.52	8,445.06	4,371.09	4,332.23	38.86	112.478	
11,000.00	7,105.39	7,125.00	7,124.85	32.96	6.21	89.12	-1,172.52	8,445.06	4,272.94	4,233.78	39.16	109.108	
11,100.00	7,105.43	7,125.00	7,124.85	33.26	6.21	89.12	-1,172.52	8,445.06	4,174.88	4,135.42	39.46	105.792	
11,200.00	7,105.47	7,125.00	7,124.85	33.56	6.21	89.12	-1,172.52	8,445.06	4,076.92	4,037.15	39.76	102.528	
11,300.00	7,105.51	7,125.00	7,124.85	33.86	6.21	89.12	-1,172.52	8,445.06	3,979.05	3,938.99	40.06	99.316	
11,400.00	7,105.55	7,125.00	7,124.85	34.16	6.21	89.12	-1,172.52	8,445.06	3,881.30	3,840.93	40.37	96.155	
11,500.00	7,105.59	7,125.00	7,124.85	34.46	6.21	89.12	-1,172.52	8,445.06	3,783.66	3,742.99	40.67	93.043	
11,600.00	7,105.63	7,125.00	7,124.85	34.76	6.21	89.12	-1,172.52	8,445.06	3,686.15	3,645.18	40.97	89.981	
11,700.00	7,105.67	7,125.00	7,124.85	35.06	6.21	89.12	-1,172.52	8,445.06	3,588.77	3,547.51	41.27	86.966	
11,800.00	7,105.71	7,125.00	7,124.85	35.36	6.21	89.12	-1,172.52	8,445.06	3,491.54	3,449.98	41.57	83.999	
11,900.00	7,105.75	7,125.00	7,124.85	35.66	6.21	89.12	-1,172.52	8,445.06	3,394.48	3,352.61	41.87	81.078	
12,000.00	7,105.79	7,125.00	7,124.85	35.96	6.21	89.12	-1,172.52	8,445.06	3,297.59	3,255.42	42.17	78.204	
12,100.00	7,105.83	7,125.00	7,124.85	36.26	6.21	89.12	-1,172.52	8,445.06	3,200.89	3,158.42	42.47	75.375	
12,200.00	7,105.86	7,125.00	7,124.85	36.56	6.21	89.12	-1,172.52	8,445.06	3,104.40	3,061.63	42.77	72.590	
12,300.00	7,105.90	7,125.00	7,124.85	36.86	6.21	89.12	-1,172.52	8,445.06	3,008.14	2,965.07	43.07	69.851	
12,400.00	7,105.94	7,125.00	7,124.85	37.16	6.21	89.12	-1,172.52	8,445.06	2,912.13	2,868.77	43.36	67.155	
12,500.00	7,105.98	7,125.00	7,124.85	37.46	6.21	89.12	-1,172.52	8,445.06	2,816.40	2,772.74	43.66	64.503	
12,600.00	7,106.02	7,125.00	7,124.85	37.76	6.21	89.12	-1,172.52	8,445.06	2,720.98	2,677.02	43.96	61.895	
12,700.00	7,106.06	7,125.00	7,124.85	38.06	6.21	89.12	-1,172.52	8,445.06	2,625.89	2,581.63	44.26	59.330	
12,800.00	7,106.10	7,125.00	7,124.85	38.36	6.21	89.12	-1,172.52	8,445.06	2,531.19	2,486.63	44.56	56.808	
12,900.00	7,106.14	7,125.11	7,124.96	38.66	6.21	89.13	-1,172.52	8,445.06	2,436.91	2,392.06	44.85	54.330	
13,000.00	7,106.18	7,125.24	7,125.09	38.96	6.21	89.14	-1,172.52	8,445.06	2,343.10	2,297.95	45.15	51.896	
13,100.00	7,106.22	7,125.37	7,125.22	39.26	6.21	89.15	-1,172.52	8,445.06	2,249.83	2,204.38	45.44	49.507	
13,200.00	7,106.26	7,125.50	7,125.35	39.56	6.21	89.16	-1,172.52	8,445.06	2,157.16	2,111.42	45.74	47.163	
13,300.00	7,106.30	7,125.64	7,125.49	39.86	6.21	89.17	-1,172.52	8,445.06	2,065.17	2,019.14	46.03	44.864	
13,400.00	7,106.33	7,125.77	7,125.62	40.16	6.21	89.17	-1,172.53	8,445.06	1,973.97	1,927.64	46.32	42.613	
13,500.00	7,106.37	7,125.91	7,125.76	40.46	6.21	89.18	-1,172.53	8,445.06	1,883.65	1,837.04	46.61	40.411	
13,600.00	7,106.41	7,126.05	7,125.90	40.76	6.21	89.19	-1,172.53	8,445.06	1,794.37	1,747.47	46.90	38.260	
13,700.00	7,106.45	7,126.19	7,126.04	41.06	6.21	89.20	-1,172.53	8,445.06	1,706.27	1,659.09	47.18	36.163	
13,800.00	7,106.49	7,126.33	7,126.18	41.36	6.21	89.21	-1,172.53	8,445.06	1,619.55	1,572.09	47.46	34.122	
13,900.00	7,106.53	7,126.47	7,126.32	41.67	6.21	89.22	-1,172.53	8,445.06	1,534.46	1,486.72	47.74	32.143	
14,000.00	7,106.57	7,126.61	7,126.46	41.97	6.21	89.23	-1,172.53	8,445.06	1,451.26	1,403.25	48.01	30.228	
14,100.00	7,106.61	7,126.76	7,126.61	42.27	6.21	89.24	-1,172.54	8,445.06	1,370.32	1,322.04	48.27	28.386	
14,200.00	7,106.65	7,126.90	7,126.75	42.57	6.21	89.25	-1,172.54	8,445.06	1,292.04	1,243.51	48.53	26.624	
14,300.00	7,106.69	7,127.05	7,126.90	42.87	6.21	89.26	-1,172.54	8,445.06	1,216.95	1,168.18	48.78	24.950	
14,400.00	7,106.73	7,127.19	7,127.04	43.17	6.21	89.27	-1,172.54	8,445.06	1,145.68	1,096.67	49.01	23.376	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #055 (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	7,127.34	7,127.19	43.47	6.21	89.28	-1,172.54	8,445.06	1,078.97	1,029.74	49.23	21.916	
14,600.00	7,106.80	7,127.49	7,127.34	43.77	6.21	89.29	-1,172.54	8,445.06	1,017.73	968.29	49.44	20.586	
14,700.00	7,106.84	7,127.64	7,127.49	44.07	6.21	89.30	-1,172.55	8,445.06	963.01	913.38	49.63	19.404	
14,800.00	7,106.88	7,127.80	7,127.65	44.37	6.21	89.31	-1,172.55	8,445.06	915.96	866.15	49.81	18.391	
14,900.00	7,106.92	7,127.95	7,127.80	44.67	6.21	89.33	-1,172.55	8,445.06	877.83	827.86	49.97	17.566	
15,000.00	7,106.96	7,128.11	7,127.95	44.97	6.21	89.34	-1,172.55	8,445.06	849.82	799.67	50.14	16.948	
15,100.00	7,107.00	7,128.26	7,128.11	45.27	6.21	89.35	-1,172.55	8,445.06	832.94	782.62	50.33	16.551	
15,191.99	7,107.04	7,128.41	7,128.26	45.54	6.21	89.36	-1,172.55	8,445.06	827.85	777.33	50.52	16.388	CC, ES
15,200.00	7,107.04	7,128.42	7,128.27	45.57	6.21	89.36	-1,172.55	8,445.06	827.89	777.35	50.53	16.383	SF
15,300.00	7,107.08	7,128.58	7,128.43	45.87	6.21	89.37	-1,172.56	8,445.06	834.86	784.08	50.78	16.441	
15,400.00	7,107.12	7,128.74	7,128.59	46.17	6.21	89.38	-1,172.56	8,445.06	853.58	802.51	51.07	16.715	
15,500.00	7,107.16	7,128.90	7,128.75	46.47	6.21	89.39	-1,172.56	8,445.06	883.29	831.90	51.39	17.188	
15,600.00	7,107.20	7,129.06	7,128.91	46.77	6.21	89.40	-1,172.56	8,445.06	922.93	871.19	51.74	17.837	
15,700.00	7,107.23	7,129.23	7,129.08	47.07	6.21	89.41	-1,172.56	8,445.06	971.29	919.18	52.11	18.638	
15,800.00	7,107.27	7,129.39	7,129.24	47.37	6.21	89.43	-1,172.57	8,445.06	1,027.14	974.64	52.49	19.567	
15,900.00	7,107.31	7,129.56	7,129.41	47.67	6.21	89.44	-1,172.57	8,445.06	1,089.32	1,036.44	52.87	20.603	
16,000.00	7,107.35	7,129.73	7,129.58	47.97	6.21	89.45	-1,172.57	8,445.06	1,156.81	1,103.56	53.25	21.724	
16,100.00	7,107.39	7,129.90	7,129.75	48.27	6.21	89.46	-1,172.57	8,445.06	1,228.75	1,175.12	53.62	22.914	
16,200.00	7,107.43	7,130.07	7,129.92	48.57	6.21	89.47	-1,172.57	8,445.07	1,304.38	1,250.39	53.99	24.159	
16,300.00	7,107.47	7,130.25	7,130.10	48.87	6.21	89.48	-1,172.58	8,445.07	1,383.12	1,328.77	54.35	25.448	
16,400.00	7,107.51	7,130.42	7,130.27	49.17	6.21	89.50	-1,172.58	8,445.07	1,464.45	1,409.75	54.71	26.770	
16,500.00	7,107.55	7,130.60	7,130.45	49.47	6.21	89.51	-1,172.58	8,445.07	1,547.97	1,492.92	55.05	28.118	
16,600.00	7,107.59	7,130.78	7,130.63	49.77	6.21	89.52	-1,172.58	8,445.07	1,633.35	1,577.95	55.40	29.485	
16,700.00	7,107.63	7,130.96	7,130.81	50.07	6.21	89.53	-1,172.58	8,445.07	1,720.30	1,664.56	55.73	30.866	
16,800.00	7,107.67	7,131.14	7,130.99	50.37	6.21	89.55	-1,172.59	8,445.07	1,808.60	1,752.53	56.07	32.257	
16,900.00	7,107.70	7,131.32	7,131.17	50.67	6.21	89.56	-1,172.59	8,445.07	1,898.06	1,841.66	56.40	33.654	
17,000.00	7,107.74	7,131.51	7,131.36	50.97	6.21	89.57	-1,172.59	8,445.07	1,988.52	1,931.80	56.73	35.054	
17,100.00	7,107.78	7,131.69	7,131.54	51.27	6.21	89.58	-1,172.59	8,445.07	2,079.86	2,022.81	57.05	36.456	
17,200.00	7,107.82	7,131.88	7,131.73	51.57	6.21	89.60	-1,172.59	8,445.07	2,171.97	2,114.59	57.37	37.856	
17,300.00	7,107.86	7,132.07	7,131.92	51.87	6.21	89.61	-1,172.60	8,445.07	2,264.74	2,207.04	57.69	39.254	
17,400.00	7,107.90	7,132.26	7,132.11	52.17	6.21	89.62	-1,172.60	8,445.07	2,358.10	2,300.09	58.01	40.648	
17,500.00	7,107.94	7,132.46	7,132.31	52.47	6.21	89.64	-1,172.60	8,445.07	2,451.99	2,393.66	58.33	42.037	
17,600.00	7,107.98	7,132.65	7,132.50	52.77	6.22	89.65	-1,172.60	8,445.07	2,546.34	2,487.69	58.64	43.420	
17,700.00	7,108.02	7,132.85	7,132.70	53.07	6.22	89.66	-1,172.61	8,445.07	2,641.11	2,582.15	58.96	44.796	
17,800.00	7,108.06	7,133.05	7,132.90	53.37	6.22	89.68	-1,172.61	8,445.07	2,736.25	2,676.97	59.27	46.165	
17,900.00	7,108.10	7,133.25	7,133.10	53.67	6.22	89.69	-1,172.61	8,445.07	2,831.72	2,772.14	59.58	47.525	
18,000.00	7,108.14	7,133.45	7,133.30	53.97	6.22	89.71	-1,172.61	8,445.07	2,927.50	2,867.60	59.89	48.878	
18,100.00	7,108.17	7,133.66	7,133.51	54.27	6.22	89.72	-1,172.61	8,445.07	3,023.55	2,963.34	60.20	50.221	
18,200.00	7,108.21	7,133.87	7,133.72	54.57	6.22	89.73	-1,172.62	8,445.07	3,119.85	3,059.33	60.51	51.556	
18,300.00	7,108.25	7,134.08	7,133.93	54.87	6.22	89.75	-1,172.62	8,445.07	3,216.37	3,155.55	60.82	52.881	
18,400.00	7,108.29	7,134.29	7,134.14	55.17	6.22	89.76	-1,172.62	8,445.07	3,313.10	3,251.97	61.13	54.197	
18,500.00	7,108.33	7,134.50	7,134.35	55.47	6.22	89.78	-1,172.62	8,445.07	3,410.02	3,348.58	61.44	55.503	
18,600.00	7,108.37	7,134.72	7,134.57	55.77	6.22	89.79	-1,172.63	8,445.07	3,507.11	3,445.37	61.75	56.800	
18,700.00	7,108.41	7,134.94	7,134.78	56.07	6.22	89.81	-1,172.63	8,445.07	3,604.36	3,542.31	62.05	58.086	
18,800.00	7,108.45	7,135.16	7,135.00	56.37	6.22	89.82	-1,172.63	8,445.07	3,701.76	3,639.40	62.36	59.363	
18,900.00	7,108.49	7,135.38	7,135.23	56.67	6.22	89.84	-1,172.64	8,445.07	3,799.30	3,736.63	62.66	60.629	
19,000.00	7,108.53	7,135.60	7,135.45	56.97	6.22	89.85	-1,172.64	8,445.07	3,896.95	3,833.98	62.97	61.886	
19,100.00	7,108.57	7,135.83	7,135.68	57.28	6.22	89.87	-1,172.64	8,445.07	3,994.73	3,931.45	63.28	63.132	
19,200.00	7,108.61	7,136.06	7,135.91	57.58	6.22	89.89	-1,172.64	8,445.07	4,092.61	4,029.03	63.58	64.369	
19,300.00	7,108.64	7,136.29	7,136.14	57.88	6.22	89.90	-1,172.65	8,445.07	4,190.59	4,126.70	63.89	65.596	
19,400.00	7,108.68	7,136.52	7,136.37	58.18	6.22	89.92	-1,172.65	8,445.07	4,288.66	4,224.47	64.19	66.813	
19,500.00	7,108.72	7,136.76	7,136.61	58.48	6.22	89.94	-1,172.65	8,445.07	4,386.83	4,322.33	64.49	68.019	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #055 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,600.00	7,108.76	7,137.00	7,136.85	58.78	6.22	89.95	-1,172.65	8,445.08	4,485.07	4,420.27	64.80	69.216	
19,700.00	7,108.80	7,137.24	7,137.09	59.08	6.22	89.97	-1,172.66	8,445.08	4,583.39	4,518.29	65.10	70.403	
19,800.00	7,108.84	7,137.49	7,137.34	59.38	6.22	89.99	-1,172.66	8,445.08	4,681.78	4,616.37	65.41	71.581	
19,900.00	7,108.88	7,137.73	7,137.58	59.68	6.22	90.00	-1,172.66	8,445.08	4,780.23	4,714.53	65.71	72.749	
20,000.00	7,108.92	7,137.98	7,137.83	59.98	6.22	90.02	-1,172.67	8,445.08	4,878.75	4,812.74	66.01	73.907	
20,100.00	7,108.96	7,138.23	7,138.08	60.28	6.22	90.04	-1,172.67	8,445.08	4,977.33	4,911.02	66.32	75.055	
20,208.46	7,109.00	7,138.51	7,138.36	60.60	6.22	90.06	-1,172.67	8,445.08	5,084.31	5,017.67	66.64	76.290	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-170.98	-846.38	-134.32	857.07				
100.00	100.00	86.28	86.28	0.23	0.04	-170.98	-846.45	-134.31	857.04	856.77	0.27	3,137.304	
200.00	200.00	184.92	184.92	0.53	0.17	-170.99	-846.68	-134.28	857.26	856.57	0.69	1,244.828	
300.00	300.00	283.57	283.56	0.83	0.30	-171.00	-847.07	-134.22	857.65	856.53	1.11	769.806	
400.00	400.00	382.15	382.15	1.13	0.43	-171.01	-847.62	-134.13	858.19	856.65	1.54	557.479	
500.00	500.00	480.70	480.69	1.43	0.56	-171.02	-848.34	-134.02	858.89	856.93	1.96	437.196	
600.00	599.98	578.56	578.55	1.73	0.68	33.41	-849.33	-133.75	858.39	856.01	2.39	359.904	
644.12	644.06	622.01	621.99	1.86	0.74	33.47	-849.84	-133.56	857.30	854.73	2.57	333.737	
700.00	699.87	677.18	677.16	2.03	0.81	33.55	-850.53	-133.25	855.60	852.80	2.80	305.548	
800.00	799.74	777.78	777.75	2.33	0.94	33.67	-851.87	-132.55	852.61	849.39	3.21	265.358	
900.00	899.62	877.51	877.47	2.63	1.07	33.79	-853.17	-131.66	849.57	845.95	3.62	234.827	
1,000.00	999.49	977.94	977.89	2.93	1.19	33.90	-854.45	-130.75	846.50	842.47	4.02	210.453	
1,100.00	1,099.36	1,081.10	1,081.03	3.23	1.32	34.02	-855.58	-129.81	843.26	838.83	4.42	190.637	
1,200.00	1,199.24	1,180.02	1,179.94	3.53	1.44	34.12	-856.50	-128.63	839.80	834.99	4.81	174.753	
1,300.00	1,299.11	1,277.82	1,277.73	3.83	1.56	34.21	-857.66	-127.31	836.58	831.39	5.19	161.137	
1,400.00	1,398.98	1,380.50	1,380.40	4.13	1.69	34.34	-858.73	-126.37	833.30	827.71	5.59	149.039	
1,500.00	1,498.86	1,476.96	1,476.85	4.43	1.81	34.46	-859.76	-125.61	830.06	824.07	5.99	138.611	
1,600.00	1,598.73	1,578.15	1,578.03	4.73	1.95	34.62	-860.97	-125.24	827.03	820.62	6.41	129.049	
1,700.00	1,698.60	1,677.02	1,676.90	5.03	2.07	34.79	-862.13	-125.09	824.02	817.19	6.83	120.639	
1,800.00	1,798.48	1,781.49	1,781.36	5.33	2.19	35.00	-862.96	-125.27	820.70	813.44	7.26	112.988	
1,900.00	1,898.35	1,882.41	1,882.28	5.63	2.31	35.20	-863.51	-125.23	817.12	809.43	7.69	106.261	
2,000.00	1,998.22	1,980.71	1,980.58	5.93	2.44	35.38	-864.09	-125.07	813.56	805.45	8.11	100.352	
2,100.00	2,098.10	2,081.08	2,080.94	6.23	2.56	35.56	-864.77	-124.82	810.08	801.56	8.52	95.039	
2,200.00	2,197.97	2,182.79	2,182.65	6.53	2.68	35.77	-865.20	-124.92	806.43	797.47	8.95	90.077	
2,300.00	2,297.84	2,283.85	2,283.71	6.83	2.73	36.01	-865.38	-125.29	802.59	793.25	9.35	85.880	
2,400.00	2,397.72	2,383.61	2,383.47	7.13	2.76	36.27	-865.44	-125.98	798.73	789.02	9.71	82.255	
2,500.00	2,497.59	2,483.03	2,482.88	7.43	2.79	36.54	-865.57	-126.92	795.00	784.92	10.08	78.868	
2,600.00	2,597.46	2,585.21	2,585.06	7.73	2.82	36.84	-865.52	-127.97	791.14	780.70	10.44	75.798	
2,700.00	2,697.34	2,685.66	2,685.51	8.03	2.83	37.13	-865.29	-128.82	787.08	776.30	10.78	73.037	
2,800.00	2,797.21	2,784.16	2,784.00	8.33	2.86	37.38	-865.21	-129.23	783.09	771.97	11.13	70.368	
2,900.00	2,897.09	2,884.38	2,884.22	8.63	2.91	37.62	-865.26	-129.56	779.23	767.72	11.50	67.740	
3,000.00	2,996.96	2,982.89	2,982.73	8.93	2.97	37.87	-865.27	-129.87	775.33	763.46	11.87	65.310	
3,100.00	3,096.83	3,080.71	3,080.55	9.23	3.08	38.11	-865.59	-130.14	771.74	759.46	12.29	62.817	
3,200.00	3,196.71	3,180.07	3,179.91	9.53	3.20	38.35	-866.02	-130.35	768.26	755.55	12.71	60.441	
3,300.00	3,296.58	3,277.92	3,277.75	9.83	3.32	38.56	-866.87	-130.38	765.17	752.04	13.13	58.265	
3,400.00	3,396.45	3,375.86	3,375.69	10.13	3.45	38.77	-867.76	-130.28	762.10	748.55	13.55	56.235	
3,500.00	3,496.33	3,476.35	3,476.18	10.43	3.58	38.98	-868.82	-130.22	759.19	745.22	13.98	54.319	
3,600.00	3,596.20	3,576.70	3,576.52	10.73	3.71	39.20	-869.92	-130.20	756.34	741.94	14.40	52.518	
3,700.00	3,696.07	3,676.47	3,676.28	11.03	3.83	39.42	-871.08	-130.18	753.56	738.74	14.83	50.828	
3,800.00	3,795.95	3,774.34	3,774.14	11.33	3.96	39.64	-872.12	-130.24	750.73	735.48	15.25	49.232	
3,900.00	3,895.82	3,876.40	3,876.20	11.63	4.09	39.87	-873.25	-130.18	747.91	732.24	15.67	47.715	
4,000.00	3,995.69	3,976.95	3,976.75	11.93	4.22	40.10	-874.37	-130.23	745.15	729.04	16.10	46.281	
4,100.00	4,095.57	4,075.69	4,075.48	12.23	4.35	40.33	-875.39	-130.31	742.32	725.80	16.52	44.922	
4,200.00	4,195.44	4,171.91	4,171.69	12.53	4.47	40.55	-876.54	-130.42	739.68	722.73	16.95	43.648	
4,300.00	4,295.31	4,269.63	4,269.39	12.83	4.60	40.78	-878.12	-130.59	737.46	720.10	17.37	42.458	
4,400.00	4,395.19	4,366.43	4,366.18	13.13	4.73	41.01	-880.07	-130.92	735.68	717.89	17.79	41.350	
4,500.00	4,495.06	4,463.31	4,463.03	13.43	4.85	41.25	-882.45	-131.49	734.42	716.20	18.21	40.321	
4,600.00	4,594.93	4,562.18	4,561.86	13.73	4.98	41.48	-885.14	-132.04	733.40	714.76	18.64	39.347	
4,700.00	4,694.81	4,662.72	4,662.35	14.03	5.11	41.72	-887.93	-132.59	732.46	713.40	19.07	38.417	
4,800.00	4,794.68	4,761.72	4,761.32	14.33	5.24	41.96	-890.70	-133.13	731.54	712.05	19.49	37.533	
4,900.00	4,894.55	4,861.89	4,861.44	14.63	5.36	42.20	-893.51	-133.75	730.67	710.75	19.92	36.686	
5,000.00	4,994.43	4,961.34	4,960.85	14.93	5.49	42.45	-896.31	-134.40	729.83	709.49	20.34	35.878	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,060.92	5,060.39	15.23	5.62	42.69	-899.21	-135.08	729.10	708.33	20.77	35.108	
5,200.00	5,194.18	5,160.88	5,160.30	15.53	5.75	42.94	-902.11	-135.79	728.39	707.20	21.19	34.369	
5,300.00	5,294.05	5,259.72	5,259.10	15.83	5.88	43.19	-905.06	-136.52	727.78	706.17	21.62	33.667	
5,400.00	5,393.92	5,358.49	5,357.82	16.13	6.00	43.44	-908.13	-137.27	727.31	705.27	22.04	32.998	
5,500.00	5,493.80	5,458.37	5,457.65	16.43	6.13	43.68	-911.27	-138.03	726.89	704.42	22.47	32.354	
5,600.00	5,593.67	5,557.83	5,557.05	16.73	6.26	43.93	-914.47	-138.77	726.53	703.64	22.89	31.739	
5,700.00	5,693.54	5,657.18	5,656.34	17.03	6.39	44.18	-917.70	-139.56	726.25	702.93	23.32	31.149	
5,800.00	5,793.42	5,756.26	5,755.37	17.33	6.52	44.42	-921.04	-140.37	726.10	702.36	23.74	30.587	
5,900.00	5,893.29	5,857.21	5,856.25	17.63	6.65	44.67	-924.52	-141.16	726.02	701.86	24.16	30.045	
6,000.00	5,993.16	5,957.65	5,956.64	17.93	6.78	44.92	-927.80	-142.06	725.82	701.23	24.59	29.517	
6,100.00	6,093.04	6,057.44	6,056.37	18.23	6.90	45.18	-931.02	-142.92	725.60	700.58	25.01	29.008	
6,200.00	6,192.91	6,156.96	6,155.83	18.53	7.03	45.44	-934.34	-143.88	725.52	700.08	25.44	28.521	
6,300.00	6,292.78	6,256.42	6,255.23	18.83	7.16	45.70	-937.67	-144.88	725.49	699.63	25.86	28.053	
6,321.18	6,313.94	6,277.20	6,276.00	18.89	7.19	45.75	-938.37	-145.10	725.48	699.53	25.95	27.956	
6,400.00	6,392.66	6,356.16	6,354.91	19.13	7.29	45.96	-941.02	-145.97	725.50	699.22	26.29	27.601	
6,500.00	6,492.53	6,458.12	6,456.81	19.43	7.42	46.24	-944.29	-147.06	725.40	698.68	26.71	27.156	
6,551.20	6,543.67	6,511.95	6,510.62	19.58	7.49	46.38	-945.86	-147.48	725.15	698.22	26.93	26.925	
6,560.81	6,553.26	6,521.47	6,520.14	19.61	7.50	61.29	-946.13	-147.55	725.12	698.14	26.97	26.883	CC, ES
6,600.00	6,592.30	6,562.44	6,561.09	19.73	7.55	88.60	-947.23	-147.77	725.56	698.43	27.14	26.736	
6,650.00	6,641.67	6,612.82	6,611.45	19.88	7.62	98.98	-948.52	-148.02	727.56	700.22	27.34	26.612	
6,700.00	6,690.21	6,662.70	6,661.32	20.03	7.68	103.54	-949.69	-148.18	731.21	703.68	27.53	26.557	SF
6,750.00	6,737.54	6,711.90	6,710.50	20.18	7.75	106.34	-950.76	-148.37	736.74	709.03	27.72	26.580	
6,800.00	6,783.30	6,758.99	6,757.58	20.33	7.81	108.35	-951.65	-148.53	744.26	716.37	27.89	26.684	
6,850.00	6,827.15	6,804.12	6,802.71	20.48	7.87	109.90	-952.43	-148.69	754.06	726.00	28.05	26.881	
6,900.00	6,868.74	6,846.23	6,844.81	20.63	7.92	111.06	-953.08	-148.82	766.29	738.10	28.20	27.176	
6,950.00	6,907.77	6,883.98	6,882.55	20.78	7.97	111.80	-953.69	-148.98	781.28	752.95	28.33	27.580	
7,000.00	6,943.94	6,920.93	6,919.50	20.93	8.02	112.25	-954.30	-149.10	799.11	770.66	28.45	28.092	
7,050.00	6,976.97	6,953.64	6,952.21	21.08	8.06	112.22	-954.82	-149.21	819.84	791.29	28.55	28.715	
7,100.00	7,006.62	6,982.12	6,980.68	21.23	8.10	111.65	-955.28	-149.35	843.54	814.90	28.64	29.451	
7,150.00	7,032.64	7,008.73	7,007.29	21.38	8.13	110.61	-955.73	-149.44	870.12	841.40	28.72	30.292	
7,200.00	7,054.86	7,031.79	7,030.35	21.53	8.16	108.94	-956.13	-149.49	899.43	870.63	28.80	31.232	
7,250.00	7,073.09	7,050.79	7,049.34	21.68	8.19	106.52	-956.43	-149.52	931.28	902.41	28.87	32.263	
7,300.00	7,087.20	7,064.78	7,063.33	21.83	8.21	103.20	-956.65	-149.55	965.43	936.51	28.93	33.374	
7,350.00	7,097.08	7,074.54	7,073.09	21.98	8.22	98.95	-956.79	-149.57	1,001.59	972.60	28.99	34.553	
7,400.00	7,102.66	7,079.87	7,078.42	22.13	8.23	93.72	-956.87	-149.58	1,039.40	1,010.35	29.05	35.786	
7,438.94	7,104.00	7,081.07	7,079.62	22.25	8.23	88.99	-956.89	-149.59	1,069.75	1,040.66	29.09	36.773	
7,500.00	7,104.02	7,080.93	7,079.48	22.43	8.23	88.98	-956.89	-149.59	1,118.48	1,089.31	29.17	38.348	
7,600.00	7,104.06	7,080.71	7,079.26	22.74	8.23	88.96	-956.88	-149.59	1,200.72	1,171.42	29.31	40.971	
7,700.00	7,104.10	7,080.49	7,079.04	23.04	8.23	88.94	-956.88	-149.58	1,285.49	1,256.02	29.47	43.625	
7,800.00	7,104.14	7,080.27	7,078.82	23.34	8.23	88.93	-956.88	-149.58	1,372.30	1,342.66	29.64	46.294	
7,900.00	7,104.18	7,080.06	7,078.61	23.64	8.23	88.91	-956.87	-149.58	1,460.81	1,430.97	29.84	48.962	
8,000.00	7,104.22	7,079.84	7,078.39	23.94	8.23	88.89	-956.87	-149.58	1,550.71	1,520.67	30.04	51.621	
8,100.00	7,104.26	7,079.63	7,078.18	24.24	8.23	88.87	-956.87	-149.58	1,641.78	1,611.52	30.26	54.262	
8,200.00	7,104.30	7,079.42	7,077.96	24.54	8.23	88.85	-956.86	-149.58	1,733.84	1,703.35	30.48	56.880	
8,300.00	7,104.34	7,079.20	7,077.75	24.84	8.23	88.83	-956.86	-149.58	1,826.73	1,796.01	30.72	59.470	
8,400.00	7,104.38	7,078.99	7,077.54	25.14	8.23	88.81	-956.86	-149.58	1,920.33	1,889.37	30.96	62.029	
8,500.00	7,104.42	7,078.79	7,077.33	25.44	8.23	88.80	-956.85	-149.58	2,014.55	1,983.34	31.21	64.556	
8,600.00	7,104.45	7,078.58	7,077.13	25.74	8.23	88.78	-956.85	-149.58	2,109.30	2,077.84	31.46	67.048	
8,700.00	7,104.49	7,078.37	7,076.92	26.04	8.23	88.76	-956.85	-149.58	2,204.52	2,172.80	31.72	69.505	
8,800.00	7,104.53	7,078.17	7,076.72	26.34	8.23	88.74	-956.84	-149.58	2,300.14	2,268.16	31.98	71.925	
8,900.00	7,104.57	7,077.96	7,076.51	26.64	8.23	88.72	-956.84	-149.58	2,396.12	2,363.87	32.25	74.310	
9,000.00	7,104.61	7,077.76	7,076.31	26.95	8.22	88.71	-956.84	-149.58	2,492.41	2,459.90	32.51	76.657	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	7,077.56	7,076.11	27.25	8.22	88.69	-956.84	-149.58	2,588.99	2,556.20	32.79	78.968	
9,200.00	7,104.69	7,077.36	7,075.91	27.55	8.22	88.67	-956.83	-149.58	2,685.81	2,652.75	33.06	81.242	
9,300.00	7,104.73	7,077.16	7,075.71	27.85	8.22	88.65	-956.83	-149.58	2,782.86	2,749.53	33.34	83.481	
9,400.00	7,104.77	7,076.96	7,075.51	28.15	8.22	88.64	-956.83	-149.58	2,880.12	2,846.50	33.61	85.683	
9,500.00	7,104.81	7,076.76	7,075.31	28.45	8.22	88.62	-956.82	-149.57	2,977.55	2,943.66	33.89	87.851	
9,600.00	7,104.85	7,076.57	7,075.12	28.75	8.22	88.60	-956.82	-149.57	3,075.15	3,040.98	34.17	89.984	
9,700.00	7,104.89	7,076.37	7,074.92	29.05	8.22	88.59	-956.82	-149.57	3,172.90	3,138.44	34.46	92.082	
9,800.00	7,104.92	7,076.18	7,074.73	29.35	8.22	88.57	-956.82	-149.57	3,270.79	3,236.04	34.74	94.147	
9,900.00	7,104.96	7,075.99	7,074.54	29.65	8.22	88.55	-956.81	-149.57	3,368.79	3,333.77	35.03	96.179	
10,000.00	7,105.00	7,075.80	7,074.35	29.95	8.22	88.54	-956.81	-149.57	3,466.92	3,431.60	35.31	98.178	
10,100.00	7,105.04	7,075.61	7,074.16	30.25	8.22	88.52	-956.81	-149.57	3,565.14	3,529.54	35.60	100.146	
10,200.00	7,105.08	7,075.42	7,073.97	30.55	8.22	88.50	-956.80	-149.57	3,663.47	3,627.58	35.89	102.082	
10,300.00	7,105.12	7,075.23	7,073.78	30.85	8.22	88.49	-956.80	-149.57	3,761.88	3,725.70	36.18	103.988	
10,400.00	7,105.16	7,075.04	7,073.59	31.15	8.22	88.47	-956.80	-149.57	3,860.37	3,823.91	36.47	105.864	
10,500.00	7,105.20	7,074.86	7,073.41	31.45	8.22	88.45	-956.80	-149.57	3,958.94	3,922.19	36.76	107.710	
10,600.00	7,105.24	7,074.67	7,073.22	31.75	8.22	88.44	-956.79	-149.57	4,057.58	4,020.53	37.05	109.528	
10,700.00	7,105.28	7,074.49	7,073.04	32.05	8.22	88.42	-956.79	-149.57	4,156.28	4,118.95	37.34	111.317	
10,800.00	7,105.32	7,074.31	7,072.86	32.35	8.22	88.41	-956.79	-149.57	4,255.05	4,217.42	37.63	113.079	
10,900.00	7,105.36	7,074.13	7,072.68	32.66	8.22	88.39	-956.79	-149.57	4,353.87	4,315.95	37.92	114.814	
11,000.00	7,105.39	7,073.95	7,072.50	32.96	8.22	88.38	-956.78	-149.57	4,452.74	4,414.53	38.21	116.522	
11,100.00	7,105.43	7,073.77	7,072.32	33.26	8.22	88.36	-956.78	-149.57	4,551.66	4,513.16	38.51	118.205	
11,200.00	7,105.47	7,073.60	7,072.15	33.56	8.22	88.34	-956.78	-149.57	4,650.63	4,611.83	38.80	119.862	
11,300.00	7,105.51	7,073.42	7,071.97	33.86	8.22	88.33	-956.78	-149.57	4,749.64	4,710.55	39.09	121.495	
11,400.00	7,105.55	7,073.25	7,071.80	34.16	8.22	88.31	-956.77	-149.57	4,848.70	4,809.31	39.39	123.103	
11,500.00	7,105.59	7,073.08	7,071.62	34.46	8.22	88.30	-956.77	-149.57	4,947.79	4,908.11	39.68	124.687	
11,600.00	7,105.63	7,072.90	7,071.45	34.76	8.22	88.28	-956.77	-149.57	5,046.91	5,006.94	39.98	126.248	
11,700.00	7,105.67	7,072.73	7,071.28	35.06	8.22	88.27	-956.77	-149.56	5,146.07	5,105.80	40.27	127.786	
11,800.00	7,105.71	7,072.56	7,071.11	35.36	8.22	88.26	-956.76	-149.56	5,245.27	5,204.70	40.57	129.302	
11,900.00	7,105.75	7,072.40	7,070.95	35.66	8.22	88.24	-956.76	-149.56	5,344.49	5,303.63	40.86	130.796	
12,000.00	7,105.79	7,072.23	7,070.78	35.96	8.22	88.23	-956.76	-149.56	5,443.74	5,402.58	41.16	132.269	
12,100.00	7,105.83	7,072.06	7,070.61	36.26	8.22	88.21	-956.76	-149.56	5,543.02	5,501.56	41.45	133.720	
12,200.00	7,105.86	7,071.90	7,070.45	36.56	8.22	88.20	-956.75	-149.56	5,642.32	5,600.57	41.75	135.151	
12,300.00	7,105.90	7,071.74	7,070.29	36.86	8.22	88.18	-956.75	-149.56	5,741.65	5,699.60	42.04	136.562	
12,400.00	7,105.94	7,071.57	7,070.12	37.16	8.22	88.17	-956.75	-149.56	5,841.00	5,798.66	42.34	137.953	
12,500.00	7,105.98	7,071.41	7,069.96	37.46	8.22	88.15	-956.75	-149.56	5,940.37	5,897.73	42.64	139.325	
12,600.00	7,106.02	7,071.25	7,069.80	37.76	8.22	88.14	-956.74	-149.56	6,039.76	5,996.83	42.93	140.678	
12,700.00	7,106.06	7,071.09	7,069.64	38.06	8.22	88.13	-956.74	-149.56	6,139.17	6,095.94	43.23	142.013	
12,800.00	7,106.10	7,070.93	7,069.48	38.36	8.22	88.11	-956.74	-149.56	6,238.61	6,195.08	43.53	143.329	
12,900.00	7,106.14	7,070.78	7,069.33	38.66	8.22	88.10	-956.74	-149.56	6,338.05	6,294.23	43.82	144.627	
13,000.00	7,106.18	7,070.62	7,069.17	38.96	8.22	88.09	-956.73	-149.56	6,437.52	6,393.40	44.12	145.908	
13,100.00	7,106.22	7,070.47	7,069.01	39.26	8.22	88.07	-956.73	-149.56	6,537.00	6,492.59	44.42	147.172	
13,200.00	7,106.26	7,070.31	7,068.86	39.56	8.22	88.06	-956.73	-149.56	6,636.50	6,591.79	44.71	148.419	
13,300.00	7,106.30	7,070.16	7,068.71	39.86	8.21	88.05	-956.73	-149.56	6,736.01	6,691.00	45.01	149.650	
13,400.00	7,106.33	7,070.01	7,068.56	40.16	8.21	88.03	-956.72	-149.56	6,835.54	6,790.23	45.31	150.864	
13,500.00	7,106.37	7,069.85	7,068.40	40.46	8.21	88.02	-956.72	-149.56	6,935.08	6,889.48	45.61	152.063	
13,600.00	7,106.41	7,069.70	7,068.25	40.76	8.21	88.01	-956.72	-149.56	7,034.64	6,988.73	45.90	153.246	
13,700.00	7,106.45	7,069.55	7,068.10	41.06	8.21	87.99	-956.72	-149.56	7,134.20	7,088.00	46.20	154.413	
13,800.00	7,106.49	7,069.41	7,067.96	41.36	8.21	87.98	-956.72	-149.56	7,233.78	7,187.28	46.50	155.566	
13,900.00	7,106.53	7,069.26	7,067.81	41.67	8.21	87.97	-956.71	-149.56	7,333.37	7,286.57	46.80	156.704	
14,000.00	7,106.57	7,069.11	7,067.66	41.97	8.21	87.96	-956.71	-149.56	7,432.97	7,385.87	47.10	157.828	
14,100.00	7,106.61	7,068.97	7,067.52	42.27	8.21	87.94	-956.71	-149.56	7,532.58	7,485.19	47.39	158.938	
14,200.00	7,106.65	7,068.82	7,067.37	42.57	8.21	87.93	-956.71	-149.56	7,632.20	7,584.51	47.69	160.033	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	7,068.68	7,067.23	42.87	8.21	87.92	-956.71	-149.55	7,731.83	7,683.84	47.99	161.116	
14,400.00	7,106.73	7,068.54	7,067.09	43.17	8.21	87.90	-956.70	-149.55	7,831.47	7,783.19	48.29	162.184	
14,500.00	7,106.76	7,068.39	7,066.94	43.47	8.21	87.89	-956.70	-149.55	7,931.12	7,882.54	48.59	163.240	
14,600.00	7,106.80	7,068.25	7,066.80	43.77	8.21	87.88	-956.70	-149.55	8,030.78	7,981.90	48.88	164.283	
14,700.00	7,106.84	7,068.11	7,066.66	44.07	8.21	87.87	-956.70	-149.55	8,130.45	8,081.27	49.18	165.313	
14,800.00	7,106.88	7,067.97	7,066.52	44.37	8.21	87.86	-956.69	-149.55	8,230.12	8,180.64	49.48	166.331	
14,900.00	7,106.92	7,067.83	7,066.38	44.67	8.21	87.84	-956.69	-149.55	8,329.81	8,280.03	49.78	167.336	
15,000.00	7,106.96	7,067.70	7,066.25	44.97	8.21	87.83	-956.69	-149.55	8,429.50	8,379.42	50.08	168.330	
15,100.00	7,107.00	7,067.56	7,066.11	45.27	8.21	87.82	-956.69	-149.55	8,529.19	8,478.82	50.38	169.312	
15,200.00	7,107.04	7,067.42	7,065.97	45.57	8.21	87.81	-956.69	-149.55	8,628.90	8,578.22	50.67	170.282	
15,300.00	7,107.08	7,067.29	7,065.84	45.87	8.21	87.80	-956.68	-149.55	8,728.61	8,677.64	50.97	171.241	
15,400.00	7,107.12	7,067.15	7,065.70	46.17	8.21	87.78	-956.68	-149.55	8,828.33	8,777.06	51.27	172.188	
15,500.00	7,107.16	7,067.02	7,065.57	46.47	8.21	87.77	-956.68	-149.55	8,928.05	8,876.48	51.57	173.125	
15,600.00	7,107.20	7,066.89	7,065.44	46.77	8.21	87.76	-956.68	-149.55	9,027.78	8,975.91	51.87	174.051	
15,700.00	7,107.23	7,066.76	7,065.31	47.07	8.21	87.75	-956.68	-149.55	9,127.52	9,075.35	52.17	174.966	
15,800.00	7,107.27	7,066.63	7,065.18	47.37	8.21	87.74	-956.67	-149.55	9,227.26	9,174.79	52.47	175.871	
15,900.00	7,107.31	7,066.50	7,065.05	47.67	8.21	87.73	-956.67	-149.55	9,327.01	9,274.24	52.76	176.766	
16,000.00	7,107.35	7,066.37	7,064.92	47.97	8.21	87.72	-956.67	-149.55	9,426.76	9,373.70	53.06	177.650	
16,100.00	7,107.39	7,066.24	7,064.79	48.27	8.21	87.71	-956.67	-149.55	9,526.52	9,473.15	53.36	178.525	
16,200.00	7,107.43	7,066.11	7,064.66	48.57	8.21	87.69	-956.67	-149.55	9,626.28	9,572.62	53.66	179.390	
16,300.00	7,107.47	7,065.98	7,064.53	48.87	8.21	87.68	-956.66	-149.55	9,726.05	9,672.09	53.96	180.245	
16,400.00	7,107.51	7,065.85	7,064.40	49.17	8.21	87.67	-956.66	-149.55	9,825.82	9,771.56	54.26	181.091	
16,500.00	7,107.55	7,065.73	7,064.28	49.47	8.21	87.66	-956.66	-149.55	9,925.60	9,871.04	54.56	181.927	
16,600.00	7,107.59	7,065.60	7,064.15	49.77	8.21	87.65	-956.66	-149.55	10,025.38	9,970.52	54.86	182.755	
16,700.00	7,107.63	7,065.48	7,064.03	50.07	8.21	87.64	-956.66	-149.55	10,125.16	10,070.01	55.16	183.574	
16,800.00	7,107.67	7,065.36	7,063.91	50.37	8.21	87.63	-956.66	-149.55	10,224.95	10,169.50	55.45	184.383	
16,900.00	7,107.70	7,065.23	7,063.78	50.67	8.21	87.62	-956.65	-149.55	10,324.75	10,268.99	55.75	185.184	
17,000.00	7,107.74	7,065.11	7,063.66	50.97	8.21	87.61	-956.65	-149.55	10,424.54	10,368.49	56.05	185.977	
17,100.00	7,107.78	7,064.99	7,063.54	51.27	8.21	87.60	-956.65	-149.55	10,524.35	10,467.99	56.35	186.761	
17,200.00	7,107.82	7,064.87	7,063.42	51.57	8.21	87.59	-956.65	-149.55	10,624.15	10,567.50	56.65	187.537	
17,300.00	7,107.86	7,064.75	7,063.30	51.87	8.21	87.58	-956.65	-149.55	10,723.96	10,667.01	56.95	188.304	
17,400.00	7,107.90	7,064.63	7,063.18	52.17	8.21	87.57	-956.64	-149.55	10,823.77	10,766.52	57.25	189.064	
17,500.00	7,107.94	7,064.51	7,063.06	52.47	8.21	87.56	-956.64	-149.55	10,923.59	10,866.04	57.55	189.815	
17,600.00	7,107.98	7,064.39	7,062.94	52.77	8.21	87.54	-956.64	-149.55	11,023.41	10,965.56	57.85	190.559	
17,700.00	7,108.02	7,064.27	7,062.82	53.07	8.21	87.53	-956.64	-149.55	11,123.23	11,065.09	58.15	191.296	
17,800.00	7,108.06	7,064.16	7,062.71	53.37	8.21	87.52	-956.64	-149.54	11,223.06	11,164.61	58.45	192.024	
17,900.00	7,108.10	7,064.04	7,062.59	53.67	8.21	87.51	-956.64	-149.54	11,322.89	11,264.14	58.75	192.746	
18,000.00	7,108.14	7,063.93	7,062.48	53.97	8.21	87.50	-956.63	-149.54	11,422.72	11,363.67	59.04	193.460	
18,100.00	7,108.17	7,063.81	7,062.36	54.27	8.21	87.49	-956.63	-149.54	11,522.55	11,463.21	59.34	194.167	
18,200.00	7,108.21	7,063.70	7,062.25	54.57	8.21	87.48	-956.63	-149.54	11,622.39	11,562.75	59.64	194.866	
18,300.00	7,108.25	7,063.58	7,062.13	54.87	8.21	87.47	-956.63	-149.54	11,722.23	11,662.29	59.94	195.559	
18,400.00	7,108.29	7,063.47	7,062.02	55.17	8.21	87.46	-956.63	-149.54	11,822.07	11,761.83	60.24	196.245	
18,500.00	7,108.33	7,063.36	7,061.91	55.47	8.21	87.46	-956.63	-149.54	11,921.92	11,861.38	60.54	196.924	
18,600.00	7,108.37	7,063.25	7,061.80	55.77	8.21	87.45	-956.62	-149.54	12,021.77	11,960.93	60.84	197.596	
18,700.00	7,108.41	7,063.14	7,061.69	56.07	8.21	87.44	-956.62	-149.54	12,121.62	12,060.48	61.14	198.262	
18,800.00	7,108.45	7,063.02	7,061.58	56.37	8.21	87.43	-956.62	-149.54	12,221.47	12,160.03	61.44	198.921	
18,900.00	7,108.49	7,062.91	7,061.47	56.67	8.21	87.42	-956.62	-149.54	12,321.33	12,259.59	61.74	199.574	
19,000.00	7,108.53	7,062.81	7,061.36	56.97	8.21	87.41	-956.62	-149.54	12,421.19	12,359.15	62.04	200.221	
19,100.00	7,108.57	7,062.70	7,061.25	57.28	8.21	87.40	-956.62	-149.54	12,521.05	12,458.71	62.34	200.861	
19,200.00	7,108.61	7,062.59	7,061.14	57.58	8.21	87.39	-956.61	-149.54	12,620.91	12,558.27	62.64	201.495	
19,300.00	7,108.64	7,062.48	7,061.03	57.88	8.20	87.38	-956.61	-149.54	12,720.77	12,657.84	62.94	202.124	
19,400.00	7,108.68	7,062.37	7,060.93	58.18	8.20	87.37	-956.61	-149.54	12,820.64	12,757.40	63.23	202.746	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077 (Offset) - OH - OH

Survey Program: 100-Standard Keeper 104

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,500.00	7,108.72	7,062.27	7,060.82	58.48	8.20	87.36	-956.61	-149.54	12,920.51	12,856.97	63.53	203.362	
19,600.00	7,108.76	7,062.16	7,060.71	58.78	8.20	87.35	-956.61	-149.54	13,020.38	12,956.54	63.83	203.973	
19,700.00	7,108.80	7,062.06	7,060.61	59.08	8.20	87.34	-956.61	-149.54	13,120.25	13,056.12	64.13	204.578	
19,800.00	7,108.84	7,061.95	7,060.50	59.38	8.20	87.33	-956.60	-149.54	13,220.13	13,155.69	64.43	205.177	
19,900.00	7,108.88	7,061.85	7,060.40	59.68	8.20	87.32	-956.60	-149.54	13,320.00	13,255.27	64.73	205.771	
20,000.00	7,108.92	7,061.74	7,060.30	59.98	8.20	87.31	-956.60	-149.54	13,419.88	13,354.85	65.03	206.359	
20,100.00	7,108.96	7,061.64	7,060.19	60.28	8.20	87.31	-956.60	-149.54	13,519.76	13,454.43	65.33	206.942	
20,208.46	7,109.00	7,061.53	7,060.08	60.60	8.20	87.30	-956.60	-149.54	13,628.09	13,562.43	65.66	207.568	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	109.04	-1,092.03	3,164.81	3,348.38				
100.00	100.00	44.51	44.51	0.23	0.44	109.04	-1,092.03	3,164.81	3,347.92	3,347.25	0.67	5,033.896	
200.00	200.00	144.52	144.51	0.53	1.67	109.04	-1,092.03	3,164.81	3,347.92	3,345.73	2.19	1,527.717	
269.69	269.69	214.19	214.19	0.74	3.04	109.03	-1,091.72	3,164.81	3,347.82	3,344.04	3.77	887.273	
300.00	300.00	242.36	242.36	0.83	3.59	109.03	-1,091.75	3,164.81	3,347.83	3,343.41	4.42	757.605	
400.00	400.00	344.53	344.51	1.13	5.58	109.04	-1,092.03	3,164.81	3,347.92	3,341.21	6.71	499.188	
500.00	500.00	443.60	443.58	1.43	7.46	109.03	-1,091.64	3,164.81	3,347.79	3,338.90	8.89	376.549	
537.19	537.18	478.70	478.68	1.54	8.13	-46.58	-1,091.70	3,164.81	3,347.65	3,337.98	9.67	346.198	
600.00	599.98	537.98	537.96	1.73	9.26	-46.61	-1,091.96	3,164.81	3,346.70	3,335.72	10.99	304.647	
644.12	644.06	588.61	588.57	1.86	10.22	-46.65	-1,092.03	3,164.81	3,345.43	3,333.35	12.08	276.909	
700.00	699.87	644.42	644.38	2.03	11.28	-46.69	-1,092.03	3,164.81	3,343.50	3,330.19	13.31	251.178	
800.00	799.74	744.29	744.26	2.33	13.19	-46.75	-1,092.03	3,164.81	3,340.05	3,324.53	15.51	215.315	
900.00	899.62	843.21	843.18	2.63	15.07	-46.82	-1,091.51	3,164.81	3,336.44	3,318.74	17.70	188.548	
1,000.00	999.49	941.23	941.19	2.93	16.93	-46.88	-1,091.68	3,164.81	3,333.05	3,313.19	19.86	167.818	
1,100.00	1,099.36	1,043.94	1,043.88	3.23	18.90	-46.94	-1,092.03	3,164.81	3,329.72	3,307.60	22.12	150.511	
1,200.00	1,199.24	1,143.81	1,143.75	3.53	20.93	-47.00	-1,092.03	3,164.81	3,326.29	3,301.83	24.46	136.012	
1,300.00	1,299.11	1,243.69	1,243.62	3.83	22.96	-47.07	-1,092.03	3,164.81	3,322.86	3,296.07	26.79	124.038	
1,400.00	1,398.98	1,342.02	1,341.95	4.13	24.96	-47.14	-1,091.26	3,164.81	3,319.19	3,290.10	29.09	114.098	
1,500.00	1,498.86	1,439.21	1,439.14	4.43	26.94	-47.20	-1,091.52	3,164.81	3,315.86	3,284.49	31.37	105.704	
1,600.00	1,598.73	1,543.36	1,543.24	4.73	29.06	-47.26	-1,092.03	3,164.81	3,312.59	3,278.80	33.79	98.035	
1,700.00	1,698.60	1,643.24	1,643.12	5.03	31.10	-47.32	-1,092.03	3,164.81	3,309.18	3,273.05	36.13	91.596	
1,800.00	1,798.48	1,743.11	1,742.99	5.33	33.14	-47.38	-1,092.03	3,164.81	3,305.77	3,267.31	38.47	85.940	
1,900.00	1,898.35	1,841.15	1,841.02	5.63	35.14	-47.46	-1,090.96	3,164.81	3,302.03	3,261.27	40.77	80.999	
2,000.00	1,998.22	1,937.67	1,937.53	5.93	37.11	-47.52	-1,091.29	3,164.81	3,298.74	3,255.71	43.04	76.651	
2,100.00	2,098.10	2,034.21	2,034.07	6.23	39.08	-47.57	-1,091.94	3,164.81	3,295.55	3,250.25	45.31	72.740	
2,200.00	2,197.97	2,142.67	2,142.48	6.53	41.15	-47.64	-1,092.03	3,164.81	3,292.18	3,244.50	47.68	69.048	
2,300.00	2,297.84	2,242.54	2,242.36	6.83	43.05	-47.71	-1,092.03	3,164.81	3,288.79	3,238.91	49.88	65.939	
2,400.00	2,397.72	2,340.94	2,340.75	7.13	44.92	-47.78	-1,091.27	3,164.81	3,285.17	3,233.13	52.04	63.122	
2,500.00	2,497.59	2,438.19	2,438.00	7.43	46.77	-47.84	-1,091.54	3,164.81	3,281.88	3,227.69	54.19	60.560	
2,600.00	2,597.46	2,542.19	2,541.98	7.73	48.74	-47.90	-1,092.03	3,164.81	3,278.65	3,222.18	56.47	58.063	
2,700.00	2,697.34	2,642.06	2,641.85	8.03	50.64	-47.97	-1,092.03	3,164.81	3,275.28	3,216.61	58.67	55.830	
2,800.00	2,797.21	2,741.94	2,741.72	8.33	52.54	-48.03	-1,092.03	3,164.81	3,271.91	3,211.05	60.86	53.758	
2,900.00	2,897.09	2,840.82	2,840.61	8.63	54.42	-48.11	-1,091.50	3,164.81	3,268.39	3,205.34	63.04	51.843	
3,000.00	2,996.96	2,939.05	2,938.83	8.93	56.28	-48.17	-1,091.68	3,164.81	3,265.09	3,199.88	65.21	50.070	
3,100.00	3,096.83	3,041.59	3,041.35	9.23	58.24	-48.23	-1,092.03	3,164.81	3,261.83	3,194.37	67.47	48.347	
3,200.00	3,196.71	3,141.46	3,141.22	9.53	60.28	-48.29	-1,092.03	3,164.81	3,258.48	3,188.68	69.80	46.681	
3,300.00	3,296.58	3,241.11	3,240.86	9.83	62.31	-48.37	-1,091.38	3,164.81	3,254.95	3,182.81	72.14	45.123	
3,400.00	3,396.45	3,337.91	3,337.66	10.13	64.28	-48.43	-1,091.56	3,164.81	3,251.66	3,177.25	74.41	43.700	
3,500.00	3,496.33	3,441.13	3,440.84	10.43	66.40	-48.49	-1,092.03	3,164.81	3,248.46	3,171.63	76.83	42.283	
3,600.00	3,596.20	3,541.00	3,540.71	10.73	68.58	-48.56	-1,092.03	3,164.81	3,245.13	3,165.82	79.31	40.919	
3,700.00	3,696.07	3,639.21	3,638.92	11.03	70.72	-48.64	-1,091.30	3,164.81	3,241.59	3,159.84	81.75	39.652	
3,800.00	3,795.95	3,734.56	3,734.26	11.33	72.81	-48.69	-1,091.70	3,164.81	3,238.39	3,154.25	84.13	38.491	
3,900.00	3,895.82	3,840.69	3,840.33	11.63	75.08	-48.76	-1,092.03	3,164.81	3,235.15	3,148.45	86.71	37.312	
4,000.00	3,995.69	3,940.58	3,940.21	11.93	77.09	-48.83	-1,092.03	3,164.81	3,231.84	3,142.82	89.02	36.304	
4,100.00	4,095.57	4,038.06	4,037.68	12.23	78.87	-48.90	-1,091.77	3,164.81	3,228.45	3,137.35	91.10	35.438	
4,200.00	4,195.44	4,140.34	4,139.95	12.53	80.68	-48.96	-1,092.03	3,164.81	3,225.22	3,132.02	93.20	34.604	
4,300.00	4,295.31	4,240.14	4,239.76	12.83	82.36	-49.03	-1,091.87	3,164.81	3,221.88	3,126.69	95.19	33.847	
4,400.00	4,395.19	4,338.62	4,338.23	13.13	84.02	-49.10	-1,091.96	3,164.81	3,218.60	3,121.45	97.15	33.130	
4,500.00	4,495.06	4,439.96	4,439.57	13.43	85.74	-49.16	-1,092.03	3,164.81	3,215.33	3,116.17	99.16	32.424	
4,600.00	4,594.93	4,539.23	4,538.84	13.73	87.42	-49.23	-1,091.90	3,164.81	3,212.01	3,110.86	101.15	31.755	
4,700.00	4,694.81	4,639.71	4,639.32	14.03	89.14	-49.30	-1,092.03	3,164.81	3,208.76	3,105.60	103.16	31.104	
4,800.00	4,794.68	4,739.58	4,739.19	14.33	90.90	-49.37	-1,092.03	3,164.81	3,205.48	3,100.25	105.23	30.462	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,900.00	4,894.55	4,838.25	4,837.86	14.63	92.65	-49.44	-1,091.94	3,164.81	3,202.18	3,094.91	107.27	29.850	
5,000.00	4,994.43	4,939.34	4,938.94	14.93	94.50	-49.50	-1,092.03	3,164.81	3,198.93	3,089.50	109.43	29.232	
5,100.00	5,094.30	5,038.42	5,038.03	15.23	96.39	-49.58	-1,091.76	3,164.81	3,195.60	3,083.98	111.62	28.630	
5,200.00	5,194.18	5,135.33	5,134.93	15.53	98.23	-49.64	-1,092.01	3,164.81	3,192.41	3,078.65	113.76	28.063	
5,300.00	5,294.05	5,238.97	5,238.56	15.83	100.27	-49.71	-1,092.03	3,164.81	3,189.15	3,073.05	116.10	27.469	
5,400.00	5,393.92	5,335.44	5,335.03	16.13	102.17	-49.78	-1,091.77	3,164.81	3,185.83	3,067.53	118.30	26.930	
5,500.00	5,493.80	5,438.74	5,438.31	16.43	104.28	-49.85	-1,092.03	3,164.81	3,182.65	3,061.95	120.70	26.367	
5,600.00	5,593.67	5,537.40	5,536.97	16.73	106.35	-49.92	-1,091.63	3,164.81	3,179.30	3,056.22	123.08	25.832	
5,700.00	5,693.54	5,633.02	5,632.59	17.03	108.36	-49.98	-1,092.01	3,164.81	3,176.17	3,050.78	125.39	25.331	
5,800.00	5,793.42	5,738.40	5,737.93	17.33	110.72	-50.06	-1,092.03	3,164.81	3,172.94	3,044.89	128.05	24.780	
5,900.00	5,893.29	5,832.58	5,832.10	17.63	112.83	-50.13	-1,091.62	3,164.81	3,169.60	3,039.15	130.46	24.296	
6,000.00	5,993.16	5,938.20	5,937.68	17.93	115.24	-50.20	-1,092.03	3,164.81	3,166.48	3,033.31	133.17	23.778	
6,100.00	6,093.04	6,035.84	6,035.31	18.23	117.51	-50.28	-1,091.38	3,164.81	3,163.09	3,027.36	135.74	23.303	
6,200.00	6,192.91	6,138.02	6,137.42	18.53	119.87	-50.34	-1,092.03	3,164.81	3,160.05	3,021.65	138.40	22.833	
6,300.00	6,292.78	6,237.90	6,237.30	18.83	122.13	-50.41	-1,092.03	3,164.81	3,156.84	3,015.89	140.95	22.396	
6,400.00	6,392.66	6,331.79	6,331.17	19.13	124.25	-50.48	-1,091.44	3,164.81	3,153.49	3,010.12	143.37	21.995	
6,500.00	6,492.53	6,437.71	6,437.04	19.43	126.57	-50.55	-1,092.03	3,164.81	3,150.44	3,004.44	145.99	21.579	
6,551.20	6,543.67	6,488.84	6,488.18	19.58	127.65	-50.58	-1,092.03	3,164.81	3,148.80	3,001.57	147.23	21.387	
6,600.00	6,592.30	6,536.31	6,535.64	19.73	128.65	-8.55	-1,091.49	3,164.81	3,145.10	2,996.72	148.38	21.196	
6,650.00	6,641.67	6,583.07	6,582.40	19.88	129.64	1.61	-1,091.63	3,164.81	3,137.35	2,987.83	149.52	20.983	
6,700.00	6,690.21	6,629.05	6,628.38	20.03	130.61	5.96	-1,091.92	3,164.81	3,125.51	2,974.86	150.64	20.748	
6,750.00	6,737.54	6,682.75	6,682.05	20.18	131.75	8.59	-1,092.03	3,164.81	3,109.57	2,957.64	151.93	20.467	
6,800.00	6,783.30	6,728.51	6,727.81	20.33	132.72	10.56	-1,092.03	3,164.81	3,089.70	2,936.66	153.05	20.188	
6,850.00	6,827.15	6,772.13	6,771.42	20.48	133.64	12.29	-1,091.48	3,164.81	3,065.93	2,911.81	154.12	19.893	
6,900.00	6,868.74	6,811.54	6,810.83	20.63	134.48	14.03	-1,091.54	3,164.81	3,038.74	2,883.64	155.10	19.592	
6,950.00	6,907.77	6,848.54	6,847.83	20.78	135.26	15.90	-1,091.70	3,164.81	3,008.22	2,852.18	156.04	19.279	
7,000.00	6,943.94	6,882.83	6,882.12	20.93	135.98	18.04	-1,091.93	3,164.81	2,974.60	2,817.68	156.91	18.957	
7,050.00	6,976.97	6,922.23	6,921.49	21.08	136.84	20.67	-1,092.03	3,164.81	2,938.07	2,780.15	157.92	18.605	
7,100.00	7,006.62	6,951.87	6,951.13	21.23	137.49	23.88	-1,092.03	3,164.81	2,898.95	2,740.23	158.72	18.265	
7,150.00	7,032.64	6,977.89	6,977.16	21.38	138.06	27.96	-1,092.03	3,164.81	2,857.57	2,698.13	159.44	17.923	
7,200.00	7,054.86	7,000.11	6,999.37	21.53	138.55	33.29	-1,092.03	3,164.81	2,814.24	2,654.17	160.08	17.581	
7,250.00	7,073.09	7,018.32	7,017.58	21.68	138.94	40.38	-1,091.48	3,164.81	2,769.17	2,608.54	160.63	17.240	
7,300.00	7,087.20	7,031.69	7,030.95	21.83	139.24	49.85	-1,091.49	3,164.81	2,723.00	2,561.93	161.07	16.906	
7,350.00	7,097.08	7,041.06	7,040.31	21.98	139.44	62.24	-1,091.50	3,164.81	2,675.94	2,514.52	161.43	16.577	
7,400.00	7,102.66	7,046.34	7,045.60	22.13	139.56	77.30	-1,091.51	3,164.81	2,628.37	2,466.68	161.69	16.255	
7,438.94	7,104.00	7,047.61	7,046.87	22.25	139.59	89.81	-1,091.52	3,164.81	2,591.21	2,429.37	161.84	16.011	
7,500.00	7,104.02	7,047.63	7,046.89	22.43	139.59	89.81	-1,091.52	3,164.81	2,533.01	2,370.99	162.02	15.634	
7,600.00	7,104.06	7,047.67	7,046.93	22.74	139.59	89.81	-1,091.52	3,164.81	2,438.00	2,275.68	162.32	15.020	
7,700.00	7,104.10	7,047.71	7,046.97	23.04	139.59	89.81	-1,091.52	3,164.81	2,343.41	2,180.79	162.62	14.410	
7,800.00	7,104.14	7,047.75	7,047.00	23.34	139.59	89.82	-1,091.52	3,164.81	2,249.29	2,086.37	162.93	13.806	
7,900.00	7,104.18	7,047.79	7,047.04	23.64	139.59	89.82	-1,091.52	3,164.81	2,155.70	1,992.47	163.23	13.207	
8,000.00	7,104.22	7,047.82	7,047.08	23.94	139.59	89.82	-1,091.52	3,164.81	2,062.71	1,899.18	163.53	12.614	
8,100.00	7,104.26	7,047.86	7,047.12	24.24	139.59	89.83	-1,091.52	3,164.81	1,970.40	1,806.57	163.83	12.027	
8,200.00	7,104.30	7,047.90	7,047.16	24.54	139.59	89.83	-1,091.52	3,164.81	1,878.89	1,714.75	164.13	11.447	
8,300.00	7,104.34	7,047.94	7,047.19	24.84	139.59	89.83	-1,091.52	3,164.81	1,788.28	1,623.85	164.43	10.875	
8,400.00	7,104.38	7,047.98	7,047.23	25.14	139.59	89.83	-1,091.52	3,164.81	1,698.72	1,533.99	164.73	10.312	
8,500.00	7,104.42	7,048.02	7,047.27	25.44	139.60	89.84	-1,091.52	3,164.81	1,610.40	1,445.36	165.03	9.758	
8,600.00	7,104.45	7,048.05	7,047.31	25.74	139.60	89.84	-1,091.52	3,164.81	1,523.52	1,358.18	165.34	9.215	
8,700.00	7,104.49	7,048.09	7,047.35	26.04	139.60	89.84	-1,091.52	3,164.81	1,438.34	1,272.71	165.64	8.684	
8,800.00	7,104.53	7,048.13	7,047.39	26.34	139.60	89.85	-1,091.52	3,164.81	1,355.20	1,189.26	165.94	8.167	
8,900.00	7,104.57	7,048.17	7,047.42	26.64	139.60	89.85	-1,091.52	3,164.81	1,274.47	1,108.24	166.24	7.667	
9,000.00	7,104.61	7,048.21	7,047.46	26.95	139.60	89.85	-1,091.52	3,164.81	1,196.67	1,030.13	166.54	7.186	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077A (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	7,048.24	7,047.50	27.25	139.60	89.85	-1,091.52	3,164.81	1,122.38	955.54	166.84	6.727	
9,200.00	7,104.69	7,048.28	7,047.54	27.55	139.60	89.86	-1,091.52	3,164.81	1,052.36	885.22	167.14	6.296	
9,300.00	7,104.73	7,048.32	7,047.58	27.85	139.60	89.86	-1,091.52	3,164.81	987.51	820.08	167.44	5.898	
9,400.00	7,104.77	7,048.36	7,047.62	28.15	139.60	89.86	-1,091.52	3,164.81	928.93	761.19	167.74	5.538	
9,500.00	7,104.81	7,048.40	7,047.65	28.45	139.60	89.86	-1,091.52	3,164.81	877.86	709.82	168.04	5.224	
9,600.00	7,104.85	7,048.44	7,047.69	28.75	139.60	89.87	-1,091.52	3,164.81	835.68	667.34	168.33	4.964	
9,700.00	7,104.89	7,048.47	7,047.73	29.05	139.61	89.87	-1,091.52	3,164.81	803.79	635.16	168.63	4.767	
9,800.00	7,104.92	7,048.51	7,047.77	29.35	139.61	89.87	-1,091.52	3,164.81	783.46	614.53	168.93	4.638	
9,900.00	7,104.96	7,048.55	7,047.81	29.65	139.61	89.88	-1,091.52	3,164.81	775.59	606.35	169.23	4.583	
9,911.38	7,104.97	7,048.56	7,047.81	29.68	139.61	89.88	-1,091.52	3,164.81	775.50	606.24	169.27	4.582	CC, ES, SF
10,000.00	7,105.00	7,048.59	7,047.84	29.95	139.61	89.88	-1,091.52	3,164.81	780.55	611.02	169.53	4.604	
10,100.00	7,105.04	7,048.63	7,047.88	30.25	139.61	89.88	-1,091.52	3,164.81	798.11	628.28	169.84	4.699	
10,200.00	7,105.08	7,048.67	7,047.92	30.55	139.61	89.88	-1,091.52	3,164.81	827.47	657.33	170.14	4.864	
10,300.00	7,105.12	7,048.70	7,047.96	30.85	139.61	89.89	-1,091.52	3,164.81	867.43	696.99	170.44	5.089	
10,400.00	7,105.16	7,048.74	7,048.00	31.15	139.61	89.89	-1,091.52	3,164.81	916.60	745.86	170.74	5.368	
10,500.00	7,105.20	7,048.78	7,048.04	31.45	139.61	89.89	-1,091.52	3,164.81	973.59	802.55	171.05	5.692	
10,600.00	7,105.24	7,048.82	7,048.07	31.75	139.61	89.90	-1,091.52	3,164.81	1,037.12	865.77	171.35	6.053	
10,700.00	7,105.28	7,048.86	7,048.11	32.05	139.61	89.90	-1,091.52	3,164.81	1,106.04	934.39	171.65	6.444	
10,800.00	7,105.32	7,048.90	7,048.15	32.35	139.61	89.90	-1,091.52	3,164.81	1,179.43	1,007.48	171.96	6.859	
10,900.00	7,105.36	7,048.93	7,048.19	32.66	139.62	89.90	-1,091.52	3,164.81	1,256.50	1,084.24	172.26	7.294	
11,000.00	7,105.39	7,048.97	7,048.23	32.96	139.62	89.91	-1,091.52	3,164.81	1,336.60	1,164.04	172.56	7.746	
11,100.00	7,105.43	7,049.01	7,048.27	33.26	139.62	89.91	-1,091.52	3,164.81	1,419.24	1,246.37	172.86	8.210	
11,200.00	7,105.47	7,049.05	7,048.30	33.56	139.62	89.91	-1,091.52	3,164.81	1,503.98	1,330.82	173.16	8.685	
11,300.00	7,105.51	7,049.09	7,048.34	33.86	139.62	89.92	-1,091.52	3,164.81	1,590.50	1,417.03	173.47	9.169	
11,400.00	7,105.55	7,049.13	7,048.38	34.16	139.62	89.92	-1,091.52	3,164.81	1,678.51	1,504.75	173.77	9.659	
11,500.00	7,105.59	7,049.16	7,048.42	34.46	139.62	89.92	-1,091.52	3,164.81	1,767.80	1,593.73	174.07	10.156	
11,600.00	7,105.63	7,049.20	7,048.46	34.76	139.62	89.92	-1,091.52	3,164.81	1,858.19	1,683.81	174.37	10.656	
11,700.00	7,105.67	7,049.24	7,048.50	35.06	139.62	89.93	-1,091.52	3,164.81	1,949.51	1,774.83	174.67	11.161	
11,800.00	7,105.71	7,049.28	7,048.53	35.36	139.62	89.93	-1,091.52	3,164.81	2,041.64	1,866.67	174.98	11.668	
11,900.00	7,105.75	7,049.32	7,048.57	35.66	139.62	89.93	-1,091.52	3,164.81	2,134.49	1,959.21	175.28	12.178	
12,000.00	7,105.79	7,049.36	7,048.61	35.96	139.62	89.94	-1,091.52	3,164.81	2,227.95	2,052.37	175.58	12.689	
12,100.00	7,105.83	7,049.39	7,048.65	36.26	139.63	89.94	-1,091.52	3,164.81	2,321.96	2,146.08	175.88	13.202	
12,200.00	7,105.86	7,049.43	7,048.69	36.56	139.63	89.94	-1,091.52	3,164.81	2,416.45	2,240.26	176.18	13.716	
12,300.00	7,105.90	7,049.47	7,048.73	36.86	139.63	89.94	-1,091.52	3,164.81	2,511.36	2,334.88	176.48	14.230	
12,400.00	7,105.94	7,049.51	7,048.76	37.16	139.63	89.95	-1,091.52	3,164.81	2,606.66	2,429.87	176.78	14.745	
12,500.00	7,105.98	7,049.55	7,048.80	37.46	139.63	89.95	-1,091.52	3,164.81	2,702.29	2,525.21	177.09	15.260	
12,600.00	7,106.02	7,049.59	7,048.84	37.76	139.63	89.95	-1,091.52	3,164.81	2,798.23	2,620.85	177.39	15.775	
12,700.00	7,106.06	7,049.62	7,048.88	38.06	139.63	89.96	-1,091.52	3,164.81	2,894.45	2,716.76	177.69	16.289	
12,800.00	7,106.10	7,049.66	7,048.92	38.36	139.63	89.96	-1,091.52	3,164.81	2,990.91	2,812.92	177.99	16.804	
12,900.00	7,106.14	7,049.70	7,048.96	38.66	139.63	89.96	-1,091.52	3,164.81	3,087.60	2,909.31	178.29	17.318	
13,000.00	7,106.18	7,049.74	7,048.99	38.96	139.63	89.96	-1,091.52	3,164.81	3,184.49	3,005.90	178.59	17.831	
13,100.00	7,106.22	7,049.78	7,049.03	39.26	139.63	89.97	-1,091.52	3,164.81	3,281.57	3,102.68	178.89	18.344	
13,200.00	7,106.26	7,049.82	7,049.07	39.56	139.63	89.97	-1,091.52	3,164.81	3,378.82	3,199.63	179.19	18.856	
13,300.00	7,106.30	7,049.85	7,049.11	39.86	139.64	89.97	-1,091.52	3,164.81	3,476.23	3,296.73	179.50	19.367	
13,400.00	7,106.33	7,049.89	7,049.15	40.16	139.64	89.98	-1,091.52	3,164.81	3,573.78	3,393.98	179.80	19.877	
13,500.00	7,106.37	7,049.93	7,049.19	40.46	139.64	89.98	-1,091.52	3,164.81	3,671.46	3,491.36	180.10	20.386	
13,600.00	7,106.41	7,049.97	7,049.22	40.76	139.64	89.98	-1,091.52	3,164.81	3,769.26	3,588.86	180.40	20.894	
13,700.00	7,106.45	7,050.01	7,049.26	41.06	139.64	89.98	-1,091.52	3,164.81	3,867.18	3,686.48	180.70	21.401	
13,800.00	7,106.49	7,050.05	7,049.30	41.36	139.64	89.99	-1,091.52	3,164.81	3,965.20	3,784.20	181.00	21.907	
13,900.00	7,106.53	7,050.08	7,049.34	41.67	139.64	89.99	-1,091.52	3,164.81	4,063.32	3,882.01	181.30	22.412	
14,000.00	7,106.57	7,050.12	7,049.38	41.97	139.64	89.99	-1,091.52	3,164.81	4,161.52	3,979.92	181.60	22.915	
14,100.00	7,106.61	7,050.16	7,049.42	42.27	139.64	90.00	-1,091.52	3,164.81	4,259.81	4,077.90	181.91	23.418	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,200.00	7,106.65	7,050.20	7,049.45	42.57	139.64	90.00	-1,091.52	3,164.81	4,358.18	4,175.97	182.21	23.919	
14,300.00	7,106.69	7,050.24	7,049.49	42.87	139.64	90.00	-1,091.52	3,164.81	4,456.62	4,274.11	182.51	24.419	
14,400.00	7,106.73	7,050.28	7,049.53	43.17	139.64	90.00	-1,091.52	3,164.81	4,555.12	4,372.31	182.81	24.917	
14,500.00	7,106.76	7,050.31	7,049.57	43.47	139.65	90.01	-1,091.52	3,164.81	4,653.70	4,470.59	183.11	25.415	
14,600.00	7,106.80	7,050.35	7,049.61	43.77	139.65	90.01	-1,091.52	3,164.81	4,752.33	4,568.91	183.41	25.911	
14,700.00	7,106.84	7,050.39	7,049.65	44.07	139.65	90.01	-1,091.52	3,164.81	4,851.01	4,667.30	183.71	26.405	
14,800.00	7,106.88	7,050.43	7,049.69	44.37	139.65	90.02	-1,091.52	3,164.81	4,949.75	4,765.74	184.01	26.899	
14,900.00	7,106.92	7,050.47	7,049.72	44.67	139.65	90.02	-1,091.52	3,164.81	5,048.54	4,864.23	184.31	27.391	
15,000.00	7,106.96	7,050.51	7,049.76	44.97	139.65	90.02	-1,091.52	3,164.81	5,147.38	4,962.76	184.62	27.882	
15,100.00	7,107.00	7,050.54	7,049.80	45.27	139.65	90.02	-1,091.52	3,164.81	5,246.26	5,061.34	184.92	28.371	
15,200.00	7,107.04	7,050.58	7,049.84	45.57	139.65	90.03	-1,091.52	3,164.81	5,345.18	5,159.96	185.22	28.859	
15,300.00	7,107.08	7,050.62	7,049.88	45.87	139.65	90.03	-1,091.52	3,164.81	5,444.14	5,258.62	185.52	29.345	
15,400.00	7,107.12	7,050.66	7,049.92	46.17	139.65	90.03	-1,091.52	3,164.81	5,543.14	5,357.32	185.82	29.831	
15,500.00	7,107.16	7,050.70	7,049.95	46.47	139.65	90.03	-1,091.52	3,164.81	5,642.17	5,456.05	186.12	30.315	
15,600.00	7,107.20	7,050.74	7,049.99	46.77	139.65	90.04	-1,091.52	3,164.81	5,741.24	5,554.82	186.42	30.797	
15,700.00	7,107.23	7,050.78	7,050.03	47.07	139.66	90.04	-1,091.52	3,164.81	5,840.34	5,653.62	186.72	31.278	
15,800.00	7,107.27	7,050.81	7,050.07	47.37	139.66	90.04	-1,091.52	3,164.81	5,939.47	5,752.45	187.02	31.758	
15,900.00	7,107.31	7,050.85	7,050.11	47.67	139.66	90.05	-1,091.52	3,164.81	6,038.63	5,851.30	187.33	32.236	
16,000.00	7,107.35	7,050.89	7,050.15	47.97	139.66	90.05	-1,091.52	3,164.81	6,137.81	5,950.19	187.63	32.713	
16,100.00	7,107.39	7,050.93	7,050.18	48.27	139.66	90.05	-1,091.52	3,164.81	6,237.02	6,049.10	187.93	33.188	
16,200.00	7,107.43	7,050.97	7,050.22	48.57	139.66	90.05	-1,091.52	3,164.81	6,336.26	6,148.03	188.23	33.663	
16,300.00	7,107.47	7,051.01	7,050.26	48.87	139.66	90.06	-1,091.52	3,164.81	6,435.52	6,246.99	188.53	34.135	
16,400.00	7,107.51	7,051.04	7,050.30	49.17	139.66	90.06	-1,091.52	3,164.81	6,534.80	6,345.97	188.83	34.607	
16,500.00	7,107.55	7,051.08	7,050.34	49.47	139.66	90.06	-1,091.52	3,164.81	6,634.11	6,444.98	189.13	35.077	
16,600.00	7,107.59	7,051.12	7,050.38	49.77	139.66	90.07	-1,091.52	3,164.81	6,733.43	6,544.00	189.43	35.545	
16,700.00	7,107.63	7,051.16	7,050.42	50.07	139.66	90.07	-1,091.52	3,164.81	6,832.78	6,643.04	189.73	36.012	
16,800.00	7,107.67	7,051.20	7,050.45	50.37	139.66	90.07	-1,091.52	3,164.81	6,932.14	6,742.10	190.03	36.478	
16,900.00	7,107.70	7,051.24	7,050.49	50.67	139.67	90.07	-1,091.52	3,164.81	7,031.52	6,841.18	190.34	36.943	
17,000.00	7,107.74	7,051.28	7,050.53	50.97	139.67	90.08	-1,091.52	3,164.81	7,130.92	6,940.28	190.64	37.406	
17,100.00	7,107.78	7,051.31	7,050.57	51.27	139.67	90.08	-1,091.52	3,164.81	7,230.33	7,039.40	190.94	37.867	
17,200.00	7,107.82	7,051.35	7,050.61	51.57	139.67	90.08	-1,091.52	3,164.81	7,329.76	7,138.53	191.24	38.328	
17,300.00	7,107.86	7,051.39	7,050.65	51.87	139.67	90.09	-1,091.52	3,164.81	7,429.21	7,237.67	191.54	38.787	
17,400.00	7,107.90	7,051.43	7,050.68	52.17	139.67	90.09	-1,091.52	3,164.81	7,528.67	7,336.83	191.84	39.244	
17,500.00	7,107.94	7,051.47	7,050.72	52.47	139.67	90.09	-1,091.52	3,164.81	7,628.15	7,436.00	192.14	39.701	
17,600.00	7,107.98	7,051.51	7,050.76	52.77	139.67	90.09	-1,091.52	3,164.81	7,727.64	7,535.19	192.44	40.155	
17,700.00	7,108.02	7,051.54	7,050.80	53.07	139.67	90.10	-1,091.52	3,164.81	7,827.14	7,634.39	192.74	40.609	
17,800.00	7,108.06	7,051.58	7,050.84	53.37	139.67	90.10	-1,091.52	3,164.81	7,926.65	7,733.61	193.05	41.061	
17,900.00	7,108.10	7,051.62	7,050.88	53.67	139.67	90.10	-1,091.52	3,164.81	8,026.18	7,832.83	193.35	41.512	
18,000.00	7,108.14	7,051.66	7,050.92	53.97	139.67	90.11	-1,091.52	3,164.81	8,125.72	7,932.07	193.65	41.961	
18,100.00	7,108.17	7,051.70	7,050.95	54.27	139.68	90.11	-1,091.52	3,164.81	8,225.26	8,031.32	193.95	42.410	
18,200.00	7,108.21	7,051.74	7,050.99	54.57	139.68	90.11	-1,091.53	3,164.81	8,324.82	8,130.57	194.25	42.856	
18,300.00	7,108.25	7,051.78	7,051.03	54.87	139.68	90.11	-1,091.53	3,164.81	8,424.39	8,229.84	194.55	43.302	
18,400.00	7,108.29	7,051.81	7,051.07	55.17	139.68	90.12	-1,091.53	3,164.81	8,523.97	8,329.12	194.85	43.746	
18,500.00	7,108.33	7,051.85	7,051.11	55.47	139.68	90.12	-1,091.53	3,164.81	8,623.56	8,428.41	195.15	44.189	
18,600.00	7,108.37	7,051.89	7,051.15	55.77	139.68	90.12	-1,091.53	3,164.81	8,723.16	8,527.71	195.45	44.630	
18,700.00	7,108.41	7,051.93	7,051.19	56.07	139.68	90.13	-1,091.53	3,164.81	8,822.77	8,627.02	195.75	45.071	
18,800.00	7,108.45	7,051.97	7,051.22	56.37	139.68	90.13	-1,091.53	3,164.81	8,922.39	8,726.33	196.06	45.510	
18,900.00	7,108.49	7,052.01	7,051.26	56.67	139.68	90.13	-1,091.53	3,164.81	9,022.02	8,825.66	196.36	45.947	
19,000.00	7,108.53	7,052.05	7,051.30	56.97	139.68	90.13	-1,091.53	3,164.81	9,121.65	8,924.99	196.66	46.383	
19,100.00	7,108.57	7,052.08	7,051.34	57.28	139.68	90.14	-1,091.53	3,164.81	9,221.29	9,024.33	196.96	46.818	
19,200.00	7,108.61	7,052.12	7,051.38	57.58	139.69	90.14	-1,091.53	3,164.81	9,320.94	9,123.68	197.26	47.252	
19,300.00	7,108.64	7,052.16	7,051.42	57.88	139.69	90.14	-1,091.53	3,164.81	9,420.60	9,223.04	197.56	47.685	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,400.00	7,108.68	7,052.20	7,051.45	58.18	139.69	90.15	-1,091.53	3,164.81	9,520.26	9,322.40	197.86	48.116	
19,500.00	7,108.72	7,052.24	7,051.49	58.48	139.69	90.15	-1,091.53	3,164.81	9,619.93	9,421.77	198.16	48.546	
19,600.00	7,108.76	7,052.28	7,051.53	58.78	139.69	90.15	-1,091.53	3,164.81	9,719.61	9,521.15	198.46	48.974	
19,700.00	7,108.80	7,052.32	7,051.57	59.08	139.69	90.15	-1,091.53	3,164.81	9,819.30	9,620.53	198.76	49.402	
19,800.00	7,108.84	7,052.35	7,051.61	59.38	139.69	90.16	-1,091.53	3,164.81	9,918.99	9,719.92	199.07	49.828	
19,900.00	7,108.88	7,052.39	7,051.65	59.68	139.69	90.16	-1,091.53	3,164.81	10,018.68	9,819.32	199.37	50.253	
20,000.00	7,108.92	7,052.43	7,051.69	59.98	139.69	90.16	-1,091.53	3,164.81	10,118.39	9,918.72	199.67	50.676	
20,100.00	7,108.96	7,052.47	7,051.72	60.28	139.69	90.17	-1,091.53	3,164.81	10,218.10	10,018.13	199.97	51.099	
20,208.46	7,109.00	7,052.51	7,051.77	60.60	139.69	90.17	-1,091.53	3,164.81	10,326.24	10,125.95	200.29	51.555	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	138.26	-1,765.72	1,575.55	2,367.13				
100.00	100.00	43.51	43.51	0.23	0.39	138.26	-1,765.72	1,575.55	2,366.46	2,365.85	0.61	3,865.934	
200.00	200.00	143.51	143.51	0.53	1.27	138.26	-1,765.72	1,575.55	2,366.46	2,364.66	1.80	1,316.226	
300.00	300.00	243.51	243.51	0.83	2.16	138.26	-1,765.72	1,575.55	2,366.46	2,363.48	2.98	793.131	
400.00	400.00	343.51	343.51	1.13	3.51	138.26	-1,765.72	1,575.55	2,366.46	2,361.83	4.63	510.682	
500.00	500.00	443.51	443.51	1.43	5.35	138.26	-1,765.72	1,575.55	2,366.46	2,359.68	6.78	349.188	
600.00	599.98	543.49	543.49	1.73	7.19	-17.37	-1,765.72	1,575.55	2,364.79	2,355.87	8.92	265.117	
644.12	644.06	586.93	586.93	1.86	7.99	-17.40	-1,765.46	1,575.55	2,362.80	2,352.95	9.85	239.812	
700.00	699.87	641.90	641.89	2.03	9.01	-17.42	-1,765.49	1,575.55	2,360.15	2,349.11	11.03	213.907	
800.00	799.74	740.27	740.27	2.33	10.82	-17.45	-1,765.61	1,575.55	2,355.44	2,342.30	13.15	179.167	
900.00	899.62	843.15	843.13	2.63	12.74	-17.49	-1,765.72	1,575.55	2,350.72	2,335.36	15.37	152.951	
1,000.00	999.49	943.02	943.00	2.93	14.64	-17.53	-1,765.72	1,575.55	2,345.93	2,328.36	17.56	133.563	
1,100.00	1,099.36	1,042.70	1,042.67	3.23	16.53	-17.58	-1,764.92	1,575.55	2,340.54	2,320.78	19.76	118.475	
1,200.00	1,199.24	1,138.13	1,138.10	3.53	18.34	-17.61	-1,765.06	1,575.55	2,335.85	2,313.98	21.87	106.824	
1,300.00	1,299.11	1,233.59	1,233.55	3.83	20.15	-17.64	-1,765.44	1,575.55	2,331.35	2,307.37	23.98	97.231	
1,400.00	1,398.98	1,342.55	1,342.50	4.13	22.22	-17.68	-1,765.72	1,575.55	2,326.75	2,300.41	26.35	88.310	
1,500.00	1,498.86	1,442.42	1,442.37	4.43	24.12	-17.71	-1,765.72	1,575.55	2,321.96	2,293.42	28.55	81.339	
1,600.00	1,598.73	1,541.98	1,541.93	4.73	26.01	-17.76	-1,765.18	1,575.55	2,316.77	2,286.03	30.74	75.366	
1,700.00	1,698.60	1,638.95	1,638.90	5.03	27.86	-17.80	-1,765.28	1,575.55	2,312.06	2,279.17	32.88	70.309	
1,800.00	1,798.48	1,735.94	1,735.88	5.33	29.70	-17.83	-1,765.54	1,575.55	2,307.47	2,272.44	35.03	65.874	
1,900.00	1,898.35	1,841.94	1,841.86	5.63	31.75	-17.87	-1,765.72	1,575.55	2,302.81	2,265.43	37.38	61.605	
2,000.00	1,998.22	1,941.82	1,941.74	5.93	33.71	-17.91	-1,765.72	1,575.55	2,298.02	2,258.38	39.64	57.976	
2,100.00	2,098.10	2,041.24	2,041.15	6.23	35.66	-17.96	-1,764.90	1,575.55	2,292.63	2,250.75	41.89	54.734	
2,200.00	2,197.97	2,136.89	2,136.80	6.53	37.53	-17.99	-1,765.05	1,575.55	2,287.96	2,243.90	44.06	51.926	
2,300.00	2,297.84	2,232.56	2,232.47	6.83	39.41	-18.02	-1,765.43	1,575.55	2,283.47	2,237.24	46.24	49.386	
2,400.00	2,397.72	2,341.35	2,341.23	7.13	41.55	-18.06	-1,765.72	1,575.55	2,278.89	2,230.21	48.67	46.821	
2,500.00	2,497.59	2,441.23	2,441.10	7.43	43.51	-18.10	-1,765.72	1,575.55	2,274.11	2,223.17	50.93	44.648	
2,600.00	2,597.46	2,540.66	2,540.53	7.73	45.46	-18.15	-1,764.91	1,575.55	2,268.73	2,215.54	53.19	42.656	
2,700.00	2,697.34	2,636.35	2,636.22	8.03	47.34	-18.19	-1,765.05	1,575.55	2,264.06	2,208.69	55.37	40.893	
2,800.00	2,797.21	2,732.08	2,731.94	8.33	49.22	-18.22	-1,765.44	1,575.55	2,259.58	2,202.03	57.55	39.266	
2,900.00	2,897.09	2,840.76	2,840.60	8.63	51.39	-18.26	-1,765.72	1,575.55	2,254.99	2,194.97	60.02	37.570	
3,000.00	2,996.96	2,940.64	2,940.47	8.93	53.42	-18.30	-1,765.72	1,575.55	2,250.22	2,187.87	62.35	36.092	
3,100.00	3,096.83	3,040.08	3,039.90	9.23	55.44	-18.35	-1,764.90	1,575.55	2,244.84	2,180.18	64.67	34.715	
3,200.00	3,196.71	3,135.84	3,135.66	9.53	57.38	-18.39	-1,765.05	1,575.55	2,240.18	2,173.27	66.91	33.481	
3,300.00	3,296.58	3,231.62	3,231.44	9.83	59.33	-18.42	-1,765.44	1,575.55	2,235.70	2,166.55	69.15	32.330	
3,400.00	3,396.45	3,340.19	3,339.97	10.13	61.58	-18.46	-1,765.72	1,575.55	2,231.13	2,159.42	71.70	31.116	
3,500.00	3,496.33	3,440.06	3,439.84	10.43	63.68	-18.50	-1,765.72	1,575.55	2,226.36	2,152.25	74.11	30.041	
3,600.00	3,596.20	3,539.94	3,539.71	10.73	65.79	-18.54	-1,765.72	1,575.55	2,221.59	2,145.07	76.52	29.035	
3,700.00	3,696.07	3,639.81	3,639.59	11.03	67.89	-18.58	-1,765.72	1,575.55	2,216.82	2,137.90	78.92	28.089	
3,800.00	3,795.95	3,739.69	3,739.46	11.33	70.00	-18.63	-1,765.72	1,575.55	2,212.05	2,130.73	81.33	27.200	
3,900.00	3,895.82	3,839.56	3,839.33	11.63	72.11	-18.67	-1,765.72	1,575.55	2,207.29	2,123.56	83.73	26.361	
4,000.00	3,995.69	3,939.43	3,939.21	11.93	74.21	-18.71	-1,765.72	1,575.55	2,202.52	2,116.39	86.14	25.570	
4,100.00	4,095.57	4,039.31	4,039.08	12.23	76.32	-18.75	-1,765.72	1,575.55	2,197.76	2,109.22	88.54	24.821	
4,200.00	4,195.44	4,139.18	4,138.95	12.53	78.42	-18.79	-1,765.72	1,575.55	2,193.00	2,102.05	90.95	24.112	
4,300.00	4,295.31	4,237.67	4,237.41	12.83	80.50	-18.90	-1,761.96	1,575.55	2,185.50	2,092.17	93.33	23.418	
4,400.00	4,395.19	4,336.00	4,335.73	13.13	82.57	-18.94	-1,762.10	1,575.55	2,180.84	2,085.14	95.70	22.788	
4,500.00	4,495.06	4,434.34	4,434.07	13.43	84.65	-18.98	-1,762.33	1,575.55	2,176.26	2,078.18	98.07	22.190	
4,600.00	4,594.93	4,532.69	4,532.41	13.73	86.72	-19.02	-1,762.66	1,575.55	2,171.75	2,071.30	100.45	21.621	
4,700.00	4,694.81	4,631.05	4,630.77	14.03	88.79	-19.05	-1,763.08	1,575.55	2,167.30	2,064.48	102.82	21.078	
4,800.00	4,794.68	4,729.42	4,729.14	14.33	90.87	-19.09	-1,763.60	1,575.55	2,162.94	2,057.74	105.19	20.561	
4,900.00	4,894.55	4,827.81	4,827.51	14.63	92.94	-19.12	-1,764.22	1,575.55	2,158.64	2,051.07	107.57	20.068	
5,000.00	4,994.43	4,926.20	4,925.90	14.93	95.02	-19.15	-1,764.94	1,575.55	2,154.42	2,044.47	109.94	19.596	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,038.31	5,037.82	15.23	97.38	-19.18	-1,765.72	1,575.55	2,150.20	2,037.59	112.61	19.094	
5,200.00	5,194.18	5,138.18	5,137.69	15.53	99.50	-19.23	-1,765.72	1,575.55	2,145.45	2,030.42	115.03	18.652	
5,300.00	5,294.05	5,238.05	5,237.56	15.83	101.61	-19.27	-1,765.72	1,575.55	2,140.70	2,023.26	117.44	18.228	
5,400.00	5,393.92	5,337.93	5,337.44	16.13	103.73	-19.32	-1,765.72	1,575.55	2,135.95	2,016.10	119.86	17.821	
5,500.00	5,493.80	5,437.80	5,437.31	16.43	105.85	-19.36	-1,765.72	1,575.55	2,131.21	2,008.94	122.27	17.430	
5,600.00	5,593.67	5,537.67	5,537.18	16.73	107.96	-19.40	-1,765.72	1,575.55	2,126.46	2,001.78	124.69	17.054	
5,700.00	5,693.54	5,637.55	5,637.06	17.03	110.08	-19.45	-1,765.72	1,575.55	2,121.72	1,994.62	127.11	16.693	
5,800.00	5,793.42	5,737.42	5,736.93	17.33	112.19	-19.50	-1,765.72	1,575.55	2,116.98	1,987.46	129.52	16.345	
5,900.00	5,893.29	5,837.29	5,836.80	17.63	114.31	-19.54	-1,765.72	1,575.55	2,112.24	1,980.30	131.94	16.009	
6,000.00	5,993.16	5,937.17	5,936.68	17.93	116.43	-19.59	-1,765.72	1,575.55	2,107.50	1,973.15	134.35	15.686	
6,100.00	6,093.04	6,037.04	6,036.55	18.23	118.54	-19.63	-1,765.72	1,575.55	2,102.76	1,965.99	136.77	15.375	
6,200.00	6,192.91	6,136.91	6,136.42	18.53	120.66	-19.68	-1,765.72	1,575.55	2,098.03	1,958.84	139.18	15.074	
6,300.00	6,292.78	6,236.79	6,236.30	18.83	122.77	-19.73	-1,765.72	1,575.55	2,093.29	1,951.69	141.60	14.783	
6,400.00	6,392.66	6,336.66	6,336.17	19.13	124.89	-19.77	-1,765.72	1,575.55	2,088.56	1,944.54	144.02	14.502	
6,401.46	6,394.12	6,338.12	6,337.63	19.13	124.92	-19.77	-1,765.72	1,575.55	2,088.49	1,944.44	144.05	14.498	
6,500.00	6,492.53	6,219.00	6,218.33	19.43	122.40	-19.72	-1,765.72	1,575.55	2,095.17	1,953.99	141.18	14.840	
6,551.20	6,543.67	6,219.00	6,218.33	19.58	122.40	-19.72	-1,765.72	1,575.55	2,098.70	1,957.70	141.00	14.885	
6,600.00	6,592.30	6,219.00	6,218.33	19.73	122.40	22.04	-1,765.72	1,575.55	2,101.76	1,961.00	140.76	14.932	
6,650.00	6,641.67	6,219.00	6,218.33	19.88	122.40	31.91	-1,765.72	1,575.55	2,103.05	1,962.60	140.45	14.974	
6,700.00	6,690.21	6,219.00	6,218.33	20.03	122.40	35.96	-1,765.72	1,575.55	2,102.46	1,962.39	140.08	15.009	
6,750.00	6,737.54	6,219.00	6,218.33	20.18	122.40	38.27	-1,765.72	1,575.55	2,100.00	1,960.35	139.65	15.038	
6,800.00	6,783.30	6,219.00	6,218.33	20.33	122.40	39.89	-1,765.72	1,575.55	2,095.67	1,956.50	139.16	15.059	
6,850.00	6,827.15	6,219.00	6,218.33	20.48	122.40	41.21	-1,765.72	1,575.55	2,089.49	1,950.85	138.64	15.072	
6,900.00	6,868.74	6,219.00	6,218.33	20.63	122.40	42.42	-1,765.72	1,575.55	2,081.50	1,943.43	138.07	15.076	
6,950.00	6,907.77	6,219.00	6,218.33	20.78	122.40	43.61	-1,765.72	1,575.55	2,071.75	1,934.27	137.48	15.070	
7,000.00	6,943.94	6,219.00	6,218.33	20.93	122.40	44.84	-1,765.72	1,575.55	2,060.27	1,923.40	136.86	15.053	
7,050.00	6,976.97	6,219.00	6,218.33	21.08	122.40	46.13	-1,765.72	1,575.55	2,047.12	1,910.88	136.25	15.025	
7,100.00	7,006.62	6,219.00	6,218.33	21.23	122.40	47.53	-1,765.72	1,575.55	2,032.38	1,896.75	135.63	14.985	
7,150.00	7,032.64	6,219.00	6,218.33	21.38	122.40	49.03	-1,765.72	1,575.55	2,016.13	1,881.09	135.04	14.930	
7,200.00	7,054.86	6,219.00	6,218.33	21.53	122.40	50.66	-1,765.72	1,575.55	1,998.45	1,863.97	134.47	14.861	
7,250.00	7,073.09	6,219.00	6,218.33	21.68	122.40	52.43	-1,765.72	1,575.55	1,979.43	1,845.48	133.96	14.777	
7,300.00	7,087.20	6,219.00	6,218.33	21.83	122.40	54.34	-1,765.72	1,575.55	1,959.20	1,825.70	133.50	14.676	
7,350.00	7,097.08	6,219.00	6,218.33	21.98	122.40	56.39	-1,765.72	1,575.55	1,937.87	1,804.75	133.12	14.558	
7,400.00	7,102.66	6,219.00	6,218.33	22.13	122.40	58.57	-1,765.72	1,575.55	1,915.56	1,782.73	132.82	14.422	
7,438.94	7,104.00	6,219.00	6,218.33	22.25	122.40	60.37	-1,765.72	1,575.55	1,897.60	1,764.93	132.67	14.304	
7,500.00	7,104.02	6,219.00	6,218.33	22.43	122.40	60.37	-1,765.72	1,575.55	1,869.85	1,737.37	132.47	14.115	
7,600.00	7,104.06	6,219.00	6,218.33	22.74	122.40	60.37	-1,765.72	1,575.55	1,827.90	1,695.74	132.16	13.830	
7,700.00	7,104.10	6,219.00	6,218.33	23.04	122.40	60.37	-1,765.72	1,575.55	1,790.57	1,658.68	131.89	13.577	
7,800.00	7,104.14	6,219.00	6,218.33	23.34	122.40	60.37	-1,765.72	1,575.55	1,758.13	1,626.48	131.65	13.355	
7,900.00	7,104.18	6,219.00	6,218.33	23.64	122.40	60.37	-1,765.72	1,575.55	1,730.88	1,599.41	131.47	13.165	
8,000.00	7,104.22	6,219.00	6,218.33	23.94	122.40	60.37	-1,765.72	1,575.55	1,709.05	1,577.67	131.37	13.009	
8,100.00	7,104.26	6,219.00	6,218.33	24.24	122.40	60.37	-1,765.72	1,575.55	1,692.85	1,561.49	131.36	12.887	
8,200.00	7,104.30	6,219.00	6,218.33	24.54	122.40	60.37	-1,765.72	1,575.55	1,682.45	1,550.99	131.46	12.798	
8,300.00	7,104.34	6,219.00	6,218.33	24.84	122.40	60.37	-1,765.72	1,575.55	1,677.96	1,546.29	131.67	12.743	
8,325.49	7,104.35	6,219.00	6,218.33	24.92	122.40	60.37	-1,765.72	1,575.55	1,677.77	1,546.02	131.74	12.735	CC, ES
8,400.00	7,104.38	6,219.00	6,218.33	25.14	122.40	60.37	-1,765.72	1,575.55	1,679.42	1,547.42	132.00	12.723	SF
8,500.00	7,104.42	6,219.00	6,218.33	25.44	122.40	60.37	-1,765.72	1,575.55	1,686.82	1,554.37	132.45	12.736	
8,600.00	7,104.45	6,219.00	6,218.33	25.74	122.40	60.37	-1,765.72	1,575.55	1,700.08	1,567.07	133.00	12.782	
8,700.00	7,104.49	6,219.00	6,218.33	26.04	122.40	60.37	-1,765.72	1,575.55	1,719.06	1,585.40	133.66	12.862	
8,800.00	7,104.53	6,219.00	6,218.33	26.34	122.40	60.37	-1,765.72	1,575.55	1,743.58	1,609.18	134.40	12.973	
8,900.00	7,104.57	6,219.00	6,218.33	26.64	122.40	60.37	-1,765.72	1,575.55	1,773.40	1,638.20	135.21	13.116	
9,000.00	7,104.61	6,219.00	6,218.33	26.95	122.40	60.37	-1,765.72	1,575.55	1,808.28	1,672.21	136.07	13.290	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	6,219.00	6,218.33	27.25	122.40	60.37	-1,765.72	1,575.55	1,847.91	1,710.95	136.96	13.492	
9,200.00	7,104.69	6,219.00	6,218.33	27.55	122.40	60.37	-1,765.72	1,575.55	1,892.00	1,754.13	137.88	13.722	
9,300.00	7,104.73	6,219.00	6,218.33	27.85	122.40	60.37	-1,765.72	1,575.55	1,940.25	1,801.45	138.80	13.979	
9,400.00	7,104.77	6,219.00	6,218.33	28.15	122.40	60.37	-1,765.72	1,575.55	1,992.36	1,852.64	139.72	14.260	
9,500.00	7,104.81	6,219.00	6,218.33	28.45	122.40	60.37	-1,765.72	1,575.55	2,048.02	1,907.39	140.63	14.564	
9,600.00	7,104.85	6,219.00	6,218.33	28.75	122.40	60.37	-1,765.72	1,575.55	2,106.96	1,965.45	141.51	14.889	
9,700.00	7,104.89	6,219.00	6,218.33	29.05	122.40	60.37	-1,765.72	1,575.55	2,168.91	2,026.54	142.38	15.234	
9,800.00	7,104.92	6,219.00	6,218.33	29.35	122.40	60.37	-1,765.72	1,575.55	2,233.63	2,090.41	143.21	15.596	
9,900.00	7,104.96	6,219.00	6,218.33	29.65	122.40	60.37	-1,765.72	1,575.55	2,300.87	2,156.85	144.02	15.976	
10,000.00	7,105.00	6,219.00	6,218.33	29.95	122.40	60.37	-1,765.72	1,575.55	2,370.42	2,225.62	144.80	16.370	
10,100.00	7,105.04	6,219.00	6,218.33	30.25	122.40	60.37	-1,765.72	1,575.55	2,442.09	2,296.54	145.55	16.778	
10,200.00	7,105.08	6,219.00	6,218.33	30.55	122.40	60.37	-1,765.72	1,575.55	2,515.69	2,369.42	146.27	17.199	
10,300.00	7,105.12	6,219.00	6,218.33	30.85	122.40	60.37	-1,765.72	1,575.55	2,591.06	2,444.10	146.96	17.631	
10,400.00	7,105.16	6,219.00	6,218.33	31.15	122.40	60.37	-1,765.72	1,575.55	2,668.05	2,520.42	147.63	18.073	
10,500.00	7,105.20	6,219.00	6,218.33	31.45	122.40	60.37	-1,765.72	1,575.55	2,746.53	2,598.26	148.27	18.524	
10,600.00	7,105.24	6,219.00	6,218.33	31.75	122.40	60.37	-1,765.72	1,575.55	2,826.36	2,677.47	148.89	18.983	
10,700.00	7,105.28	6,219.00	6,218.33	32.05	122.40	60.37	-1,765.72	1,575.55	2,907.44	2,757.96	149.48	19.450	
10,800.00	7,105.32	6,219.00	6,218.33	32.35	122.40	60.37	-1,765.72	1,575.55	2,989.67	2,839.61	150.06	19.923	
10,900.00	7,105.36	6,219.00	6,218.33	32.66	122.40	60.37	-1,765.72	1,575.55	3,072.95	2,922.34	150.61	20.403	
11,000.00	7,105.39	6,219.00	6,218.33	32.96	122.40	60.37	-1,765.72	1,575.55	3,157.20	3,006.05	151.15	20.888	
11,100.00	7,105.43	6,219.00	6,218.33	33.26	122.40	60.37	-1,765.72	1,575.55	3,242.35	3,090.68	151.67	21.377	
11,200.00	7,105.47	6,219.00	6,218.33	33.56	122.40	60.37	-1,765.72	1,575.55	3,328.32	3,176.14	152.18	21.871	
11,300.00	7,105.51	6,219.00	6,218.33	33.86	122.40	60.37	-1,765.72	1,575.55	3,415.06	3,262.39	152.67	22.369	
11,400.00	7,105.55	6,219.00	6,218.33	34.16	122.40	60.37	-1,765.72	1,575.55	3,502.50	3,349.35	153.15	22.870	
11,500.00	7,105.59	6,219.00	6,218.33	34.46	122.40	60.37	-1,765.72	1,575.55	3,590.60	3,436.99	153.62	23.374	
11,600.00	7,105.63	6,219.00	6,218.33	34.76	122.40	60.37	-1,765.72	1,575.55	3,679.31	3,525.24	154.07	23.880	
11,700.00	7,105.67	6,219.00	6,218.33	35.06	122.40	60.37	-1,765.72	1,575.55	3,768.59	3,614.07	154.52	24.389	
11,800.00	7,105.71	6,219.00	6,218.33	35.36	122.40	60.37	-1,765.72	1,575.55	3,858.39	3,703.43	154.96	24.900	
11,900.00	7,105.75	6,219.00	6,218.33	35.66	122.40	60.37	-1,765.72	1,575.55	3,948.68	3,793.29	155.38	25.412	
12,000.00	7,105.79	6,219.00	6,218.33	35.96	122.40	60.37	-1,765.72	1,575.55	4,039.42	3,883.62	155.80	25.926	
12,100.00	7,105.83	6,219.00	6,218.33	36.26	122.40	60.37	-1,765.72	1,575.55	4,130.60	3,974.38	156.22	26.441	
12,200.00	7,105.86	6,219.00	6,218.33	36.56	122.40	60.37	-1,765.72	1,575.55	4,222.17	4,065.55	156.62	26.958	
12,300.00	7,105.90	6,219.00	6,218.33	36.86	122.40	60.37	-1,765.72	1,575.55	4,314.12	4,157.10	157.02	27.475	
12,400.00	7,105.94	6,219.00	6,218.33	37.16	122.40	60.37	-1,765.72	1,575.55	4,406.42	4,249.01	157.42	27.992	
12,500.00	7,105.98	6,219.00	6,218.33	37.46	122.40	60.37	-1,765.72	1,575.55	4,499.05	4,341.25	157.80	28.511	
12,600.00	7,106.02	6,219.00	6,218.33	37.76	122.40	60.37	-1,765.72	1,575.55	4,591.99	4,433.80	158.19	29.029	
12,700.00	7,106.06	6,219.00	6,218.33	38.06	122.40	60.37	-1,765.72	1,575.55	4,685.22	4,526.65	158.56	29.548	
12,800.00	7,106.10	6,219.00	6,218.33	38.36	122.40	60.37	-1,765.72	1,575.55	4,778.72	4,619.78	158.94	30.066	
12,900.00	7,106.14	6,219.00	6,218.33	38.66	122.40	60.37	-1,765.72	1,575.55	4,872.48	4,713.17	159.31	30.585	
13,000.00	7,106.18	6,219.00	6,218.33	38.96	122.40	60.37	-1,765.72	1,575.55	4,966.49	4,806.81	159.67	31.104	
13,100.00	7,106.22	6,219.00	6,218.33	39.26	122.40	60.37	-1,765.72	1,575.55	5,060.72	4,900.68	160.04	31.622	
13,200.00	7,106.26	6,219.00	6,218.33	39.56	122.40	60.37	-1,765.72	1,575.55	5,155.17	4,994.77	160.40	32.140	
13,300.00	7,106.30	6,219.00	6,218.33	39.86	122.40	60.37	-1,765.72	1,575.55	5,249.83	5,089.07	160.75	32.658	
13,400.00	7,106.33	6,219.00	6,218.33	40.16	122.40	60.37	-1,765.72	1,575.55	5,344.68	5,183.57	161.11	33.175	
13,500.00	7,106.37	6,219.00	6,218.33	40.46	122.40	60.37	-1,765.72	1,575.55	5,439.71	5,278.26	161.46	33.691	
13,600.00	7,106.41	6,219.00	6,218.33	40.76	122.40	60.37	-1,765.72	1,575.55	5,534.93	5,373.12	161.80	34.207	
13,700.00	7,106.45	6,219.00	6,218.33	41.06	122.40	60.37	-1,765.72	1,575.55	5,630.30	5,468.15	162.15	34.723	
13,800.00	7,106.49	6,219.00	6,218.33	41.36	122.40	60.37	-1,765.72	1,575.55	5,725.84	5,563.34	162.49	35.237	
13,900.00	7,106.53	6,219.00	6,218.33	41.67	122.40	60.37	-1,765.72	1,575.55	5,821.52	5,658.69	162.84	35.751	
14,000.00	7,106.57	6,219.00	6,218.33	41.97	122.40	60.37	-1,765.72	1,575.55	5,917.35	5,754.17	163.18	36.264	
14,100.00	7,106.61	6,219.00	6,218.33	42.27	122.40	60.37	-1,765.72	1,575.55	6,013.31	5,849.80	163.51	36.776	
14,200.00	7,106.65	6,219.00	6,218.33	42.57	122.40	60.37	-1,765.72	1,575.55	6,109.40	5,945.55	163.85	37.287	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	6,219.00	6,218.33	42.87	122.40	60.37	-1,765.72	1,575.55	6,205.62	6,041.44	164.18	37.797	
14,400.00	7,106.73	6,219.00	6,218.33	43.17	122.40	60.37	-1,765.72	1,575.55	6,301.95	6,137.44	164.52	38.306	
14,500.00	7,106.76	6,219.00	6,218.33	43.47	122.40	60.37	-1,765.72	1,575.55	6,398.40	6,233.55	164.85	38.814	
14,600.00	7,106.80	6,219.00	6,218.33	43.77	122.40	60.37	-1,765.72	1,575.55	6,494.95	6,329.78	165.18	39.321	
14,700.00	7,106.84	6,219.00	6,218.33	44.07	122.40	60.37	-1,765.72	1,575.55	6,591.61	6,426.10	165.51	39.827	
14,800.00	7,106.88	6,219.00	6,218.33	44.37	122.40	60.37	-1,765.72	1,575.55	6,688.37	6,522.53	165.83	40.331	
14,900.00	7,106.92	6,219.00	6,218.33	44.67	122.40	60.37	-1,765.72	1,575.55	6,785.21	6,619.05	166.16	40.835	
15,000.00	7,106.96	6,219.00	6,218.33	44.97	122.40	60.37	-1,765.72	1,575.55	6,882.15	6,715.67	166.49	41.338	
15,100.00	7,107.00	6,219.00	6,218.33	45.27	122.40	60.37	-1,765.72	1,575.55	6,979.18	6,812.37	166.81	41.839	
15,200.00	7,107.04	6,219.00	6,218.33	45.57	122.40	60.37	-1,765.72	1,575.55	7,076.29	6,909.15	167.13	42.339	
15,300.00	7,107.08	6,219.00	6,218.33	45.87	122.40	60.37	-1,765.72	1,575.55	7,173.48	7,006.02	167.46	42.838	
15,400.00	7,107.12	6,219.00	6,218.33	46.17	122.40	60.37	-1,765.72	1,575.55	7,270.74	7,102.96	167.78	43.335	
15,500.00	7,107.16	6,219.00	6,218.33	46.47	122.40	60.37	-1,765.72	1,575.55	7,368.08	7,199.98	168.10	43.832	
15,600.00	7,107.20	6,219.00	6,218.33	46.77	122.40	60.37	-1,765.72	1,575.55	7,465.48	7,297.06	168.42	44.327	
15,700.00	7,107.23	6,219.00	6,218.33	47.07	122.40	60.37	-1,765.72	1,575.55	7,562.96	7,394.22	168.74	44.821	
15,800.00	7,107.27	6,219.00	6,218.33	47.37	122.40	60.37	-1,765.72	1,575.55	7,660.50	7,491.44	169.06	45.313	
15,900.00	7,107.31	6,219.00	6,218.33	47.67	122.40	60.37	-1,765.72	1,575.55	7,758.10	7,588.73	169.38	45.804	
16,000.00	7,107.35	6,219.00	6,218.33	47.97	122.40	60.37	-1,765.72	1,575.55	7,855.77	7,686.07	169.69	46.294	
16,100.00	7,107.39	6,219.00	6,218.33	48.27	122.40	60.37	-1,765.72	1,575.55	7,953.49	7,783.48	170.01	46.783	
16,200.00	7,107.43	6,219.00	6,218.33	48.57	122.40	60.37	-1,765.72	1,575.55	8,051.27	7,880.94	170.32	47.270	
16,300.00	7,107.47	6,219.00	6,218.33	48.87	122.40	60.37	-1,765.72	1,575.55	8,149.10	7,978.46	170.64	47.756	
16,400.00	7,107.51	6,219.00	6,218.33	49.17	122.40	60.37	-1,765.72	1,575.55	8,246.98	8,076.02	170.96	48.241	
16,500.00	7,107.55	6,219.00	6,218.33	49.47	122.40	60.37	-1,765.72	1,575.55	8,344.91	8,173.64	171.27	48.724	
16,600.00	7,107.59	6,219.00	6,218.33	49.77	122.40	60.37	-1,765.72	1,575.55	8,442.90	8,271.31	171.58	49.206	
16,700.00	7,107.63	6,219.00	6,218.33	50.07	122.40	60.37	-1,765.72	1,575.55	8,540.92	8,369.03	171.90	49.686	
16,800.00	7,107.67	6,219.00	6,218.33	50.37	122.40	60.37	-1,765.72	1,575.55	8,639.00	8,466.79	172.21	50.165	
16,900.00	7,107.70	6,219.00	6,218.33	50.67	122.40	60.37	-1,765.72	1,575.55	8,737.12	8,564.59	172.52	50.643	
17,000.00	7,107.74	6,219.00	6,218.33	50.97	122.40	60.37	-1,765.72	1,575.55	8,835.28	8,662.44	172.83	51.120	
17,100.00	7,107.78	6,219.00	6,218.33	51.27	122.40	60.37	-1,765.72	1,575.55	8,933.48	8,760.33	173.15	51.595	
17,200.00	7,107.82	6,219.00	6,218.33	51.57	122.40	60.37	-1,765.72	1,575.55	9,031.72	8,858.26	173.46	52.069	
17,300.00	7,107.86	6,219.00	6,218.33	51.87	122.40	60.37	-1,765.72	1,575.55	9,129.99	8,956.23	173.77	52.541	
17,400.00	7,107.90	6,219.00	6,218.33	52.17	122.40	60.37	-1,765.72	1,575.55	9,228.31	9,054.23	174.08	53.012	
17,500.00	7,107.94	6,219.00	6,218.33	52.47	122.40	60.37	-1,765.72	1,575.55	9,326.66	9,152.27	174.39	53.482	
17,600.00	7,107.98	6,219.00	6,218.33	52.77	122.40	60.37	-1,765.72	1,575.55	9,425.05	9,250.35	174.70	53.950	
17,700.00	7,108.02	6,219.00	6,218.33	53.07	122.40	60.37	-1,765.72	1,575.55	9,523.47	9,348.46	175.01	54.417	
17,800.00	7,108.06	6,219.00	6,218.33	53.37	122.40	60.37	-1,765.72	1,575.55	9,621.92	9,446.60	175.32	54.882	
17,900.00	7,108.10	6,219.00	6,218.33	53.67	122.40	60.37	-1,765.72	1,575.55	9,720.40	9,544.77	175.63	55.346	
18,000.00	7,108.14	6,219.00	6,218.33	53.97	122.40	60.37	-1,765.72	1,575.55	9,818.92	9,642.98	175.94	55.809	
18,100.00	7,108.17	6,219.00	6,218.33	54.27	122.40	60.37	-1,765.72	1,575.55	9,917.46	9,741.21	176.25	56.271	
18,200.00	7,108.21	6,219.00	6,218.33	54.57	122.40	60.37	-1,765.72	1,575.55	10,016.03	9,839.48	176.55	56.731	
18,300.00	7,108.25	6,219.00	6,218.33	54.87	122.40	60.37	-1,765.72	1,575.55	10,114.63	9,937.77	176.86	57.189	
18,400.00	7,108.29	6,219.00	6,218.33	55.17	122.40	60.37	-1,765.72	1,575.55	10,213.26	10,036.09	177.17	57.647	
18,500.00	7,108.33	6,219.00	6,218.33	55.47	122.40	60.37	-1,765.72	1,575.55	10,311.92	10,134.44	177.48	58.102	
18,600.00	7,108.37	6,219.00	6,218.33	55.77	122.40	60.37	-1,765.72	1,575.55	10,410.60	10,232.81	177.79	58.557	
18,700.00	7,108.41	6,219.00	6,218.33	56.07	122.40	60.37	-1,765.72	1,575.55	10,509.30	10,331.21	178.09	59.010	
18,800.00	7,108.45	6,219.00	6,218.33	56.37	122.40	60.37	-1,765.72	1,575.55	10,608.03	10,429.63	178.40	59.462	
18,900.00	7,108.49	6,219.00	6,218.33	56.67	122.40	60.37	-1,765.72	1,575.55	10,706.79	10,528.08	178.71	59.913	
19,000.00	7,108.53	6,219.00	6,218.33	56.97	122.40	60.37	-1,765.72	1,575.55	10,805.56	10,626.55	179.01	60.362	
19,100.00	7,108.57	6,219.00	6,218.33	57.28	122.40	60.37	-1,765.72	1,575.55	10,904.36	10,725.04	179.32	60.809	
19,200.00	7,108.61	6,219.00	6,218.33	57.58	122.40	60.37	-1,765.72	1,575.55	11,003.18	10,823.55	179.63	61.256	
19,300.00	7,108.64	6,219.00	6,218.33	57.88	122.40	60.37	-1,765.72	1,575.55	11,102.02	10,922.09	179.93	61.701	
19,400.00	7,108.68	6,219.00	6,218.33	58.18	122.40	60.37	-1,765.72	1,575.55	11,200.88	11,020.64	180.24	62.145	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077B (Offset) - OH - OH

Survey Program: 295-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,500.00	7,108.72	6,219.00	6,218.33	58.48	122.40	60.37	-1,765.72	1,575.55	11,299.76	11,119.22	180.54	62.587	
19,600.00	7,108.76	6,219.00	6,218.33	58.78	122.40	60.37	-1,765.72	1,575.55	11,398.67	11,217.82	180.85	63.028	
19,700.00	7,108.80	6,219.00	6,218.33	59.08	122.40	60.37	-1,765.72	1,575.55	11,497.59	11,316.43	181.16	63.468	
19,800.00	7,108.84	6,219.00	6,218.33	59.38	122.40	60.37	-1,765.72	1,575.55	11,596.52	11,415.06	181.46	63.906	
19,900.00	7,108.88	6,219.00	6,218.33	59.68	122.40	60.37	-1,765.72	1,575.55	11,695.48	11,513.71	181.77	64.343	
20,000.00	7,108.92	6,219.00	6,218.33	59.98	122.40	60.37	-1,765.72	1,575.55	11,794.46	11,612.38	182.07	64.779	
20,100.00	7,108.96	6,219.00	6,218.33	60.28	122.40	60.37	-1,765.72	1,575.55	11,893.45	11,711.07	182.38	65.214	
20,208.46	7,109.00	6,219.00	6,218.33	60.60	122.40	60.37	-1,765.72	1,575.55	12,000.83	11,818.12	182.71	65.683	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	153.69	153.69	0.00	0.13	117.81	-1,992.35	3,777.16	4,270.42				
100.00	100.00	250.35	250.35	0.23	0.25	117.82	-1,992.76	3,777.14	4,270.59	4,270.20	0.39	N/A	
200.00	200.00	346.70	346.69	0.53	0.38	117.82	-1,993.34	3,777.12	4,270.85	4,270.08	0.77	5,541.384	
300.00	300.00	443.04	443.04	0.83	0.51	117.83	-1,994.12	3,777.08	4,271.19	4,270.04	1.15	3,707.862	
400.00	400.00	545.81	545.80	1.13	0.62	117.84	-1,994.76	3,777.17	4,271.57	4,270.02	1.55	2,759.703	
500.00	500.00	651.81	651.80	1.43	0.62	117.83	-1,994.39	3,777.68	4,271.83	4,269.89	1.94	2,201.050	
600.00	599.98	795.10	795.08	1.73	0.61	-37.84	-1,992.54	3,777.97	4,269.99	4,267.68	2.30	1,853.591	
644.12	644.06	846.52	846.49	1.86	0.62	-37.89	-1,991.53	3,777.96	4,268.08	4,265.63	2.46	1,736.970	
700.00	699.87	902.80	902.75	2.03	0.63	-37.93	-1,990.36	3,777.93	4,265.30	4,262.65	2.65	1,609.057	
800.00	799.74	992.48	992.42	2.33	0.67	-37.99	-1,988.62	3,777.95	4,260.45	4,257.45	3.00	1,420.864	
900.00	899.62	1,094.73	1,094.65	2.63	0.74	-38.06	-1,986.53	3,778.17	4,255.74	4,252.38	3.36	1,266.339	
1,000.00	999.49	1,196.90	1,196.80	2.93	0.82	-38.13	-1,984.33	3,778.24	4,250.84	4,247.11	3.73	1,140.978	
1,100.00	1,099.36	1,297.21	1,297.08	3.23	0.92	-38.20	-1,982.30	3,778.40	4,246.09	4,241.99	4.09	1,037.329	
1,200.00	1,199.24	1,393.89	1,393.74	3.53	1.01	-38.26	-1,980.35	3,778.38	4,241.20	4,236.74	4.46	950.740	
1,300.00	1,299.11	1,504.26	1,504.09	3.83	1.13	-38.33	-1,978.20	3,778.34	4,236.32	4,231.48	4.84	875.047	
1,400.00	1,398.98	1,597.21	1,597.02	4.13	1.23	-38.39	-1,976.54	3,778.21	4,231.43	4,226.22	5.21	811.944	
1,500.00	1,498.86	1,701.90	1,701.70	4.43	1.35	-38.46	-1,974.54	3,777.95	4,226.38	4,220.79	5.59	755.565	
1,600.00	1,598.73	1,810.18	1,809.95	4.73	1.48	-38.53	-1,972.35	3,777.78	4,221.40	4,215.42	5.98	705.932	
1,700.00	1,698.60	1,901.73	1,901.48	5.03	1.59	-38.59	-1,970.46	3,777.65	4,216.38	4,210.03	6.35	663.598	
1,800.00	1,798.48	2,009.62	2,009.35	5.33	1.72	-38.66	-1,968.15	3,777.32	4,211.20	4,204.45	6.74	624.437	
1,900.00	1,898.35	2,123.84	2,123.54	5.63	1.85	-38.74	-1,965.77	3,776.62	4,205.77	4,198.62	7.15	588.625	
2,000.00	1,998.22	2,214.50	2,214.18	5.93	1.96	-38.79	-1,963.90	3,776.03	4,200.34	4,192.81	7.53	558.031	
2,100.00	2,098.10	2,288.07	2,287.74	6.23	2.05	-38.84	-1,962.42	3,776.05	4,195.49	4,187.61	7.89	531.943	
2,200.00	2,197.97	2,382.44	2,382.08	6.53	2.17	-38.91	-1,960.61	3,776.21	4,190.87	4,182.61	8.26	507.256	
2,300.00	2,297.84	2,487.70	2,487.33	6.83	2.30	-38.98	-1,958.77	3,776.31	4,186.25	4,177.60	8.65	484.137	
2,400.00	2,397.72	2,600.75	2,600.36	7.13	2.45	-39.05	-1,956.92	3,776.14	4,181.47	4,172.43	9.04	462.360	
2,500.00	2,497.59	2,697.13	2,696.73	7.43	2.57	-39.11	-1,955.25	3,775.96	4,176.63	4,167.20	9.43	443.034	
2,600.00	2,597.46	2,780.46	2,780.05	7.73	2.67	-39.17	-1,953.61	3,776.14	4,172.02	4,162.23	9.79	426.026	
2,700.00	2,697.34	2,873.64	2,873.20	8.03	2.79	-39.23	-1,951.75	3,776.52	4,167.60	4,157.44	10.16	410.099	
2,800.00	2,797.21	2,968.50	2,968.05	8.33	2.91	-39.30	-1,949.96	3,776.98	4,163.31	4,152.78	10.53	395.338	
2,900.00	2,897.09	3,067.38	3,066.91	8.63	3.03	-39.36	-1,948.27	3,777.43	4,159.07	4,148.16	10.90	381.484	
3,000.00	2,996.96	3,167.43	3,166.95	8.93	3.16	-39.43	-1,946.68	3,777.83	4,154.84	4,143.56	11.27	368.501	
3,100.00	3,096.83	3,266.51	3,266.02	9.23	3.29	-39.49	-1,945.29	3,778.26	4,150.72	4,139.08	11.64	356.441	
3,200.00	3,196.71	3,363.03	3,362.53	9.53	3.41	-39.56	-1,943.98	3,778.70	4,146.65	4,134.64	12.01	345.214	
3,300.00	3,296.58	3,456.96	3,456.45	9.83	3.53	-39.61	-1,942.93	3,779.05	4,142.63	4,130.25	12.38	334.680	
3,400.00	3,396.45	3,563.95	3,563.44	10.13	3.66	-39.68	-1,941.59	3,779.47	4,138.55	4,125.80	12.75	324.519	
3,500.00	3,496.33	3,656.76	3,656.23	10.43	3.78	-39.74	-1,940.61	3,779.83	4,134.56	4,121.45	13.12	315.220	
3,600.00	3,596.20	3,751.70	3,751.17	10.73	3.90	-39.79	-1,939.72	3,780.32	4,130.75	4,117.28	13.48	306.534	
3,700.00	3,696.07	3,850.30	3,849.77	11.03	4.02	-39.85	-1,938.86	3,780.78	4,126.93	4,113.09	13.84	298.234	
3,800.00	3,795.95	3,929.46	3,928.92	11.33	4.08	-39.89	-1,938.74	3,781.23	4,123.50	4,109.33	14.17	291.004	
3,900.00	3,895.82	4,000.00	3,999.46	11.63	4.08	-39.92	-1,939.28	3,781.74	4,120.64	4,106.14	14.50	284.273	
4,000.00	3,995.69	4,078.49	4,077.94	11.93	4.07	-39.94	-1,940.58	3,782.61	4,118.47	4,103.64	14.83	277.739	
4,100.00	4,095.57	4,171.61	4,171.03	12.23	4.06	-39.97	-1,942.36	3,783.75	4,116.55	4,101.38	15.17	271.337	
4,200.00	4,195.44	4,271.17	4,270.56	12.53	4.06	-40.00	-1,944.30	3,785.02	4,114.69	4,099.17	15.52	265.111	
4,300.00	4,295.31	4,411.44	4,410.80	12.83	4.06	-40.04	-1,946.67	3,786.44	4,112.51	4,096.61	15.90	258.714	
4,400.00	4,395.19	4,533.36	4,532.71	13.13	4.05	-40.08	-1,947.97	3,786.83	4,109.40	4,093.13	16.27	252.584	
4,500.00	4,495.06	4,647.01	4,646.36	13.43	4.04	-40.12	-1,949.04	3,786.77	4,105.91	4,089.26	16.64	246.694	
4,600.00	4,594.93	4,747.05	4,746.40	13.73	4.03	-40.15	-1,949.81	3,786.66	4,102.28	4,085.27	17.01	241.159	
4,700.00	4,694.81	4,847.25	4,846.59	14.03	4.02	-40.19	-1,950.63	3,786.50	4,098.65	4,081.27	17.38	235.846	
4,800.00	4,794.68	4,941.65	4,940.99	14.33	4.03	-40.22	-1,951.45	3,786.41	4,095.10	4,077.35	17.74	230.811	
4,900.00	4,894.55	5,041.31	5,040.65	14.63	4.03	-40.25	-1,952.45	3,786.28	4,091.57	4,073.46	18.11	225.927	
5,000.00	4,994.43	5,139.48	5,138.81	14.93	4.04	-40.28	-1,953.50	3,786.17	4,088.09	4,069.61	18.48	221.249	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,236.42	5,235.74	15.23	4.05	-40.31	-1,954.53	3,786.12	4,084.66	4,065.81	18.84	216.761	
5,200.00	5,194.18	5,329.65	5,328.97	15.53	4.07	-40.34	-1,955.54	3,786.12	4,081.29	4,062.08	19.21	212.470	
5,300.00	5,294.05	5,425.90	5,425.21	15.83	4.10	-40.37	-1,956.56	3,786.38	4,078.14	4,058.57	19.58	208.318	
5,400.00	5,393.92	5,517.02	5,516.33	16.13	4.13	-40.40	-1,957.57	3,786.75	4,075.15	4,055.20	19.94	204.348	
5,500.00	5,493.80	5,618.58	5,617.88	16.43	4.17	-40.44	-1,958.74	3,787.19	4,072.21	4,051.89	20.32	200.437	
5,600.00	5,593.67	5,716.26	5,715.54	16.73	4.21	-40.47	-1,960.16	3,787.56	4,069.34	4,048.65	20.69	196.689	
5,700.00	5,693.54	5,841.17	5,840.44	17.03	4.25	-40.50	-1,962.11	3,787.48	4,066.11	4,045.03	21.08	192.893	
5,800.00	5,793.42	5,943.70	5,942.96	17.33	4.29	-40.53	-1,963.51	3,787.11	4,062.53	4,041.08	21.45	189.372	
5,900.00	5,893.29	6,050.23	6,049.49	17.63	4.33	-40.56	-1,964.51	3,786.78	4,058.83	4,037.00	21.83	185.946	
6,000.00	5,993.16	6,151.70	6,150.95	17.93	4.38	-40.59	-1,965.47	3,786.40	4,055.07	4,032.87	22.20	182.668	
6,100.00	6,093.04	6,245.16	6,244.41	18.23	4.42	-40.62	-1,966.44	3,786.05	4,051.35	4,028.79	22.57	179.541	
6,200.00	6,192.91	6,340.19	6,339.43	18.53	4.47	-40.65	-1,967.54	3,785.83	4,047.81	4,024.88	22.93	176.503	
6,300.00	6,292.78	6,434.81	6,434.05	18.83	4.52	-40.68	-1,968.63	3,785.73	4,044.38	4,021.08	23.30	173.558	
6,400.00	6,392.66	6,535.17	6,534.39	19.13	4.58	-40.71	-1,969.78	3,785.73	4,041.05	4,017.37	23.68	170.671	
6,500.00	6,492.53	6,640.61	6,639.83	19.43	4.65	-40.75	-1,970.84	3,785.70	4,037.64	4,013.58	24.06	167.846	
6,551.20	6,543.67	6,696.01	6,695.22	19.58	4.68	-40.77	-1,971.30	3,785.61	4,035.79	4,011.54	24.25	166.428	
6,600.00	6,592.30	6,749.10	6,748.32	19.73	4.72	1.36	-1,971.76	3,785.47	4,032.11	4,007.68	24.43	165.022	
6,650.00	6,641.67	6,801.39	6,800.60	19.88	4.75	11.67	-1,972.17	3,785.37	4,024.46	3,999.84	24.62	163.453	
6,700.00	6,690.21	6,844.45	6,843.66	20.03	4.78	16.23	-1,972.53	3,785.25	4,012.92	3,988.11	24.80	161.796	
6,750.00	6,737.54	6,893.79	6,893.00	20.18	4.81	19.15	-1,972.98	3,785.11	3,997.59	3,972.60	24.99	159.984	
6,800.00	6,783.30	6,937.71	6,936.92	20.33	4.84	21.49	-1,973.38	3,784.97	3,978.60	3,953.43	25.17	158.076	
6,850.00	6,827.15	6,980.67	6,979.88	20.48	4.87	23.68	-1,973.79	3,784.86	3,956.14	3,930.79	25.35	156.061	
6,900.00	6,868.74	7,019.93	7,019.13	20.63	4.90	25.95	-1,974.14	3,784.79	3,930.36	3,904.83	25.53	153.958	
6,950.00	6,907.77	7,056.98	7,056.18	20.78	4.93	28.45	-1,974.45	3,784.75	3,901.49	3,875.78	25.71	151.771	
7,000.00	6,943.94	7,092.89	7,092.09	20.93	4.95	31.32	-1,974.76	3,784.72	3,869.74	3,843.86	25.88	149.507	
7,050.00	6,976.97	7,124.31	7,123.51	21.08	4.98	34.67	-1,975.01	3,784.70	3,835.38	3,809.32	26.06	147.190	
7,100.00	7,006.62	7,152.95	7,152.15	21.23	5.00	38.66	-1,975.26	3,784.69	3,798.68	3,772.45	26.23	144.825	
7,150.00	7,032.64	7,174.84	7,174.04	21.38	5.02	43.38	-1,975.45	3,784.70	3,759.94	3,733.55	26.40	142.439	
7,200.00	7,054.86	7,198.32	7,197.52	21.53	5.04	49.12	-1,975.66	3,784.72	3,719.48	3,692.91	26.57	140.012	
7,250.00	7,073.09	7,214.40	7,213.60	21.68	5.05	55.86	-1,975.81	3,784.73	3,677.60	3,650.87	26.73	137.591	
7,300.00	7,087.20	7,226.76	7,225.96	21.83	5.06	63.68	-1,975.92	3,784.75	3,634.65	3,607.76	26.89	135.173	
7,350.00	7,097.08	7,235.73	7,234.93	21.98	5.07	72.46	-1,976.00	3,784.77	3,590.96	3,563.92	27.05	132.770	
7,400.00	7,102.66	7,240.84	7,240.04	22.13	5.07	81.83	-1,976.05	3,784.78	3,546.88	3,519.68	27.20	130.395	
7,438.94	7,104.00	7,242.12	7,241.31	22.25	5.07	89.19	-1,976.06	3,784.78	3,512.51	3,485.19	27.32	128.573	
7,500.00	7,104.02	7,242.26	7,241.45	22.43	5.07	89.20	-1,976.06	3,784.78	3,458.79	3,431.28	27.50	125.760	
7,600.00	7,104.06	7,242.49	7,241.69	22.74	5.07	89.20	-1,976.06	3,784.78	3,371.35	3,343.54	27.80	121.253	
7,700.00	7,104.10	7,242.72	7,241.92	23.04	5.07	89.21	-1,976.06	3,784.78	3,284.62	3,256.52	28.11	116.868	
7,800.00	7,104.14	7,242.96	7,242.15	23.34	5.07	89.22	-1,976.07	3,784.78	3,198.68	3,170.27	28.41	112.604	
7,900.00	7,104.18	7,243.19	7,242.39	23.64	5.07	89.23	-1,976.07	3,784.78	3,113.57	3,084.86	28.71	108.459	
8,000.00	7,104.22	7,243.42	7,242.62	23.94	5.07	89.24	-1,976.07	3,784.78	3,029.37	3,000.36	29.01	104.432	
8,100.00	7,104.26	7,243.66	7,242.86	24.24	5.07	89.24	-1,976.07	3,784.78	2,946.16	2,916.85	29.31	100.521	
8,200.00	7,104.30	7,243.89	7,243.09	24.54	5.07	89.25	-1,976.07	3,784.78	2,864.02	2,834.41	29.61	96.726	
8,300.00	7,104.34	7,244.13	7,243.33	24.84	5.07	89.26	-1,976.08	3,784.79	2,783.05	2,753.14	29.91	93.047	
8,400.00	7,104.38	7,244.37	7,243.56	25.14	5.07	89.27	-1,976.08	3,784.79	2,703.36	2,673.15	30.21	89.484	
8,500.00	7,104.42	7,244.60	7,243.80	25.44	5.07	89.28	-1,976.08	3,784.79	2,625.06	2,594.55	30.51	86.036	
8,600.00	7,104.45	7,244.84	7,244.04	25.74	5.07	89.28	-1,976.08	3,784.79	2,548.27	2,517.46	30.81	82.706	
8,700.00	7,104.49	7,245.08	7,244.27	26.04	5.07	89.29	-1,976.09	3,784.79	2,473.15	2,442.04	31.11	79.493	
8,800.00	7,104.53	7,245.31	7,244.51	26.34	5.07	89.30	-1,976.09	3,784.79	2,399.84	2,368.43	31.41	76.400	
8,900.00	7,104.57	7,245.55	7,244.75	26.64	5.07	89.31	-1,976.09	3,784.79	2,328.52	2,296.81	31.71	73.429	
9,000.00	7,104.61	7,245.79	7,244.99	26.95	5.07	89.32	-1,976.09	3,784.79	2,259.37	2,227.36	32.01	70.582	
9,100.00	7,104.65	7,246.03	7,245.23	27.25	5.07	89.33	-1,976.09	3,784.79	2,192.61	2,160.30	32.31	67.862	
9,200.00	7,104.69	7,246.27	7,245.47	27.55	5.07	89.33	-1,976.10	3,784.79	2,128.45	2,095.84	32.61	65.272	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077C (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	7,246.51	7,245.71	27.85	5.07	89.34	-1,976.10	3,784.79	2,067.14	2,034.23	32.91	62.816	
9,400.00	7,104.77	7,246.75	7,245.95	28.15	5.08	89.35	-1,976.10	3,784.79	2,008.94	1,975.74	33.21	60.498	
9,500.00	7,104.81	7,246.99	7,246.19	28.45	5.08	89.36	-1,976.10	3,784.79	1,954.13	1,920.62	33.50	58.324	
9,600.00	7,104.85	7,247.24	7,246.43	28.75	5.08	89.37	-1,976.11	3,784.79	1,902.99	1,869.19	33.80	56.297	
9,700.00	7,104.89	7,247.48	7,246.67	29.05	5.08	89.38	-1,976.11	3,784.79	1,855.84	1,821.74	34.10	54.423	
9,800.00	7,104.92	7,247.72	7,246.92	29.35	5.08	89.38	-1,976.11	3,784.79	1,812.99	1,778.59	34.40	52.707	
9,900.00	7,104.96	7,247.96	7,247.16	29.65	5.08	89.39	-1,976.11	3,784.79	1,774.74	1,740.04	34.69	51.153	
10,000.00	7,105.00	7,248.21	7,247.40	29.95	5.08	89.40	-1,976.12	3,784.79	1,741.40	1,706.40	34.99	49.767	
10,100.00	7,105.04	7,248.45	7,247.65	30.25	5.08	89.41	-1,976.12	3,784.79	1,713.25	1,677.96	35.29	48.551	
10,200.00	7,105.08	7,248.70	7,247.89	30.55	5.08	89.42	-1,976.12	3,784.80	1,690.56	1,654.98	35.58	47.509	
10,300.00	7,105.12	7,248.94	7,248.14	30.85	5.08	89.43	-1,976.12	3,784.80	1,673.55	1,637.67	35.88	46.642	
10,400.00	7,105.16	7,249.19	7,248.38	31.15	5.08	89.43	-1,976.12	3,784.80	1,662.39	1,626.21	36.18	45.952	
10,500.00	7,105.20	7,249.43	7,248.63	31.45	5.08	89.44	-1,976.13	3,784.80	1,657.20	1,620.72	36.47	45.436	
10,536.16	7,105.21	7,249.52	7,248.72	31.56	5.08	89.45	-1,976.13	3,784.80	1,656.80	1,620.22	36.58	45.292	CC, ES
10,600.00	7,105.24	7,249.68	7,248.88	31.75	5.08	89.45	-1,976.13	3,784.80	1,658.03	1,621.26	36.77	45.092	
10,700.00	7,105.28	7,249.93	7,249.12	32.05	5.08	89.46	-1,976.13	3,784.80	1,664.88	1,627.82	37.07	44.916	
10,800.00	7,105.32	7,250.17	7,249.37	32.35	5.08	89.47	-1,976.13	3,784.80	1,677.68	1,640.31	37.36	44.900	SF
10,900.00	7,105.36	7,250.42	7,249.62	32.66	5.08	89.48	-1,976.14	3,784.80	1,696.28	1,658.62	37.66	45.039	
11,000.00	7,105.39	7,250.67	7,249.87	32.96	5.08	89.49	-1,976.14	3,784.80	1,720.50	1,682.54	37.96	45.324	
11,100.00	7,105.43	7,250.92	7,250.12	33.26	5.08	89.49	-1,976.14	3,784.80	1,750.11	1,711.86	38.26	45.744	
11,200.00	7,105.47	7,251.17	7,250.36	33.56	5.08	89.50	-1,976.14	3,784.80	1,784.84	1,746.29	38.56	46.290	
11,300.00	7,105.51	7,251.42	7,250.61	33.86	5.08	89.51	-1,976.15	3,784.80	1,824.40	1,785.54	38.86	46.951	
11,400.00	7,105.55	7,251.59	7,250.79	34.16	5.08	89.52	-1,976.15	3,784.80	1,868.48	1,829.32	39.16	47.717	
11,500.00	7,105.59	7,251.83	7,251.03	34.46	5.08	89.53	-1,976.15	3,784.80	1,916.76	1,877.30	39.46	48.577	
11,600.00	7,105.63	7,252.07	7,251.26	34.76	5.08	89.53	-1,976.15	3,784.80	1,968.94	1,929.18	39.76	49.522	
11,700.00	7,105.67	7,252.30	7,251.50	35.06	5.08	89.54	-1,976.16	3,784.80	2,024.72	1,984.66	40.06	50.543	
11,800.00	7,105.71	7,252.54	7,251.73	35.36	5.08	89.55	-1,976.16	3,784.80	2,083.81	2,043.45	40.36	51.630	
11,900.00	7,105.75	7,252.77	7,251.97	35.66	5.08	89.56	-1,976.16	3,784.80	2,145.93	2,105.27	40.66	52.775	
12,000.00	7,105.79	7,253.00	7,252.20	35.96	5.08	89.57	-1,976.16	3,784.80	2,210.84	2,169.87	40.96	53.971	
12,100.00	7,105.83	7,253.24	7,252.43	36.26	5.08	89.57	-1,976.16	3,784.81	2,278.28	2,237.02	41.26	55.211	
12,200.00	7,105.86	7,253.47	7,252.67	36.56	5.08	89.58	-1,976.17	3,784.81	2,348.05	2,306.48	41.57	56.489	
12,300.00	7,105.90	7,253.70	7,252.90	36.86	5.08	89.59	-1,976.17	3,784.81	2,419.94	2,378.07	41.87	57.799	
12,400.00	7,105.94	7,253.93	7,253.13	37.16	5.08	89.60	-1,976.17	3,784.81	2,493.76	2,451.59	42.17	59.136	
12,500.00	7,105.98	7,254.17	7,253.36	37.46	5.08	89.61	-1,976.17	3,784.81	2,569.36	2,526.89	42.47	60.496	
12,600.00	7,106.02	7,254.40	7,253.59	37.76	5.08	89.61	-1,976.18	3,784.81	2,646.58	2,603.81	42.77	61.875	
12,700.00	7,106.06	7,254.63	7,253.82	38.06	5.08	89.62	-1,976.18	3,784.81	2,725.28	2,682.21	43.07	63.269	
12,800.00	7,106.10	7,254.86	7,254.05	38.36	5.08	89.63	-1,976.18	3,784.81	2,805.34	2,761.96	43.38	64.674	
12,900.00	7,106.14	7,255.09	7,254.28	38.66	5.08	89.64	-1,976.18	3,784.81	2,886.64	2,842.96	43.68	66.089	
13,000.00	7,106.18	7,255.32	7,254.51	38.96	5.08	89.65	-1,976.19	3,784.81	2,969.08	2,925.10	43.98	67.511	
13,100.00	7,106.22	7,255.54	7,254.74	39.26	5.08	89.65	-1,976.19	3,784.81	3,052.58	3,008.29	44.28	68.937	
13,200.00	7,106.26	7,255.77	7,254.97	39.56	5.08	89.66	-1,976.19	3,784.81	3,137.03	3,092.45	44.58	70.365	
13,300.00	7,106.30	7,256.00	7,255.20	39.86	5.08	89.67	-1,976.19	3,784.81	3,222.38	3,177.50	44.88	71.794	
13,400.00	7,106.33	7,256.23	7,255.42	40.16	5.08	89.68	-1,976.19	3,784.81	3,308.55	3,263.37	45.19	73.222	
13,500.00	7,106.37	7,256.45	7,255.65	40.46	5.08	89.69	-1,976.20	3,784.81	3,395.48	3,349.99	45.49	74.648	
13,600.00	7,106.41	7,256.68	7,255.88	40.76	5.08	89.69	-1,976.20	3,784.81	3,483.11	3,437.32	45.79	76.070	
13,700.00	7,106.45	7,256.91	7,256.10	41.06	5.08	89.70	-1,976.20	3,784.81	3,571.39	3,525.30	46.09	77.488	
13,800.00	7,106.49	7,257.13	7,256.33	41.36	5.08	89.71	-1,976.20	3,784.81	3,660.27	3,613.88	46.39	78.901	
13,900.00	7,106.53	7,257.36	7,256.55	41.67	5.08	89.72	-1,976.21	3,784.81	3,749.71	3,703.02	46.69	80.307	
14,000.00	7,106.57	7,257.58	7,256.78	41.97	5.08	89.73	-1,976.21	3,784.81	3,839.67	3,792.68	46.99	81.707	
14,100.00	7,106.61	7,257.81	7,257.00	42.27	5.08	89.73	-1,976.21	3,784.82	3,930.12	3,882.83	47.29	83.099	
14,200.00	7,106.65	7,258.03	7,257.23	42.57	5.08	89.74	-1,976.21	3,784.82	4,021.02	3,973.43	47.60	84.483	
14,300.00	7,106.69	7,258.25	7,257.45	42.87	5.08	89.75	-1,976.22	3,784.82	4,112.34	4,064.45	47.90	85.859	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077C (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,400.00	7,106.73	7,258.48	7,257.67	43.17	5.08	89.76	-1,976.22	3,784.82	4,204.06	4,155.87	48.20	87.225	
14,500.00	7,106.76	7,258.70	7,257.89	43.47	5.08	89.76	-1,976.22	3,784.82	4,296.15	4,247.65	48.50	88.583	
14,600.00	7,106.80	7,258.92	7,258.12	43.77	5.09	89.77	-1,976.22	3,784.82	4,388.58	4,339.78	48.80	89.930	
14,700.00	7,106.84	7,259.14	7,258.34	44.07	5.09	89.78	-1,976.22	3,784.82	4,481.34	4,432.24	49.10	91.268	
14,800.00	7,106.88	7,259.36	7,258.56	44.37	5.09	89.79	-1,976.23	3,784.82	4,574.41	4,525.00	49.40	92.596	
14,900.00	7,106.92	7,259.58	7,258.78	44.67	5.09	89.79	-1,976.23	3,784.82	4,667.76	4,618.05	49.70	93.914	
15,000.00	7,106.96	7,259.80	7,259.00	44.97	5.09	89.80	-1,976.23	3,784.82	4,761.38	4,711.37	50.00	95.221	
15,100.00	7,107.00	7,260.02	7,259.22	45.27	5.09	89.81	-1,976.23	3,784.82	4,855.25	4,804.95	50.30	96.517	
15,200.00	7,107.04	7,260.24	7,259.44	45.57	5.09	89.82	-1,976.24	3,784.82	4,949.37	4,898.76	50.61	97.803	
15,300.00	7,107.08	7,260.46	7,259.66	45.87	5.09	89.82	-1,976.24	3,784.82	5,043.71	4,992.80	50.91	99.078	
15,400.00	7,107.12	7,260.68	7,259.88	46.17	5.09	89.83	-1,976.24	3,784.82	5,138.27	5,087.06	51.21	100.343	
15,500.00	7,107.16	7,260.90	7,260.09	46.47	5.09	89.84	-1,976.24	3,784.82	5,233.02	5,181.52	51.51	101.596	
15,600.00	7,107.20	7,261.12	7,260.31	46.77	5.09	89.85	-1,976.24	3,784.82	5,327.97	5,276.16	51.81	102.839	
15,700.00	7,107.23	7,261.33	7,260.53	47.07	5.09	89.85	-1,976.25	3,784.82	5,423.10	5,370.99	52.11	104.071	
15,800.00	7,107.27	7,261.55	7,260.75	47.37	5.09	89.86	-1,976.25	3,784.82	5,518.41	5,466.00	52.41	105.292	
15,900.00	7,107.31	7,261.77	7,260.96	47.67	5.09	89.87	-1,976.25	3,784.82	5,613.87	5,561.16	52.71	106.503	
16,000.00	7,107.35	7,261.98	7,261.18	47.97	5.09	89.88	-1,976.25	3,784.82	5,709.50	5,656.48	53.01	107.702	
16,100.00	7,107.39	7,262.20	7,261.39	48.27	5.09	89.88	-1,976.26	3,784.82	5,805.26	5,751.95	53.31	108.891	
16,200.00	7,107.43	7,262.41	7,261.61	48.57	5.09	89.89	-1,976.26	3,784.82	5,901.17	5,847.56	53.61	110.069	
16,300.00	7,107.47	7,262.63	7,261.82	48.87	5.09	89.90	-1,976.26	3,784.83	5,997.22	5,943.30	53.91	111.237	
16,400.00	7,107.51	7,262.84	7,262.04	49.17	5.09	89.91	-1,976.26	3,784.83	6,093.39	6,039.17	54.21	112.394	
16,500.00	7,107.55	7,263.06	7,262.25	49.47	5.09	89.91	-1,976.27	3,784.83	6,189.68	6,135.16	54.52	113.540	
16,600.00	7,107.59	7,263.27	7,262.47	49.77	5.09	89.92	-1,976.27	3,784.83	6,286.09	6,231.27	54.82	114.676	
16,700.00	7,107.63	7,263.48	7,262.68	50.07	5.09	89.93	-1,976.27	3,784.83	6,382.61	6,327.49	55.12	115.802	
16,800.00	7,107.67	7,263.70	7,262.89	50.37	5.09	89.94	-1,976.27	3,784.83	6,479.23	6,423.81	55.42	116.917	
16,900.00	7,107.70	7,263.91	7,263.10	50.67	5.09	89.94	-1,976.27	3,784.83	6,575.95	6,520.24	55.72	118.023	
17,000.00	7,107.74	7,264.12	7,263.32	50.97	5.09	89.95	-1,976.28	3,784.83	6,672.78	6,616.76	56.02	119.118	
17,100.00	7,107.78	7,264.33	7,263.53	51.27	5.09	89.96	-1,976.28	3,784.83	6,769.69	6,713.37	56.32	120.203	
17,200.00	7,107.82	7,264.54	7,263.74	51.57	5.09	89.97	-1,976.28	3,784.83	6,866.69	6,810.07	56.62	121.278	
17,300.00	7,107.86	7,264.75	7,263.95	51.87	5.09	89.97	-1,976.28	3,784.83	6,963.78	6,906.86	56.92	122.343	
17,400.00	7,107.90	7,264.96	7,264.16	52.17	5.09	89.98	-1,976.29	3,784.83	7,060.95	7,003.73	57.22	123.398	
17,500.00	7,107.94	7,265.17	7,264.37	52.47	5.09	89.99	-1,976.29	3,784.83	7,158.19	7,100.67	57.52	124.444	
17,600.00	7,107.98	7,265.38	7,264.58	52.77	5.09	89.99	-1,976.29	3,784.83	7,255.52	7,197.69	57.82	125.481	
17,700.00	7,108.02	7,265.59	7,264.79	53.07	5.09	90.00	-1,976.29	3,784.83	7,352.91	7,294.79	58.12	126.507	
17,800.00	7,108.06	7,265.80	7,265.00	53.37	5.09	90.01	-1,976.29	3,784.83	7,450.37	7,391.95	58.42	127.525	
17,900.00	7,108.10	7,266.01	7,265.21	53.67	5.09	90.02	-1,976.30	3,784.83	7,547.90	7,489.18	58.72	128.533	
18,000.00	7,108.14	7,266.22	7,265.41	53.97	5.09	90.02	-1,976.30	3,784.83	7,645.49	7,586.47	59.02	129.532	
18,100.00	7,108.17	7,266.43	7,265.62	54.27	5.09	90.03	-1,976.30	3,784.83	7,743.15	7,683.82	59.32	130.522	
18,200.00	7,108.21	7,266.63	7,265.83	54.57	5.09	90.04	-1,976.30	3,784.83	7,840.86	7,781.23	59.62	131.503	
18,300.00	7,108.25	7,266.84	7,266.03	54.87	5.09	90.05	-1,976.31	3,784.83	7,938.63	7,878.70	59.93	132.475	
18,400.00	7,108.29	7,267.05	7,266.24	55.17	5.09	90.05	-1,976.31	3,784.83	8,036.45	7,976.23	60.23	133.438	
18,500.00	7,108.33	7,267.25	7,266.45	55.47	5.09	90.06	-1,976.31	3,784.83	8,134.33	8,073.80	60.53	134.393	
18,600.00	7,108.37	7,267.46	7,266.65	55.77	5.09	90.07	-1,976.31	3,784.84	8,232.26	8,171.43	60.83	135.339	
18,700.00	7,108.41	7,267.66	7,266.86	56.07	5.09	90.07	-1,976.31	3,784.84	8,330.24	8,269.11	61.13	136.277	
18,800.00	7,108.45	7,267.87	7,267.06	56.37	5.09	90.08	-1,976.32	3,784.84	8,428.26	8,366.83	61.43	137.206	
18,900.00	7,108.49	7,268.07	7,267.27	56.67	5.09	90.09	-1,976.32	3,784.84	8,526.33	8,464.61	61.73	138.127	
19,000.00	7,108.53	7,268.28	7,267.47	56.97	5.09	90.09	-1,976.32	3,784.84	8,624.45	8,562.42	62.03	139.040	
19,100.00	7,108.57	7,268.48	7,267.67	57.28	5.09	90.10	-1,976.32	3,784.84	8,722.61	8,660.28	62.33	139.944	
19,200.00	7,108.61	7,268.68	7,267.88	57.58	5.09	90.11	-1,976.33	3,784.84	8,820.81	8,758.18	62.63	140.841	
19,300.00	7,108.64	7,268.89	7,268.08	57.88	5.09	90.12	-1,976.33	3,784.84	8,919.05	8,856.12	62.93	141.730	
19,400.00	7,108.68	7,269.09	7,268.28	58.18	5.09	90.12	-1,976.33	3,784.84	9,017.33	8,954.09	63.23	142.610	
19,500.00	7,108.72	7,269.29	7,268.49	58.48	5.09	90.13	-1,976.33	3,784.84	9,115.64	9,052.11	63.53	143.484	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #077C (Offset) - OH - OH

Survey Program: 100-Standard Keeper 104

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,600.00	7,108.76	7,269.49	7,268.69	58.78	5.09	90.14	-1,976.33	3,784.84	9,213.99	9,150.16	63.83	144.349	
19,700.00	7,108.80	7,269.69	7,268.89	59.08	5.09	90.14	-1,976.34	3,784.84	9,312.38	9,248.25	64.13	145.207	
19,800.00	7,108.84	7,269.89	7,269.09	59.38	5.09	90.15	-1,976.34	3,784.84	9,410.80	9,346.37	64.43	146.058	
19,900.00	7,108.88	7,270.09	7,269.29	59.68	5.09	90.16	-1,976.34	3,784.84	9,509.26	9,444.52	64.73	146.901	
20,000.00	7,108.92	7,270.29	7,269.49	59.98	5.09	90.16	-1,976.34	3,784.84	9,607.74	9,542.71	65.03	147.736	
20,100.00	7,108.96	7,270.49	7,269.69	60.28	5.09	90.17	-1,976.35	3,784.84	9,706.26	9,640.93	65.33	148.565	
20,208.46	7,109.00	7,270.71	7,269.91	60.60	5.09	90.18	-1,976.35	3,784.84	9,813.14	9,747.48	65.66	149.456	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #097 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-95.00	-811.53	-9,274.95	9,310.40				
100.00	100.00	107.49	86.51	0.23	1.05	-95.00	-811.53	-9,274.95	9,310.39	9,309.11	1.27	7,303.248	
200.00	200.00	186.51	186.51	0.53	2.47	-95.00	-811.53	-9,274.95	9,310.39	9,307.39	3.00	3,103.931	
300.00	300.00	286.52	286.51	0.83	4.28	-95.00	-811.53	-9,274.95	9,310.39	9,305.28	5.11	1,823.374	
400.00	400.00	386.52	386.51	1.13	6.18	-95.00	-811.53	-9,274.95	9,310.39	9,303.08	7.30	1,274.556	
500.00	500.00	486.52	486.51	1.43	8.20	-95.00	-811.53	-9,274.95	9,310.39	9,300.76	9.62	967.352	CC
600.00	599.98	586.50	586.49	1.73	10.22	109.39	-811.53	-9,274.95	9,310.97	9,299.02	11.94	779.552	
644.12	644.06	630.42	630.41	1.86	11.10	109.39	-810.72	-9,274.95	9,311.52	9,298.56	12.96	718.289	
700.00	699.87	685.07	685.05	2.03	12.21	109.41	-810.77	-9,274.95	9,312.46	9,298.23	14.23	654.203	
800.00	799.74	782.88	782.86	2.33	14.18	109.44	-811.06	-9,274.95	9,314.16	9,297.65	16.51	564.139	
900.00	899.62	886.20	886.13	2.63	16.31	109.46	-811.53	-9,274.95	9,315.88	9,296.94	18.94	491.939	
1,000.00	999.49	986.07	986.00	2.93	18.57	109.49	-811.53	-9,274.95	9,317.55	9,296.05	21.50	433.380	
1,100.00	1,099.36	1,085.70	1,085.63	3.23	20.83	109.53	-810.62	-9,274.95	9,319.16	9,295.10	24.06	387.377	
1,200.00	1,199.24	1,182.42	1,182.34	3.53	23.02	109.56	-810.84	-9,274.95	9,320.86	9,294.31	26.55	351.092	
1,300.00	1,299.11	1,279.18	1,279.09	3.83	25.21	109.58	-811.46	-9,274.95	9,322.60	9,293.56	29.04	321.023	
1,400.00	1,398.98	1,385.66	1,385.50	4.13	27.57	109.61	-811.53	-9,274.95	9,324.29	9,292.60	31.70	294.173	
1,500.00	1,498.86	1,485.54	1,485.37	4.43	29.78	109.64	-811.53	-9,274.95	9,325.98	9,291.78	34.20	272.671	
1,600.00	1,598.73	1,581.63	1,581.43	4.73	31.90	109.67	-810.33	-9,274.95	9,327.58	9,290.96	36.62	254.681	
1,700.00	1,698.60	1,677.12	1,676.91	5.03	34.01	109.70	-811.09	-9,274.95	9,329.34	9,290.31	39.03	239.009	
1,800.00	1,798.48	1,785.24	1,784.99	5.33	36.22	109.73	-811.53	-9,274.95	9,331.07	9,289.52	41.55	224.591	
1,900.00	1,898.35	1,885.12	1,884.86	5.63	38.18	109.76	-811.53	-9,274.95	9,332.77	9,288.96	43.81	213.037	
2,000.00	1,998.22	1,984.99	1,984.74	5.93	40.14	109.78	-811.53	-9,274.95	9,334.47	9,288.41	46.07	202.618	
2,100.00	2,098.10	2,084.86	2,084.61	6.23	42.10	109.81	-811.53	-9,274.95	9,336.18	9,287.85	48.33	193.174	
2,200.00	2,197.97	2,184.74	2,184.48	6.53	44.07	109.84	-811.53	-9,274.95	9,337.89	9,287.30	50.59	184.574	
2,300.00	2,297.84	2,284.12	2,283.86	6.83	46.02	109.88	-809.85	-9,274.95	9,339.47	9,286.62	52.84	176.739	
2,400.00	2,397.72	2,383.09	2,382.82	7.13	47.96	109.91	-809.98	-9,274.95	9,341.19	9,286.10	55.09	169.573	
2,500.00	2,497.59	2,482.08	2,481.81	7.43	49.90	109.94	-810.24	-9,274.95	9,342.92	9,285.59	57.33	162.967	
2,600.00	2,597.46	2,581.08	2,580.80	7.73	51.85	109.96	-810.61	-9,274.95	9,344.67	9,285.10	59.57	156.858	
2,700.00	2,697.34	2,680.09	2,679.81	8.03	53.79	109.99	-811.11	-9,274.95	9,346.43	9,284.61	61.82	151.192	
2,800.00	2,797.21	2,784.07	2,783.72	8.33	55.86	110.02	-811.53	-9,274.95	9,348.18	9,283.99	64.19	145.634	
2,900.00	2,897.09	2,883.94	2,883.60	8.63	57.91	110.05	-811.53	-9,274.95	9,349.91	9,283.38	66.53	140.533	
3,000.00	2,996.96	2,983.81	2,983.47	8.93	59.95	110.07	-811.53	-9,274.95	9,351.63	9,282.76	68.87	135.778	
3,100.00	3,096.83	3,083.69	3,083.35	9.23	61.99	110.10	-811.53	-9,274.95	9,353.36	9,282.15	71.22	131.336	
3,200.00	3,196.71	3,183.56	3,183.22	9.53	64.03	110.13	-811.53	-9,274.95	9,355.10	9,281.54	73.56	127.178	
3,300.00	3,296.58	3,283.43	3,283.09	9.83	66.08	110.16	-811.53	-9,274.95	9,356.83	9,280.93	75.90	123.276	
3,400.00	3,396.45	3,383.31	3,382.97	10.13	68.12	110.19	-811.53	-9,274.95	9,358.57	9,280.32	78.24	119.607	
3,500.00	3,496.33	3,483.18	3,482.84	10.43	70.16	110.22	-811.53	-9,274.95	9,360.30	9,279.72	80.59	116.152	
3,600.00	3,596.20	3,582.54	3,582.18	10.73	72.19	110.26	-809.12	-9,274.95	9,361.87	9,278.95	82.92	112.905	
3,700.00	3,696.07	3,681.85	3,681.49	11.03	74.22	110.29	-809.24	-9,274.95	9,363.62	9,278.38	85.25	109.838	
3,800.00	3,795.95	3,781.16	3,780.80	11.33	76.25	110.32	-809.44	-9,274.95	9,365.39	9,277.81	87.58	106.935	
3,900.00	3,895.82	3,880.48	3,880.12	11.63	78.29	110.34	-809.74	-9,274.95	9,367.16	9,277.24	89.91	104.182	
4,000.00	3,995.69	3,979.82	3,979.44	11.93	80.32	110.37	-810.11	-9,274.95	9,368.93	9,276.69	92.24	101.568	
4,100.00	4,095.57	4,079.16	4,078.78	12.23	82.35	110.40	-810.58	-9,274.95	9,370.72	9,276.15	94.57	99.083	
4,200.00	4,195.44	4,178.51	4,178.13	12.53	84.38	110.42	-811.13	-9,274.95	9,372.51	9,275.61	96.91	96.718	
4,300.00	4,295.31	4,282.35	4,281.83	12.83	86.50	110.45	-811.53	-9,274.95	9,374.30	9,274.97	99.33	94.376	
4,400.00	4,395.19	4,382.22	4,381.70	13.13	88.55	110.48	-811.53	-9,274.95	9,376.06	9,274.39	101.67	92.219	
4,500.00	4,495.06	4,478.87	4,478.35	13.43	90.52	110.51	-811.10	-9,274.95	9,377.79	9,273.84	103.95	90.216	
4,600.00	4,594.93	4,582.00	4,581.45	13.73	92.73	110.54	-811.53	-9,274.95	9,379.59	9,273.13	106.46	88.108	
4,700.00	4,694.81	4,681.87	4,681.32	14.03	95.01	110.56	-811.53	-9,274.95	9,381.35	9,272.31	109.04	86.037	
4,800.00	4,794.68	4,781.44	4,780.88	14.33	97.29	110.60	-810.80	-9,274.95	9,383.07	9,271.46	111.61	84.067	
4,900.00	4,894.55	4,879.56	4,879.00	14.63	99.53	110.62	-810.99	-9,274.95	9,384.86	9,270.70	114.16	82.210	
5,000.00	4,994.43	4,977.70	4,977.14	14.93	101.77	110.65	-811.46	-9,274.95	9,386.66	9,269.96	116.70	80.434	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #097 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,081.48	5,080.82	15.23	104.23	110.68	-811.53	-9,274.95	9,388.44	9,268.99	119.45	78.595	
5,200.00	5,194.18	5,174.36	5,173.67	15.53	106.43	110.71	-811.20	-9,274.95	9,390.20	9,268.25	121.96	76.996	
5,300.00	5,294.05	5,281.29	5,280.56	15.83	108.84	110.74	-811.53	-9,274.95	9,392.00	9,267.34	124.66	75.340	
5,400.00	5,393.92	5,381.16	5,380.44	16.13	111.04	110.76	-811.53	-9,274.95	9,393.79	9,266.62	127.17	73.868	
5,500.00	5,493.80	5,481.04	5,480.31	16.43	113.25	110.79	-811.53	-9,274.95	9,395.57	9,265.90	129.68	72.453	
5,600.00	5,593.67	5,580.91	5,580.18	16.73	115.46	110.82	-811.53	-9,274.95	9,397.36	9,265.18	132.19	71.091	
5,700.00	5,693.54	5,680.78	5,680.06	17.03	117.67	110.85	-811.53	-9,274.95	9,399.15	9,264.46	134.70	69.780	
5,800.00	5,793.42	5,780.64	5,779.89	17.33	119.88	110.89	-809.00	-9,274.95	9,400.79	9,263.59	137.20	68.517	
5,900.00	5,893.29	5,879.68	5,878.92	17.63	122.07	110.92	-809.08	-9,274.95	9,402.59	9,262.90	139.69	67.308	
6,000.00	5,993.16	5,978.73	5,977.98	17.93	124.26	110.95	-809.30	-9,274.95	9,404.41	9,262.22	142.18	66.142	
6,100.00	6,093.04	6,077.81	6,077.04	18.23	126.45	110.98	-809.68	-9,274.95	9,406.23	9,261.55	144.68	65.016	
6,200.00	6,192.91	6,176.90	6,176.13	18.53	128.64	111.00	-810.20	-9,274.95	9,408.06	9,260.90	147.17	63.928	
6,300.00	6,292.78	6,276.01	6,275.23	18.83	130.83	111.02	-810.86	-9,274.95	9,409.91	9,260.25	149.66	62.876	
6,400.00	6,392.66	6,380.12	6,379.17	19.13	133.19	111.05	-811.53	-9,274.95	9,411.75	9,259.43	152.32	61.790	
6,500.00	6,492.53	6,480.00	6,479.04	19.43	135.66	111.08	-811.53	-9,274.95	9,413.56	9,258.47	155.09	60.698	
6,551.20	6,543.67	6,531.13	6,530.18	19.58	136.93	111.09	-811.53	-9,274.95	9,414.49	9,257.98	156.51	60.154	ES
6,600.00	6,592.30	6,579.77	6,578.81	19.73	138.13	153.07	-811.53	-9,274.95	9,417.45	9,259.59	157.86	59.659	
6,650.00	6,641.67	6,628.68	6,627.72	19.88	139.34	163.01	-810.17	-9,274.95	9,424.67	9,265.46	159.21	59.195	
6,700.00	6,690.21	6,676.13	6,675.16	20.03	140.51	166.96	-810.26	-9,274.95	9,436.26	9,275.72	160.54	58.779	
6,750.00	6,737.54	6,722.42	6,721.44	20.18	141.66	169.00	-810.44	-9,274.95	9,452.04	9,290.20	161.83	58.406	
6,800.00	6,783.30	6,767.18	6,766.20	20.33	142.76	170.18	-810.70	-9,274.95	9,471.89	9,308.80	163.09	58.078	
6,850.00	6,827.15	6,810.07	6,809.09	20.48	143.82	170.89	-811.04	-9,274.95	9,495.65	9,331.35	164.30	57.794	
6,900.00	6,868.74	6,850.78	6,849.79	20.63	144.83	171.30	-811.43	-9,274.95	9,523.16	9,357.70	165.46	57.557	
6,950.00	6,907.77	6,895.41	6,894.29	20.78	145.97	171.48	-811.53	-9,274.95	9,554.17	9,387.43	166.75	57.298	
7,000.00	6,943.94	6,931.58	6,930.46	20.93	146.90	171.47	-811.53	-9,274.95	9,588.47	9,420.65	167.83	57.133	
7,050.00	6,976.97	6,964.61	6,963.49	21.08	147.75	171.28	-811.53	-9,274.95	9,625.80	9,456.98	168.83	57.016	
7,100.00	7,006.62	6,994.25	6,993.13	21.23	148.51	170.86	-811.53	-9,274.95	9,665.87	9,496.14	169.74	56.946	
7,150.00	7,032.64	7,020.28	7,019.16	21.38	149.18	170.16	-811.53	-9,274.95	9,708.39	9,537.83	170.56	56.921	SF
7,200.00	7,054.86	7,042.50	7,041.37	21.53	149.75	169.04	-811.53	-9,274.95	9,753.02	9,581.74	171.28	56.942	
7,250.00	7,073.09	7,060.73	7,059.60	21.68	150.22	167.23	-811.53	-9,274.95	9,799.43	9,627.53	171.90	57.007	
7,300.00	7,087.20	7,074.84	7,073.71	21.83	150.58	164.04	-811.53	-9,274.95	9,847.26	9,674.84	172.41	57.115	
7,350.00	7,097.08	7,084.72	7,083.60	21.98	150.83	157.47	-811.53	-9,274.95	9,896.15	9,723.33	172.82	57.264	
7,400.00	7,102.66	7,090.30	7,089.18	22.13	150.98	138.74	-811.53	-9,274.95	9,945.72	9,772.61	173.11	57.453	
7,438.94	7,104.00	7,091.64	7,090.51	22.25	151.01	90.40	-811.53	-9,274.95	9,984.56	9,811.30	173.26	57.627	
7,500.00	7,104.02	7,091.66	7,090.54	22.43	151.01	90.40	-811.53	-9,274.95	10,045.53	9,872.08	173.45	57.917	
7,600.00	7,104.06	7,091.70	7,090.58	22.74	151.01	90.40	-811.53	-9,274.95	10,145.37	9,971.63	173.75	58.391	
7,700.00	7,104.10	7,091.74	7,090.62	23.04	151.01	90.41	-811.53	-9,274.95	10,245.22	10,071.17	174.05	58.864	
7,800.00	7,104.14	7,091.78	7,090.65	23.34	151.02	90.41	-811.53	-9,274.95	10,345.07	10,170.72	174.35	59.335	
7,900.00	7,104.18	7,091.82	7,090.69	23.64	151.02	90.42	-811.53	-9,274.95	10,444.92	10,270.27	174.65	59.804	
8,000.00	7,104.22	7,091.86	7,090.73	23.94	151.02	90.42	-811.53	-9,274.95	10,544.78	10,369.82	174.96	60.271	
8,100.00	7,104.26	7,091.90	7,090.77	24.24	151.02	90.42	-811.53	-9,274.95	10,644.64	10,469.38	175.26	60.737	
8,200.00	7,104.30	7,091.94	7,090.81	24.54	151.02	90.43	-811.53	-9,274.95	10,744.50	10,568.94	175.56	61.202	
8,300.00	7,104.34	7,091.98	7,090.85	24.84	151.02	90.43	-811.53	-9,274.95	10,844.36	10,668.50	175.86	61.665	
8,400.00	7,104.38	7,092.01	7,090.89	25.14	151.02	90.44	-811.53	-9,274.95	10,944.23	10,768.07	176.16	62.126	
8,500.00	7,104.42	7,092.05	7,090.93	25.44	151.02	90.44	-811.53	-9,274.95	11,044.10	10,867.63	176.46	62.586	
8,600.00	7,104.45	7,092.09	7,090.97	25.74	151.02	90.44	-811.53	-9,274.95	11,143.97	10,967.20	176.77	63.044	
8,700.00	7,104.49	7,092.13	7,091.01	26.04	151.02	90.45	-811.53	-9,274.95	11,243.84	11,066.78	177.07	63.500	
8,800.00	7,104.53	7,092.17	7,091.05	26.34	151.03	90.45	-811.53	-9,274.95	11,343.72	11,166.35	177.37	63.955	
8,900.00	7,104.57	7,092.21	7,091.09	26.64	151.03	90.46	-811.53	-9,274.95	11,443.60	11,265.93	177.67	64.409	
9,000.00	7,104.61	7,092.25	7,091.12	26.95	151.03	90.46	-811.53	-9,274.95	11,543.48	11,365.50	177.97	64.861	
9,100.00	7,104.65	7,092.29	7,091.16	27.25	151.03	90.46	-811.53	-9,274.95	11,643.36	11,465.08	178.27	65.312	
9,200.00	7,104.69	7,092.33	7,091.20	27.55	151.03	90.47	-811.53	-9,274.95	11,743.24	11,564.67	178.58	65.761	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #097 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	7,092.37	7,091.24	27.85	151.03	90.47	-811.53	-9,274.95	11,843.13	11,664.25	178.88	66.208	
9,400.00	7,104.77	7,092.41	7,091.28	28.15	151.03	90.48	-811.53	-9,274.95	11,943.02	11,763.84	179.18	66.654	
9,500.00	7,104.81	7,092.45	7,091.32	28.45	151.03	90.48	-811.53	-9,274.95	12,042.90	11,863.42	179.48	67.099	
9,600.00	7,104.85	7,092.48	7,091.36	28.75	151.03	90.48	-811.53	-9,274.95	12,142.80	11,963.01	179.78	67.542	
9,700.00	7,104.89	7,092.52	7,091.40	29.05	151.03	90.49	-811.53	-9,274.95	12,242.69	12,062.61	180.08	67.983	
9,800.00	7,104.92	7,092.56	7,091.44	29.35	151.04	90.49	-811.53	-9,274.95	12,342.58	12,162.20	180.39	68.424	
9,900.00	7,104.96	7,092.60	7,091.48	29.65	151.04	90.50	-811.53	-9,274.95	12,442.48	12,261.79	180.69	68.862	
10,000.00	7,105.00	7,092.64	7,091.52	29.95	151.04	90.50	-811.53	-9,274.95	12,542.38	12,361.39	180.99	69.299	
10,100.00	7,105.04	7,092.68	7,091.56	30.25	151.04	90.50	-811.53	-9,274.95	12,642.28	12,460.99	181.29	69.735	
10,200.00	7,105.08	7,092.72	7,091.59	30.55	151.04	90.51	-811.53	-9,274.95	12,742.18	12,560.59	181.59	70.170	
10,300.00	7,105.12	7,092.76	7,091.63	30.85	151.04	90.51	-811.53	-9,274.95	12,842.08	12,660.19	181.89	70.603	
10,400.00	7,105.16	7,092.80	7,091.67	31.15	151.04	90.52	-811.53	-9,274.95	12,941.99	12,759.79	182.19	71.034	
10,500.00	7,105.20	7,092.84	7,091.71	31.45	151.04	90.52	-811.53	-9,274.95	13,041.89	12,859.40	182.50	71.464	
10,600.00	7,105.24	7,092.88	7,091.75	31.75	151.04	90.52	-811.53	-9,274.95	13,141.80	12,959.00	182.80	71.893	
10,700.00	7,105.28	7,092.92	7,091.79	32.05	151.04	90.53	-811.53	-9,274.95	13,241.71	13,058.61	183.10	72.320	
10,800.00	7,105.32	7,092.95	7,091.83	32.35	151.05	90.53	-811.53	-9,274.95	13,341.62	13,158.22	183.40	72.746	
10,900.00	7,105.36	7,092.99	7,091.87	32.66	151.05	90.53	-811.53	-9,274.95	13,441.53	13,257.83	183.70	73.171	
11,000.00	7,105.39	7,093.03	7,091.91	32.96	151.05	90.54	-811.53	-9,274.95	13,541.45	13,357.44	184.00	73.594	
11,100.00	7,105.43	7,093.07	7,091.95	33.26	151.05	90.54	-811.53	-9,274.95	13,641.36	13,457.06	184.30	74.015	
11,200.00	7,105.47	7,093.11	7,091.99	33.56	151.05	90.55	-811.53	-9,274.95	13,741.27	13,556.67	184.61	74.436	
11,300.00	7,105.51	7,093.15	7,092.03	33.86	151.05	90.55	-811.53	-9,274.95	13,841.19	13,656.28	184.91	74.855	
11,400.00	7,105.55	7,093.19	7,092.06	34.16	151.05	90.55	-811.53	-9,274.95	13,941.11	13,755.90	185.21	75.273	
11,500.00	7,105.59	7,093.23	7,092.10	34.46	151.05	90.56	-811.53	-9,274.95	14,041.03	13,855.52	185.51	75.689	
11,600.00	7,105.63	7,093.27	7,092.14	34.76	151.05	90.56	-811.53	-9,274.95	14,140.95	13,955.14	185.81	76.104	
11,700.00	7,105.67	7,093.31	7,092.18	35.06	151.05	90.57	-811.53	-9,274.95	14,240.87	14,054.76	186.11	76.518	
11,800.00	7,105.71	7,093.35	7,092.22	35.36	151.06	90.57	-811.53	-9,274.95	14,340.79	14,154.38	186.41	76.930	
11,900.00	7,105.75	7,093.39	7,092.26	35.66	151.06	90.57	-811.53	-9,274.95	14,440.71	14,254.00	186.72	77.341	
12,000.00	7,105.79	7,093.42	7,092.30	35.96	151.06	90.58	-811.53	-9,274.95	14,540.64	14,353.62	187.02	77.751	
12,100.00	7,105.83	7,093.46	7,092.34	36.26	151.06	90.58	-811.53	-9,274.95	14,640.56	14,453.25	187.32	78.159	
12,200.00	7,105.86	7,093.50	7,092.38	36.56	151.06	90.59	-811.53	-9,274.95	14,740.49	14,552.87	187.62	78.566	
12,300.00	7,105.90	7,093.54	7,092.42	36.86	151.06	90.59	-811.53	-9,274.95	14,840.42	14,652.50	187.92	78.972	
12,400.00	7,105.94	7,093.58	7,092.46	37.16	151.06	90.59	-811.53	-9,274.95	14,940.35	14,752.13	188.22	79.376	
12,500.00	7,105.98	7,093.62	7,092.49	37.46	151.06	90.60	-811.53	-9,274.95	15,040.28	14,851.75	188.52	79.779	
12,600.00	7,106.02	7,093.66	7,092.53	37.76	151.06	90.60	-811.53	-9,274.95	15,140.21	14,951.38	188.82	80.181	
12,700.00	7,106.06	7,093.70	7,092.57	38.06	151.06	90.61	-811.53	-9,274.95	15,240.14	15,051.01	189.13	80.582	
12,800.00	7,106.10	7,093.74	7,092.61	38.36	151.07	90.61	-811.53	-9,274.95	15,340.07	15,150.64	189.43	80.981	
12,900.00	7,106.14	7,093.78	7,092.65	38.66	151.07	90.61	-811.53	-9,274.95	15,440.00	15,250.27	189.73	81.379	
13,000.00	7,106.18	7,093.82	7,092.69	38.96	151.07	90.62	-811.53	-9,274.95	15,539.94	15,349.91	190.03	81.776	
13,100.00	7,106.22	7,093.86	7,092.73	39.26	151.07	90.62	-811.53	-9,274.95	15,639.87	15,449.54	190.33	82.172	
13,200.00	7,106.26	7,093.89	7,092.77	39.56	151.07	90.63	-811.53	-9,274.95	15,739.81	15,549.17	190.63	82.566	
13,300.00	7,106.30	7,093.93	7,092.81	39.86	151.07	90.63	-811.53	-9,274.95	15,839.74	15,648.81	190.93	82.959	
13,400.00	7,106.33	7,093.97	7,092.85	40.16	151.07	90.63	-811.53	-9,274.95	15,939.68	15,748.45	191.24	83.351	
13,500.00	7,106.37	7,094.01	7,092.89	40.46	151.07	90.64	-811.53	-9,274.95	16,039.62	15,848.08	191.54	83.742	
13,600.00	7,106.41	7,094.05	7,092.93	40.76	151.07	90.64	-811.53	-9,274.95	16,139.56	15,947.72	191.84	84.131	
13,700.00	7,106.45	7,094.09	7,092.96	41.06	151.08	90.65	-811.53	-9,274.95	16,239.50	16,047.36	192.14	84.520	
13,800.00	7,106.49	7,094.13	7,093.00	41.36	151.08	90.65	-811.53	-9,274.95	16,339.44	16,147.00	192.44	84.907	
13,900.00	7,106.53	7,094.17	7,093.04	41.67	151.08	90.65	-811.53	-9,274.95	16,439.38	16,246.64	192.74	85.292	
14,000.00	7,106.57	7,094.21	7,093.08	41.97	151.08	90.66	-811.53	-9,274.95	16,539.32	16,346.28	193.04	85.677	
14,100.00	7,106.61	7,094.25	7,093.12	42.27	151.08	90.66	-811.53	-9,274.95	16,639.26	16,445.92	193.34	86.060	
14,200.00	7,106.65	7,094.29	7,093.16	42.57	151.08	90.67	-811.53	-9,274.95	16,739.20	16,545.56	193.65	86.443	
14,300.00	7,106.69	7,094.33	7,093.20	42.87	151.08	90.67	-811.53	-9,274.95	16,839.15	16,645.20	193.95	86.824	
14,400.00	7,106.73	7,094.36	7,093.24	43.17	151.08	90.67	-811.53	-9,274.95	16,939.09	16,744.85	194.25	87.204	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #097 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	7,094.40	7,093.28	43.47	151.08	90.68	-811.53	-9,274.95	17,039.04	16,844.49	194.55	87.582	
14,600.00	7,106.80	7,094.44	7,093.32	43.77	151.08	90.68	-811.53	-9,274.95	17,138.98	16,944.13	194.85	87.960	
14,700.00	7,106.84	7,094.48	7,093.36	44.07	151.09	90.69	-811.53	-9,274.95	17,238.93	17,043.78	195.15	88.336	
14,800.00	7,106.88	7,094.52	7,093.40	44.37	151.09	90.69	-811.53	-9,274.95	17,338.88	17,143.42	195.45	88.711	
14,900.00	7,106.92	7,094.56	7,093.43	44.67	151.09	90.69	-811.53	-9,274.95	17,438.82	17,243.07	195.75	89.085	
15,000.00	7,106.96	7,094.60	7,093.47	44.97	151.09	90.70	-811.53	-9,274.95	17,538.77	17,342.72	196.06	89.458	
15,100.00	7,107.00	7,094.64	7,093.51	45.27	151.09	90.70	-811.53	-9,274.95	17,638.72	17,442.36	196.36	89.830	
15,200.00	7,107.04	7,094.68	7,093.55	45.57	151.09	90.71	-811.53	-9,274.95	17,738.67	17,542.01	196.66	90.201	
15,300.00	7,107.08	7,094.72	7,093.59	45.87	151.09	90.71	-811.53	-9,274.95	17,838.62	17,641.66	196.96	90.570	
15,400.00	7,107.12	7,094.76	7,093.63	46.17	151.09	90.71	-811.53	-9,274.95	17,938.57	17,741.31	197.26	90.939	
15,500.00	7,107.16	7,094.79	7,093.67	46.47	151.09	90.72	-811.53	-9,274.95	18,038.52	17,840.96	197.56	91.306	
15,600.00	7,107.20	7,094.83	7,093.71	46.77	151.09	90.72	-811.53	-9,274.95	18,138.47	17,940.61	197.86	91.672	
15,700.00	7,107.23	7,094.87	7,093.75	47.07	151.10	90.73	-811.53	-9,274.95	18,238.43	18,040.26	198.16	92.037	
15,800.00	7,107.27	7,094.91	7,093.79	47.37	151.10	90.73	-811.53	-9,274.95	18,338.38	18,139.91	198.46	92.401	
15,900.00	7,107.31	7,094.95	7,093.83	47.67	151.10	90.73	-811.53	-9,274.95	18,438.33	18,239.56	198.77	92.764	
16,000.00	7,107.35	7,094.99	7,093.87	47.97	151.10	90.74	-811.53	-9,274.95	18,538.28	18,339.22	199.07	93.126	
16,100.00	7,107.39	7,095.03	7,093.90	48.27	151.10	90.74	-811.53	-9,274.95	18,638.24	18,438.87	199.37	93.486	
16,200.00	7,107.43	7,095.07	7,093.94	48.57	151.10	90.75	-811.53	-9,274.95	18,738.19	18,538.52	199.67	93.846	
16,300.00	7,107.47	7,095.11	7,093.98	48.87	151.10	90.75	-811.53	-9,274.95	18,838.15	18,638.18	199.97	94.204	
16,400.00	7,107.51	7,095.15	7,094.02	49.17	151.10	90.75	-811.53	-9,274.95	18,938.10	18,737.83	200.27	94.562	
16,500.00	7,107.55	7,095.19	7,094.06	49.47	151.10	90.76	-811.53	-9,274.95	19,038.06	18,837.49	200.57	94.918	
16,600.00	7,107.59	7,095.23	7,094.10	49.77	151.10	90.76	-811.53	-9,274.95	19,138.02	18,937.14	200.87	95.273	
16,700.00	7,107.63	7,095.26	7,094.14	50.07	151.11	90.77	-811.53	-9,274.95	19,237.97	19,036.80	201.18	95.628	
16,800.00	7,107.67	7,095.30	7,094.18	50.37	151.11	90.77	-811.53	-9,274.95	19,337.93	19,136.45	201.48	95.981	
16,900.00	7,107.70	7,095.34	7,094.22	50.67	151.11	90.77	-811.53	-9,274.95	19,437.89	19,236.11	201.78	96.333	
17,000.00	7,107.74	7,095.38	7,094.26	50.97	151.11	90.78	-811.53	-9,274.95	19,537.85	19,335.77	202.08	96.684	
17,100.00	7,107.78	7,095.42	7,094.30	51.27	151.11	90.78	-811.53	-9,274.95	19,637.81	19,435.42	202.38	97.034	
17,200.00	7,107.82	7,095.46	7,094.34	51.57	151.11	90.79	-811.53	-9,274.95	19,737.76	19,535.08	202.68	97.383	
17,300.00	7,107.86	7,095.50	7,094.37	51.87	151.11	90.79	-811.53	-9,274.95	19,837.72	19,634.74	202.98	97.731	
17,400.00	7,107.90	7,095.54	7,094.41	52.17	151.11	90.79	-811.53	-9,274.95	19,937.68	19,734.40	203.28	98.078	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	10.49	-10.49	0.00	0.11	-98.25	-1,340.67	-9,243.88	9,340.60				
100.00	100.00	89.51	89.51	0.23	0.95	-98.25	-1,340.67	-9,243.88	9,340.60	9,339.42	1.18	7,921.661	
192.06	192.06	181.57	181.56	0.50	2.47	-98.25	-1,340.41	-9,243.88	9,340.56	9,337.59	2.97	3,143.875	
200.00	200.00	188.20	188.19	0.53	2.60	-98.25	-1,340.42	-9,243.88	9,340.56	9,337.43	3.13	2,988.875	
300.00	300.00	289.53	289.51	0.83	4.67	-98.25	-1,340.67	-9,243.88	9,340.60	9,335.10	5.49	1,700.243	
380.00	380.00	369.35	369.33	1.07	6.36	-98.25	-1,340.40	-9,243.88	9,340.56	9,333.13	7.43	1,257.120	CC
400.00	400.00	388.45	388.43	1.13	6.77	-98.25	-1,340.41	-9,243.88	9,340.56	9,332.66	7.90	1,182.940	
500.00	500.00	483.96	483.94	1.43	8.80	-98.25	-1,340.65	-9,243.88	9,340.59	9,330.37	10.23	913.423	
600.00	599.98	589.55	589.49	1.73	11.13	106.14	-1,340.67	-9,243.88	9,341.08	9,328.22	12.86	726.481	
644.12	644.06	632.58	632.51	1.86	12.08	106.15	-1,339.80	-9,243.88	9,341.48	9,327.54	13.94	669.988	
700.00	699.87	681.98	681.90	2.03	13.18	106.16	-1,339.95	-9,243.88	9,342.29	9,327.08	15.20	614.464	
800.00	799.74	789.37	789.26	2.33	15.56	106.19	-1,340.67	-9,243.88	9,343.79	9,325.91	17.88	522.521	
900.00	899.62	889.24	889.13	2.63	17.77	106.22	-1,340.67	-9,243.88	9,345.19	9,324.80	20.40	458.178	
1,000.00	999.49	989.11	989.00	2.93	19.98	106.25	-1,340.67	-9,243.88	9,346.60	9,323.69	22.91	407.958	
1,100.00	1,099.36	1,086.30	1,086.18	3.23	22.14	106.28	-1,339.94	-9,243.88	9,347.91	9,322.54	25.37	368.530	
1,200.00	1,199.24	1,182.87	1,182.74	3.53	24.28	106.31	-1,340.26	-9,243.88	9,349.37	9,321.56	27.81	336.232	
1,300.00	1,299.11	1,288.83	1,288.62	3.83	26.72	106.34	-1,340.67	-9,243.88	9,350.84	9,320.30	30.54	306.155	
1,400.00	1,398.98	1,388.71	1,388.50	4.13	29.21	106.37	-1,340.67	-9,243.88	9,352.26	9,318.92	33.34	280.517	
1,500.00	1,498.86	1,486.96	1,486.72	4.43	31.67	106.40	-1,339.32	-9,243.88	9,353.49	9,317.39	36.10	259.134	
1,600.00	1,598.73	1,579.38	1,579.13	4.73	33.98	106.43	-1,339.70	-9,243.88	9,354.97	9,316.26	38.71	241.697	
1,700.00	1,698.60	1,688.47	1,688.12	5.03	36.71	106.45	-1,340.67	-9,243.88	9,356.52	9,314.79	41.73	224.196	
1,800.00	1,798.48	1,788.34	1,787.99	5.33	39.21	106.48	-1,340.67	-9,243.88	9,357.95	9,313.41	44.54	210.097	
1,900.00	1,898.35	1,881.55	1,881.18	5.63	41.55	106.52	-1,339.86	-9,243.88	9,359.27	9,312.09	47.18	198.369	
2,000.00	1,998.22	1,988.19	1,987.74	5.93	44.18	106.54	-1,340.67	-9,243.88	9,360.81	9,310.71	50.11	186.823	
2,100.00	2,098.10	2,088.07	2,087.61	6.23	46.39	106.57	-1,340.67	-9,243.88	9,362.25	9,309.63	52.62	177.922	
2,200.00	2,197.97	2,187.94	2,187.48	6.53	48.61	106.60	-1,340.67	-9,243.88	9,363.68	9,308.55	55.13	169.833	
2,300.00	2,297.84	2,284.96	2,284.48	6.83	50.76	106.64	-1,338.97	-9,243.88	9,364.89	9,307.31	57.59	162.624	
2,400.00	2,397.72	2,379.11	2,378.62	7.13	52.85	106.67	-1,339.40	-9,243.88	9,366.40	9,306.42	59.97	156.174	
2,500.00	2,497.59	2,473.32	2,472.81	7.43	54.94	106.69	-1,340.26	-9,243.88	9,367.97	9,305.60	62.36	150.217	
2,600.00	2,597.46	2,587.54	2,586.98	7.73	57.24	106.72	-1,340.67	-9,243.88	9,369.46	9,304.49	64.97	144.223	
2,700.00	2,697.34	2,687.41	2,686.85	8.03	59.17	106.75	-1,340.67	-9,243.88	9,370.91	9,303.71	67.19	139.460	
2,800.00	2,797.21	2,786.16	2,785.59	8.33	61.07	106.78	-1,339.89	-9,243.88	9,372.25	9,302.85	69.40	135.045	
2,900.00	2,897.09	2,882.85	2,882.28	8.63	62.94	106.81	-1,340.10	-9,243.88	9,373.74	9,302.17	71.57	130.976	
3,000.00	2,996.96	2,979.57	2,979.00	8.93	64.81	106.84	-1,340.56	-9,243.88	9,375.26	9,301.52	73.74	127.146	
3,100.00	3,096.83	3,086.95	3,086.35	9.23	66.98	106.87	-1,340.67	-9,243.88	9,376.73	9,300.53	76.20	123.052	
3,200.00	3,196.71	3,186.82	3,186.22	9.53	69.01	106.90	-1,340.67	-9,243.88	9,378.19	9,299.66	78.53	119.419	
3,300.00	3,296.58	3,285.68	3,285.07	9.83	71.02	106.93	-1,339.85	-9,243.88	9,379.55	9,298.71	80.84	116.024	
3,400.00	3,396.45	3,382.56	3,381.95	10.13	72.98	106.96	-1,340.05	-9,243.88	9,381.04	9,297.93	83.11	112.874	
3,500.00	3,496.33	3,479.47	3,478.85	10.43	74.95	106.98	-1,340.49	-9,243.88	9,382.57	9,297.19	85.38	109.891	
3,600.00	3,596.20	3,586.38	3,585.71	10.73	77.06	107.01	-1,340.67	-9,243.88	9,384.06	9,296.28	87.79	106.898	
3,700.00	3,696.07	3,683.31	3,682.63	11.03	78.94	107.04	-1,340.13	-9,243.88	9,385.47	9,295.50	89.97	104.318	
3,800.00	3,795.95	3,786.15	3,785.46	11.33	80.94	107.07	-1,340.67	-9,243.88	9,387.01	9,294.75	92.27	101.739	
3,900.00	3,895.82	3,886.02	3,885.33	11.63	82.79	107.10	-1,340.67	-9,243.88	9,388.49	9,294.07	94.42	99.432	
4,000.00	3,995.69	3,983.51	3,982.81	11.93	84.61	107.13	-1,340.44	-9,243.88	9,389.95	9,293.41	96.53	97.272	
4,100.00	4,095.57	4,085.79	4,085.08	12.23	86.76	107.16	-1,340.67	-9,243.88	9,391.46	9,292.47	98.99	94.877	
4,200.00	4,195.44	4,185.66	4,184.95	12.53	89.52	107.19	-1,340.67	-9,243.88	9,392.95	9,290.90	102.05	92.042	
4,300.00	4,295.31	4,285.53	4,284.83	12.83	92.29	107.22	-1,340.67	-9,243.88	9,394.43	9,289.32	105.11	89.373	
4,400.00	4,395.19	4,383.15	4,382.44	13.13	94.99	107.25	-1,339.92	-9,243.88	9,395.83	9,287.72	108.12	86.905	
4,500.00	4,495.06	4,480.10	4,479.39	13.43	97.67	107.28	-1,340.23	-9,243.88	9,397.37	9,286.27	111.10	84.585	
4,600.00	4,594.93	4,585.45	4,584.45	13.73	100.81	107.31	-1,340.67	-9,243.88	9,398.92	9,284.38	114.54	82.060	
4,700.00	4,694.81	4,669.41	4,668.30	14.03	103.78	107.33	-1,340.38	-9,243.88	9,400.39	9,282.58	117.81	79.793	
4,800.00	4,794.68	4,774.23	4,773.04	14.33	107.43	107.36	-1,340.13	-9,243.88	9,401.86	9,280.10	121.76	77.217	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,900.00	4,894.55	4,873.39	4,872.06	14.63	110.90	107.39	-1,340.17	-9,243.88	9,403.37	9,277.84	125.53	74.911	
5,000.00	4,994.43	4,978.94	4,977.51	14.93	114.54	107.42	-1,340.04	-9,243.88	9,404.85	9,275.39	129.46	72.646	
5,100.00	5,094.30	5,084.75	5,083.19	15.23	118.23	107.46	-1,339.97	-9,243.88	9,406.35	9,272.90	133.45	70.485	
5,200.00	5,194.18	5,185.37	5,183.69	15.53	121.75	107.48	-1,340.67	-9,243.88	9,407.95	9,270.67	137.28	68.532	
5,300.00	5,294.05	5,270.84	5,269.12	15.83	124.71	107.51	-1,339.95	-9,243.88	9,409.38	9,268.85	140.53	66.956	
5,400.00	5,393.92	5,384.04	5,382.17	16.13	128.55	107.54	-1,339.91	-9,243.88	9,410.88	9,266.21	144.68	65.048	
5,500.00	5,493.80	5,485.30	5,483.31	16.43	132.00	107.57	-1,340.67	-9,243.88	9,412.49	9,264.07	148.42	63.417	
5,600.00	5,593.67	5,574.89	5,572.87	16.73	135.12	107.60	-1,339.90	-9,243.88	9,413.93	9,262.08	151.84	61.997	
5,700.00	5,693.54	5,685.23	5,683.06	17.03	139.03	107.63	-1,340.67	-9,243.88	9,415.54	9,259.48	156.06	60.333	
5,800.00	5,793.42	5,764.57	5,762.35	17.33	141.89	107.65	-1,340.30	-9,243.88	9,417.04	9,257.82	159.22	59.145	
5,900.00	5,893.29	5,883.13	5,880.75	17.63	146.07	107.69	-1,339.55	-9,243.88	9,418.46	9,254.76	163.70	57.535	
6,000.00	5,993.16	5,985.23	5,982.68	17.93	149.66	107.71	-1,340.67	-9,243.88	9,420.12	9,252.54	167.58	56.212	
6,100.00	6,093.04	6,077.95	6,075.37	18.23	152.92	107.75	-1,339.85	-9,243.88	9,421.56	9,250.42	171.15	55.049	
6,200.00	6,192.91	6,170.00	6,167.24	18.53	156.20	107.77	-1,340.67	-9,243.88	9,423.20	9,248.48	174.73	53.931 ES	
6,300.00	6,292.78	6,170.00	6,167.24	18.83	156.20	107.77	-1,340.67	-9,243.88	9,425.43	9,250.41	175.02	53.855	
6,400.00	6,392.66	6,170.00	6,167.24	19.13	156.20	107.77	-1,340.67	-9,243.88	9,428.72	9,253.43	175.29	53.790	
6,500.00	6,492.53	6,170.00	6,167.24	19.43	156.20	107.77	-1,340.67	-9,243.88	9,433.07	9,257.52	175.54	53.737	
6,551.20	6,543.67	6,170.00	6,167.24	19.58	156.20	107.77	-1,340.67	-9,243.88	9,435.70	9,260.04	175.67	53.714	
6,600.00	6,592.30	6,170.00	6,167.24	19.73	156.20	149.69	-1,340.67	-9,243.88	9,440.52	9,264.74	175.78	53.706 SF	
6,650.00	6,641.67	6,170.00	6,167.24	19.88	156.20	159.53	-1,340.67	-9,243.88	9,449.95	9,274.06	175.89	53.725	
6,700.00	6,690.21	6,170.00	6,167.24	20.03	156.20	163.36	-1,340.67	-9,243.88	9,463.84	9,287.84	176.00	53.771	
6,750.00	6,737.54	6,170.00	6,167.24	20.18	156.20	165.24	-1,340.67	-9,243.88	9,482.06	9,305.95	176.11	53.841	
6,800.00	6,783.30	6,170.00	6,167.24	20.33	156.20	166.21	-1,340.67	-9,243.88	9,504.45	9,328.23	176.22	53.936	
6,850.00	6,827.15	6,170.00	6,167.24	20.48	156.20	166.65	-1,340.67	-9,243.88	9,530.81	9,354.48	176.32	54.053	
6,900.00	6,868.74	6,170.00	6,167.24	20.63	156.20	166.71	-1,340.67	-9,243.88	9,560.90	9,384.47	176.43	54.191	
6,950.00	6,907.77	6,170.00	6,167.24	20.78	156.20	166.44	-1,340.67	-9,243.88	9,594.47	9,417.93	176.54	54.348	
7,000.00	6,943.94	6,170.00	6,167.24	20.93	156.20	165.84	-1,340.67	-9,243.88	9,631.23	9,454.58	176.65	54.522	
7,050.00	6,976.97	6,170.00	6,167.24	21.08	156.20	164.85	-1,340.67	-9,243.88	9,670.85	9,494.09	176.76	54.712	
7,100.00	7,006.62	6,170.00	6,167.24	21.23	156.20	163.34	-1,340.67	-9,243.88	9,713.01	9,536.13	176.88	54.914	
7,150.00	7,032.64	6,170.00	6,167.24	21.38	156.20	161.06	-1,340.67	-9,243.88	9,757.35	9,580.35	177.00	55.128	
7,200.00	7,054.86	6,170.00	6,167.24	21.53	156.20	157.51	-1,340.67	-9,243.88	9,803.51	9,626.39	177.12	55.349	
7,250.00	7,073.09	6,170.00	6,167.24	21.68	156.20	151.60	-1,340.67	-9,243.88	9,851.11	9,673.86	177.25	55.577	
7,300.00	7,087.20	6,170.00	6,167.24	21.83	156.20	140.65	-1,340.67	-9,243.88	9,899.78	9,722.39	177.39	55.808	
7,350.00	7,097.08	6,170.00	6,167.24	21.98	156.20	117.87	-1,340.67	-9,243.88	9,949.13	9,771.60	177.53	56.041	
7,400.00	7,102.66	6,170.00	6,167.24	22.13	156.20	77.55	-1,340.67	-9,243.88	9,998.78	9,821.10	177.68	56.274	
7,438.94	7,104.00	6,170.00	6,167.24	22.25	156.20	49.82	-1,340.67	-9,243.88	10,037.40	9,859.60	177.80	56.453	
7,500.00	7,104.02	6,170.00	6,167.24	22.43	156.20	49.82	-1,340.67	-9,243.88	10,097.84	9,919.85	177.99	56.732	
7,600.00	7,104.06	6,170.00	6,167.24	22.74	156.20	49.82	-1,340.67	-9,243.88	10,196.85	10,018.54	178.31	57.187	
7,700.00	7,104.10	6,170.00	6,167.24	23.04	156.20	49.82	-1,340.67	-9,243.88	10,295.87	10,117.25	178.62	57.642	
7,800.00	7,104.14	6,170.00	6,167.24	23.34	156.20	49.82	-1,340.67	-9,243.88	10,394.91	10,215.98	178.93	58.095	
7,900.00	7,104.18	6,170.00	6,167.24	23.64	156.20	49.82	-1,340.67	-9,243.88	10,493.97	10,314.73	179.24	58.546	
8,000.00	7,104.22	6,170.00	6,167.24	23.94	156.20	49.82	-1,340.67	-9,243.88	10,593.05	10,413.49	179.55	58.996	
8,100.00	7,104.26	6,170.00	6,167.24	24.24	156.20	49.82	-1,340.67	-9,243.88	10,692.14	10,512.27	179.87	59.445	
8,200.00	7,104.30	6,170.00	6,167.24	24.54	156.20	49.82	-1,340.67	-9,243.88	10,791.25	10,611.07	180.18	59.892	
8,300.00	7,104.34	6,170.00	6,167.24	24.84	156.20	49.82	-1,340.67	-9,243.88	10,890.38	10,709.89	180.49	60.338	
8,400.00	7,104.38	6,170.00	6,167.24	25.14	156.20	49.82	-1,340.67	-9,243.88	10,989.52	10,808.72	180.80	60.783	
8,500.00	7,104.42	6,170.00	6,167.24	25.44	156.20	49.82	-1,340.67	-9,243.88	11,088.68	10,907.57	181.11	61.227	
8,600.00	7,104.45	6,170.00	6,167.24	25.74	156.20	49.82	-1,340.67	-9,243.88	11,187.85	11,006.43	181.42	61.669	
8,700.00	7,104.49	6,170.00	6,167.24	26.04	156.20	49.82	-1,340.67	-9,243.88	11,287.04	11,105.31	181.73	62.109	
8,800.00	7,104.53	6,170.00	6,167.24	26.34	156.20	49.82	-1,340.67	-9,243.88	11,386.24	11,204.20	182.04	62.549	
8,900.00	7,104.57	6,170.00	6,167.24	26.64	156.20	49.82	-1,340.67	-9,243.88	11,485.45	11,303.11	182.35	62.987	
9,000.00	7,104.61	6,170.00	6,167.24	26.95	156.20	49.82	-1,340.67	-9,243.88	11,584.68	11,402.03	182.66	63.423	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	6,170.00	6,167.24	27.25	156.20	49.82	-1,340.67	-9,243.88	11,683.93	11,500.96	182.97	63.859	
9,200.00	7,104.69	6,170.00	6,167.24	27.55	156.20	49.82	-1,340.67	-9,243.88	11,783.18	11,599.91	183.27	64.293	
9,300.00	7,104.73	6,170.00	6,167.24	27.85	156.20	49.82	-1,340.67	-9,243.88	11,882.45	11,698.87	183.58	64.725	
9,400.00	7,104.77	6,170.00	6,167.24	28.15	156.20	49.82	-1,340.67	-9,243.88	11,981.73	11,797.84	183.89	65.157	
9,500.00	7,104.81	6,170.00	6,167.24	28.45	156.20	49.82	-1,340.67	-9,243.88	12,081.02	11,896.82	184.20	65.587	
9,600.00	7,104.85	6,170.00	6,167.24	28.75	156.20	49.82	-1,340.67	-9,243.88	12,180.32	11,995.82	184.51	66.016	
9,700.00	7,104.89	6,170.00	6,167.24	29.05	156.20	49.82	-1,340.67	-9,243.88	12,279.64	12,094.82	184.81	66.443	
9,800.00	7,104.92	6,170.00	6,167.24	29.35	156.20	49.82	-1,340.67	-9,243.88	12,378.96	12,193.84	185.12	66.870	
9,900.00	7,104.96	6,170.00	6,167.24	29.65	156.20	49.82	-1,340.67	-9,243.88	12,478.30	12,292.87	185.43	67.294	
10,000.00	7,105.00	6,170.00	6,167.24	29.95	156.20	49.82	-1,340.67	-9,243.88	12,577.65	12,391.91	185.74	67.718	
10,100.00	7,105.04	6,170.00	6,167.24	30.25	156.20	49.82	-1,340.67	-9,243.88	12,677.00	12,490.96	186.04	68.140	
10,200.00	7,105.08	6,170.00	6,167.24	30.55	156.20	49.82	-1,340.67	-9,243.88	12,776.37	12,590.02	186.35	68.561	
10,300.00	7,105.12	6,170.00	6,167.24	30.85	156.20	49.82	-1,340.67	-9,243.88	12,875.75	12,689.09	186.66	68.981	
10,400.00	7,105.16	6,170.00	6,167.24	31.15	156.20	49.82	-1,340.67	-9,243.88	12,975.13	12,788.17	186.96	69.400	
10,500.00	7,105.20	6,170.00	6,167.24	31.45	156.20	49.82	-1,340.67	-9,243.88	13,074.53	12,887.26	187.27	69.817	
10,600.00	7,105.24	6,170.00	6,167.24	31.75	156.20	49.82	-1,340.67	-9,243.88	13,173.93	12,986.36	187.57	70.233	
10,700.00	7,105.28	6,170.00	6,167.24	32.05	156.20	49.82	-1,340.67	-9,243.88	13,273.35	13,085.47	187.88	70.648	
10,800.00	7,105.32	6,170.00	6,167.24	32.35	156.20	49.82	-1,340.67	-9,243.88	13,372.77	13,184.58	188.19	71.061	
10,900.00	7,105.36	6,170.00	6,167.24	32.66	156.20	49.82	-1,340.67	-9,243.88	13,472.20	13,283.71	188.49	71.473	
11,000.00	7,105.39	6,170.00	6,167.24	32.96	156.20	49.82	-1,340.67	-9,243.88	13,571.64	13,382.84	188.80	71.884	
11,100.00	7,105.43	6,170.00	6,167.24	33.26	156.20	49.82	-1,340.67	-9,243.88	13,671.09	13,481.98	189.10	72.294	
11,200.00	7,105.47	6,170.00	6,167.24	33.56	156.20	49.82	-1,340.67	-9,243.88	13,770.54	13,581.14	189.41	72.703	
11,300.00	7,105.51	6,170.00	6,167.24	33.86	156.20	49.82	-1,340.67	-9,243.88	13,870.01	13,680.29	189.71	73.110	
11,400.00	7,105.55	6,170.00	6,167.24	34.16	156.20	49.82	-1,340.67	-9,243.88	13,969.48	13,779.46	190.02	73.516	
11,500.00	7,105.59	6,170.00	6,167.24	34.46	156.20	49.82	-1,340.67	-9,243.88	14,068.96	13,878.63	190.32	73.921	
11,600.00	7,105.63	6,170.00	6,167.24	34.76	156.20	49.82	-1,340.67	-9,243.88	14,168.44	13,977.81	190.63	74.324	
11,700.00	7,105.67	6,170.00	6,167.24	35.06	156.20	49.82	-1,340.67	-9,243.88	14,267.94	14,077.00	190.93	74.727	
11,800.00	7,105.71	6,170.00	6,167.24	35.36	156.20	49.82	-1,340.67	-9,243.88	14,367.44	14,176.20	191.24	75.128	
11,900.00	7,105.75	6,170.00	6,167.24	35.66	156.20	49.82	-1,340.67	-9,243.88	14,466.94	14,275.40	191.54	75.528	
12,000.00	7,105.79	6,170.00	6,167.24	35.96	156.20	49.82	-1,340.67	-9,243.88	14,566.46	14,374.61	191.85	75.927	
12,100.00	7,105.83	6,170.00	6,167.24	36.26	156.20	49.82	-1,340.67	-9,243.88	14,665.98	14,473.83	192.15	76.324	
12,200.00	7,105.86	6,170.00	6,167.24	36.56	156.20	49.82	-1,340.67	-9,243.88	14,765.51	14,573.05	192.46	76.721	
12,300.00	7,105.90	6,170.00	6,167.24	36.86	156.20	49.82	-1,340.67	-9,243.88	14,865.04	14,672.28	192.76	77.116	
12,400.00	7,105.94	6,170.00	6,167.24	37.16	156.20	49.82	-1,340.67	-9,243.88	14,964.58	14,771.51	193.07	77.510	
12,500.00	7,105.98	6,170.00	6,167.24	37.46	156.20	49.82	-1,340.67	-9,243.88	15,064.12	14,870.75	193.37	77.903	
12,600.00	7,106.02	6,170.00	6,167.24	37.76	156.20	49.82	-1,340.67	-9,243.88	15,163.68	14,970.00	193.67	78.295	
12,700.00	7,106.06	6,170.00	6,167.24	38.06	156.20	49.82	-1,340.67	-9,243.88	15,263.23	15,069.26	193.98	78.685	
12,800.00	7,106.10	6,170.00	6,167.24	38.36	156.20	49.82	-1,340.67	-9,243.88	15,362.80	15,168.51	194.28	79.075	
12,900.00	7,106.14	6,170.00	6,167.24	38.66	156.20	49.82	-1,340.67	-9,243.88	15,462.37	15,267.78	194.59	79.463	
13,000.00	7,106.18	6,170.00	6,167.24	38.96	156.20	49.82	-1,340.67	-9,243.88	15,561.94	15,367.05	194.89	79.850	
13,100.00	7,106.22	6,170.00	6,167.24	39.26	156.20	49.82	-1,340.67	-9,243.88	15,661.52	15,466.33	195.19	80.236	
13,200.00	7,106.26	6,170.00	6,167.24	39.56	156.20	49.82	-1,340.67	-9,243.88	15,761.11	15,565.61	195.50	80.621	
13,300.00	7,106.30	6,170.00	6,167.24	39.86	156.20	49.82	-1,340.67	-9,243.88	15,860.70	15,664.89	195.80	81.004	
13,400.00	7,106.33	6,170.00	6,167.24	40.16	156.20	49.82	-1,340.67	-9,243.88	15,960.29	15,764.19	196.10	81.387	
13,500.00	7,106.37	6,170.00	6,167.24	40.46	156.20	49.82	-1,340.67	-9,243.88	16,059.89	15,863.48	196.41	81.768	
13,600.00	7,106.41	6,170.00	6,167.24	40.76	156.20	49.82	-1,340.67	-9,243.88	16,159.50	15,962.79	196.71	82.148	
13,700.00	7,106.45	6,170.00	6,167.24	41.06	156.20	49.82	-1,340.67	-9,243.88	16,259.11	16,062.09	197.01	82.527	
13,800.00	7,106.49	6,170.00	6,167.24	41.36	156.20	49.82	-1,340.67	-9,243.88	16,358.72	16,161.40	197.32	82.905	
13,900.00	7,106.53	6,170.00	6,167.24	41.67	156.20	49.82	-1,340.67	-9,243.88	16,458.34	16,260.72	197.62	83.282	
14,000.00	7,106.57	6,170.00	6,167.24	41.97	156.20	49.82	-1,340.67	-9,243.88	16,557.97	16,360.04	197.92	83.658	
14,100.00	7,106.61	6,170.00	6,167.24	42.27	156.20	49.82	-1,340.67	-9,243.88	16,657.60	16,459.37	198.23	84.033	
14,200.00	7,106.65	6,170.00	6,167.24	42.57	156.20	49.82	-1,340.67	-9,243.88	16,757.23	16,558.70	198.53	84.406	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	6,170.00	6,167.24	42.87	156.20	49.82	-1,340.67	-9,243.88	16,856.87	16,658.03	198.83	84.779	
14,400.00	7,106.73	6,170.00	6,167.24	43.17	156.20	49.82	-1,340.67	-9,243.88	16,956.51	16,757.37	199.14	85.150	
14,500.00	7,106.76	6,170.00	6,167.24	43.47	156.20	49.82	-1,340.67	-9,243.88	17,056.15	16,856.72	199.44	85.521	
14,600.00	7,106.80	6,170.00	6,167.24	43.77	156.20	49.82	-1,340.67	-9,243.88	17,155.80	16,956.06	199.74	85.890	
14,700.00	7,106.84	6,170.00	6,167.24	44.07	156.20	49.82	-1,340.67	-9,243.88	17,255.46	17,055.41	200.04	86.258	
14,800.00	7,106.88	6,170.00	6,167.24	44.37	156.20	49.82	-1,340.67	-9,243.88	17,355.12	17,154.77	200.35	86.625	
14,900.00	7,106.92	6,170.00	6,167.24	44.67	156.20	49.82	-1,340.67	-9,243.88	17,454.78	17,254.13	200.65	86.991	
15,000.00	7,106.96	6,170.00	6,167.24	44.97	156.20	49.82	-1,340.67	-9,243.88	17,554.45	17,353.49	200.95	87.356	
15,100.00	7,107.00	6,170.00	6,167.24	45.27	156.20	49.82	-1,340.67	-9,243.88	17,654.11	17,452.86	201.26	87.720	
15,200.00	7,107.04	6,170.00	6,167.24	45.57	156.20	49.82	-1,340.67	-9,243.88	17,753.79	17,552.23	201.56	88.083	
15,300.00	7,107.08	6,170.00	6,167.24	45.87	156.20	49.82	-1,340.67	-9,243.88	17,853.47	17,651.60	201.86	88.445	
15,400.00	7,107.12	6,170.00	6,167.24	46.17	156.20	49.82	-1,340.67	-9,243.88	17,953.15	17,750.98	202.16	88.805	
15,500.00	7,107.16	6,170.00	6,167.24	46.47	156.20	49.82	-1,340.67	-9,243.88	18,052.83	17,850.36	202.47	89.165	
15,600.00	7,107.20	6,170.00	6,167.24	46.77	156.20	49.82	-1,340.67	-9,243.88	18,152.52	17,949.75	202.77	89.524	
15,700.00	7,107.23	6,170.00	6,167.24	47.07	156.20	49.82	-1,340.67	-9,243.88	18,252.21	18,049.14	203.07	89.881	
15,800.00	7,107.27	6,170.00	6,167.24	47.37	156.20	49.82	-1,340.67	-9,243.88	18,351.90	18,148.53	203.37	90.238	
15,900.00	7,107.31	6,170.00	6,167.24	47.67	156.20	49.82	-1,340.67	-9,243.88	18,451.60	18,247.93	203.67	90.593	
16,000.00	7,107.35	6,170.00	6,167.24	47.97	156.20	49.82	-1,340.67	-9,243.88	18,551.30	18,347.33	203.98	90.948	
16,100.00	7,107.39	6,170.00	6,167.24	48.27	156.20	49.82	-1,340.67	-9,243.88	18,651.01	18,446.73	204.28	91.301	
16,200.00	7,107.43	6,170.00	6,167.24	48.57	156.20	49.82	-1,340.67	-9,243.88	18,750.71	18,546.13	204.58	91.654	
16,300.00	7,107.47	6,170.00	6,167.24	48.87	156.20	49.82	-1,340.67	-9,243.88	18,850.42	18,645.54	204.88	92.005	
16,400.00	7,107.51	6,170.00	6,167.24	49.17	156.20	49.82	-1,340.67	-9,243.88	18,950.14	18,744.95	205.19	92.356	
16,500.00	7,107.55	6,170.00	6,167.24	49.47	156.20	49.82	-1,340.67	-9,243.88	19,049.85	18,844.37	205.49	92.705	
16,600.00	7,107.59	6,170.00	6,167.24	49.77	156.20	49.82	-1,340.67	-9,243.88	19,149.57	18,943.78	205.79	93.054	
16,700.00	7,107.63	6,170.00	6,167.24	50.07	156.20	49.82	-1,340.67	-9,243.88	19,249.30	19,043.20	206.09	93.401	
16,800.00	7,107.67	6,170.00	6,167.24	50.37	156.20	49.82	-1,340.67	-9,243.88	19,349.02	19,142.63	206.39	93.748	
16,900.00	7,107.70	6,170.00	6,167.24	50.67	156.20	49.82	-1,340.67	-9,243.88	19,448.75	19,242.05	206.70	94.094	
17,000.00	7,107.74	6,170.00	6,167.24	50.97	156.20	49.82	-1,340.67	-9,243.88	19,548.48	19,341.48	207.00	94.438	
17,100.00	7,107.78	6,170.00	6,167.24	51.27	156.20	49.82	-1,340.67	-9,243.88	19,648.21	19,440.91	207.30	94.782	
17,200.00	7,107.82	6,170.00	6,167.24	51.57	156.20	49.82	-1,340.67	-9,243.88	19,747.95	19,540.35	207.60	95.124	
17,300.00	7,107.86	6,170.00	6,167.24	51.87	156.20	49.82	-1,340.67	-9,243.88	19,847.69	19,639.79	207.90	95.466	
17,400.00	7,107.90	6,170.00	6,167.24	52.17	156.20	49.82	-1,340.67	-9,243.88	19,947.43	19,739.23	208.21	95.807	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-96.46	-817.67	-7,225.84	7,272.16				
100.00	100.00	45.51	45.51	0.23	0.42	-96.46	-817.67	-7,225.84	7,271.96	7,271.31	0.65	N/A	
200.00	200.00	145.51	145.51	0.53	1.35	-96.46	-817.67	-7,225.84	7,271.96	7,270.09	1.87	3,885.558	
300.00	300.00	340.48	245.51	0.83	3.61	-96.46	-817.67	-7,225.84	7,271.96	7,267.52	4.44	1,638.501	
400.00	400.00	345.52	345.51	1.13	3.71	-96.46	-817.67	-7,225.84	7,271.96	7,267.13	4.83	1,504.347	
500.00	500.00	445.52	445.51	1.43	5.61	-96.46	-817.67	-7,225.84	7,271.96	7,264.92	7.04	1,033.406	CC
600.00	599.98	545.43	545.42	1.73	7.51	107.94	-817.13	-7,225.84	7,272.44	7,263.20	9.24	787.225	
644.12	644.06	588.88	588.88	1.86	8.34	107.95	-817.15	-7,225.84	7,273.02	7,262.82	10.20	713.225	
700.00	699.87	643.91	643.90	2.03	9.39	107.97	-817.22	-7,225.84	7,273.89	7,262.48	11.41	637.385	
800.00	799.74	742.39	742.38	2.33	11.26	108.00	-817.49	-7,225.84	7,275.48	7,261.89	13.59	535.507	
900.00	899.62	845.16	845.13	2.63	13.29	108.04	-817.67	-7,225.84	7,277.06	7,261.14	15.92	457.231	
1,000.00	999.49	945.04	945.00	2.93	15.32	108.08	-817.67	-7,225.84	7,278.62	7,260.37	18.24	398.944	
1,100.00	1,099.36	1,044.69	1,044.66	3.23	17.34	108.12	-816.86	-7,225.84	7,280.09	7,259.52	20.57	353.925	
1,200.00	1,199.24	1,142.53	1,142.48	3.53	19.33	108.16	-817.02	-7,225.84	7,281.68	7,258.82	22.86	318.571	
1,300.00	1,299.11	1,240.39	1,240.34	3.83	21.32	108.19	-817.42	-7,225.84	7,283.29	7,258.15	25.15	289.644	
1,400.00	1,398.98	1,344.59	1,344.50	4.13	23.49	108.23	-817.67	-7,225.84	7,284.89	7,257.28	27.61	263.806	
1,500.00	1,498.86	1,444.46	1,444.37	4.43	25.60	108.26	-817.67	-7,225.84	7,286.47	7,256.44	30.03	242.679	
1,600.00	1,598.73	1,543.99	1,543.88	4.73	27.70	108.31	-816.58	-7,225.84	7,287.93	7,255.50	32.43	224.740	
1,700.00	1,698.60	1,641.27	1,641.17	5.03	29.76	108.34	-816.79	-7,225.84	7,289.54	7,254.75	34.78	209.565	
1,800.00	1,798.48	1,738.60	1,738.49	5.33	31.81	108.38	-817.33	-7,225.84	7,291.18	7,254.04	37.14	196.312	
1,900.00	1,898.35	1,844.03	1,843.86	5.63	34.05	108.41	-817.67	-7,225.84	7,292.80	7,253.13	39.67	183.820	
2,000.00	1,998.22	1,943.90	1,943.74	5.93	36.17	108.45	-817.67	-7,225.84	7,294.39	7,252.30	42.09	173.298	
2,100.00	2,098.10	2,043.67	2,043.49	6.23	38.28	108.50	-816.54	-7,225.84	7,295.87	7,251.37	44.51	163.925	
2,200.00	2,197.97	2,141.12	2,140.93	6.53	40.35	108.53	-816.71	-7,225.84	7,297.49	7,250.62	46.87	155.684	
2,300.00	2,297.84	2,238.59	2,238.41	6.83	42.41	108.56	-817.21	-7,225.84	7,299.14	7,249.90	49.24	148.233	
2,400.00	2,397.72	2,343.48	2,343.23	7.13	44.64	108.60	-817.67	-7,225.84	7,300.79	7,249.03	51.77	141.033	
2,500.00	2,497.59	2,443.35	2,443.10	7.43	46.76	108.64	-817.67	-7,225.84	7,302.40	7,248.21	54.19	134.762	
2,600.00	2,597.46	2,543.22	2,542.98	7.73	48.88	108.68	-817.67	-7,225.84	7,304.01	7,247.40	56.61	129.027	
2,700.00	2,697.34	2,640.81	2,640.55	8.03	50.95	108.72	-816.72	-7,225.84	7,305.53	7,246.55	58.98	123.862	
2,800.00	2,797.21	2,738.29	2,738.03	8.33	53.02	108.75	-817.20	-7,225.84	7,307.20	7,245.84	61.35	119.104	
2,900.00	2,897.09	2,842.92	2,842.60	8.63	55.28	108.79	-817.67	-7,225.84	7,308.86	7,244.95	63.91	114.364	
3,000.00	2,996.96	2,942.79	2,942.47	8.93	57.49	108.82	-817.67	-7,225.84	7,310.48	7,244.07	66.41	110.076	
3,100.00	3,096.83	3,042.67	3,042.35	9.23	59.69	108.86	-817.67	-7,225.84	7,312.11	7,243.19	68.92	106.101	
3,200.00	3,196.71	3,140.22	3,139.89	9.53	61.84	108.91	-816.75	-7,225.84	7,313.65	7,242.28	71.37	102.476	
3,300.00	3,296.58	3,237.73	3,237.39	9.83	63.99	108.94	-817.25	-7,225.84	7,315.33	7,241.51	73.82	99.095	
3,400.00	3,396.45	3,342.38	3,341.97	10.13	66.31	108.97	-817.67	-7,225.84	7,317.01	7,240.57	76.43	95.732	
3,500.00	3,496.33	3,442.26	3,441.84	10.43	68.51	109.01	-817.67	-7,225.84	7,318.64	7,239.70	78.94	92.712	
3,600.00	3,596.20	3,542.13	3,541.71	10.73	70.72	109.05	-817.67	-7,225.84	7,320.28	7,238.84	81.45	89.878	
3,700.00	3,696.07	3,639.22	3,638.78	11.03	72.87	109.09	-816.50	-7,225.84	7,321.82	7,237.93	83.89	87.276	
3,800.00	3,795.95	3,736.33	3,735.88	11.33	75.01	109.12	-817.10	-7,225.84	7,323.53	7,237.19	86.34	84.823	
3,900.00	3,895.82	3,841.85	3,841.33	11.63	77.23	109.16	-817.67	-7,225.84	7,325.23	7,236.37	88.85	82.440	
4,000.00	3,995.69	3,941.72	3,941.21	11.93	79.19	109.20	-817.67	-7,225.84	7,326.88	7,235.77	91.11	80.415	
4,100.00	4,095.57	4,041.60	4,041.08	12.23	81.15	109.23	-817.67	-7,225.84	7,328.54	7,235.17	93.37	78.488	
4,200.00	4,195.44	4,139.26	4,138.73	12.53	83.06	109.28	-816.75	-7,225.84	7,330.12	7,234.53	95.59	76.685	
4,300.00	4,295.31	4,236.94	4,236.40	12.83	84.98	109.31	-817.25	-7,225.84	7,331.83	7,234.02	97.80	74.966	
4,400.00	4,395.19	4,341.26	4,340.70	13.13	87.11	109.34	-817.67	-7,225.84	7,333.53	7,233.29	100.23	73.165	
4,500.00	4,495.06	4,441.13	4,440.57	13.43	89.23	109.38	-817.67	-7,225.84	7,335.20	7,232.54	102.66	71.453	
4,600.00	4,594.93	4,541.01	4,540.45	13.73	91.36	109.42	-817.67	-7,225.84	7,336.87	7,231.79	105.08	69.821	
4,700.00	4,694.81	4,640.07	4,639.51	14.03	93.46	109.46	-817.13	-7,225.84	7,338.50	7,231.01	107.49	68.272	
4,800.00	4,794.68	4,738.95	4,738.39	14.33	95.57	109.49	-817.34	-7,225.84	7,340.19	7,230.30	109.89	66.795	
4,900.00	4,894.55	4,840.72	4,840.07	14.63	97.78	109.53	-817.67	-7,225.84	7,341.90	7,229.50	112.40	65.318	
5,000.00	4,994.43	4,940.59	4,939.94	14.93	100.33	109.57	-817.67	-7,225.84	7,343.59	7,228.34	115.25	63.718	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,040.46	5,039.82	15.23	102.88	109.60	-817.67	-7,225.84	7,345.28	7,227.17	118.10	62.195	
5,200.00	5,194.18	5,138.06	5,137.39	15.53	105.37	109.65	-816.24	-7,225.84	7,346.85	7,225.96	120.89	60.772	
5,300.00	5,294.05	5,234.82	5,234.13	15.83	107.84	109.68	-816.86	-7,225.84	7,348.60	7,224.93	123.66	59.424	
5,400.00	5,393.92	5,340.28	5,339.44	16.13	110.65	109.71	-817.67	-7,225.84	7,350.36	7,223.58	126.78	57.978	
5,500.00	5,493.80	5,440.15	5,439.31	16.43	113.58	109.75	-817.67	-7,225.84	7,352.06	7,222.05	130.01	56.550	
5,600.00	5,593.67	5,540.02	5,539.18	16.73	116.51	109.79	-817.67	-7,225.84	7,353.76	7,220.52	133.24	55.191	
5,700.00	5,693.54	5,636.91	5,636.02	17.03	119.36	109.84	-816.01	-7,225.84	7,355.33	7,218.95	136.38	53.931	
5,800.00	5,793.42	5,733.40	5,732.50	17.33	122.19	109.87	-816.80	-7,225.84	7,357.11	7,217.59	139.52	52.733	
5,900.00	5,893.29	5,839.99	5,838.80	17.63	125.45	109.90	-817.67	-7,225.84	7,358.89	7,215.81	143.08	51.432	
6,000.00	5,993.16	5,939.86	5,938.68	17.93	128.71	109.93	-817.67	-7,225.84	7,360.60	7,213.96	146.64	50.196	
6,100.00	6,093.04	6,039.73	6,038.55	18.23	131.97	109.97	-817.67	-7,225.84	7,362.32	7,212.12	150.19	49.019	
6,200.00	6,192.91	6,139.61	6,138.42	18.53	135.23	110.01	-817.67	-7,225.84	7,364.04	7,210.29	153.75	47.896	
6,300.00	6,292.78	6,239.48	6,238.30	18.83	138.48	110.04	-817.67	-7,225.84	7,365.76	7,208.45	157.31	46.823	ES, SF
6,400.00	6,392.66	6,210.00	6,208.43	19.13	137.52	110.03	-817.67	-7,225.84	7,368.63	7,212.00	156.63	47.046	
6,500.00	6,492.53	6,210.00	6,208.43	19.43	137.52	110.03	-817.67	-7,225.84	7,372.80	7,215.91	156.88	46.995	
6,551.20	6,543.67	6,210.00	6,208.43	19.58	137.52	110.03	-817.67	-7,225.84	7,375.45	7,218.45	157.00	46.976	
6,600.00	6,592.30	6,210.00	6,208.43	19.73	137.52	151.97	-817.67	-7,225.84	7,380.38	7,223.26	157.11	46.974	
6,650.00	6,641.67	6,210.00	6,208.43	19.88	137.52	161.85	-817.67	-7,225.84	7,389.99	7,232.77	157.22	47.003	
6,700.00	6,690.21	6,210.00	6,208.43	20.03	137.52	165.74	-817.67	-7,225.84	7,404.15	7,246.83	157.33	47.063	
6,750.00	6,737.54	6,210.00	6,208.43	20.18	137.52	167.69	-817.67	-7,225.84	7,422.71	7,265.29	157.43	47.151	
6,800.00	6,783.30	6,210.00	6,208.43	20.33	137.52	168.77	-817.67	-7,225.84	7,445.51	7,287.99	157.52	47.266	
6,850.00	6,827.15	6,210.00	6,208.43	20.48	137.52	169.34	-817.67	-7,225.84	7,472.32	7,314.71	157.62	47.408	
6,900.00	6,868.74	6,210.00	6,208.43	20.63	137.52	169.57	-817.67	-7,225.84	7,502.91	7,345.20	157.71	47.573	
6,950.00	6,907.77	6,210.00	6,208.43	20.78	137.52	169.53	-817.67	-7,225.84	7,537.00	7,379.19	157.81	47.760	
7,000.00	6,943.94	6,210.00	6,208.43	20.93	137.52	169.21	-817.67	-7,225.84	7,574.28	7,416.37	157.91	47.966	
7,050.00	6,976.97	6,210.00	6,208.43	21.08	137.52	168.59	-817.67	-7,225.84	7,614.42	7,456.41	158.01	48.189	
7,100.00	7,006.62	6,210.00	6,208.43	21.23	137.52	167.56	-817.67	-7,225.84	7,657.08	7,498.96	158.12	48.426	
7,150.00	7,032.64	6,210.00	6,208.43	21.38	137.52	165.93	-817.67	-7,225.84	7,701.89	7,543.66	158.23	48.674	
7,200.00	7,054.86	6,210.00	6,208.43	21.53	137.52	163.28	-817.67	-7,225.84	7,748.48	7,590.13	158.35	48.932	
7,250.00	7,073.09	6,210.00	6,208.43	21.68	137.52	158.58	-817.67	-7,225.84	7,796.46	7,637.98	158.48	49.195	
7,300.00	7,087.20	6,210.00	6,208.43	21.83	137.52	148.79	-817.67	-7,225.84	7,845.45	7,686.84	158.61	49.462	
7,350.00	7,097.08	6,210.00	6,208.43	21.98	137.52	122.25	-817.67	-7,225.84	7,895.06	7,736.30	158.76	49.730	
7,400.00	7,102.66	6,210.00	6,208.43	22.13	137.52	62.74	-817.67	-7,225.84	7,944.90	7,785.99	158.91	49.997	
7,438.94	7,104.00	6,210.00	6,208.43	22.25	137.52	33.67	-817.67	-7,225.84	7,983.63	7,824.60	159.03	50.202	
7,500.00	7,104.02	6,210.00	6,208.43	22.43	137.52	33.67	-817.67	-7,225.84	8,044.21	7,884.99	159.22	50.522	
7,600.00	7,104.06	6,210.00	6,208.43	22.74	137.52	33.67	-817.67	-7,225.84	8,143.43	7,983.89	159.54	51.043	
7,700.00	7,104.10	6,210.00	6,208.43	23.04	137.52	33.67	-817.67	-7,225.84	8,242.67	8,082.81	159.86	51.562	
7,800.00	7,104.14	6,210.00	6,208.43	23.34	137.52	33.67	-817.67	-7,225.84	8,341.93	8,181.76	160.18	52.079	
7,900.00	7,104.18	6,210.00	6,208.43	23.64	137.52	33.67	-817.67	-7,225.84	8,441.21	8,280.72	160.49	52.595	
8,000.00	7,104.22	6,210.00	6,208.43	23.94	137.52	33.67	-817.67	-7,225.84	8,540.51	8,379.70	160.81	53.109	
8,100.00	7,104.26	6,210.00	6,208.43	24.24	137.52	33.67	-817.67	-7,225.84	8,639.82	8,478.69	161.13	53.622	
8,200.00	7,104.30	6,210.00	6,208.43	24.54	137.52	33.67	-817.67	-7,225.84	8,739.14	8,577.70	161.44	54.132	
8,300.00	7,104.34	6,210.00	6,208.43	24.84	137.52	33.67	-817.67	-7,225.84	8,838.49	8,676.73	161.75	54.641	
8,400.00	7,104.38	6,210.00	6,208.43	25.14	137.52	33.67	-817.67	-7,225.84	8,937.84	8,775.77	162.07	55.148	
8,500.00	7,104.42	6,210.00	6,208.43	25.44	137.52	33.67	-817.67	-7,225.84	9,037.21	8,874.83	162.38	55.654	
8,600.00	7,104.45	6,210.00	6,208.43	25.74	137.52	33.67	-817.67	-7,225.84	9,136.60	8,973.90	162.70	56.158	
8,700.00	7,104.49	6,210.00	6,208.43	26.04	137.52	33.67	-817.67	-7,225.84	9,235.99	9,072.99	163.01	56.660	
8,800.00	7,104.53	6,210.00	6,208.43	26.34	137.52	33.67	-817.67	-7,225.84	9,335.40	9,172.08	163.32	57.160	
8,900.00	7,104.57	6,210.00	6,208.43	26.64	137.52	33.67	-817.67	-7,225.84	9,434.83	9,271.19	163.63	57.659	
9,000.00	7,104.61	6,210.00	6,208.43	26.95	137.52	33.67	-817.67	-7,225.84	9,534.26	9,370.32	163.94	58.156	
9,100.00	7,104.65	6,210.00	6,208.43	27.25	137.52	33.67	-817.67	-7,225.84	9,633.71	9,469.45	164.26	58.651	
9,200.00	7,104.69	6,210.00	6,208.43	27.55	137.52	33.67	-817.67	-7,225.84	9,733.17	9,568.60	164.57	59.144	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	6,210.00	6,208.43	27.85	137.52	33.67	-817.67	-7,225.84	9,832.63	9,667.76	164.88	59.636	
9,400.00	7,104.77	6,210.00	6,208.43	28.15	137.52	33.67	-817.67	-7,225.84	9,932.11	9,766.93	165.19	60.126	
9,500.00	7,104.81	6,210.00	6,208.43	28.45	137.52	33.67	-817.67	-7,225.84	10,031.60	9,866.11	165.50	60.615	
9,600.00	7,104.85	6,210.00	6,208.43	28.75	137.52	33.67	-817.67	-7,225.84	10,131.10	9,965.30	165.81	61.102	
9,700.00	7,104.89	6,210.00	6,208.43	29.05	137.52	33.67	-817.67	-7,225.84	10,230.61	10,064.50	166.12	61.587	
9,800.00	7,104.92	6,210.00	6,208.43	29.35	137.52	33.67	-817.67	-7,225.84	10,330.13	10,163.71	166.43	62.071	
9,900.00	7,104.96	6,210.00	6,208.43	29.65	137.52	33.67	-817.67	-7,225.84	10,429.66	10,262.93	166.73	62.553	
10,000.00	7,105.00	6,210.00	6,208.43	29.95	137.52	33.67	-817.67	-7,225.84	10,529.20	10,362.16	167.04	63.033	
10,100.00	7,105.04	6,210.00	6,208.43	30.25	137.52	33.67	-817.67	-7,225.84	10,628.75	10,461.39	167.35	63.511	
10,200.00	7,105.08	6,210.00	6,208.43	30.55	137.52	33.67	-817.67	-7,225.84	10,728.30	10,560.64	167.66	63.989	
10,300.00	7,105.12	6,210.00	6,208.43	30.85	137.52	33.67	-817.67	-7,225.84	10,827.86	10,659.89	167.97	64.464	
10,400.00	7,105.16	6,210.00	6,208.43	31.15	137.52	33.67	-817.67	-7,225.84	10,927.43	10,759.16	168.28	64.938	
10,500.00	7,105.20	6,210.00	6,208.43	31.45	137.52	33.67	-817.67	-7,225.84	11,027.01	10,858.43	168.58	65.410	
10,600.00	7,105.24	6,210.00	6,208.43	31.75	137.52	33.67	-817.67	-7,225.84	11,126.60	10,957.71	168.89	65.881	
10,700.00	7,105.28	6,210.00	6,208.43	32.05	137.52	33.67	-817.67	-7,225.84	11,226.19	11,056.99	169.20	66.350	
10,800.00	7,105.32	6,210.00	6,208.43	32.35	137.52	33.67	-817.67	-7,225.84	11,325.79	11,156.29	169.50	66.817	
10,900.00	7,105.36	6,210.00	6,208.43	32.66	137.52	33.67	-817.67	-7,225.84	11,425.40	11,255.59	169.81	67.283	
11,000.00	7,105.39	6,210.00	6,208.43	32.96	137.52	33.67	-817.67	-7,225.84	11,525.01	11,354.89	170.12	67.747	
11,100.00	7,105.43	6,210.00	6,208.43	33.26	137.52	33.67	-817.67	-7,225.84	11,624.63	11,454.21	170.42	68.210	
11,200.00	7,105.47	6,210.00	6,208.43	33.56	137.52	33.67	-817.67	-7,225.84	11,724.26	11,553.53	170.73	68.671	
11,300.00	7,105.51	6,210.00	6,208.43	33.86	137.52	33.67	-817.67	-7,225.84	11,823.89	11,652.86	171.04	69.131	
11,400.00	7,105.55	6,210.00	6,208.43	34.16	137.52	33.67	-817.67	-7,225.84	11,923.53	11,752.19	171.34	69.589	
11,500.00	7,105.59	6,210.00	6,208.43	34.46	137.52	33.67	-817.67	-7,225.84	12,023.18	11,851.53	171.65	70.045	
11,600.00	7,105.63	6,210.00	6,208.43	34.76	137.52	33.67	-817.67	-7,225.84	12,122.83	11,950.88	171.95	70.500	
11,700.00	7,105.67	6,210.00	6,208.43	35.06	137.52	33.67	-817.67	-7,225.84	12,222.49	12,050.23	172.26	70.954	
11,800.00	7,105.71	6,210.00	6,208.43	35.36	137.52	33.67	-817.67	-7,225.84	12,322.15	12,149.59	172.57	71.406	
11,900.00	7,105.75	6,210.00	6,208.43	35.66	137.52	33.67	-817.67	-7,225.84	12,421.82	12,248.95	172.87	71.856	
12,000.00	7,105.79	6,210.00	6,208.43	35.96	137.52	33.67	-817.67	-7,225.84	12,521.49	12,348.32	173.18	72.305	
12,100.00	7,105.83	6,210.00	6,208.43	36.26	137.52	33.67	-817.67	-7,225.84	12,621.17	12,447.69	173.48	72.752	
12,200.00	7,105.86	6,210.00	6,208.43	36.56	137.52	33.67	-817.67	-7,225.84	12,720.86	12,547.07	173.79	73.198	
12,300.00	7,105.90	6,210.00	6,208.43	36.86	137.52	33.67	-817.67	-7,225.84	12,820.55	12,646.45	174.09	73.643	
12,400.00	7,105.94	6,210.00	6,208.43	37.16	137.52	33.67	-817.67	-7,225.84	12,920.24	12,745.84	174.40	74.086	
12,500.00	7,105.98	6,210.00	6,208.43	37.46	137.52	33.67	-817.67	-7,225.84	13,019.94	12,845.24	174.70	74.527	
12,600.00	7,106.02	6,210.00	6,208.43	37.76	137.52	33.67	-817.67	-7,225.84	13,119.64	12,944.63	175.00	74.967	
12,700.00	7,106.06	6,210.00	6,208.43	38.06	137.52	33.67	-817.67	-7,225.84	13,219.35	13,044.04	175.31	75.406	
12,800.00	7,106.10	6,210.00	6,208.43	38.36	137.52	33.67	-817.67	-7,225.84	13,319.06	13,143.45	175.61	75.843	
12,900.00	7,106.14	6,210.00	6,208.43	38.66	137.52	33.67	-817.67	-7,225.84	13,418.77	13,242.86	175.92	76.279	
13,000.00	7,106.18	6,210.00	6,208.43	38.96	137.52	33.67	-817.67	-7,225.84	13,518.49	13,342.27	176.22	76.713	
13,100.00	7,106.22	6,210.00	6,208.43	39.26	137.52	33.67	-817.67	-7,225.84	13,618.22	13,441.69	176.53	77.146	
13,200.00	7,106.26	6,210.00	6,208.43	39.56	137.52	33.67	-817.67	-7,225.84	13,717.95	13,541.12	176.83	77.577	
13,300.00	7,106.30	6,210.00	6,208.43	39.86	137.52	33.67	-817.67	-7,225.84	13,817.68	13,640.55	177.13	78.007	
13,400.00	7,106.33	6,210.00	6,208.43	40.16	137.52	33.67	-817.67	-7,225.84	13,917.42	13,739.98	177.44	78.435	
13,500.00	7,106.37	6,210.00	6,208.43	40.46	137.52	33.67	-817.67	-7,225.84	14,017.16	13,839.41	177.74	78.863	
13,600.00	7,106.41	6,210.00	6,208.43	40.76	137.52	33.67	-817.67	-7,225.84	14,116.90	13,938.85	178.05	79.288	
13,700.00	7,106.45	6,210.00	6,208.43	41.06	137.52	33.67	-817.67	-7,225.84	14,216.65	14,038.30	178.35	79.713	
13,800.00	7,106.49	6,210.00	6,208.43	41.36	137.52	33.67	-817.67	-7,225.84	14,316.40	14,137.74	178.65	80.136	
13,900.00	7,106.53	6,210.00	6,208.43	41.67	137.52	33.67	-817.67	-7,225.84	14,416.15	14,237.20	178.96	80.557	
14,000.00	7,106.57	6,210.00	6,208.43	41.97	137.52	33.67	-817.67	-7,225.84	14,515.91	14,336.65	179.26	80.977	
14,100.00	7,106.61	6,210.00	6,208.43	42.27	137.52	33.67	-817.67	-7,225.84	14,615.67	14,436.11	179.56	81.396	
14,200.00	7,106.65	6,210.00	6,208.43	42.57	137.52	33.67	-817.67	-7,225.84	14,715.43	14,535.57	179.87	81.813	
14,300.00	7,106.69	6,210.00	6,208.43	42.87	137.52	33.67	-817.67	-7,225.84	14,815.20	14,635.03	180.17	82.230	
14,400.00	7,106.73	6,210.00	6,208.43	43.17	137.52	33.67	-817.67	-7,225.84	14,914.97	14,734.50	180.47	82.644	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	6,210.00	6,208.43	43.47	137.52	33.67	-817.67	-7,225.84	15,014.74	14,833.97	180.78	83.058	
14,600.00	7,106.80	6,210.00	6,208.43	43.77	137.52	33.67	-817.67	-7,225.84	15,114.52	14,933.44	181.08	83.470	
14,700.00	7,106.84	6,210.00	6,208.43	44.07	137.52	33.67	-817.67	-7,225.84	15,214.30	15,032.92	181.38	83.880	
14,800.00	7,106.88	6,210.00	6,208.43	44.37	137.52	33.67	-817.67	-7,225.84	15,314.08	15,132.40	181.68	84.290	
14,900.00	7,106.92	6,210.00	6,208.43	44.67	137.52	33.67	-817.67	-7,225.84	15,413.87	15,231.88	181.99	84.698	
15,000.00	7,106.96	6,210.00	6,208.43	44.97	137.52	33.67	-817.67	-7,225.84	15,513.65	15,331.37	182.29	85.105	
15,100.00	7,107.00	6,210.00	6,208.43	45.27	137.52	33.67	-817.67	-7,225.84	15,613.45	15,430.85	182.59	85.510	
15,200.00	7,107.04	6,210.00	6,208.43	45.57	137.52	33.67	-817.67	-7,225.84	15,713.24	15,530.34	182.89	85.914	
15,300.00	7,107.08	6,210.00	6,208.43	45.87	137.52	33.67	-817.67	-7,225.84	15,813.03	15,629.84	183.20	86.317	
15,400.00	7,107.12	6,210.00	6,208.43	46.17	137.52	33.67	-817.67	-7,225.84	15,912.83	15,729.33	183.50	86.718	
15,500.00	7,107.16	6,210.00	6,208.43	46.47	137.52	33.67	-817.67	-7,225.84	16,012.63	15,828.83	183.80	87.119	
15,600.00	7,107.20	6,210.00	6,208.43	46.77	137.52	33.67	-817.67	-7,225.84	16,112.44	15,928.33	184.11	87.518	
15,700.00	7,107.23	6,210.00	6,208.43	47.07	137.52	33.67	-817.67	-7,225.84	16,212.24	16,027.84	184.41	87.915	
15,800.00	7,107.27	6,210.00	6,208.43	47.37	137.52	33.67	-817.67	-7,225.84	16,312.05	16,127.34	184.71	88.312	
15,900.00	7,107.31	6,210.00	6,208.43	47.67	137.52	33.67	-817.67	-7,225.84	16,411.86	16,226.85	185.01	88.707	
16,000.00	7,107.35	6,210.00	6,208.43	47.97	137.52	33.67	-817.67	-7,225.84	16,511.67	16,326.36	185.31	89.101	
16,100.00	7,107.39	6,210.00	6,208.43	48.27	137.52	33.67	-817.67	-7,225.84	16,611.49	16,425.87	185.62	89.493	
16,200.00	7,107.43	6,210.00	6,208.43	48.57	137.52	33.67	-817.67	-7,225.84	16,711.31	16,525.39	185.92	89.885	
16,300.00	7,107.47	6,210.00	6,208.43	48.87	137.52	33.67	-817.67	-7,225.84	16,811.13	16,624.90	186.22	90.275	
16,400.00	7,107.51	6,210.00	6,208.43	49.17	137.52	33.67	-817.67	-7,225.84	16,910.95	16,724.42	186.52	90.664	
16,500.00	7,107.55	6,210.00	6,208.43	49.47	137.52	33.67	-817.67	-7,225.84	17,010.77	16,823.95	186.83	91.052	
16,600.00	7,107.59	6,210.00	6,208.43	49.77	137.52	33.67	-817.67	-7,225.84	17,110.60	16,923.47	187.13	91.438	
16,700.00	7,107.63	6,210.00	6,208.43	50.07	137.52	33.67	-817.67	-7,225.84	17,210.42	17,022.99	187.43	91.823	
16,800.00	7,107.67	6,210.00	6,208.43	50.37	137.52	33.67	-817.67	-7,225.84	17,310.25	17,122.52	187.73	92.207	
16,900.00	7,107.70	6,210.00	6,208.43	50.67	137.52	33.67	-817.67	-7,225.84	17,410.09	17,222.05	188.03	92.590	
17,000.00	7,107.74	6,210.00	6,208.43	50.97	137.52	33.67	-817.67	-7,225.84	17,509.92	17,321.58	188.34	92.972	
17,100.00	7,107.78	6,210.00	6,208.43	51.27	137.52	33.67	-817.67	-7,225.84	17,609.75	17,421.12	188.64	93.352	
17,200.00	7,107.82	6,210.00	6,208.43	51.57	137.52	33.67	-817.67	-7,225.84	17,709.59	17,520.65	188.94	93.732	
17,300.00	7,107.86	6,210.00	6,208.43	51.87	137.52	33.67	-817.67	-7,225.84	17,809.43	17,620.19	189.24	94.110	
17,400.00	7,107.90	6,210.00	6,208.43	52.17	137.52	33.67	-817.67	-7,225.84	17,909.27	17,719.73	189.54	94.486	
17,500.00	7,107.94	6,210.00	6,208.43	52.47	137.52	33.67	-817.67	-7,225.84	18,009.11	17,819.27	189.85	94.862	
17,600.00	7,107.98	6,210.00	6,208.43	52.77	137.52	33.67	-817.67	-7,225.84	18,108.96	17,918.81	190.15	95.237	
17,700.00	7,108.02	6,210.00	6,208.43	53.07	137.52	33.67	-817.67	-7,225.84	18,208.81	18,018.36	190.45	95.610	
17,800.00	7,108.06	6,210.00	6,208.43	53.37	137.52	33.67	-817.67	-7,225.84	18,308.65	18,117.90	190.75	95.982	
17,900.00	7,108.10	6,210.00	6,208.43	53.67	137.52	33.67	-817.67	-7,225.84	18,408.50	18,217.45	191.05	96.353	
18,000.00	7,108.14	6,210.00	6,208.43	53.97	137.52	33.67	-817.67	-7,225.84	18,508.35	18,317.00	191.35	96.723	
18,100.00	7,108.17	6,210.00	6,208.43	54.27	137.52	33.67	-817.67	-7,225.84	18,608.21	18,416.55	191.66	97.092	
18,200.00	7,108.21	6,210.00	6,208.43	54.57	137.52	33.67	-817.67	-7,225.84	18,708.06	18,516.10	191.96	97.460	
18,300.00	7,108.25	6,210.00	6,208.43	54.87	137.52	33.67	-817.67	-7,225.84	18,807.92	18,615.66	192.26	97.826	
18,400.00	7,108.29	6,210.00	6,208.43	55.17	137.52	33.67	-817.67	-7,225.84	18,907.77	18,715.21	192.56	98.192	
18,500.00	7,108.33	6,210.00	6,208.43	55.47	137.52	33.67	-817.67	-7,225.84	19,007.63	18,814.77	192.86	98.556	
18,600.00	7,108.37	6,210.00	6,208.43	55.77	137.52	33.67	-817.67	-7,225.84	19,107.49	18,914.33	193.16	98.919	
18,700.00	7,108.41	6,210.00	6,208.43	56.07	137.52	33.67	-817.67	-7,225.84	19,207.35	19,013.89	193.46	99.281	
18,800.00	7,108.45	6,210.00	6,208.43	56.37	137.52	33.67	-817.67	-7,225.84	19,307.22	19,113.45	193.77	99.642	
18,900.00	7,108.49	6,210.00	6,208.43	56.67	137.52	33.67	-817.67	-7,225.84	19,407.08	19,213.02	194.07	100.002	
19,000.00	7,108.53	6,210.00	6,208.43	56.97	137.52	33.67	-817.67	-7,225.84	19,506.95	19,312.58	194.37	100.360	
19,100.00	7,108.57	6,210.00	6,208.43	57.28	137.52	33.67	-817.67	-7,225.84	19,606.82	19,412.15	194.67	100.718	
19,200.00	7,108.61	6,210.00	6,208.43	57.58	137.52	33.67	-817.67	-7,225.84	19,706.68	19,511.71	194.97	101.075	
19,300.00	7,108.64	6,210.00	6,208.43	57.88	137.52	33.67	-817.67	-7,225.84	19,806.55	19,611.28	195.27	101.430	
19,400.00	7,108.68	6,210.00	6,208.43	58.18	137.52	33.67	-817.67	-7,225.84	19,906.43	19,710.85	195.57	101.784	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137B (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-107.15	-2,002.52	-6,487.29	6,790.09				
100.00	100.00	1.49	-1.49	0.23	0.01	-107.15	-2,002.52	-6,487.29	6,789.33	6,789.09	0.24	N/A	
200.00	200.00	98.51	98.51	0.53	0.91	-107.15	-2,002.52	-6,487.29	6,789.33	6,787.89	1.44	4,724.122	
300.00	300.00	198.51	198.51	0.83	1.83	-107.15	-2,002.52	-6,487.29	6,789.33	6,786.67	2.66	2,551.070	
400.00	400.00	301.48	298.51	1.13	2.80	-107.15	-2,002.52	-6,487.29	6,789.33	6,785.41	3.93	1,729.005	
500.00	500.00	398.52	398.51	1.43	4.59	-107.15	-2,002.52	-6,487.29	6,789.33	6,783.31	6.02	1,127.714	CC
600.00	599.98	498.50	498.49	1.73	6.44	97.25	-2,002.52	-6,487.29	6,789.55	6,781.38	8.17	831.177	
644.12	644.06	541.88	541.87	1.86	7.24	97.26	-2,002.04	-6,487.29	6,789.65	6,780.54	9.10	745.875	
700.00	699.87	595.60	595.59	2.03	8.24	97.28	-2,002.08	-6,487.29	6,790.02	6,779.75	10.26	661.561	
800.00	799.74	691.75	691.75	2.33	10.01	97.32	-2,002.31	-6,487.29	6,790.73	6,778.38	12.34	550.255	
900.00	899.62	798.15	798.13	2.63	12.01	97.37	-2,002.52	-6,487.29	6,791.43	6,776.79	14.63	464.079	
1,000.00	999.49	898.02	898.00	2.93	13.91	97.41	-2,002.52	-6,487.29	6,792.08	6,775.24	16.83	403.498	
1,100.00	1,099.36	997.76	997.74	3.23	15.80	97.45	-2,001.99	-6,487.29	6,792.57	6,773.54	19.03	356.954	
1,200.00	1,199.24	1,094.26	1,094.24	3.53	17.64	97.49	-2,002.07	-6,487.29	6,793.25	6,772.09	21.16	320.984	
1,300.00	1,299.11	1,190.78	1,190.75	3.83	19.47	97.53	-2,002.33	-6,487.29	6,793.99	6,770.69	23.30	291.603	
1,400.00	1,398.98	1,297.55	1,297.50	4.13	21.54	97.58	-2,002.52	-6,487.29	6,794.70	6,769.04	25.66	264.761	
1,500.00	1,498.86	1,397.42	1,397.37	4.43	23.50	97.62	-2,002.52	-6,487.29	6,795.37	6,767.45	27.92	243.363	
1,600.00	1,598.73	1,497.16	1,497.10	4.73	25.45	97.67	-2,001.69	-6,487.29	6,795.80	6,765.62	30.18	225.181	
1,700.00	1,698.60	1,592.27	1,592.21	5.03	27.32	97.71	-2,001.81	-6,487.29	6,796.51	6,764.16	32.35	210.125	
1,800.00	1,798.48	1,687.40	1,687.34	5.33	29.18	97.74	-2,002.17	-6,487.29	6,797.29	6,762.78	34.51	196.959	
1,900.00	1,898.35	1,796.96	1,796.86	5.63	31.34	97.79	-2,002.52	-6,487.29	6,798.07	6,761.11	36.96	183.918	
2,000.00	1,998.22	1,896.83	1,896.74	5.93	33.30	97.83	-2,002.52	-6,487.29	6,798.75	6,759.53	39.23	173.324	
2,100.00	2,098.10	1,996.70	1,996.61	6.23	35.26	97.87	-2,002.52	-6,487.29	6,799.44	6,757.95	41.49	163.885	
2,200.00	2,197.97	2,091.89	2,091.79	6.53	37.13	97.92	-2,001.82	-6,487.29	6,799.93	6,756.27	43.66	155.747	
2,300.00	2,297.84	2,187.00	2,186.90	6.83	39.00	97.95	-2,002.17	-6,487.29	6,800.73	6,754.90	45.83	148.391	
2,400.00	2,397.72	2,296.37	2,296.23	7.13	41.19	98.00	-2,002.52	-6,487.29	6,801.52	6,753.21	48.31	140.785	
2,500.00	2,497.59	2,396.24	2,396.10	7.43	43.22	98.04	-2,002.52	-6,487.29	6,802.23	6,751.58	50.64	134.320	
2,600.00	2,597.46	2,496.11	2,495.98	7.73	45.25	98.08	-2,002.52	-6,487.29	6,802.93	6,749.96	52.97	128.425	
2,700.00	2,697.34	2,592.37	2,592.22	8.03	47.20	98.13	-2,001.73	-6,487.29	6,803.42	6,748.19	55.23	123.186	
2,800.00	2,797.21	2,687.80	2,687.65	8.33	49.14	98.16	-2,002.02	-6,487.29	6,804.22	6,746.75	57.47	118.399	
2,900.00	2,897.09	2,795.80	2,795.60	8.63	51.37	98.21	-2,002.52	-6,487.29	6,805.07	6,745.07	60.00	113.425	
3,000.00	2,996.96	2,895.67	2,895.47	8.93	53.62	98.25	-2,002.52	-6,487.29	6,805.79	6,743.25	62.54	108.819	
3,100.00	3,096.83	2,995.54	2,995.35	9.23	55.86	98.29	-2,002.52	-6,487.29	6,806.52	6,741.43	65.09	104.573	
3,200.00	3,196.71	3,090.36	3,090.15	9.53	57.99	98.34	-2,001.59	-6,487.29	6,806.99	6,739.47	67.52	100.813	
3,300.00	3,296.58	3,183.79	3,183.58	9.83	60.10	98.37	-2,002.00	-6,487.29	6,807.84	6,737.92	69.92	97.363	
3,400.00	3,396.45	3,295.28	3,294.97	10.13	62.58	98.41	-2,002.52	-6,487.29	6,808.71	6,736.00	72.71	93.647	
3,500.00	3,496.33	3,395.15	3,394.84	10.43	64.77	98.46	-2,002.52	-6,487.29	6,809.45	6,734.25	75.20	90.557	
3,600.00	3,596.20	3,494.46	3,494.12	10.73	66.95	98.51	-2,000.99	-6,487.29	6,809.77	6,732.10	77.67	87.673	
3,700.00	3,696.07	3,584.99	3,584.65	11.03	68.93	98.55	-2,001.24	-6,487.29	6,810.59	6,730.64	79.96	85.178	
3,800.00	3,795.95	3,675.58	3,675.22	11.33	70.92	98.58	-2,001.95	-6,487.29	6,811.56	6,729.31	82.24	82.822	
3,900.00	3,895.82	3,794.74	3,794.33	11.63	73.48	98.62	-2,002.52	-6,487.29	6,812.44	6,727.33	85.11	80.046	
4,000.00	3,995.69	3,894.61	3,894.21	11.93	75.60	98.67	-2,002.52	-6,487.29	6,813.20	6,725.67	87.53	77.842	
4,100.00	4,095.57	3,994.49	3,994.08	12.23	77.72	98.71	-2,002.52	-6,487.29	6,813.96	6,724.01	89.95	75.756	
4,200.00	4,195.44	4,094.36	4,093.95	12.53	79.84	98.75	-2,002.52	-6,487.29	6,814.72	6,722.35	92.37	73.780	
4,300.00	4,295.31	4,194.23	4,193.83	12.83	81.96	98.79	-2,002.52	-6,487.29	6,815.49	6,720.70	94.79	71.905	
4,400.00	4,395.19	4,294.11	4,293.70	13.13	84.08	98.83	-2,002.52	-6,487.29	6,816.26	6,719.05	97.20	70.123	
4,500.00	4,495.06	4,392.31	4,391.89	13.43	86.16	98.89	-2,000.64	-6,487.29	6,816.53	6,716.94	99.59	68.447	
4,600.00	4,594.93	4,490.21	4,489.79	13.73	88.24	98.93	-2,000.79	-6,487.29	6,817.35	6,715.38	101.97	66.859	
4,700.00	4,694.81	4,588.12	4,587.69	14.03	90.32	98.97	-2,001.04	-6,487.29	6,818.20	6,713.86	104.34	65.343	
4,800.00	4,794.68	4,686.04	4,685.61	14.33	92.40	99.00	-2,001.40	-6,487.29	6,819.08	6,712.36	106.72	63.895	
4,900.00	4,894.55	4,783.98	4,783.54	14.63	94.48	99.04	-2,001.86	-6,487.29	6,820.00	6,710.90	109.10	62.511	
5,000.00	4,994.43	4,881.92	4,881.48	14.93	96.55	99.08	-2,002.43	-6,487.29	6,820.95	6,709.47	111.48	61.185	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137B (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	4,993.40	4,992.82	15.23	99.00	99.12	-2,002.52	-6,487.29	6,821.76	6,707.53	114.23	59.721	
5,200.00	5,194.18	5,093.28	5,092.69	15.53	101.21	99.17	-2,002.52	-6,487.29	6,822.56	6,705.83	116.73	58.447	
5,300.00	5,294.05	5,193.15	5,192.56	15.83	103.41	99.21	-2,002.52	-6,487.29	6,823.36	6,704.13	119.24	57.226	
5,400.00	5,393.92	5,293.03	5,292.44	16.13	105.61	99.25	-2,002.52	-6,487.29	6,824.17	6,702.43	121.74	56.056	
5,500.00	5,493.80	5,392.90	5,392.31	16.43	107.82	99.29	-2,002.52	-6,487.29	6,824.98	6,700.74	124.24	54.933	
5,600.00	5,593.67	5,492.77	5,492.18	16.73	110.02	99.33	-2,002.52	-6,487.29	6,825.80	6,699.05	126.75	53.854	
5,700.00	5,693.54	5,592.65	5,592.06	17.03	112.22	99.37	-2,002.52	-6,487.29	6,826.61	6,697.36	129.25	52.817	
5,800.00	5,793.42	5,692.52	5,691.93	17.33	114.43	99.42	-2,002.52	-6,487.29	6,827.44	6,695.68	131.75	51.820	
5,900.00	5,893.29	5,792.39	5,791.80	17.63	116.63	99.46	-2,002.52	-6,487.29	6,828.26	6,694.00	134.26	50.860	
6,000.00	5,993.16	5,892.27	5,891.68	17.93	118.83	99.50	-2,002.52	-6,487.29	6,829.09	6,692.33	136.76	49.935	
6,100.00	6,093.04	5,992.14	5,991.55	18.23	121.04	99.54	-2,002.52	-6,487.29	6,829.92	6,690.66	139.26	49.043	
6,200.00	6,192.91	6,092.01	6,091.42	18.53	123.24	99.58	-2,002.52	-6,487.29	6,830.76	6,688.99	141.77	48.183	
6,300.00	6,292.78	6,191.89	6,191.30	18.83	125.45	99.62	-2,002.52	-6,487.29	6,831.60	6,687.33	144.27	47.352	ES, SF
6,400.00	6,392.66	6,165.00	6,164.16	19.13	124.85	99.61	-2,002.52	-6,487.29	6,833.62	6,689.66	143.96	47.470	
6,500.00	6,492.53	6,165.00	6,164.16	19.43	124.85	99.61	-2,002.52	-6,487.29	6,837.05	6,692.84	144.21	47.410	
6,551.20	6,543.67	6,165.00	6,164.16	19.58	124.85	99.61	-2,002.52	-6,487.29	6,839.38	6,695.05	144.33	47.387	
6,600.00	6,592.30	6,165.00	6,164.16	19.73	124.85	141.47	-2,002.52	-6,487.29	6,843.95	6,699.50	144.44	47.382	
6,650.00	6,641.67	6,165.00	6,164.16	19.88	124.85	151.19	-2,002.52	-6,487.29	6,853.10	6,708.55	144.55	47.411	
6,700.00	6,690.21	6,165.00	6,164.16	20.03	124.85	154.81	-2,002.52	-6,487.29	6,866.69	6,722.04	144.65	47.472	
6,750.00	6,737.54	6,165.00	6,164.16	20.18	124.85	156.41	-2,002.52	-6,487.29	6,884.58	6,739.84	144.74	47.564	
6,800.00	6,783.30	6,165.00	6,164.16	20.33	124.85	157.01	-2,002.52	-6,487.29	6,906.62	6,761.78	144.84	47.685	
6,850.00	6,827.15	6,165.00	6,164.16	20.48	124.85	156.97	-2,002.52	-6,487.29	6,932.59	6,787.66	144.93	47.833	
6,900.00	6,868.74	6,165.00	6,164.16	20.63	124.85	156.42	-2,002.52	-6,487.29	6,962.25	6,817.23	145.03	48.007	
6,950.00	6,907.77	6,165.00	6,164.16	20.78	124.85	155.38	-2,002.52	-6,487.29	6,995.34	6,850.22	145.12	48.204	
7,000.00	6,943.94	6,165.00	6,164.16	20.93	124.85	153.79	-2,002.52	-6,487.29	7,031.55	6,886.33	145.22	48.421	
7,050.00	6,976.97	6,165.00	6,164.16	21.08	124.85	151.54	-2,002.52	-6,487.29	7,070.56	6,925.24	145.32	48.656	
7,100.00	7,006.62	6,165.00	6,164.16	21.23	124.85	148.40	-2,002.52	-6,487.29	7,112.03	6,966.60	145.42	48.905	
7,150.00	7,032.64	6,165.00	6,164.16	21.38	124.85	144.01	-2,002.52	-6,487.29	7,155.61	7,010.07	145.54	49.167	
7,200.00	7,054.86	6,165.00	6,164.16	21.53	124.85	137.80	-2,002.52	-6,487.29	7,200.92	7,055.27	145.66	49.438	
7,250.00	7,073.09	6,165.00	6,164.16	21.68	124.85	128.86	-2,002.52	-6,487.29	7,247.61	7,101.82	145.78	49.715	
7,300.00	7,087.20	6,165.00	6,164.16	21.83	124.85	116.03	-2,002.52	-6,487.29	7,295.27	7,149.36	145.92	49.996	
7,350.00	7,097.08	6,165.00	6,164.16	21.98	124.85	98.69	-2,002.52	-6,487.29	7,343.55	7,197.49	146.06	50.278	
7,400.00	7,102.66	6,165.00	6,164.16	22.13	124.85	78.80	-2,002.52	-6,487.29	7,392.06	7,245.85	146.21	50.559	
7,438.94	7,104.00	6,165.00	6,164.16	22.25	124.85	64.34	-2,002.52	-6,487.29	7,429.76	7,283.43	146.33	50.774	
7,500.00	7,104.02	6,165.00	6,164.16	22.43	124.85	64.34	-2,002.52	-6,487.29	7,488.75	7,342.22	146.53	51.109	
7,600.00	7,104.06	6,165.00	6,164.16	22.74	124.85	64.34	-2,002.52	-6,487.29	7,585.42	7,438.57	146.85	51.656	
7,700.00	7,104.10	6,165.00	6,164.16	23.04	124.85	64.34	-2,002.52	-6,487.29	7,682.17	7,535.00	147.17	52.201	
7,800.00	7,104.14	6,165.00	6,164.16	23.34	124.85	64.34	-2,002.52	-6,487.29	7,779.00	7,631.52	147.48	52.745	
7,900.00	7,104.18	6,165.00	6,164.16	23.64	124.85	64.34	-2,002.52	-6,487.29	7,875.92	7,728.12	147.80	53.287	
8,000.00	7,104.22	6,165.00	6,164.16	23.94	124.85	64.34	-2,002.52	-6,487.29	7,972.91	7,824.79	148.12	53.828	
8,100.00	7,104.26	6,165.00	6,164.16	24.24	124.85	64.34	-2,002.52	-6,487.29	8,069.97	7,921.54	148.44	54.367	
8,200.00	7,104.30	6,165.00	6,164.16	24.54	124.85	64.34	-2,002.52	-6,487.29	8,167.11	8,018.36	148.75	54.904	
8,300.00	7,104.34	6,165.00	6,164.16	24.84	124.85	64.34	-2,002.52	-6,487.29	8,264.31	8,115.25	149.07	55.440	
8,400.00	7,104.38	6,165.00	6,164.16	25.14	124.85	64.34	-2,002.52	-6,487.29	8,361.58	8,212.20	149.38	55.974	
8,500.00	7,104.42	6,165.00	6,164.16	25.44	124.85	64.34	-2,002.52	-6,487.29	8,458.92	8,309.22	149.70	56.507	
8,600.00	7,104.45	6,165.00	6,164.16	25.74	124.85	64.34	-2,002.52	-6,487.29	8,556.31	8,406.30	150.01	57.038	
8,700.00	7,104.49	6,165.00	6,164.16	26.04	124.85	64.34	-2,002.52	-6,487.29	8,653.76	8,503.44	150.32	57.567	
8,800.00	7,104.53	6,165.00	6,164.16	26.34	124.85	64.34	-2,002.52	-6,487.29	8,751.28	8,600.64	150.64	58.095	
8,900.00	7,104.57	6,165.00	6,164.16	26.64	124.85	64.34	-2,002.52	-6,487.29	8,848.84	8,697.89	150.95	58.621	
9,000.00	7,104.61	6,165.00	6,164.16	26.95	124.85	64.34	-2,002.52	-6,487.29	8,946.46	8,795.20	151.26	59.145	
9,100.00	7,104.65	6,165.00	6,164.16	27.25	124.85	64.34	-2,002.52	-6,487.29	9,044.14	8,892.56	151.57	59.668	
9,200.00	7,104.69	6,165.00	6,164.16	27.55	124.85	64.34	-2,002.52	-6,487.29	9,141.86	8,989.97	151.89	60.189	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	6,165.00	6,164.16	27.85	124.85	64.34	-2,002.52	-6,487.29	9,239.63	9,087.43	152.20	60.708	
9,400.00	7,104.77	6,165.00	6,164.16	28.15	124.85	64.34	-2,002.52	-6,487.29	9,337.45	9,184.94	152.51	61.226	
9,500.00	7,104.81	6,165.00	6,164.16	28.45	124.85	64.34	-2,002.52	-6,487.29	9,435.31	9,282.49	152.82	61.742	
9,600.00	7,104.85	6,165.00	6,164.16	28.75	124.85	64.34	-2,002.52	-6,487.29	9,533.22	9,380.09	153.13	62.256	
9,700.00	7,104.89	6,165.00	6,164.16	29.05	124.85	64.34	-2,002.52	-6,487.29	9,631.18	9,477.74	153.44	62.769	
9,800.00	7,104.92	6,165.00	6,164.16	29.35	124.85	64.34	-2,002.52	-6,487.29	9,729.17	9,575.42	153.75	63.280	
9,900.00	7,104.96	6,165.00	6,164.16	29.65	124.85	64.34	-2,002.52	-6,487.29	9,827.20	9,673.14	154.06	63.789	
10,000.00	7,105.00	6,165.00	6,164.16	29.95	124.85	64.34	-2,002.52	-6,487.29	9,925.28	9,770.91	154.37	64.296	
10,100.00	7,105.04	6,165.00	6,164.16	30.25	124.85	64.34	-2,002.52	-6,487.29	10,023.39	9,868.71	154.68	64.802	
10,200.00	7,105.08	6,165.00	6,164.16	30.55	124.85	64.34	-2,002.52	-6,487.29	10,121.54	9,966.55	154.99	65.306	
10,300.00	7,105.12	6,165.00	6,164.16	30.85	124.85	64.34	-2,002.52	-6,487.29	10,219.72	10,064.43	155.29	65.809	
10,400.00	7,105.16	6,165.00	6,164.16	31.15	124.85	64.34	-2,002.52	-6,487.29	10,317.94	10,162.34	155.60	66.310	
10,500.00	7,105.20	6,165.00	6,164.16	31.45	124.85	64.34	-2,002.52	-6,487.29	10,416.19	10,260.28	155.91	66.809	
10,600.00	7,105.24	6,165.00	6,164.16	31.75	124.85	64.34	-2,002.52	-6,487.29	10,514.48	10,358.26	156.22	67.307	
10,700.00	7,105.28	6,165.00	6,164.16	32.05	124.85	64.34	-2,002.52	-6,487.29	10,612.80	10,456.27	156.52	67.803	
10,800.00	7,105.32	6,165.00	6,164.16	32.35	124.85	64.34	-2,002.52	-6,487.29	10,711.14	10,554.31	156.83	68.297	
10,900.00	7,105.36	6,165.00	6,164.16	32.66	124.85	64.34	-2,002.52	-6,487.29	10,809.52	10,652.39	157.14	68.789	
11,000.00	7,105.39	6,165.00	6,164.16	32.96	124.85	64.34	-2,002.52	-6,487.29	10,907.93	10,750.49	157.45	69.280	
11,100.00	7,105.43	6,165.00	6,164.16	33.26	124.85	64.34	-2,002.52	-6,487.29	11,006.37	10,848.62	157.75	69.770	
11,200.00	7,105.47	6,165.00	6,164.16	33.56	124.85	64.34	-2,002.52	-6,487.29	11,104.84	10,946.78	158.06	70.257	
11,300.00	7,105.51	6,165.00	6,164.16	33.86	124.85	64.34	-2,002.52	-6,487.29	11,203.33	11,044.96	158.37	70.743	
11,400.00	7,105.55	6,165.00	6,164.16	34.16	124.85	64.34	-2,002.52	-6,487.29	11,301.85	11,143.18	158.67	71.228	
11,500.00	7,105.59	6,165.00	6,164.16	34.46	124.85	64.34	-2,002.52	-6,487.29	11,400.39	11,241.41	158.98	71.710	
11,600.00	7,105.63	6,165.00	6,164.16	34.76	124.85	64.34	-2,002.52	-6,487.29	11,498.96	11,339.68	159.28	72.191	
11,700.00	7,105.67	6,165.00	6,164.16	35.06	124.85	64.34	-2,002.52	-6,487.29	11,597.56	11,437.97	159.59	72.671	
11,800.00	7,105.71	6,165.00	6,164.16	35.36	124.85	64.34	-2,002.52	-6,487.29	11,696.18	11,536.28	159.90	73.149	
11,900.00	7,105.75	6,165.00	6,164.16	35.66	124.85	64.34	-2,002.52	-6,487.29	11,794.82	11,634.62	160.20	73.625	
12,000.00	7,105.79	6,165.00	6,164.16	35.96	124.85	64.34	-2,002.52	-6,487.29	11,893.48	11,732.98	160.51	74.100	
12,100.00	7,105.83	6,165.00	6,164.16	36.26	124.85	64.34	-2,002.52	-6,487.29	11,992.17	11,831.36	160.81	74.573	
12,200.00	7,105.86	6,165.00	6,164.16	36.56	124.85	64.34	-2,002.52	-6,487.29	12,090.88	11,929.76	161.12	75.044	
12,300.00	7,105.90	6,165.00	6,164.16	36.86	124.85	64.34	-2,002.52	-6,487.29	12,189.61	12,028.18	161.42	75.514	
12,400.00	7,105.94	6,165.00	6,164.16	37.16	124.85	64.34	-2,002.52	-6,487.29	12,288.35	12,126.63	161.73	75.982	
12,500.00	7,105.98	6,165.00	6,164.16	37.46	124.85	64.34	-2,002.52	-6,487.29	12,387.12	12,225.09	162.03	76.449	
12,600.00	7,106.02	6,165.00	6,164.16	37.76	124.85	64.34	-2,002.52	-6,487.29	12,485.91	12,323.58	162.34	76.914	
12,700.00	7,106.06	6,165.00	6,164.16	38.06	124.85	64.34	-2,002.52	-6,487.29	12,584.72	12,422.08	162.64	77.377	
12,800.00	7,106.10	6,165.00	6,164.16	38.36	124.85	64.34	-2,002.52	-6,487.29	12,683.55	12,520.60	162.95	77.839	
12,900.00	7,106.14	6,165.00	6,164.16	38.66	124.85	64.34	-2,002.52	-6,487.29	12,782.39	12,619.15	163.25	78.300	
13,000.00	7,106.18	6,165.00	6,164.16	38.96	124.85	64.34	-2,002.52	-6,487.29	12,881.26	12,717.70	163.55	78.758	
13,100.00	7,106.22	6,165.00	6,164.16	39.26	124.85	64.34	-2,002.52	-6,487.29	12,980.14	12,816.28	163.86	79.216	
13,200.00	7,106.26	6,165.00	6,164.16	39.56	124.85	64.34	-2,002.52	-6,487.29	13,079.04	12,914.87	164.16	79.671	
13,300.00	7,106.30	6,165.00	6,164.16	39.86	124.85	64.34	-2,002.52	-6,487.29	13,177.95	13,013.48	164.47	80.126	
13,400.00	7,106.33	6,165.00	6,164.16	40.16	124.85	64.34	-2,002.52	-6,487.29	13,276.88	13,112.11	164.77	80.578	
13,500.00	7,106.37	6,165.00	6,164.16	40.46	124.85	64.34	-2,002.52	-6,487.29	13,375.83	13,210.75	165.07	81.029	
13,600.00	7,106.41	6,165.00	6,164.16	40.76	124.85	64.34	-2,002.52	-6,487.29	13,474.79	13,309.41	165.38	81.479	
13,700.00	7,106.45	6,165.00	6,164.16	41.06	124.85	64.34	-2,002.52	-6,487.29	13,573.77	13,408.09	165.68	81.927	
13,800.00	7,106.49	6,165.00	6,164.16	41.36	124.85	64.34	-2,002.52	-6,487.29	13,672.76	13,506.77	165.99	82.373	
13,900.00	7,106.53	6,165.00	6,164.16	41.67	124.85	64.34	-2,002.52	-6,487.29	13,771.77	13,605.48	166.29	82.818	
14,000.00	7,106.57	6,165.00	6,164.16	41.97	124.85	64.34	-2,002.52	-6,487.29	13,870.79	13,704.19	166.59	83.262	
14,100.00	7,106.61	6,165.00	6,164.16	42.27	124.85	64.34	-2,002.52	-6,487.29	13,969.82	13,802.93	166.90	83.704	
14,200.00	7,106.65	6,165.00	6,164.16	42.57	124.85	64.34	-2,002.52	-6,487.29	14,068.87	13,901.67	167.20	84.145	
14,300.00	7,106.69	6,165.00	6,164.16	42.87	124.85	64.34	-2,002.52	-6,487.29	14,167.93	14,000.43	167.50	84.584	
14,400.00	7,106.73	6,165.00	6,164.16	43.17	124.85	64.34	-2,002.52	-6,487.29	14,267.01	14,099.20	167.81	85.021	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	6,165.00	6,164.16	43.47	124.85	64.34	-2,002.52	-6,487.29	14,366.09	14,197.99	168.11	85.457	
14,600.00	7,106.80	6,165.00	6,164.16	43.77	124.85	64.34	-2,002.52	-6,487.29	14,465.19	14,296.78	168.41	85.892	
14,700.00	7,106.84	6,165.00	6,164.16	44.07	124.85	64.34	-2,002.52	-6,487.29	14,564.31	14,395.59	168.71	86.325	
14,800.00	7,106.88	6,165.00	6,164.16	44.37	124.85	64.34	-2,002.52	-6,487.29	14,663.43	14,494.41	169.02	86.757	
14,900.00	7,106.92	6,165.00	6,164.16	44.67	124.85	64.34	-2,002.52	-6,487.29	14,762.57	14,593.25	169.32	87.187	
15,000.00	7,106.96	6,165.00	6,164.16	44.97	124.85	64.34	-2,002.52	-6,487.29	14,861.72	14,692.09	169.62	87.616	
15,100.00	7,107.00	6,165.00	6,164.16	45.27	124.85	64.34	-2,002.52	-6,487.29	14,960.88	14,790.95	169.93	88.044	
15,200.00	7,107.04	6,165.00	6,164.16	45.57	124.85	64.34	-2,002.52	-6,487.29	15,060.05	14,889.82	170.23	88.470	
15,300.00	7,107.08	6,165.00	6,164.16	45.87	124.85	64.34	-2,002.52	-6,487.29	15,159.23	14,988.70	170.53	88.894	
15,400.00	7,107.12	6,165.00	6,164.16	46.17	124.85	64.34	-2,002.52	-6,487.29	15,258.42	15,087.59	170.83	89.317	
15,500.00	7,107.16	6,165.00	6,164.16	46.47	124.85	64.34	-2,002.52	-6,487.29	15,357.62	15,186.49	171.14	89.739	
15,600.00	7,107.20	6,165.00	6,164.16	46.77	124.85	64.34	-2,002.52	-6,487.29	15,456.84	15,285.40	171.44	90.159	
15,700.00	7,107.23	6,165.00	6,164.16	47.07	124.85	64.34	-2,002.52	-6,487.29	15,556.06	15,384.32	171.74	90.578	
15,800.00	7,107.27	6,165.00	6,164.16	47.37	124.85	64.34	-2,002.52	-6,487.29	15,655.29	15,483.25	172.04	90.996	
15,900.00	7,107.31	6,165.00	6,164.16	47.67	124.85	64.34	-2,002.52	-6,487.29	15,754.53	15,582.19	172.35	91.412	
16,000.00	7,107.35	6,165.00	6,164.16	47.97	124.85	64.34	-2,002.52	-6,487.29	15,853.79	15,681.14	172.65	91.827	
16,100.00	7,107.39	6,165.00	6,164.16	48.27	124.85	64.34	-2,002.52	-6,487.29	15,953.05	15,780.10	172.95	92.240	
16,200.00	7,107.43	6,165.00	6,164.16	48.57	124.85	64.34	-2,002.52	-6,487.29	16,052.32	15,879.06	173.25	92.652	
16,300.00	7,107.47	6,165.00	6,164.16	48.87	124.85	64.34	-2,002.52	-6,487.29	16,151.60	15,978.04	173.56	93.063	
16,400.00	7,107.51	6,165.00	6,164.16	49.17	124.85	64.34	-2,002.52	-6,487.29	16,250.89	16,077.03	173.86	93.472	
16,500.00	7,107.55	6,165.00	6,164.16	49.47	124.85	64.34	-2,002.52	-6,487.29	16,350.18	16,176.02	174.16	93.880	
16,600.00	7,107.59	6,165.00	6,164.16	49.77	124.85	64.34	-2,002.52	-6,487.29	16,449.49	16,275.03	174.46	94.287	
16,700.00	7,107.63	6,165.00	6,164.16	50.07	124.85	64.34	-2,002.52	-6,487.29	16,548.80	16,374.04	174.76	94.692	
16,800.00	7,107.67	6,165.00	6,164.16	50.37	124.85	64.34	-2,002.52	-6,487.29	16,648.12	16,473.06	175.07	95.096	
16,900.00	7,107.70	6,165.00	6,164.16	50.67	124.85	64.34	-2,002.52	-6,487.29	16,747.45	16,572.09	175.37	95.499	
17,000.00	7,107.74	6,165.00	6,164.16	50.97	124.85	64.34	-2,002.52	-6,487.29	16,846.79	16,671.12	175.67	95.900	
17,100.00	7,107.78	6,165.00	6,164.16	51.27	124.85	64.34	-2,002.52	-6,487.29	16,946.14	16,770.17	175.97	96.300	
17,200.00	7,107.82	6,165.00	6,164.16	51.57	124.85	64.34	-2,002.52	-6,487.29	17,045.49	16,869.22	176.27	96.699	
17,300.00	7,107.86	6,165.00	6,164.16	51.87	124.85	64.34	-2,002.52	-6,487.29	17,144.85	16,968.28	176.58	97.096	
17,400.00	7,107.90	6,165.00	6,164.16	52.17	124.85	64.34	-2,002.52	-6,487.29	17,244.22	17,067.34	176.88	97.493	
17,500.00	7,107.94	6,165.00	6,164.16	52.47	124.85	64.34	-2,002.52	-6,487.29	17,343.60	17,166.42	177.18	97.887	
17,600.00	7,107.98	6,165.00	6,164.16	52.77	124.85	64.34	-2,002.52	-6,487.29	17,442.98	17,265.50	177.48	98.281	
17,700.00	7,108.02	6,165.00	6,164.16	53.07	124.85	64.34	-2,002.52	-6,487.29	17,542.37	17,364.59	177.78	98.673	
17,800.00	7,108.06	6,165.00	6,164.16	53.37	124.85	64.34	-2,002.52	-6,487.29	17,641.77	17,463.68	178.08	99.064	
17,900.00	7,108.10	6,165.00	6,164.16	53.67	124.85	64.34	-2,002.52	-6,487.29	17,741.17	17,562.78	178.39	99.454	
18,000.00	7,108.14	6,165.00	6,164.16	53.97	124.85	64.34	-2,002.52	-6,487.29	17,840.58	17,661.89	178.69	99.842	
18,100.00	7,108.17	6,165.00	6,164.16	54.27	124.85	64.34	-2,002.52	-6,487.29	17,940.00	17,761.01	178.99	100.229	
18,200.00	7,108.21	6,165.00	6,164.16	54.57	124.85	64.34	-2,002.52	-6,487.29	18,039.42	17,860.13	179.29	100.615	
18,300.00	7,108.25	6,165.00	6,164.16	54.87	124.85	64.34	-2,002.52	-6,487.29	18,138.85	17,959.26	179.59	101.000	
18,400.00	7,108.29	6,165.00	6,164.16	55.17	124.85	64.34	-2,002.52	-6,487.29	18,238.29	18,058.39	179.89	101.383	
18,500.00	7,108.33	6,165.00	6,164.16	55.47	124.85	64.34	-2,002.52	-6,487.29	18,337.73	18,157.53	180.20	101.766	
18,600.00	7,108.37	6,165.00	6,164.16	55.77	124.85	64.34	-2,002.52	-6,487.29	18,437.18	18,256.68	180.50	102.147	
18,700.00	7,108.41	6,165.00	6,164.16	56.07	124.85	64.34	-2,002.52	-6,487.29	18,536.63	18,355.83	180.80	102.526	
18,800.00	7,108.45	6,165.00	6,164.16	56.37	124.85	64.34	-2,002.52	-6,487.29	18,636.09	18,454.99	181.10	102.905	
18,900.00	7,108.49	6,165.00	6,164.16	56.67	124.85	64.34	-2,002.52	-6,487.29	18,735.56	18,554.15	181.40	103.282	
19,000.00	7,108.53	6,165.00	6,164.16	56.97	124.85	64.34	-2,002.52	-6,487.29	18,835.03	18,653.32	181.70	103.658	
19,100.00	7,108.57	6,165.00	6,164.16	57.28	124.85	64.34	-2,002.52	-6,487.29	18,934.50	18,752.50	182.00	104.033	
19,200.00	7,108.61	6,165.00	6,164.16	57.58	124.85	64.34	-2,002.52	-6,487.29	19,033.99	18,851.68	182.31	104.407	
19,300.00	7,108.64	6,165.00	6,164.16	57.88	124.85	64.34	-2,002.52	-6,487.29	19,133.47	18,950.87	182.61	104.779	
19,400.00	7,108.68	6,165.00	6,164.16	58.18	124.85	64.34	-2,002.52	-6,487.29	19,232.97	19,050.06	182.91	105.151	
19,500.00	7,108.72	6,165.00	6,164.16	58.48	124.85	64.34	-2,002.52	-6,487.29	19,332.46	19,149.25	183.21	105.521	
19,600.00	7,108.76	6,165.00	6,164.16	58.78	124.85	64.34	-2,002.52	-6,487.29	19,431.97	19,248.46	183.51	105.890	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137B (Offset) - OH - OH

Survey Program: 300-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,700.00	7,108.80	6,165.00	6,164.16	59.08	124.85	64.34	-2,002.52	-6,487.29	19,531.48	19,347.66	183.81	106.258	
19,800.00	7,108.84	6,165.00	6,164.16	59.38	124.85	64.34	-2,002.52	-6,487.29	19,630.99	19,446.88	184.11	106.624	
19,900.00	7,108.88	6,165.00	6,164.16	59.68	124.85	64.34	-2,002.52	-6,487.29	19,730.51	19,546.09	184.41	106.990	
20,000.00	7,108.92	6,165.00	6,164.16	59.98	124.85	64.34	-2,002.52	-6,487.29	19,830.03	19,645.31	184.72	107.354	
20,100.00	7,108.96	6,165.00	6,164.16	60.28	124.85	64.34	-2,002.52	-6,487.29	19,929.56	19,744.54	185.02	107.717	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137C (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-102.98	-1,935.02	-8,396.64	8,617.26				
100.00	100.00	4.27	4.27	0.23	0.00	-102.98	-1,935.02	-8,396.64	8,616.72	8,616.49	0.23	N/A	
200.00	200.00	125.07	125.07	0.53	0.09	-102.98	-1,935.17	-8,396.44	8,616.59	8,615.99	0.60	N/A	
296.49	296.49	200.00	200.00	0.82	0.19	-102.98	-1,935.40	-8,396.19	8,616.37	8,615.41	0.95	9,036.101	CC
300.00	300.00	200.00	200.00	0.83	0.19	-102.98	-1,935.40	-8,396.19	8,616.37	8,615.40	0.96	8,937.286	ES
400.00	400.00	400.00	237.41	1.13	0.33	-102.98	-1,935.56	-8,396.37	8,616.83	8,615.54	1.29	6,685.472	
500.00	500.00	300.00	299.99	1.43	0.23	-102.98	-1,935.80	-8,396.92	8,617.79	8,616.19	1.60	5,398.960	
600.00	599.98	350.00	349.99	1.73	0.27	101.38	-1,936.09	-8,397.60	8,619.61	8,617.67	1.94	4,447.294	
644.12	644.06	375.00	374.98	1.86	0.30	101.36	-1,936.33	-8,398.05	8,620.84	8,618.74	2.10	4,114.597	
700.00	699.87	435.94	435.91	2.03	0.36	101.38	-1,937.01	-8,399.11	8,622.47	8,620.15	2.33	3,704.003	
800.00	799.74	540.17	540.12	2.33	0.49	101.41	-1,938.19	-8,400.88	8,625.37	8,622.63	2.75	3,139.486	
900.00	899.62	628.30	628.23	2.63	0.59	101.43	-1,939.36	-8,402.41	8,628.36	8,625.21	3.15	2,738.603	
1,000.00	999.49	706.86	706.76	2.93	0.69	101.45	-1,940.49	-8,403.90	8,631.53	8,627.99	3.54	2,435.518	
1,100.00	1,099.36	779.82	779.70	3.23	0.79	101.47	-1,941.64	-8,405.43	8,634.94	8,631.00	3.93	2,196.370	
1,200.00	1,199.24	872.05	871.89	3.53	0.91	101.49	-1,943.47	-8,407.55	8,638.62	8,634.28	4.34	1,990.363	
1,300.00	1,299.11	974.60	974.39	3.83	1.04	101.52	-1,945.64	-8,409.81	8,642.25	8,637.49	4.76	1,815.800	
1,400.00	1,398.98	1,069.74	1,069.49	4.13	1.16	101.54	-1,947.75	-8,412.00	8,645.98	8,640.81	5.17	1,672.330	
1,500.00	1,498.86	1,155.62	1,155.31	4.43	1.27	101.55	-1,949.71	-8,413.92	8,649.70	8,644.13	5.57	1,553.185	
1,600.00	1,598.73	1,250.56	1,250.20	4.73	1.40	101.57	-1,951.93	-8,416.23	8,653.59	8,647.61	5.98	1,447.207	
1,700.00	1,698.60	1,366.84	1,366.43	5.03	1.55	101.60	-1,954.57	-8,418.87	8,657.31	8,650.90	6.41	1,349.710	
1,800.00	1,798.48	1,457.20	1,456.73	5.33	1.66	101.62	-1,956.61	-8,420.96	8,661.08	8,654.26	6.82	1,270.107	
1,900.00	1,898.35	1,609.59	1,609.06	5.63	1.86	101.65	-1,960.07	-8,424.07	8,664.56	8,657.27	7.29	1,188.399	
2,000.00	1,998.22	1,700.00	1,699.43	5.93	1.98	101.67	-1,961.93	-8,425.79	8,667.89	8,660.19	7.69	1,126.595	
2,100.00	2,098.10	1,766.84	1,766.23	6.23	2.07	101.68	-1,963.35	-8,427.25	8,671.49	8,663.42	8.07	1,074.330	
2,200.00	2,197.97	1,887.02	1,886.37	6.53	2.22	101.71	-1,965.81	-8,429.97	8,675.17	8,666.66	8.51	1,019.020	
2,300.00	2,297.84	2,035.62	2,034.92	6.83	2.42	101.75	-1,968.32	-8,432.80	8,678.44	8,669.45	8.99	965.442	
2,400.00	2,397.72	2,138.78	2,138.05	7.13	2.55	101.77	-1,970.01	-8,434.36	8,681.29	8,671.89	9.41	922.883	
2,500.00	2,497.59	2,236.34	2,235.58	7.43	2.68	101.80	-1,971.62	-8,435.93	8,684.26	8,674.44	9.82	884.426	
2,600.00	2,597.46	2,336.61	2,335.83	7.73	2.81	101.82	-1,973.23	-8,437.54	8,687.20	8,676.97	10.24	848.754	
2,700.00	2,697.34	2,429.85	2,429.04	8.03	2.93	101.84	-1,974.60	-8,439.04	8,690.14	8,679.49	10.65	816.348	
2,800.00	2,797.21	2,525.63	2,524.80	8.33	3.05	101.87	-1,975.96	-8,440.70	8,693.16	8,682.10	11.06	786.001	
2,900.00	2,897.09	2,644.79	2,643.94	8.63	3.21	101.90	-1,977.35	-8,442.70	8,696.09	8,684.58	11.51	755.767	
3,000.00	2,996.96	2,796.86	2,795.99	8.93	3.41	101.94	-1,978.95	-8,444.55	8,698.50	8,686.52	11.99	725.638	
3,100.00	3,096.83	2,903.59	2,902.70	9.23	3.55	101.97	-1,979.92	-8,445.61	8,700.72	8,688.31	12.41	700.923	
3,200.00	3,196.71	3,000.00	2,999.11	9.53	3.67	102.00	-1,980.80	-8,446.51	8,702.87	8,690.04	12.83	678.568	
3,300.00	3,296.58	3,101.73	3,100.83	9.83	3.80	102.03	-1,981.85	-8,447.46	8,705.05	8,691.81	13.24	657.443	
3,400.00	3,396.45	3,175.00	3,174.09	10.13	3.90	102.05	-1,982.82	-8,448.21	8,707.39	8,693.77	13.62	639.269	
3,500.00	3,496.33	3,255.45	3,254.52	10.43	4.01	102.07	-1,983.97	-8,449.26	8,710.02	8,696.00	14.01	621.612	
3,600.00	3,596.20	3,347.41	3,346.46	10.73	4.13	102.09	-1,985.36	-8,450.60	8,712.81	8,698.39	14.42	604.331	
3,700.00	3,696.07	3,700.00	3,467.48	11.03	4.58	102.12	-1,987.33	-8,452.27	8,715.58	8,700.47	15.11	576.786	
3,800.00	3,795.95	3,563.73	3,562.74	11.33	4.41	102.14	-1,988.61	-8,453.39	8,718.08	8,702.82	15.26	571.324	
3,900.00	3,895.82	3,688.02	3,687.01	11.63	4.57	102.17	-1,990.27	-8,454.80	8,720.51	8,704.82	15.70	555.524	
4,000.00	3,995.69	3,886.14	3,885.11	11.93	4.81	102.22	-1,992.92	-8,455.76	8,722.36	8,706.19	16.17	539.403	
4,100.00	4,095.57	4,003.91	4,002.86	12.23	4.92	102.25	-1,995.02	-8,455.39	8,723.50	8,706.98	16.53	527.831	
4,200.00	4,195.44	4,112.56	4,111.48	12.53	5.02	102.26	-1,997.60	-8,454.79	8,724.53	8,707.66	16.87	517.034	
4,300.00	4,295.31	4,207.62	4,206.50	12.83	5.11	102.28	-2,000.03	-8,454.21	8,725.55	8,708.33	17.22	506.843	
4,400.00	4,395.19	4,300.90	4,299.75	13.13	5.20	102.29	-2,002.40	-8,453.69	8,726.60	8,709.04	17.56	497.019	
4,500.00	4,495.06	4,375.00	4,373.83	13.43	5.28	102.31	-2,003.99	-8,453.47	8,727.83	8,709.93	17.90	487.684	
4,600.00	4,594.93	4,475.00	4,473.81	13.73	5.38	102.32	-2,005.97	-8,453.36	8,729.21	8,710.95	18.26	478.157	
4,700.00	4,694.81	4,567.16	4,565.96	14.03	5.49	102.34	-2,007.81	-8,453.30	8,730.63	8,712.02	18.61	469.080	
4,800.00	4,794.68	4,658.71	4,657.49	14.33	5.59	102.36	-2,009.60	-8,453.36	8,732.18	8,713.20	18.97	460.238	
4,900.00	4,894.55	4,762.76	4,761.52	14.63	5.71	102.38	-2,011.59	-8,453.43	8,733.72	8,714.38	19.34	451.509	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,000.00	4,994.43	4,854.80	4,853.55	14.93	5.82	102.40	-2,013.37	-8,453.51	8,735.28	8,715.58	19.71	443.294	
5,100.00	5,094.30	4,968.49	4,967.20	15.23	5.95	102.42	-2,015.62	-8,453.56	8,736.82	8,716.74	20.08	435.080	
5,200.00	5,194.18	5,065.42	5,064.12	15.53	6.07	102.44	-2,017.57	-8,453.49	8,738.25	8,717.81	20.44	427.476	
5,300.00	5,294.05	5,160.13	5,158.81	15.83	6.18	102.46	-2,019.43	-8,453.53	8,739.79	8,718.98	20.80	420.094	
5,400.00	5,393.92	5,287.32	5,285.98	16.13	6.32	102.48	-2,021.89	-8,453.40	8,741.18	8,719.99	21.18	412.655	
5,500.00	5,493.80	5,382.42	5,381.06	16.43	6.43	102.50	-2,023.70	-8,453.20	8,742.44	8,720.91	21.54	405.932	
5,600.00	5,593.67	5,484.36	5,482.98	16.73	6.54	102.52	-2,025.75	-8,452.90	8,743.67	8,721.77	21.89	399.383	
5,700.00	5,693.54	5,605.42	5,604.00	17.03	6.68	102.54	-2,028.54	-8,452.35	8,744.78	8,722.53	22.26	392.916	
5,800.00	5,793.42	5,703.36	5,701.91	17.33	6.78	102.56	-2,031.30	-8,451.73	8,745.84	8,723.23	22.61	386.890	
5,900.00	5,893.29	5,788.02	5,786.53	17.63	6.88	102.57	-2,033.65	-8,451.27	8,746.97	8,724.02	22.95	381.133	
6,000.00	5,993.16	5,850.02	5,848.51	17.93	6.95	102.58	-2,035.17	-8,451.11	8,748.34	8,725.05	23.29	375.692	
6,100.00	6,093.04	5,949.75	5,948.22	18.23	7.07	102.60	-2,037.43	-8,451.24	8,750.03	8,726.37	23.66	369.873	
6,200.00	6,192.91	6,028.40	6,026.85	18.53	7.17	102.61	-2,039.04	-8,451.47	8,751.82	8,727.80	24.02	364.409	
6,300.00	6,292.78	6,124.04	6,122.47	18.83	7.29	102.63	-2,041.02	-8,451.82	8,753.71	8,729.32	24.39	358.877	
6,400.00	6,392.66	6,213.14	6,211.55	19.13	7.41	102.65	-2,042.91	-8,452.20	8,755.66	8,730.90	24.76	353.571	
6,500.00	6,492.53	6,314.34	6,312.73	19.43	7.54	102.67	-2,044.77	-8,452.83	8,757.75	8,732.59	25.15	348.181	
6,551.20	6,543.67	6,366.09	6,364.47	19.58	7.60	102.68	-2,045.54	-8,453.08	8,758.71	8,733.36	25.35	345.488	
6,600.00	6,592.30	6,439.90	6,438.28	19.73	7.70	144.62	-2,046.52	-8,453.46	8,761.65	8,736.09	25.56	342.727	
6,650.00	6,641.67	6,468.85	6,467.22	19.88	7.74	154.44	-2,046.86	-8,453.62	8,768.86	8,743.12	25.74	340.657	
6,700.00	6,690.21	6,523.80	6,522.17	20.03	7.81	158.23	-2,047.47	-8,453.97	8,780.30	8,754.35	25.94	338.421	
6,750.00	6,737.54	6,558.96	6,557.32	20.18	7.85	160.03	-2,047.77	-8,454.24	8,795.87	8,769.74	26.13	336.591	
6,800.00	6,783.30	6,600.00	6,598.36	20.33	7.90	160.89	-2,048.06	-8,454.56	8,815.44	8,789.11	26.33	334.837	
6,850.00	6,827.15	6,645.75	6,644.11	20.48	7.96	161.20	-2,048.35	-8,454.95	8,838.85	8,812.32	26.53	333.172	
6,900.00	6,868.74	6,683.46	6,681.82	20.63	8.01	161.09	-2,048.59	-8,455.28	8,865.94	8,839.22	26.72	331.787	
6,950.00	6,907.77	6,722.06	6,720.41	20.78	8.05	160.62	-2,048.82	-8,455.65	8,896.50	8,869.59	26.92	330.534	
7,000.00	6,943.94	6,763.21	6,761.56	20.93	8.10	159.79	-2,049.07	-8,455.98	8,930.24	8,903.13	27.11	329.389	
7,050.00	6,976.97	6,798.90	6,797.25	21.08	8.14	158.53	-2,049.29	-8,456.31	8,966.99	8,939.69	27.30	328.447	
7,100.00	7,006.62	6,828.92	6,827.27	21.23	8.18	156.73	-2,049.46	-8,456.55	9,006.39	8,978.91	27.48	327.697	
7,150.00	7,032.64	6,851.30	6,849.64	21.38	8.21	154.19	-2,049.58	-8,456.75	9,048.20	9,020.54	27.66	327.148	
7,200.00	7,054.86	6,881.71	6,880.05	21.53	8.24	150.67	-2,049.76	-8,456.99	9,092.07	9,064.23	27.84	326.575	
7,250.00	7,073.09	6,908.76	6,907.11	21.68	8.27	145.55	-2,049.90	-8,457.19	9,137.67	9,109.65	28.02	326.120	
7,300.00	7,087.20	6,927.70	6,926.04	21.83	8.30	137.81	-2,050.00	-8,457.31	9,184.66	9,156.47	28.19	325.835	
7,350.00	7,097.08	6,932.40	6,930.74	21.98	8.30	125.55	-2,050.03	-8,457.34	9,232.70	9,204.36	28.34	325.779	
7,400.00	7,102.66	6,935.75	6,934.10	22.13	8.31	106.73	-2,050.05	-8,457.36	9,281.41	9,252.92	28.49	325.765	
7,438.94	7,104.00	6,936.43	6,934.78	22.25	8.31	87.80	-2,050.05	-8,457.37	9,319.58	9,290.98	28.61	325.789	
7,500.00	7,104.02	6,936.18	6,934.53	22.43	8.31	87.79	-2,050.05	-8,457.36	9,379.51	9,350.72	28.79	325.844	
7,600.00	7,104.06	6,935.77	6,934.12	22.74	8.31	87.78	-2,050.05	-8,457.36	9,477.67	9,448.59	29.08	325.933	
7,700.00	7,104.10	6,935.37	6,933.71	23.04	8.31	87.76	-2,050.05	-8,457.36	9,575.87	9,546.50	29.37	326.020	
7,800.00	7,104.14	6,934.97	6,933.31	23.34	8.31	87.75	-2,050.04	-8,457.36	9,674.11	9,644.44	29.67	326.106	
7,900.00	7,104.18	6,934.57	6,932.91	23.64	8.31	87.74	-2,050.04	-8,457.35	9,772.38	9,742.42	29.96	326.189	
8,000.00	7,104.22	6,934.18	6,932.52	23.94	8.31	87.72	-2,050.04	-8,457.35	9,870.69	9,840.44	30.25	326.271	
8,100.00	7,104.26	6,933.78	6,932.13	24.24	8.31	87.71	-2,050.04	-8,457.35	9,969.03	9,938.49	30.55	326.351	
8,200.00	7,104.30	6,933.40	6,931.74	24.54	8.31	87.70	-2,050.04	-8,457.35	10,067.41	10,036.57	30.84	326.430	
8,300.00	7,104.34	6,933.01	6,931.36	24.84	8.30	87.69	-2,050.03	-8,457.34	10,165.82	10,134.68	31.14	326.506	
8,400.00	7,104.38	6,932.63	6,930.98	25.14	8.30	87.68	-2,050.03	-8,457.34	10,264.25	10,232.82	31.43	326.582	
8,500.00	7,104.42	6,932.25	6,930.60	25.44	8.30	87.66	-2,050.03	-8,457.34	10,362.72	10,331.00	31.72	326.655	
8,600.00	7,104.45	6,931.88	6,930.22	25.74	8.30	87.65	-2,050.03	-8,457.34	10,461.22	10,429.20	32.02	326.728	
8,700.00	7,104.49	6,931.51	6,929.85	26.04	8.30	87.64	-2,050.03	-8,457.33	10,559.74	10,527.43	32.31	326.798	
8,800.00	7,104.53	6,931.14	6,929.49	26.34	8.30	87.63	-2,050.02	-8,457.33	10,658.29	10,625.69	32.61	326.868	
8,900.00	7,104.57	6,930.78	6,929.12	26.64	8.30	87.62	-2,050.02	-8,457.33	10,756.87	10,723.97	32.90	326.936	
9,000.00	7,104.61	6,930.41	6,928.76	26.95	8.30	87.60	-2,050.02	-8,457.33	10,855.48	10,822.28	33.20	327.003	
9,100.00	7,104.65	6,930.06	6,928.40	27.25	8.30	87.59	-2,050.02	-8,457.32	10,954.11	10,920.62	33.49	327.068	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137C (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,200.00	7,104.69	6,929.70	6,928.04	27.55	8.30	87.58	-2,050.01	-8,457.32	11,052.76	11,018.98	33.79	327.132	
9,300.00	7,104.73	6,929.35	6,927.69	27.85	8.30	87.57	-2,050.01	-8,457.32	11,151.44	11,117.36	34.08	327.195	
9,400.00	7,104.77	6,929.00	6,927.34	28.15	8.30	87.56	-2,050.01	-8,457.32	11,250.14	11,215.77	34.38	327.257	
9,500.00	7,104.81	9,500.00	6,925.12	28.45	11.54	87.49	-2,050.00	-8,457.30	11,348.87	11,311.25	37.62	301.696	
9,600.00	7,104.85	9,600.00	6,924.50	28.75	11.67	87.47	-2,049.99	-8,457.30	11,447.61	11,409.59	38.03	301.054	
9,700.00	7,104.89	9,700.00	6,923.89	29.05	11.80	87.45	-2,049.99	-8,457.30	11,546.38	11,507.95	38.43	300.427	
9,800.00	7,104.92	9,800.00	6,923.27	29.35	11.93	87.43	-2,049.99	-8,457.29	11,645.17	11,606.33	38.84	299.814	
9,900.00	7,104.96	9,900.00	6,922.65	29.65	12.06	87.41	-2,049.98	-8,457.29	11,743.98	11,704.73	39.25	299.215	
10,000.00	7,105.00	10,000.00	6,922.04	29.95	12.19	87.39	-2,049.98	-8,457.28	11,842.81	11,803.15	39.66	298.629 SF	
10,100.00	7,105.04	6,929.63	6,927.98	30.25	8.30	87.58	-2,050.02	-8,457.32	11,941.66	11,905.21	36.45	327.629	
10,200.00	7,105.08	6,928.74	6,927.08	30.55	8.30	87.55	-2,050.01	-8,457.31	12,040.53	12,003.78	36.74	327.688	
10,300.00	7,105.12	6,927.83	6,926.18	30.85	8.30	87.52	-2,050.00	-8,457.31	12,139.42	12,102.38	37.04	327.746	
10,400.00	7,105.16	6,926.92	6,925.26	31.15	8.30	87.49	-2,050.00	-8,457.30	12,238.32	12,200.99	37.33	327.804	
10,500.00	7,105.20	6,925.99	6,924.33	31.45	8.30	87.46	-2,049.99	-8,457.30	12,337.24	12,299.61	37.63	327.861	
10,600.00	7,105.24	6,925.05	6,923.39	31.75	8.29	87.43	-2,049.99	-8,457.29	12,436.18	12,398.26	37.92	327.917	
10,700.00	7,105.28	6,924.09	6,922.44	32.05	8.29	87.40	-2,049.98	-8,457.29	12,535.14	12,496.92	38.22	327.972	
10,800.00	7,105.32	6,923.13	6,921.47	32.35	8.29	87.37	-2,049.98	-8,457.28	12,634.11	12,595.60	38.52	328.026	
10,900.00	7,105.36	6,922.15	6,920.49	32.66	8.29	87.34	-2,049.97	-8,457.27	12,733.10	12,694.29	38.81	328.080	
11,000.00	7,105.39	6,921.15	6,919.50	32.96	8.29	87.31	-2,049.96	-8,457.27	12,832.10	12,793.00	39.11	328.133	
11,100.00	7,105.43	6,920.15	6,918.49	33.26	8.29	87.28	-2,049.96	-8,457.26	12,931.12	12,891.72	39.40	328.185	
11,200.00	7,105.47	6,919.12	6,917.47	33.56	8.29	87.25	-2,049.95	-8,457.26	13,030.16	12,990.46	39.70	328.236	
11,300.00	7,105.51	6,918.09	6,916.43	33.86	8.29	87.21	-2,049.95	-8,457.25	13,129.21	13,089.22	39.99	328.287	
11,400.00	7,105.55	6,917.04	6,915.38	34.16	8.29	87.18	-2,049.94	-8,457.24	13,228.27	13,187.98	40.29	328.337	
11,500.00	7,105.59	6,915.98	6,914.32	34.46	8.28	87.15	-2,049.93	-8,457.24	13,327.35	13,286.77	40.58	328.386	
11,600.00	7,105.63	6,914.90	6,913.24	34.76	8.28	87.11	-2,049.93	-8,457.23	13,426.44	13,385.56	40.88	328.435	
11,700.00	7,105.67	6,913.80	6,912.15	35.06	8.28	87.08	-2,049.92	-8,457.22	13,525.55	13,484.37	41.18	328.483	
11,800.00	7,105.71	6,912.69	6,911.03	35.36	8.28	87.04	-2,049.92	-8,457.21	13,624.66	13,583.19	41.47	328.531	
11,900.00	7,105.75	6,911.56	6,909.91	35.66	8.28	87.01	-2,049.91	-8,457.21	13,723.79	13,682.03	41.77	328.578	
12,000.00	7,105.79	6,910.42	6,908.76	35.96	8.28	86.97	-2,049.90	-8,457.20	13,822.94	13,780.87	42.06	328.624	
12,100.00	7,105.83	6,909.26	6,907.60	36.26	8.28	86.93	-2,049.90	-8,457.19	13,922.09	13,879.73	42.36	328.670	
12,200.00	7,105.86	6,908.08	6,906.43	36.56	8.27	86.89	-2,049.89	-8,457.18	14,021.26	13,978.60	42.65	328.716	
12,300.00	7,105.90	6,906.88	6,905.23	36.86	8.27	86.86	-2,049.89	-8,457.18	14,120.44	14,077.49	42.95	328.761	
12,400.00	7,105.94	6,905.67	6,904.02	37.16	8.27	86.82	-2,049.88	-8,457.17	14,219.63	14,176.38	43.25	328.805	
12,500.00	7,105.98	6,904.99	6,903.34	37.46	8.27	86.80	-2,049.88	-8,457.16	14,318.83	14,275.28	43.54	328.843	
12,600.00	7,106.02	6,903.58	6,901.93	37.76	8.27	86.75	-2,049.87	-8,457.15	14,418.04	14,374.20	43.84	328.888	
12,700.00	7,106.06	6,902.15	6,900.50	38.06	8.27	86.71	-2,049.86	-8,457.14	14,517.26	14,473.13	44.13	328.933	
12,800.00	7,106.10	6,900.71	6,899.05	38.36	8.26	86.66	-2,049.86	-8,457.13	14,616.50	14,572.07	44.43	328.977	
12,900.00	7,106.14	6,899.24	6,897.58	38.66	8.26	86.61	-2,049.85	-8,457.12	14,715.74	14,671.01	44.73	329.020	
13,000.00	7,106.18	6,897.75	6,896.09	38.96	8.26	86.57	-2,049.84	-8,457.11	14,814.99	14,769.97	45.02	329.064	
13,100.00	7,106.22	6,896.24	6,894.58	39.26	8.26	86.52	-2,049.83	-8,457.10	14,914.26	14,868.94	45.32	329.106	
13,200.00	7,106.26	6,894.71	6,893.05	39.56	8.26	86.47	-2,049.83	-8,457.09	15,013.53	14,967.92	45.61	329.149	
13,300.00	7,106.30	6,893.15	6,891.50	39.86	8.26	86.42	-2,049.82	-8,457.08	15,112.81	15,066.91	45.91	329.191	
13,400.00	7,106.33	6,891.58	6,889.93	40.16	8.25	86.37	-2,049.81	-8,457.07	15,212.11	15,165.90	46.20	329.232	
13,500.00	7,106.37	6,889.98	6,888.33	40.46	8.25	86.32	-2,049.80	-8,457.05	15,311.41	15,264.91	46.50	329.273	
13,600.00	7,106.41	6,888.36	6,886.71	40.76	8.25	86.27	-2,049.79	-8,457.04	15,410.72	15,363.92	46.80	329.314	
13,700.00	7,106.45	6,886.72	6,885.06	41.06	8.25	86.22	-2,049.78	-8,457.03	15,510.04	15,462.95	47.09	329.354	
13,800.00	7,106.49	6,885.05	6,883.40	41.36	8.25	86.16	-2,049.77	-8,457.02	15,609.37	15,561.98	47.39	329.395	
13,900.00	7,106.53	6,883.36	6,881.70	41.67	8.24	86.11	-2,049.76	-8,457.01	15,708.70	15,661.02	47.68	329.434	
14,000.00	7,106.57	6,881.64	6,879.98	41.97	8.24	86.05	-2,049.75	-8,456.99	15,808.05	15,760.07	47.98	329.474	
14,100.00	7,106.61	6,879.89	6,878.24	42.27	8.24	86.00	-2,049.74	-8,456.98	15,907.40	15,859.12	48.28	329.513	
14,200.00	7,106.65	6,878.12	6,876.47	42.57	8.24	85.94	-2,049.73	-8,456.97	16,006.76	15,958.19	48.57	329.552	
14,300.00	7,106.69	6,876.33	6,874.67	42.87	8.24	85.89	-2,049.72	-8,456.95	16,106.13	16,057.26	48.87	329.590	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #137C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,400.00	7,106.73	6,874.60	6,872.94	43.17	8.23	85.83	-2,049.71	-8,456.94	16,205.50	16,156.34	49.16	329.628	
14,500.00	7,106.76	6,873.10	6,871.45	43.47	8.23	85.78	-2,049.70	-8,456.93	16,304.89	16,255.43	49.46	329.663	
14,600.00	7,106.80	6,871.59	6,869.94	43.77	8.23	85.74	-2,049.70	-8,456.91	16,404.28	16,354.52	49.76	329.698	
14,700.00	7,106.84	6,870.06	6,868.40	44.07	8.23	85.69	-2,049.69	-8,456.90	16,503.68	16,453.63	50.05	329.732	
14,800.00	7,106.88	6,868.50	6,866.85	44.37	8.23	85.64	-2,049.68	-8,456.89	16,603.08	16,552.74	50.35	329.767	
14,900.00	7,106.92	6,866.93	6,865.27	44.67	8.22	85.59	-2,049.67	-8,456.88	16,702.50	16,651.85	50.64	329.801	
15,000.00	7,106.96	6,865.33	6,863.67	44.97	8.22	85.54	-2,049.66	-8,456.86	16,801.92	16,750.98	50.94	329.835	
15,100.00	7,107.00	6,863.71	6,862.05	45.27	8.22	85.49	-2,049.65	-8,456.85	16,901.34	16,850.11	51.24	329.868	
15,200.00	7,107.04	6,862.06	6,860.41	45.57	8.22	85.43	-2,049.64	-8,456.84	17,000.78	16,949.24	51.53	329.902	
15,300.00	7,107.08	6,860.40	6,858.74	45.87	8.22	85.38	-2,049.63	-8,456.82	17,100.22	17,048.39	51.83	329.935	
15,400.00	7,107.12	6,858.71	6,857.05	46.17	8.21	85.33	-2,049.62	-8,456.81	17,199.66	17,147.54	52.13	329.968	
15,500.00	7,107.16	6,856.99	6,855.34	46.47	8.21	85.27	-2,049.61	-8,456.79	17,299.11	17,246.69	52.42	330.001	
15,600.00	7,107.20	6,855.25	6,853.60	46.77	8.21	85.22	-2,049.60	-8,456.78	17,398.57	17,345.85	52.72	330.033	
15,700.00	7,107.23	6,853.49	6,851.83	47.07	8.21	85.16	-2,049.59	-8,456.76	17,498.04	17,445.02	53.01	330.065	
15,800.00	7,107.27	6,851.70	6,850.04	47.37	8.21	85.10	-2,049.58	-8,456.75	17,597.51	17,544.20	53.31	330.097	
15,900.00	7,107.31	6,850.00	6,848.35	47.67	8.20	85.05	-2,049.57	-8,456.73	17,696.98	17,643.38	53.61	330.128	
16,000.00	7,107.35	6,850.00	6,848.35	47.97	8.20	85.05	-2,049.57	-8,456.73	17,796.47	17,742.56	53.90	330.147	
16,100.00	7,107.39	6,848.71	6,847.06	48.27	8.20	85.01	-2,049.56	-8,456.72	17,895.95	17,841.75	54.20	330.175	
16,200.00	7,107.43	6,848.09	6,846.43	48.57	8.20	84.99	-2,049.56	-8,456.72	17,995.45	17,940.95	54.50	330.198	
16,300.00	7,107.47	6,847.47	6,845.81	48.87	8.20	84.97	-2,049.56	-8,456.71	18,094.95	18,040.15	54.80	330.220	
16,400.00	7,107.51	6,846.85	6,845.19	49.17	8.20	84.95	-2,049.55	-8,456.71	18,194.45	18,139.36	55.09	330.242	
16,500.00	7,107.55	6,846.23	6,844.58	49.47	8.20	84.93	-2,049.55	-8,456.70	18,293.96	18,238.57	55.39	330.264	
16,600.00	7,107.59	6,845.61	6,843.96	49.77	8.20	84.91	-2,049.55	-8,456.70	18,393.48	18,337.79	55.69	330.286	
16,700.00	7,107.63	6,845.00	6,843.35	50.07	8.20	84.89	-2,049.54	-8,456.69	18,493.00	18,437.01	55.99	330.307	
16,800.00	7,107.67	6,844.38	6,842.73	50.37	8.20	84.87	-2,049.54	-8,456.69	18,592.52	18,536.24	56.28	330.329	
16,900.00	7,107.70	6,843.77	6,842.12	50.67	8.20	84.85	-2,049.54	-8,456.68	18,692.05	18,635.47	56.58	330.350	
17,000.00	7,107.74	6,843.16	6,841.51	50.97	8.20	84.83	-2,049.53	-8,456.67	18,791.59	18,734.71	56.88	330.370	
17,100.00	7,107.78	6,842.55	6,840.90	51.27	8.19	84.82	-2,049.53	-8,456.67	18,891.13	18,833.95	57.18	330.391	
17,200.00	7,107.82	6,841.95	6,840.30	51.57	8.19	84.80	-2,049.53	-8,456.66	18,990.67	18,933.20	57.48	330.411	
17,300.00	7,107.86	6,841.34	6,839.69	51.87	8.19	84.78	-2,049.52	-8,456.66	19,090.22	19,032.45	57.77	330.431	
17,400.00	7,107.90	6,840.74	6,839.09	52.17	8.19	84.76	-2,049.52	-8,456.65	19,189.78	19,131.71	58.07	330.451	
17,500.00	7,107.94	6,840.14	6,838.48	52.47	8.19	84.74	-2,049.52	-8,456.65	19,289.34	19,230.97	58.37	330.470	
17,600.00	7,107.98	6,839.53	6,837.88	52.77	8.19	84.72	-2,049.51	-8,456.64	19,388.90	19,330.24	58.67	330.489	
17,700.00	7,108.02	6,838.94	6,837.28	53.07	8.19	84.70	-2,049.51	-8,456.64	19,488.47	19,429.51	58.97	330.508	
17,800.00	7,108.06	6,838.34	6,836.69	53.37	8.19	84.68	-2,049.51	-8,456.63	19,588.04	19,528.78	59.26	330.527	
17,900.00	7,108.10	6,837.74	6,836.09	53.67	8.19	84.66	-2,049.50	-8,456.63	19,687.62	19,628.06	59.56	330.546	
18,000.00	7,108.14	6,837.15	6,835.50	53.97	8.19	84.64	-2,049.50	-8,456.62	19,787.20	19,727.34	59.86	330.564	
18,100.00	7,108.17	6,836.55	6,834.90	54.27	8.19	84.63	-2,049.50	-8,456.62	19,886.79	19,826.63	60.16	330.583	
18,200.00	7,108.21	6,835.96	6,834.31	54.57	8.19	84.61	-2,049.49	-8,456.61	19,986.38	19,925.92	60.45	330.601	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	20.51	20.51	0.00	0.19	97.80	-1,145.13	8,361.31	8,439.37				
100.00	100.00	120.51	120.51	0.23	1.11	97.80	-1,145.13	8,361.31	8,439.37	8,438.03	1.34	6,295.756	
200.00	200.00	220.51	220.51	0.53	2.04	97.80	-1,145.13	8,361.31	8,439.37	8,436.80	2.56	3,290.603	
300.00	300.00	320.52	320.51	0.83	3.22	97.80	-1,145.13	8,361.31	8,439.37	8,435.32	4.04	2,087.262	
400.00	400.00	420.52	420.51	1.13	5.07	97.80	-1,145.13	8,361.31	8,439.37	8,433.17	6.19	1,362.988	
500.00	500.00	520.52	520.51	1.43	6.91	97.80	-1,145.13	8,361.31	8,439.37	8,431.03	8.34	1,011.872	
600.00	599.98	618.98	618.97	1.73	8.73	-57.84	-1,144.64	8,361.31	8,438.37	8,427.91	10.46	806.690	
644.12	644.06	662.20	662.19	1.86	9.53	-57.86	-1,144.71	8,361.31	8,437.38	8,425.99	11.39	740.652	
700.00	699.87	716.93	716.92	2.03	10.54	-57.88	-1,144.85	8,361.31	8,435.90	8,423.33	12.57	671.054	
800.00	799.74	820.28	820.26	2.33	12.49	-57.91	-1,145.13	8,361.31	8,433.27	8,418.45	14.81	569.370	
900.00	899.62	920.15	920.13	2.63	14.44	-57.94	-1,145.13	8,361.31	8,430.59	8,413.52	17.07	493.954	
1,000.00	999.49	1,020.02	1,020.00	2.93	16.40	-57.97	-1,145.13	8,361.31	8,427.92	8,408.60	19.32	436.147	
1,100.00	1,099.36	1,118.57	1,118.54	3.23	18.33	-58.00	-1,144.61	8,361.31	8,425.18	8,403.63	21.55	390.895	
1,200.00	1,199.24	1,216.58	1,216.56	3.53	20.25	-58.02	-1,144.81	8,361.31	8,422.54	8,398.77	23.77	354.288	
1,300.00	1,299.11	1,319.69	1,319.62	3.83	22.30	-58.05	-1,145.13	8,361.31	8,419.92	8,393.80	26.12	322.310	
1,400.00	1,398.98	1,419.56	1,419.50	4.13	24.46	-58.08	-1,145.13	8,361.31	8,417.26	8,388.67	28.59	294.398	
1,500.00	1,498.86	1,519.44	1,519.37	4.43	26.63	-58.11	-1,145.13	8,361.31	8,414.60	8,383.54	31.06	270.921	
1,600.00	1,598.73	1,618.48	1,618.40	4.73	28.78	-58.15	-1,143.88	8,361.31	8,411.78	8,378.27	33.51	251.030	
1,700.00	1,698.60	1,715.17	1,715.09	5.03	30.88	-58.17	-1,144.10	8,361.31	8,409.15	8,373.24	35.91	234.187	
1,800.00	1,798.48	1,811.90	1,811.81	5.33	32.98	-58.20	-1,144.59	8,361.31	8,406.57	8,368.26	38.31	219.451	
1,900.00	1,898.35	1,919.04	1,918.86	5.63	35.26	-58.23	-1,145.13	8,361.31	8,403.98	8,363.10	40.89	205.548	
2,000.00	1,998.22	2,018.92	2,018.74	5.93	37.30	-58.26	-1,145.13	8,361.31	8,401.33	8,358.11	43.23	194.357	
2,100.00	2,098.10	2,118.79	2,118.61	6.23	39.34	-58.29	-1,145.13	8,361.31	8,398.69	8,353.12	45.57	184.316	
2,200.00	2,197.97	2,214.45	2,214.25	6.53	41.29	-58.32	-1,143.98	8,361.31	8,395.89	8,348.07	47.82	175.569	
2,300.00	2,297.84	2,309.82	2,309.61	6.83	43.24	-58.35	-1,144.56	8,361.31	8,393.33	8,343.26	50.07	167.633	
2,400.00	2,397.72	2,418.47	2,418.23	7.13	45.50	-58.37	-1,145.13	8,361.31	8,390.76	8,338.13	52.63	159.438	
2,500.00	2,497.59	2,518.34	2,518.10	7.43	47.62	-58.40	-1,145.13	8,361.31	8,388.12	8,333.07	55.05	152.386	
2,600.00	2,597.46	2,618.22	2,617.98	7.73	49.74	-58.43	-1,145.13	8,361.31	8,385.48	8,328.02	57.46	145.928	
2,700.00	2,697.34	2,718.09	2,717.85	8.03	51.85	-58.46	-1,145.13	8,361.31	8,382.85	8,322.97	59.88	139.992	
2,800.00	2,797.21	2,817.28	2,817.04	8.33	53.96	-58.50	-1,144.30	8,361.31	8,380.11	8,317.83	62.28	134.546	
2,900.00	2,897.09	2,916.01	2,915.77	8.63	56.05	-58.52	-1,144.42	8,361.31	8,377.50	8,312.82	64.68	129.526	
3,000.00	2,996.96	3,014.75	3,014.50	8.93	58.15	-58.55	-1,144.65	8,361.31	8,374.90	8,307.83	67.07	124.864	
3,100.00	3,096.83	3,113.50	3,113.25	9.23	60.24	-58.58	-1,144.99	8,361.31	8,372.32	8,302.85	69.47	120.524	
3,200.00	3,196.71	3,217.59	3,217.22	9.53	62.68	-58.61	-1,145.13	8,361.31	8,369.71	8,297.51	72.20	115.920	
3,300.00	3,296.58	3,317.46	3,317.09	9.83	65.12	-58.64	-1,145.13	8,361.31	8,367.09	8,292.14	74.95	111.637	
3,400.00	3,396.45	3,416.14	3,415.75	10.13	67.54	-58.68	-1,143.53	8,361.31	8,364.28	8,286.61	77.67	107.695	
3,500.00	3,496.33	3,510.95	3,510.55	10.43	69.86	-58.70	-1,143.89	8,361.31	8,361.71	8,281.42	80.29	104.145	
3,600.00	3,596.20	3,605.82	3,605.40	10.73	72.19	-58.72	-1,144.72	8,361.31	8,359.20	8,276.29	82.91	100.819	
3,700.00	3,696.07	3,717.12	3,716.59	11.03	74.80	-58.75	-1,145.13	8,361.31	8,356.63	8,270.81	85.82	97.372	
3,800.00	3,795.95	3,812.59	3,812.04	11.33	76.99	-58.79	-1,144.38	8,361.31	8,353.93	8,265.62	88.31	94.593	
3,900.00	3,895.82	3,916.93	3,916.33	11.63	79.35	-58.81	-1,145.13	8,361.31	8,351.41	8,260.43	90.98	91.795	
4,000.00	3,995.69	4,016.81	4,016.21	11.93	81.48	-58.84	-1,145.13	8,361.31	8,348.81	8,255.40	93.40	89.384	
4,100.00	4,095.57	4,116.68	4,116.08	12.23	83.60	-58.87	-1,145.13	8,361.31	8,346.21	8,250.38	95.83	87.094	
4,200.00	4,195.44	4,216.55	4,215.95	12.53	85.73	-58.90	-1,145.13	8,361.31	8,343.60	8,245.35	98.25	84.918	
4,300.00	4,295.31	4,316.43	4,315.83	12.83	87.85	-58.93	-1,145.13	8,361.31	8,341.01	8,240.33	100.68	82.847	
4,400.00	4,395.19	4,416.30	4,415.70	13.13	89.98	-58.96	-1,145.13	8,361.31	8,338.41	8,235.30	103.11	80.872	
4,500.00	4,495.06	4,516.01	4,515.39	13.43	92.10	-59.01	-1,142.49	8,361.31	8,335.51	8,229.98	105.53	78.989	
4,600.00	4,594.93	4,614.54	4,613.91	13.73	94.20	-59.04	-1,142.57	8,361.31	8,332.93	8,225.00	107.92	77.211	
4,700.00	4,694.81	4,713.08	4,712.45	14.03	96.30	-59.06	-1,142.80	8,361.31	8,330.37	8,220.04	110.32	75.510	
4,800.00	4,794.68	4,811.64	4,811.00	14.33	98.39	-59.09	-1,143.16	8,361.31	8,327.82	8,215.10	112.72	73.881	
4,900.00	4,894.55	4,910.22	4,909.57	14.63	100.49	-59.12	-1,143.67	8,361.31	8,325.30	8,210.18	115.12	72.320	
5,000.00	4,994.43	5,008.81	5,008.15	14.93	102.59	-59.14	-1,144.32	8,361.31	8,322.79	8,205.27	117.51	70.823	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,115.60	5,114.82	15.23	104.86	-59.17	-1,145.13	8,361.31	8,320.30	8,200.21	120.08	69.288	
5,200.00	5,194.18	5,215.47	5,214.69	15.53	106.90	-59.20	-1,145.13	8,361.31	8,317.72	8,195.29	122.42	67.942	
5,300.00	5,294.05	5,315.35	5,314.56	15.83	108.94	-59.23	-1,145.13	8,361.31	8,315.14	8,190.38	124.76	66.647	
5,400.00	5,393.92	5,415.22	5,414.44	16.13	110.98	-59.26	-1,145.13	8,361.31	8,312.57	8,185.46	127.10	65.399	
5,500.00	5,493.80	5,515.09	5,514.31	16.43	113.02	-59.29	-1,145.13	8,361.31	8,310.00	8,180.55	129.45	64.197	
5,600.00	5,593.67	5,614.97	5,614.18	16.73	115.06	-59.32	-1,145.13	8,361.31	8,307.43	8,175.64	131.79	63.037	
5,700.00	5,693.54	5,714.72	5,713.91	17.03	117.10	-59.36	-1,142.54	8,361.31	8,304.57	8,170.45	134.12	61.917	
5,800.00	5,793.42	5,813.29	5,812.48	17.33	119.11	-59.39	-1,142.62	8,361.31	8,302.02	8,165.58	136.44	60.848	
5,900.00	5,893.29	5,911.89	5,911.07	17.63	121.13	-59.42	-1,142.85	8,361.31	8,299.48	8,160.73	138.75	59.815	
6,000.00	5,993.16	6,010.50	6,009.68	17.93	123.14	-59.45	-1,143.22	8,361.31	8,296.96	8,155.90	141.07	58.816	
6,100.00	6,093.04	6,109.13	6,108.30	18.23	125.16	-59.47	-1,143.73	8,361.31	8,294.46	8,151.08	143.38	57.849	
6,200.00	6,192.91	6,207.77	6,206.93	18.53	127.17	-59.50	-1,144.39	8,361.31	8,291.98	8,146.28	145.70	56.913	
6,300.00	6,292.78	6,308.00	6,307.08	18.83	129.21	-59.52	-1,145.13	8,361.31	8,289.50	8,141.47	148.04	55.996	
6,400.00	6,392.66	6,405.10	6,404.24	19.13	131.20	-59.55	-1,146.13	8,361.32	8,287.06	8,136.73	150.33	55.126	
6,435.81	6,428.43	6,308.00	6,307.08	19.23	129.21	-59.52	-1,145.13	8,361.31	8,287.25	8,138.83	148.43	55.834	
6,500.00	6,492.53	6,308.00	6,307.08	19.43	129.21	-59.52	-1,145.13	8,361.31	8,286.96	8,138.36	148.60	55.767	
6,505.39	6,497.91	6,308.00	6,307.08	19.44	129.21	-59.52	-1,145.13	8,361.31	8,286.96	8,138.35	148.61	55.762	
6,551.20	6,543.67	6,308.00	6,307.08	19.58	129.21	-59.52	-1,145.13	8,361.31	8,287.09	8,138.36	148.73	55.719	
6,600.00	6,592.30	6,308.00	6,307.08	19.73	129.21	-17.53	-1,145.13	8,361.31	8,285.43	8,136.58	148.85	55.662	
6,650.00	6,641.67	6,308.00	6,307.08	19.88	129.21	-7.51	-1,145.13	8,361.31	8,279.76	8,130.79	148.97	55.579	
6,700.00	6,690.21	6,308.00	6,307.08	20.03	129.21	-3.40	-1,145.13	8,361.31	8,270.10	8,121.01	149.09	55.471	
6,750.00	6,737.54	6,308.00	6,307.08	20.18	129.21	-1.12	-1,145.13	8,361.31	8,256.50	8,107.30	149.20	55.339	
6,800.00	6,783.30	6,308.00	6,307.08	20.33	129.21	0.39	-1,145.13	8,361.31	8,239.06	8,089.75	149.31	55.182	
6,850.00	6,827.15	6,308.00	6,307.08	20.48	129.21	1.53	-1,145.13	8,361.31	8,217.87	8,068.46	149.41	55.001	
6,900.00	6,868.74	6,308.00	6,307.08	20.63	129.21	2.49	-1,145.13	8,361.31	8,193.08	8,043.56	149.52	54.797	
6,950.00	6,907.77	6,308.00	6,307.08	20.78	129.21	3.37	-1,145.13	8,361.31	8,164.84	8,015.22	149.62	54.570	
7,000.00	6,943.94	6,308.00	6,307.08	20.93	129.21	4.26	-1,145.13	8,361.31	8,133.33	7,983.61	149.72	54.322	
7,050.00	6,976.97	6,308.00	6,307.08	21.08	129.21	5.21	-1,145.13	8,361.31	8,098.76	7,948.93	149.83	54.054	
7,100.00	7,006.62	6,308.00	6,307.08	21.23	129.21	6.31	-1,145.13	8,361.31	8,061.34	7,911.41	149.93	53.766	
7,150.00	7,032.64	6,308.00	6,307.08	21.38	129.21	7.64	-1,145.13	8,361.31	8,021.33	7,871.29	150.04	53.461	
7,200.00	7,054.86	6,308.00	6,307.08	21.53	129.21	9.34	-1,145.13	8,361.31	7,978.99	7,828.84	150.15	53.140	
7,250.00	7,073.09	6,308.00	6,307.08	21.68	129.21	11.66	-1,145.13	8,361.31	7,934.62	7,784.35	150.27	52.804	
7,300.00	7,087.20	6,308.00	6,307.08	21.83	129.21	15.04	-1,145.13	8,361.31	7,888.51	7,738.13	150.39	52.455	
7,350.00	7,097.08	6,308.00	6,307.08	21.98	129.21	20.42	-1,145.13	8,361.31	7,841.00	7,690.48	150.51	52.095	
7,400.00	7,102.66	6,308.00	6,307.08	22.13	129.21	30.10	-1,145.13	8,361.31	7,792.41	7,641.77	150.64	51.727	
7,438.94	7,104.00	6,308.00	6,307.08	22.25	129.21	44.31	-1,145.13	8,361.31	7,754.06	7,603.31	150.75	51.436	
7,500.00	7,104.02	6,308.00	6,307.08	22.43	129.21	44.31	-1,145.13	8,361.31	7,693.68	7,542.75	150.93	50.977	
7,600.00	7,104.06	6,308.00	6,307.08	22.74	129.21	44.31	-1,145.13	8,361.31	7,594.81	7,443.60	151.21	50.228	
7,700.00	7,104.10	6,308.00	6,307.08	23.04	129.21	44.31	-1,145.13	8,361.31	7,495.97	7,344.48	151.49	49.482	
7,800.00	7,104.14	6,308.00	6,307.08	23.34	129.21	44.31	-1,145.13	8,361.31	7,397.16	7,245.39	151.77	48.740	
7,900.00	7,104.18	6,308.00	6,307.08	23.64	129.21	44.31	-1,145.13	8,361.31	7,298.39	7,146.34	152.05	48.000	
8,000.00	7,104.22	6,308.00	6,307.08	23.94	129.21	44.31	-1,145.13	8,361.31	7,199.65	7,047.32	152.33	47.264	
8,100.00	7,104.26	6,308.00	6,307.08	24.24	129.21	44.31	-1,145.13	8,361.31	7,100.94	6,948.33	152.61	46.531	
8,200.00	7,104.30	6,308.00	6,307.08	24.54	129.21	44.31	-1,145.13	8,361.31	7,002.27	6,849.39	152.88	45.802	
8,300.00	7,104.34	6,308.00	6,307.08	24.84	129.21	44.31	-1,145.13	8,361.31	6,903.64	6,750.48	153.16	45.075	
8,400.00	7,104.38	6,308.00	6,307.08	25.14	129.21	44.31	-1,145.13	8,361.31	6,805.05	6,651.61	153.43	44.352	
8,500.00	7,104.42	6,308.00	6,307.08	25.44	129.21	44.31	-1,145.13	8,361.31	6,706.50	6,552.79	153.71	43.632	
8,600.00	7,104.45	6,308.00	6,307.08	25.74	129.21	44.31	-1,145.13	8,361.31	6,607.99	6,454.01	153.98	42.915	
8,700.00	7,104.49	6,308.00	6,307.08	26.04	129.21	44.31	-1,145.13	8,361.31	6,509.53	6,355.28	154.25	42.201	
8,800.00	7,104.53	6,308.00	6,307.08	26.34	129.21	44.31	-1,145.13	8,361.31	6,411.12	6,256.60	154.52	41.491	
8,900.00	7,104.57	6,308.00	6,307.08	26.64	129.21	44.31	-1,145.13	8,361.31	6,312.76	6,157.97	154.79	40.783	
9,000.00	7,104.61	6,308.00	6,307.08	26.95	129.21	44.31	-1,145.13	8,361.31	6,214.45	6,059.39	155.05	40.079	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	6,308.00	6,307.08	27.25	129.21	44.31	-1,145.13	8,361.31	6,116.19	5,960.87	155.32	39.378	
9,200.00	7,104.69	6,308.00	6,307.08	27.55	129.21	44.31	-1,145.13	8,361.31	6,017.99	5,862.41	155.58	38.681	
9,300.00	7,104.73	6,308.00	6,307.08	27.85	129.21	44.31	-1,145.13	8,361.31	5,919.85	5,764.01	155.84	37.986	
9,400.00	7,104.77	6,308.00	6,307.08	28.15	129.21	44.31	-1,145.13	8,361.31	5,821.78	5,665.68	156.10	37.295	
9,500.00	7,104.81	6,308.00	6,307.08	28.45	129.21	44.31	-1,145.13	8,361.31	5,723.77	5,567.41	156.36	36.607	
9,600.00	7,104.85	6,308.00	6,307.08	28.75	129.21	44.31	-1,145.13	8,361.31	5,625.83	5,469.22	156.61	35.922	
9,700.00	7,104.89	6,308.00	6,307.08	29.05	129.21	44.31	-1,145.13	8,361.31	5,527.97	5,371.10	156.87	35.240	
9,800.00	7,104.92	6,308.00	6,307.08	29.35	129.21	44.31	-1,145.13	8,361.31	5,430.18	5,273.07	157.12	34.562	
9,900.00	7,104.96	6,308.00	6,307.08	29.65	129.21	44.31	-1,145.13	8,361.31	5,332.48	5,175.12	157.36	33.887	
10,000.00	7,105.00	6,308.00	6,307.08	29.95	129.21	44.31	-1,145.13	8,361.31	5,234.86	5,077.26	157.61	33.215	
10,100.00	7,105.04	6,308.00	6,307.08	30.25	129.21	44.31	-1,145.13	8,361.31	5,137.34	4,979.49	157.85	32.546	
10,200.00	7,105.08	6,308.00	6,307.08	30.55	129.21	44.31	-1,145.13	8,361.31	5,039.91	4,881.83	158.08	31.881	
10,300.00	7,105.12	6,308.00	6,307.08	30.85	129.21	44.31	-1,145.13	8,361.31	4,942.58	4,784.27	158.32	31.219	
10,400.00	7,105.16	6,308.00	6,307.08	31.15	129.21	44.31	-1,145.13	8,361.31	4,845.37	4,686.82	158.55	30.561	
10,500.00	7,105.20	6,308.00	6,307.08	31.45	129.21	44.31	-1,145.13	8,361.31	4,748.27	4,589.49	158.77	29.906	
10,600.00	7,105.24	6,308.00	6,307.08	31.75	129.21	44.31	-1,145.13	8,361.31	4,651.29	4,492.30	158.99	29.255	
10,700.00	7,105.28	6,308.00	6,307.08	32.05	129.21	44.31	-1,145.13	8,361.31	4,554.44	4,395.23	159.21	28.607	
10,800.00	7,105.32	6,308.00	6,307.08	32.35	129.21	44.31	-1,145.13	8,361.31	4,457.73	4,298.31	159.42	27.963	
10,900.00	7,105.36	6,308.00	6,307.08	32.66	129.21	44.31	-1,145.13	8,361.31	4,361.17	4,201.55	159.62	27.322	
11,000.00	7,105.39	6,308.00	6,307.08	32.96	129.21	44.31	-1,145.13	8,361.31	4,264.77	4,104.95	159.82	26.685	
11,100.00	7,105.43	6,308.00	6,307.08	33.26	129.21	44.31	-1,145.13	8,361.31	4,168.54	4,008.53	160.01	26.052	
11,200.00	7,105.47	6,308.00	6,307.08	33.56	129.21	44.31	-1,145.13	8,361.31	4,072.49	3,912.30	160.19	25.423	
11,300.00	7,105.51	6,308.00	6,307.08	33.86	129.21	44.31	-1,145.13	8,361.31	3,976.63	3,816.27	160.36	24.798	
11,400.00	7,105.55	6,308.00	6,307.08	34.16	129.21	44.31	-1,145.13	8,361.31	3,880.98	3,720.46	160.52	24.177	
11,500.00	7,105.59	6,308.00	6,307.08	34.46	129.21	44.31	-1,145.13	8,361.31	3,785.56	3,624.88	160.68	23.560	
11,600.00	7,105.63	6,308.00	6,307.08	34.76	129.21	44.31	-1,145.13	8,361.31	3,690.38	3,529.56	160.82	22.947	
11,700.00	7,105.67	6,308.00	6,307.08	35.06	129.21	44.31	-1,145.13	8,361.31	3,595.46	3,434.52	160.95	22.339	
11,800.00	7,105.71	6,308.00	6,307.08	35.36	129.21	44.31	-1,145.13	8,361.31	3,500.83	3,339.77	161.07	21.735	
11,900.00	7,105.75	6,308.00	6,307.08	35.66	129.21	44.31	-1,145.13	8,361.31	3,406.50	3,245.34	161.17	21.137	
12,000.00	7,105.79	6,308.00	6,307.08	35.96	129.21	44.31	-1,145.13	8,361.31	3,312.51	3,151.26	161.25	20.543	
12,100.00	7,105.83	6,308.00	6,307.08	36.26	129.21	44.31	-1,145.13	8,361.31	3,218.87	3,057.56	161.31	19.954	
12,200.00	7,105.86	6,308.00	6,307.08	36.56	129.21	44.31	-1,145.13	8,361.31	3,125.64	2,964.28	161.36	19.371	
12,300.00	7,105.90	6,308.00	6,307.08	36.86	129.21	44.31	-1,145.13	8,361.31	3,032.83	2,871.45	161.38	18.793	
12,400.00	7,105.94	6,308.00	6,307.08	37.16	129.21	44.31	-1,145.13	8,361.31	2,940.49	2,779.12	161.37	18.222	
12,500.00	7,105.98	6,308.00	6,307.08	37.46	129.21	44.31	-1,145.13	8,361.31	2,848.67	2,687.33	161.34	17.656	
12,600.00	7,106.02	6,308.00	6,307.08	37.76	129.21	44.31	-1,145.13	8,361.31	2,757.42	2,596.15	161.27	17.098	
12,700.00	7,106.06	6,308.00	6,307.08	38.06	129.21	44.31	-1,145.13	8,361.31	2,666.80	2,505.63	161.17	16.547	
12,800.00	7,106.10	6,308.00	6,307.08	38.36	129.21	44.31	-1,145.13	8,361.31	2,576.87	2,415.85	161.02	16.003	
12,900.00	7,106.14	6,308.00	6,307.08	38.66	129.21	44.31	-1,145.13	8,361.31	2,487.71	2,326.88	160.83	15.468	
13,000.00	7,106.18	6,308.00	6,307.08	38.96	129.21	44.31	-1,145.13	8,361.31	2,399.41	2,238.82	160.59	14.942	
13,100.00	7,106.22	6,308.00	6,307.08	39.26	129.21	44.31	-1,145.13	8,361.31	2,312.06	2,151.77	160.28	14.425	
13,200.00	7,106.26	6,308.00	6,307.08	39.56	129.21	44.31	-1,145.13	8,361.31	2,225.77	2,065.86	159.91	13.919	
13,300.00	7,106.30	6,308.00	6,307.08	39.86	129.21	44.31	-1,145.13	8,361.31	2,140.68	1,981.21	159.46	13.424	
13,400.00	7,106.33	6,308.00	6,307.08	40.16	129.21	44.31	-1,145.13	8,361.31	2,056.92	1,898.00	158.93	12.942	
13,500.00	7,106.37	6,308.00	6,307.08	40.46	129.21	44.31	-1,145.13	8,361.31	1,974.69	1,816.39	158.30	12.475	
13,600.00	7,106.41	6,308.00	6,307.08	40.76	129.21	44.31	-1,145.13	8,361.31	1,894.16	1,736.60	157.56	12.022	
13,700.00	7,106.45	6,308.00	6,307.08	41.06	129.21	44.31	-1,145.13	8,361.31	1,815.56	1,658.87	156.69	11.587	
13,800.00	7,106.49	6,308.00	6,307.08	41.36	129.21	44.31	-1,145.13	8,361.31	1,739.17	1,583.48	155.69	11.170	
13,900.00	7,106.53	6,308.00	6,307.08	41.67	129.21	44.31	-1,145.13	8,361.31	1,665.28	1,510.74	154.55	10.775	
14,000.00	7,106.57	6,308.00	6,307.08	41.97	129.21	44.31	-1,145.13	8,361.31	1,594.24	1,441.01	153.24	10.404	
14,100.00	7,106.61	6,308.00	6,307.08	42.27	129.21	44.31	-1,145.13	8,361.31	1,526.45	1,374.69	151.76	10.058	
14,200.00	7,106.65	6,308.00	6,307.08	42.57	129.21	44.31	-1,145.13	8,361.31	1,462.36	1,312.24	150.12	9.741	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	6,308.00	6,307.08	42.87	129.21	44.31	-1,145.13	8,361.31	1,402.48	1,254.16	148.32	9.456	
14,400.00	7,106.73	6,308.00	6,307.08	43.17	129.21	44.31	-1,145.13	8,361.31	1,347.36	1,200.98	146.38	9.204	
14,500.00	7,106.76	6,308.00	6,307.08	43.47	129.21	44.31	-1,145.13	8,361.31	1,297.63	1,153.26	144.37	8.988	
14,600.00	7,106.80	6,308.00	6,307.08	43.77	129.21	44.31	-1,145.13	8,361.31	1,253.91	1,111.56	142.35	8.809	
14,700.00	7,106.84	6,308.00	6,307.08	44.07	129.21	44.31	-1,145.13	8,361.31	1,216.85	1,076.42	140.44	8.665	
14,800.00	7,106.88	6,308.00	6,307.08	44.37	129.21	44.31	-1,145.13	8,361.31	1,187.09	1,048.33	138.76	8.555	
14,900.00	7,106.92	6,308.00	6,307.08	44.67	129.21	44.31	-1,145.13	8,361.31	1,165.17	1,027.69	137.48	8.475	
15,000.00	7,106.96	6,308.00	6,307.08	44.97	129.21	44.31	-1,145.13	8,361.31	1,151.55	1,014.82	136.73	8.422	
15,100.00	7,107.00	6,308.00	6,307.08	45.27	129.21	44.31	-1,145.13	8,361.31	1,146.52	1,009.89	136.63	8.391	
15,107.77	7,107.00	6,308.00	6,307.08	45.29	129.21	44.31	-1,145.13	8,361.31	1,146.49	1,009.84	136.65	8.390	CC, ES
15,200.00	7,107.04	6,308.00	6,307.08	45.57	129.21	44.31	-1,145.13	8,361.31	1,150.20	1,012.98	137.22	8.382	SF
15,300.00	7,107.08	6,308.00	6,307.08	45.87	129.21	44.31	-1,145.13	8,361.31	1,162.50	1,024.04	138.46	8.396	
15,400.00	7,107.12	6,308.00	6,307.08	46.17	129.21	44.31	-1,145.13	8,361.31	1,183.15	1,042.89	140.26	8.435	
15,500.00	7,107.16	6,308.00	6,307.08	46.47	129.21	44.31	-1,145.13	8,361.31	1,211.73	1,069.25	142.48	8.505	
15,600.00	7,107.20	6,308.00	6,307.08	46.77	129.21	44.31	-1,145.13	8,361.31	1,247.69	1,102.73	144.96	8.607	
15,700.00	7,107.23	6,308.00	6,307.08	47.07	129.21	44.31	-1,145.13	8,361.31	1,290.42	1,142.85	147.57	8.745	
15,800.00	7,107.27	6,308.00	6,307.08	47.37	129.21	44.31	-1,145.13	8,361.31	1,339.26	1,189.08	150.18	8.917	
15,900.00	7,107.31	6,308.00	6,307.08	47.67	129.21	44.31	-1,145.13	8,361.31	1,393.58	1,240.85	152.73	9.124	
16,000.00	7,107.35	6,308.00	6,307.08	47.97	129.21	44.31	-1,145.13	8,361.31	1,452.76	1,297.60	155.16	9.363	
16,100.00	7,107.39	6,308.00	6,307.08	48.27	129.21	44.31	-1,145.13	8,361.31	1,516.23	1,358.81	157.43	9.631	
16,200.00	7,107.43	6,308.00	6,307.08	48.57	129.21	44.31	-1,145.13	8,361.31	1,583.48	1,423.95	159.53	9.926	
16,300.00	7,107.47	6,308.00	6,307.08	48.87	129.21	44.31	-1,145.13	8,361.31	1,654.04	1,492.58	161.46	10.244	
16,400.00	7,107.51	6,308.00	6,307.08	49.17	129.21	44.31	-1,145.13	8,361.31	1,727.51	1,564.27	163.24	10.583	
16,500.00	7,107.55	6,308.00	6,307.08	49.47	129.21	44.31	-1,145.13	8,361.31	1,803.54	1,638.68	164.86	10.940	
16,600.00	7,107.59	6,308.00	6,307.08	49.77	129.21	44.31	-1,145.13	8,361.31	1,881.80	1,715.46	166.35	11.313	
16,700.00	7,107.63	6,308.00	6,307.08	50.07	129.21	44.31	-1,145.13	8,361.31	1,962.05	1,794.34	167.71	11.699	
16,800.00	7,107.67	6,308.00	6,307.08	50.37	129.21	44.31	-1,145.13	8,361.31	2,044.03	1,875.08	168.96	12.098	
16,900.00	7,107.70	6,308.00	6,307.08	50.67	129.21	44.31	-1,145.13	8,361.31	2,127.56	1,957.46	170.11	12.507	
17,000.00	7,107.74	6,308.00	6,307.08	50.97	129.21	44.31	-1,145.13	8,361.31	2,212.46	2,041.29	171.17	12.926	
17,100.00	7,107.78	6,308.00	6,307.08	51.27	129.21	44.31	-1,145.13	8,361.31	2,298.57	2,126.41	172.15	13.352	
17,200.00	7,107.82	6,308.00	6,307.08	51.57	129.21	44.31	-1,145.13	8,361.31	2,385.76	2,212.69	173.07	13.785	
17,300.00	7,107.86	6,308.00	6,307.08	51.87	129.21	44.31	-1,145.13	8,361.31	2,473.92	2,300.00	173.92	14.224	
17,400.00	7,107.90	6,308.00	6,307.08	52.17	129.21	44.31	-1,145.13	8,361.31	2,562.96	2,388.23	174.72	14.669	
17,500.00	7,107.94	6,308.00	6,307.08	52.47	129.21	44.31	-1,145.13	8,361.31	2,652.77	2,477.29	175.48	15.117	
17,600.00	7,107.98	6,308.00	6,307.08	52.77	129.21	44.31	-1,145.13	8,361.31	2,743.29	2,567.10	176.19	15.570	
17,700.00	7,108.02	6,308.00	6,307.08	53.07	129.21	44.31	-1,145.13	8,361.31	2,834.45	2,657.58	176.86	16.026	
17,800.00	7,108.06	6,308.00	6,307.08	53.37	129.21	44.31	-1,145.13	8,361.31	2,926.18	2,748.68	177.50	16.485	
17,900.00	7,108.10	6,308.00	6,307.08	53.67	129.21	44.31	-1,145.13	8,361.31	3,018.44	2,840.32	178.12	16.947	
18,000.00	7,108.14	6,308.00	6,307.08	53.97	129.21	44.31	-1,145.13	8,361.31	3,111.18	2,932.48	178.70	17.410	
18,100.00	7,108.17	6,308.00	6,307.08	54.27	129.21	44.31	-1,145.13	8,361.31	3,204.35	3,025.09	179.26	17.875	
18,200.00	7,108.21	6,308.00	6,307.08	54.57	129.21	44.31	-1,145.13	8,361.31	3,297.93	3,118.12	179.80	18.342	
18,300.00	7,108.25	6,308.00	6,307.08	54.87	129.21	44.31	-1,145.13	8,361.31	3,391.87	3,211.55	180.32	18.810	
18,400.00	7,108.29	6,308.00	6,307.08	55.17	129.21	44.31	-1,145.13	8,361.31	3,486.14	3,305.32	180.82	19.279	
18,500.00	7,108.33	6,308.00	6,307.08	55.47	129.21	44.31	-1,145.13	8,361.31	3,580.73	3,399.42	181.31	19.749	
18,600.00	7,108.37	6,308.00	6,307.08	55.77	129.21	44.31	-1,145.13	8,361.31	3,675.61	3,493.82	181.79	20.219	
18,700.00	7,108.41	6,308.00	6,307.08	56.07	129.21	44.31	-1,145.13	8,361.31	3,770.75	3,588.50	182.25	20.690	
18,800.00	7,108.45	6,308.00	6,307.08	56.37	129.21	44.31	-1,145.13	8,361.31	3,866.13	3,683.44	182.70	21.162	
18,900.00	7,108.49	6,308.00	6,307.08	56.67	129.21	44.31	-1,145.13	8,361.31	3,961.75	3,778.61	183.14	21.633	
19,000.00	7,108.53	6,308.00	6,307.08	56.97	129.21	44.31	-1,145.13	8,361.31	4,057.57	3,874.01	183.56	22.104	
19,100.00	7,108.57	6,308.00	6,307.08	57.28	129.21	44.31	-1,145.13	8,361.31	4,153.59	3,969.61	183.99	22.576	
19,200.00	7,108.61	6,308.00	6,307.08	57.58	129.21	44.31	-1,145.13	8,361.31	4,249.80	4,065.40	184.40	23.047	
19,300.00	7,108.64	6,308.00	6,307.08	57.88	129.21	44.31	-1,145.13	8,361.31	4,346.17	4,161.37	184.80	23.518	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184 (Offset) - OH - OH

Survey Program: 293-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,400.00	7,108.68	6,308.00	6,307.08	58.18	129.21	44.31	-1,145.13	8,361.31	4,442.71	4,257.51	185.20	23.988	
19,500.00	7,108.72	6,308.00	6,307.08	58.48	129.21	44.31	-1,145.13	8,361.31	4,539.39	4,353.80	185.59	24.459	
19,600.00	7,108.76	6,308.00	6,307.08	58.78	129.21	44.31	-1,145.13	8,361.31	4,636.22	4,450.24	185.98	24.928	
19,700.00	7,108.80	6,308.00	6,307.08	59.08	129.21	44.31	-1,145.13	8,361.31	4,733.18	4,546.82	186.36	25.398	
19,800.00	7,108.84	6,308.00	6,307.08	59.38	129.21	44.31	-1,145.13	8,361.31	4,830.26	4,643.52	186.74	25.866	
19,900.00	7,108.88	6,308.00	6,307.08	59.68	129.21	44.31	-1,145.13	8,361.31	4,927.46	4,740.35	187.11	26.334	
20,000.00	7,108.92	6,308.00	6,307.08	59.98	129.21	44.31	-1,145.13	8,361.31	5,024.77	4,837.29	187.48	26.801	
20,100.00	7,108.96	6,308.00	6,307.08	60.28	129.21	44.31	-1,145.13	8,361.31	5,122.18	4,934.34	187.85	27.268	
20,208.46	7,109.00	6,308.00	6,307.08	60.60	129.21	44.31	-1,145.13	8,361.31	5,227.95	5,039.71	188.24	27.773	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	10.51	10.51	0.00	0.11	102.09	-2,005.87	9,361.63	9,574.11				
100.00	100.00	110.51	110.51	0.23	1.18	102.09	-2,005.87	9,361.63	9,574.11	9,572.71	1.40	6,825.599	
200.00	200.00	210.51	210.51	0.53	2.24	102.09	-2,005.87	9,361.63	9,574.11	9,571.34	2.77	3,460.377	
300.00	300.00	389.47	310.51	0.83	4.53	102.09	-2,005.87	9,361.63	9,574.11	9,568.75	5.36	1,786.919	
400.00	400.00	410.53	410.51	1.13	4.96	102.09	-2,005.87	9,361.63	9,574.11	9,568.02	6.09	1,572.510	
500.00	500.00	510.53	510.51	1.43	7.01	102.09	-2,005.87	9,361.63	9,574.11	9,565.68	8.43	1,135.369	
600.00	599.98	610.51	610.49	1.73	9.05	-53.54	-2,005.87	9,361.63	9,573.07	9,562.30	10.78	888.340	
644.12	644.06	654.59	654.57	1.86	9.95	-53.57	-2,005.87	9,361.63	9,571.96	9,560.15	11.81	810.510	
700.00	699.87	708.60	708.56	2.03	11.05	-53.59	-2,004.47	9,361.63	9,569.99	9,556.91	13.08	731.572	
800.00	799.74	803.41	803.37	2.33	12.99	-53.61	-2,004.68	9,361.63	9,567.05	9,551.73	15.32	624.502	
900.00	899.62	898.24	898.20	2.63	14.93	-53.63	-2,005.12	9,361.63	9,564.16	9,546.61	17.56	544.714	
1,000.00	999.49	1,010.10	1,010.00	2.93	17.31	-53.65	-2,005.87	9,361.63	9,561.33	9,541.09	20.24	472.418	
1,100.00	1,099.36	1,109.97	1,109.88	3.23	20.29	-53.68	-2,005.87	9,361.63	9,558.35	9,534.83	23.52	406.471	
1,200.00	1,199.24	1,209.84	1,209.75	3.53	23.27	-53.70	-2,005.87	9,361.63	9,555.37	9,528.58	26.79	356.653	
1,300.00	1,299.11	1,306.77	1,306.67	3.83	26.15	-53.73	-2,005.10	9,361.63	9,552.23	9,522.25	29.98	318.616	
1,400.00	1,398.98	1,401.76	1,401.66	4.13	28.98	-53.75	-2,005.36	9,361.63	9,549.31	9,516.20	33.11	288.402	
1,500.00	1,498.86	1,509.86	1,509.37	4.43	32.44	-53.77	-2,005.87	9,361.63	9,546.44	9,509.57	36.87	258.955	
1,600.00	1,598.73	1,610.01	1,609.24	4.73	38.41	-53.80	-2,005.87	9,361.63	9,543.46	9,500.33	43.13	221.253	
1,700.00	1,698.60	1,709.88	1,709.12	5.03	45.80	-53.82	-2,005.87	9,361.63	9,540.49	9,489.67	50.82	187.718	
1,800.00	1,798.48	1,770.80	1,769.76	5.33	50.31	-53.86	-2,002.81	9,361.63	9,536.98	9,481.35	55.63	171.435	
1,900.00	1,898.35	1,911.41	1,908.86	5.63	61.25	-53.87	-2,005.87	9,361.63	9,534.55	9,467.68	66.87	142.574	
2,000.00	1,998.22	2,011.29	2,008.74	5.93	69.63	-53.90	-2,005.87	9,361.63	9,531.59	9,456.03	75.55	126.155	
2,100.00	2,098.10	2,106.44	2,103.43	6.23	77.61	-53.96	-1,998.57	9,361.63	9,527.14	9,443.30	83.84	113.637	
2,200.00	2,197.97	2,173.92	2,170.76	6.53	83.27	-53.97	-1,999.32	9,361.63	9,524.41	9,434.61	89.80	106.063	
2,300.00	2,297.84	2,241.69	2,238.34	6.83	88.96	-53.98	-2,001.22	9,361.63	9,522.01	9,426.23	95.78	99.411	
2,400.00	2,397.72	2,414.38	2,408.23	7.13	101.89	-53.99	-2,005.87	9,361.63	9,519.74	9,410.72	109.01	87.325	
2,500.00	2,497.59	2,514.26	2,508.10	7.43	108.17	-54.02	-2,005.87	9,361.63	9,516.78	9,401.18	115.60	82.326	
2,600.00	2,597.46	2,614.13	2,607.98	7.73	114.46	-54.04	-2,005.87	9,361.63	9,513.83	9,391.64	122.18	77.866	
2,700.00	2,697.34	2,688.93	2,682.12	8.03	119.16	-54.11	-1,997.58	9,361.62	9,509.24	9,382.05	127.19	74.766	
2,800.00	2,797.21	2,760.67	2,753.68	8.33	123.68	-54.12	-1,999.08	9,361.63	9,506.71	9,374.71	132.00	72.021	
2,900.00	2,897.09	2,832.68	2,825.45	8.63	128.21	-54.12	-2,001.68	9,361.63	9,504.48	9,367.66	136.83	69.464	
3,000.00	2,996.96	3,015.92	3,007.47	8.93	137.15	-54.14	-2,005.87	9,361.63	9,502.02	9,355.94	146.07	65.049	
3,100.00	3,096.83	3,115.80	3,107.35	9.23	140.90	-54.17	-2,005.87	9,361.63	9,499.07	9,348.95	150.12	63.275	
3,200.00	3,196.71	3,209.81	3,201.25	9.53	144.43	-54.21	-2,002.46	9,361.63	9,495.45	9,341.50	153.95	61.677	
3,300.00	3,296.58	3,294.14	3,285.55	9.83	147.59	-54.23	-2,003.08	9,361.63	9,492.65	9,335.23	157.42	60.302	
3,400.00	3,396.45	3,378.58	3,369.94	10.13	150.76	-54.24	-2,004.40	9,361.63	9,490.02	9,329.13	160.89	58.985	
3,500.00	3,496.33	3,515.90	3,506.84	10.43	155.51	-54.26	-2,005.87	9,361.63	9,487.30	9,321.36	165.94	57.173	
3,600.00	3,596.20	3,615.78	3,606.71	10.73	158.71	-54.29	-2,005.87	9,361.63	9,484.36	9,314.93	169.43	55.977	
3,700.00	3,696.07	3,711.86	3,702.73	11.03	161.78	-54.33	-2,003.22	9,361.63	9,480.90	9,308.10	172.81	54.864	
3,800.00	3,795.95	3,797.69	3,788.54	11.33	164.53	-54.35	-2,003.72	9,361.63	9,478.08	9,302.23	175.85	53.899	
3,900.00	3,895.82	3,883.62	3,874.43	11.63	167.27	-54.36	-2,004.87	9,361.63	9,475.41	9,296.52	178.90	52.966	
4,000.00	3,995.69	4,015.65	4,006.21	11.93	171.28	-54.39	-2,005.87	9,361.63	9,472.62	9,289.42	183.21	51.705	
4,100.00	4,095.57	4,115.52	4,106.08	12.23	174.21	-54.41	-2,005.87	9,361.63	9,469.69	9,283.26	186.44	50.794	
4,200.00	4,195.44	4,215.40	4,205.95	12.53	177.14	-54.44	-2,005.87	9,361.63	9,466.77	9,277.10	189.66	49.913	
4,300.00	4,295.31	4,315.27	4,305.83	12.83	180.07	-54.46	-2,005.87	9,361.63	9,463.84	9,270.95	192.89	49.063	
4,400.00	4,395.19	4,413.73	4,404.21	13.13	182.95	-54.51	-2,001.88	9,361.63	9,460.14	9,264.06	196.08	48.247	
4,500.00	4,495.06	4,507.17	4,497.63	13.43	185.69	-54.53	-2,002.12	9,361.63	9,457.27	9,258.15	199.12	47.496	
4,600.00	4,594.93	4,600.65	4,591.10	13.73	188.44	-54.55	-2,002.69	9,361.63	9,454.47	9,252.31	202.16	46.767	
4,700.00	4,694.81	4,694.19	4,684.61	14.03	191.18	-54.57	-2,003.60	9,361.63	9,451.74	9,246.53	205.20	46.060	
4,800.00	4,794.68	4,787.76	4,778.15	14.33	193.92	-54.58	-2,004.84	9,361.63	9,449.07	9,240.83	208.25	45.375	
4,900.00	4,894.55	4,915.07	4,905.07	14.63	197.24	-54.61	-2,005.87	9,361.63	9,446.32	9,234.45	211.86	44.587	
5,000.00	4,994.43	5,014.94	5,004.94	14.93	199.51	-54.63	-2,005.87	9,361.63	9,443.41	9,228.97	214.44	44.038	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	5,114.82	5,104.82	15.23	201.78	-54.66	-2,005.87	9,361.63	9,440.49	9,223.49	217.01	43.503	
5,200.00	5,194.18	5,214.69	5,204.69	15.53	204.05	-54.68	-2,005.87	9,361.63	9,437.58	9,218.01	219.58	42.981	
5,300.00	5,294.05	5,314.56	5,304.56	15.83	206.32	-54.71	-2,005.87	9,361.63	9,434.67	9,212.53	222.15	42.470	
5,400.00	5,393.92	5,414.44	5,404.44	16.13	208.59	-54.73	-2,005.87	9,361.63	9,431.77	9,207.05	224.72	41.971	
5,500.00	5,493.80	5,514.31	5,504.31	16.43	210.86	-54.76	-2,005.87	9,361.63	9,428.86	9,201.57	227.29	41.484	
5,600.00	5,593.67	5,611.86	5,601.75	16.73	213.08	-54.82	-1,999.75	9,361.63	9,424.81	9,195.00	229.81	41.012	
5,700.00	5,693.54	5,707.62	5,697.49	17.03	215.26	-54.84	-1,999.99	9,361.63	9,421.95	9,189.67	232.28	40.562	
5,800.00	5,793.42	5,803.41	5,793.25	17.33	217.44	-54.86	-2,000.45	9,361.63	9,419.15	9,184.39	234.76	40.122	
5,900.00	5,893.29	5,899.23	5,889.05	17.63	219.62	-54.88	-2,001.15	9,361.63	9,416.39	9,179.15	237.24	39.691	
6,000.00	5,993.16	5,995.08	5,984.88	17.93	221.80	-54.90	-2,002.07	9,361.63	9,413.67	9,173.95	239.72	39.269	
6,100.00	6,093.04	6,090.95	6,080.73	18.23	223.98	-54.92	-2,003.21	9,361.63	9,411.00	9,168.80	242.20	38.856	
6,200.00	6,192.91	6,186.86	6,176.60	18.53	226.16	-54.93	-2,004.59	9,361.63	9,408.38	9,163.70	244.68	38.452	
6,300.00	6,292.78	6,298.00	6,287.56	18.83	228.47	-54.96	-2,005.87	9,361.63	9,405.70	9,158.41	247.29	38.035	
6,400.00	6,392.66	6,298.00	6,287.56	19.13	228.47	-54.96	-2,005.87	9,361.63	9,403.51	9,155.93	247.58	37.982	
6,500.00	6,492.53	6,298.00	6,287.56	19.43	228.47	-54.96	-2,005.87	9,361.63	9,402.38	9,154.55	247.83	37.938	
6,551.20	6,543.67	6,298.00	6,287.56	19.58	228.47	-54.96	-2,005.87	9,361.63	9,402.22	9,154.26	247.96	37.919	
6,600.00	6,592.30	6,298.00	6,287.56	19.73	228.47	-12.94	-2,005.87	9,361.63	9,400.27	9,152.21	248.07	37.894	
6,650.00	6,641.67	6,298.00	6,287.56	19.88	228.47	-2.87	-2,005.87	9,361.63	9,394.32	9,146.15	248.17	37.854	
6,700.00	6,690.21	6,298.00	6,287.56	20.03	228.47	1.32	-2,005.87	9,361.63	9,384.39	9,136.12	248.27	37.799	
6,750.00	6,737.54	6,298.00	6,287.56	20.18	228.47	3.72	-2,005.87	9,361.63	9,370.56	9,122.19	248.37	37.728	
6,800.00	6,783.30	6,298.00	6,287.56	20.33	228.47	5.40	-2,005.87	9,361.63	9,352.90	9,104.44	248.46	37.643	
6,850.00	6,827.15	6,298.00	6,287.56	20.48	228.47	6.75	-2,005.87	9,361.63	9,331.53	9,082.98	248.55	37.544	
6,900.00	6,868.74	6,298.00	6,287.56	20.63	228.47	7.97	-2,005.87	9,361.63	9,306.58	9,057.95	248.63	37.431	
6,950.00	6,907.77	6,298.00	6,287.56	20.78	228.47	9.20	-2,005.87	9,361.63	9,278.23	9,029.51	248.72	37.304	
7,000.00	6,943.94	6,298.00	6,287.56	20.93	228.47	10.51	-2,005.87	9,361.63	9,246.66	8,997.85	248.80	37.165	
7,050.00	6,976.97	6,298.00	6,287.56	21.08	228.47	12.00	-2,005.87	9,361.63	9,212.06	8,963.18	248.89	37.013	
7,100.00	7,006.62	6,298.00	6,287.56	21.23	228.47	13.77	-2,005.87	9,361.63	9,174.68	8,925.71	248.97	36.850	
7,150.00	7,032.64	6,298.00	6,287.56	21.38	228.47	15.98	-2,005.87	9,361.63	9,134.77	8,885.71	249.07	36.676	
7,200.00	7,054.86	6,298.00	6,287.56	21.53	228.47	18.84	-2,005.87	9,361.63	9,092.60	8,843.44	249.16	36.493	
7,250.00	7,073.09	6,298.00	6,287.56	21.68	228.47	22.70	-2,005.87	9,361.63	9,048.46	8,799.20	249.26	36.301	
7,300.00	7,087.20	6,298.00	6,287.56	21.83	228.47	28.17	-2,005.87	9,361.63	9,002.66	8,753.29	249.37	36.101	
7,350.00	7,097.08	6,298.00	6,287.56	21.98	228.47	36.31	-2,005.87	9,361.63	8,955.53	8,706.03	249.49	35.895	
7,400.00	7,102.66	6,298.00	6,287.56	22.13	228.47	48.95	-2,005.87	9,361.63	8,907.40	8,657.78	249.62	35.684	
7,438.94	7,104.00	6,298.00	6,287.56	22.25	228.47	63.37	-2,005.87	9,361.63	8,869.46	8,619.73	249.72	35.517	
7,500.00	7,104.02	6,298.00	6,287.56	22.43	228.47	63.37	-2,005.87	9,361.63	8,809.75	8,559.86	249.89	35.254	
7,600.00	7,104.06	6,298.00	6,287.56	22.74	228.47	63.37	-2,005.87	9,361.63	8,712.01	8,461.84	250.17	34.824	
7,700.00	7,104.10	6,298.00	6,287.56	23.04	228.47	63.37	-2,005.87	9,361.63	8,614.33	8,363.88	250.45	34.395	
7,800.00	7,104.14	6,298.00	6,287.56	23.34	228.47	63.37	-2,005.87	9,361.63	8,516.69	8,265.97	250.73	33.968	
7,900.00	7,104.18	6,298.00	6,287.56	23.64	228.47	63.37	-2,005.87	9,361.63	8,419.12	8,168.11	251.00	33.542	
8,000.00	7,104.22	6,298.00	6,287.56	23.94	228.47	63.37	-2,005.87	9,361.63	8,321.60	8,070.32	251.28	33.117	
8,100.00	7,104.26	6,298.00	6,287.56	24.24	228.47	63.37	-2,005.87	9,361.63	8,224.14	7,972.58	251.55	32.694	
8,200.00	7,104.30	6,298.00	6,287.56	24.54	228.47	63.37	-2,005.87	9,361.63	8,126.74	7,874.91	251.82	32.271	
8,300.00	7,104.34	6,298.00	6,287.56	24.84	228.47	63.37	-2,005.87	9,361.63	8,029.40	7,777.31	252.10	31.851	
8,400.00	7,104.38	6,298.00	6,287.56	25.14	228.47	63.37	-2,005.87	9,361.63	7,932.13	7,679.77	252.37	31.431	
8,500.00	7,104.42	6,298.00	6,287.56	25.44	228.47	63.37	-2,005.87	9,361.63	7,834.93	7,582.30	252.64	31.013	
8,600.00	7,104.45	6,298.00	6,287.56	25.74	228.47	63.37	-2,005.87	9,361.63	7,737.81	7,484.90	252.91	30.596	
8,700.00	7,104.49	6,298.00	6,287.56	26.04	228.47	63.37	-2,005.87	9,361.63	7,640.75	7,387.58	253.17	30.180	
8,800.00	7,104.53	6,298.00	6,287.56	26.34	228.47	63.37	-2,005.87	9,361.63	7,543.78	7,290.34	253.44	29.766	
8,900.00	7,104.57	6,298.00	6,287.56	26.64	228.47	63.37	-2,005.87	9,361.63	7,446.88	7,193.18	253.70	29.353	
9,000.00	7,104.61	6,298.00	6,287.56	26.95	228.47	63.37	-2,005.87	9,361.63	7,350.06	7,096.10	253.97	28.941	
9,100.00	7,104.65	6,298.00	6,287.56	27.25	228.47	63.37	-2,005.87	9,361.63	7,253.34	6,999.11	254.23	28.531	
9,200.00	7,104.69	6,298.00	6,287.56	27.55	228.47	63.37	-2,005.87	9,361.63	7,156.70	6,902.21	254.49	28.122	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	6,298.00	6,287.56	27.85	228.47	63.37	-2,005.87	9,361.63	7,060.16	6,805.41	254.75	27.714	
9,400.00	7,104.77	6,298.00	6,287.56	28.15	228.47	63.37	-2,005.87	9,361.63	6,963.71	6,708.71	255.00	27.308	
9,500.00	7,104.81	6,298.00	6,287.56	28.45	228.47	63.37	-2,005.87	9,361.63	6,867.36	6,612.11	255.26	26.904	
9,600.00	7,104.85	6,298.00	6,287.56	28.75	228.47	63.37	-2,005.87	9,361.63	6,771.13	6,515.61	255.51	26.500	
9,700.00	7,104.89	6,298.00	6,287.56	29.05	228.47	63.37	-2,005.87	9,361.63	6,675.00	6,419.24	255.76	26.098	
9,800.00	7,104.92	6,298.00	6,287.56	29.35	228.47	63.37	-2,005.87	9,361.63	6,578.98	6,322.97	256.01	25.698	
9,900.00	7,104.96	6,298.00	6,287.56	29.65	228.47	63.37	-2,005.87	9,361.63	6,483.09	6,226.84	256.26	25.299	
10,000.00	7,105.00	6,298.00	6,287.56	29.95	228.47	63.37	-2,005.87	9,361.63	6,387.33	6,130.82	256.50	24.902	
10,100.00	7,105.04	6,298.00	6,287.56	30.25	228.47	63.37	-2,005.87	9,361.63	6,291.69	6,034.95	256.74	24.506	
10,200.00	7,105.08	6,298.00	6,287.56	30.55	228.47	63.37	-2,005.87	9,361.63	6,196.20	5,939.21	256.98	24.111	
10,300.00	7,105.12	6,298.00	6,287.56	30.85	228.47	63.37	-2,005.87	9,361.63	6,100.84	5,843.63	257.22	23.719	
10,400.00	7,105.16	6,298.00	6,287.56	31.15	228.47	63.37	-2,005.87	9,361.63	6,005.64	5,748.19	257.45	23.327	
10,500.00	7,105.20	6,298.00	6,287.56	31.45	228.47	63.37	-2,005.87	9,361.63	5,910.60	5,652.92	257.68	22.938	
10,600.00	7,105.24	6,298.00	6,287.56	31.75	228.47	63.37	-2,005.87	9,361.63	5,815.72	5,557.82	257.91	22.550	
10,700.00	7,105.28	6,298.00	6,287.56	32.05	228.47	63.37	-2,005.87	9,361.63	5,721.02	5,462.89	258.13	22.163	
10,800.00	7,105.32	6,298.00	6,287.56	32.35	228.47	63.37	-2,005.87	9,361.63	5,626.50	5,368.15	258.35	21.779	
10,900.00	7,105.36	6,298.00	6,287.56	32.66	228.47	63.37	-2,005.87	9,361.63	5,532.18	5,273.61	258.56	21.396	
11,000.00	7,105.39	6,298.00	6,287.56	32.96	228.47	63.37	-2,005.87	9,361.63	5,438.05	5,179.28	258.77	21.015	
11,100.00	7,105.43	6,298.00	6,287.56	33.26	228.47	63.37	-2,005.87	9,361.63	5,344.14	5,085.17	258.98	20.635	
11,200.00	7,105.47	6,298.00	6,287.56	33.56	228.47	63.37	-2,005.87	9,361.63	5,250.46	4,991.28	259.18	20.258	
11,300.00	7,105.51	6,298.00	6,287.56	33.86	228.47	63.37	-2,005.87	9,361.63	5,157.01	4,897.64	259.38	19.882	
11,400.00	7,105.55	6,298.00	6,287.56	34.16	228.47	63.37	-2,005.87	9,361.63	5,063.82	4,804.25	259.57	19.509	
11,500.00	7,105.59	6,298.00	6,287.56	34.46	228.47	63.37	-2,005.87	9,361.63	4,970.88	4,711.13	259.75	19.137	
11,600.00	7,105.63	6,298.00	6,287.56	34.76	228.47	63.37	-2,005.87	9,361.63	4,878.23	4,618.30	259.93	18.768	
11,700.00	7,105.67	6,298.00	6,287.56	35.06	228.47	63.37	-2,005.87	9,361.63	4,785.87	4,525.77	260.10	18.400	
11,800.00	7,105.71	6,298.00	6,287.56	35.36	228.47	63.37	-2,005.87	9,361.63	4,693.83	4,433.57	260.26	18.035	
11,900.00	7,105.75	6,298.00	6,287.56	35.66	228.47	63.37	-2,005.87	9,361.63	4,602.12	4,341.70	260.42	17.672	
12,000.00	7,105.79	6,298.00	6,287.56	35.96	228.47	63.37	-2,005.87	9,361.63	4,510.76	4,250.19	260.56	17.312	
12,100.00	7,105.83	6,298.00	6,287.56	36.26	228.47	63.37	-2,005.87	9,361.63	4,419.77	4,159.07	260.70	16.953	
12,200.00	7,105.86	6,298.00	6,287.56	36.56	228.47	63.37	-2,005.87	9,361.63	4,329.18	4,068.35	260.83	16.598	
12,300.00	7,105.90	6,298.00	6,287.56	36.86	228.47	63.37	-2,005.87	9,361.63	4,239.02	3,978.07	260.95	16.245	
12,400.00	7,105.94	6,298.00	6,287.56	37.16	228.47	63.37	-2,005.87	9,361.63	4,149.30	3,888.25	261.05	15.894	
12,500.00	7,105.98	6,298.00	6,287.56	37.46	228.47	63.37	-2,005.87	9,361.63	4,060.07	3,798.92	261.15	15.547	
12,600.00	7,106.02	6,298.00	6,287.56	37.76	228.47	63.37	-2,005.87	9,361.63	3,971.35	3,710.12	261.23	15.202	
12,700.00	7,106.06	6,298.00	6,287.56	38.06	228.47	63.37	-2,005.87	9,361.63	3,883.18	3,621.88	261.30	14.861	
12,800.00	7,106.10	6,298.00	6,287.56	38.36	228.47	63.37	-2,005.87	9,361.63	3,795.59	3,534.24	261.35	14.523	
12,900.00	7,106.14	6,298.00	6,287.56	38.66	228.47	63.37	-2,005.87	9,361.63	3,708.63	3,447.25	261.39	14.188	
13,000.00	7,106.18	6,298.00	6,287.56	38.96	228.47	63.37	-2,005.87	9,361.63	3,622.35	3,360.94	261.41	13.857	
13,100.00	7,106.22	6,298.00	6,287.56	39.26	228.47	63.37	-2,005.87	9,361.63	3,536.79	3,275.38	261.41	13.530	
13,200.00	7,106.26	6,298.00	6,287.56	39.56	228.47	63.37	-2,005.87	9,361.63	3,452.00	3,190.61	261.39	13.206	
13,300.00	7,106.30	6,298.00	6,287.56	39.86	228.47	63.37	-2,005.87	9,361.63	3,368.05	3,106.70	261.35	12.887	
13,400.00	7,106.33	6,298.00	6,287.56	40.16	228.47	63.37	-2,005.87	9,361.63	3,285.00	3,023.71	261.28	12.572	
13,500.00	7,106.37	6,298.00	6,287.56	40.46	228.47	63.37	-2,005.87	9,361.63	3,202.91	2,941.72	261.20	12.262	
13,600.00	7,106.41	6,298.00	6,287.56	40.76	228.47	63.37	-2,005.87	9,361.63	3,121.88	2,860.79	261.08	11.957	
13,700.00	7,106.45	6,298.00	6,287.56	41.06	228.47	63.37	-2,005.87	9,361.63	3,041.97	2,781.03	260.94	11.658	
13,800.00	7,106.49	6,298.00	6,287.56	41.36	228.47	63.37	-2,005.87	9,361.63	2,963.28	2,702.51	260.77	11.364	
13,900.00	7,106.53	6,298.00	6,287.56	41.67	228.47	63.37	-2,005.87	9,361.63	2,885.91	2,625.34	260.56	11.076	
14,000.00	7,106.57	6,298.00	6,287.56	41.97	228.47	63.37	-2,005.87	9,361.63	2,809.97	2,549.64	260.33	10.794	
14,100.00	7,106.61	6,298.00	6,287.56	42.27	228.47	63.37	-2,005.87	9,361.63	2,735.57	2,475.52	260.05	10.519	
14,200.00	7,106.65	6,298.00	6,287.56	42.57	228.47	63.37	-2,005.87	9,361.63	2,662.86	2,403.11	259.75	10.252	
14,300.00	7,106.69	6,298.00	6,287.56	42.87	228.47	63.37	-2,005.87	9,361.63	2,591.96	2,332.56	259.40	9.992	
14,400.00	7,106.73	6,298.00	6,287.56	43.17	228.47	63.37	-2,005.87	9,361.63	2,523.04	2,264.01	259.02	9.741	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184B (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	6,298.00	6,287.56	43.47	228.47	63.37	-2,005.87	9,361.63	2,456.25	2,197.64	258.60	9.498	
14,600.00	7,106.80	6,298.00	6,287.56	43.77	228.47	63.37	-2,005.87	9,361.63	2,391.78	2,133.63	258.15	9.265	
14,700.00	7,106.84	6,298.00	6,287.56	44.07	228.47	63.37	-2,005.87	9,361.63	2,329.82	2,072.15	257.66	9.042	
14,800.00	7,106.88	6,298.00	6,287.56	44.37	228.47	63.37	-2,005.87	9,361.63	2,270.57	2,013.43	257.15	8.830	
14,900.00	7,106.92	6,298.00	6,287.56	44.67	228.47	63.37	-2,005.87	9,361.63	2,214.26	1,957.66	256.61	8.629	
15,000.00	7,106.96	6,298.00	6,287.56	44.97	228.47	63.37	-2,005.87	9,361.63	2,161.11	1,905.06	256.05	8.440	
15,100.00	7,107.00	6,298.00	6,287.56	45.27	228.47	63.37	-2,005.87	9,361.63	2,111.36	1,855.88	255.48	8.264	
15,200.00	7,107.04	6,298.00	6,287.56	45.57	228.47	63.37	-2,005.87	9,361.63	2,065.26	1,810.34	254.92	8.102	
15,300.00	7,107.08	6,298.00	6,287.56	45.87	228.47	63.37	-2,005.87	9,361.63	2,023.05	1,768.68	254.37	7.953	
15,400.00	7,107.12	6,298.00	6,287.56	46.17	228.47	63.37	-2,005.87	9,361.63	1,984.99	1,731.14	253.86	7.819	
15,500.00	7,107.16	6,298.00	6,287.56	46.47	228.47	63.37	-2,005.87	9,361.63	1,951.32	1,697.92	253.40	7.701	
15,600.00	7,107.20	6,298.00	6,287.56	46.77	228.47	63.37	-2,005.87	9,361.63	1,922.26	1,669.26	253.00	7.598	
15,700.00	7,107.23	6,298.00	6,287.56	47.07	228.47	63.37	-2,005.87	9,361.63	1,898.04	1,645.34	252.70	7.511	
15,800.00	7,107.27	6,298.00	6,287.56	47.37	228.47	63.37	-2,005.87	9,361.63	1,878.83	1,626.33	252.50	7.441	
15,900.00	7,107.31	6,298.00	6,287.56	47.67	228.47	63.37	-2,005.87	9,361.63	1,864.79	1,612.37	252.42	7.388	
16,000.00	7,107.35	6,298.00	6,287.56	47.97	228.47	63.37	-2,005.87	9,361.63	1,856.04	1,603.56	252.48	7.351	
16,100.00	7,107.39	6,298.00	6,287.56	48.27	228.47	63.37	-2,005.87	9,361.63	1,852.66	1,599.97	252.69	7.332	
16,112.75	7,107.40	6,298.00	6,287.56	48.31	228.47	63.37	-2,005.87	9,361.63	1,852.62	1,599.89	252.72	7.331	CC, ES
16,200.00	7,107.43	6,298.00	6,287.56	48.57	228.47	63.37	-2,005.87	9,361.63	1,854.67	1,601.63	253.04	7.330	SF
16,300.00	7,107.47	6,298.00	6,287.56	48.87	228.47	63.37	-2,005.87	9,361.63	1,862.05	1,608.52	253.54	7.344	
16,400.00	7,107.51	6,298.00	6,287.56	49.17	228.47	63.37	-2,005.87	9,361.63	1,874.75	1,620.58	254.17	7.376	
16,500.00	7,107.55	6,298.00	6,287.56	49.47	228.47	63.37	-2,005.87	9,361.63	1,892.66	1,637.72	254.94	7.424	
16,600.00	7,107.59	6,298.00	6,287.56	49.77	228.47	63.37	-2,005.87	9,361.63	1,915.62	1,659.80	255.81	7.488	
16,700.00	7,107.63	6,298.00	6,287.56	50.07	228.47	63.37	-2,005.87	9,361.63	1,943.46	1,686.68	256.78	7.569	
16,800.00	7,107.67	6,298.00	6,287.56	50.37	228.47	63.37	-2,005.87	9,361.63	1,975.98	1,718.15	257.83	7.664	
16,900.00	7,107.70	6,298.00	6,287.56	50.67	228.47	63.37	-2,005.87	9,361.63	2,012.94	1,754.02	258.92	7.774	
17,000.00	7,107.74	6,298.00	6,287.56	50.97	228.47	63.37	-2,005.87	9,361.63	2,054.12	1,794.05	260.06	7.899	
17,100.00	7,107.78	6,298.00	6,287.56	51.27	228.47	63.37	-2,005.87	9,361.63	2,099.25	1,838.03	261.22	8.036	
17,200.00	7,107.82	6,298.00	6,287.56	51.57	228.47	63.37	-2,005.87	9,361.63	2,148.09	1,885.70	262.38	8.187	
17,300.00	7,107.86	6,298.00	6,287.56	51.87	228.47	63.37	-2,005.87	9,361.63	2,200.40	1,936.85	263.55	8.349	
17,400.00	7,107.90	6,298.00	6,287.56	52.17	228.47	63.37	-2,005.87	9,361.63	2,255.92	1,991.23	264.69	8.523	
17,500.00	7,107.94	6,298.00	6,287.56	52.47	228.47	63.37	-2,005.87	9,361.63	2,314.44	2,048.63	265.81	8.707	
17,600.00	7,107.98	6,298.00	6,287.56	52.77	228.47	63.37	-2,005.87	9,361.63	2,375.73	2,108.82	266.91	8.901	
17,700.00	7,108.02	6,298.00	6,287.56	53.07	228.47	63.37	-2,005.87	9,361.63	2,439.58	2,171.61	267.97	9.104	
17,800.00	7,108.06	6,298.00	6,287.56	53.37	228.47	63.37	-2,005.87	9,361.63	2,505.79	2,236.79	269.00	9.315	
17,900.00	7,108.10	6,298.00	6,287.56	53.67	228.47	63.37	-2,005.87	9,361.63	2,574.19	2,304.20	269.99	9.534	
18,000.00	7,108.14	6,298.00	6,287.56	53.97	228.47	63.37	-2,005.87	9,361.63	2,644.60	2,373.65	270.94	9.761	
18,100.00	7,108.17	6,298.00	6,287.56	54.27	228.47	63.37	-2,005.87	9,361.63	2,716.86	2,445.00	271.86	9.994	
18,200.00	7,108.21	6,298.00	6,287.56	54.57	228.47	63.37	-2,005.87	9,361.63	2,790.84	2,518.10	272.74	10.233	
18,300.00	7,108.25	6,298.00	6,287.56	54.87	228.47	63.37	-2,005.87	9,361.63	2,866.40	2,592.81	273.59	10.477	
18,400.00	7,108.29	6,298.00	6,287.56	55.17	228.47	63.37	-2,005.87	9,361.63	2,943.41	2,669.01	274.40	10.727	
18,500.00	7,108.33	6,298.00	6,287.56	55.47	228.47	63.37	-2,005.87	9,361.63	3,021.78	2,746.60	275.18	10.981	
18,600.00	7,108.37	6,298.00	6,287.56	55.77	228.47	63.37	-2,005.87	9,361.63	3,101.38	2,825.45	275.93	11.240	
18,700.00	7,108.41	6,298.00	6,287.56	56.07	228.47	63.37	-2,005.87	9,361.63	3,182.14	2,905.49	276.66	11.502	
18,800.00	7,108.45	6,298.00	6,287.56	56.37	228.47	63.37	-2,005.87	9,361.63	3,263.97	2,986.62	277.35	11.768	
18,900.00	7,108.49	6,298.00	6,287.56	56.67	228.47	63.37	-2,005.87	9,361.63	3,346.78	3,068.76	278.02	12.038	
19,000.00	7,108.53	6,298.00	6,287.56	56.97	228.47	63.37	-2,005.87	9,361.63	3,430.51	3,151.84	278.67	12.310	
19,100.00	7,108.57	6,298.00	6,287.56	57.28	228.47	63.37	-2,005.87	9,361.63	3,515.09	3,235.79	279.30	12.586	
19,200.00	7,108.61	6,298.00	6,287.56	57.58	228.47	63.37	-2,005.87	9,361.63	3,600.46	3,320.55	279.90	12.863	
19,300.00	7,108.64	6,298.00	6,287.56	57.88	228.47	63.37	-2,005.87	9,361.63	3,686.56	3,406.07	280.49	13.143	
19,400.00	7,108.68	6,298.00	6,287.56	58.18	228.47	63.37	-2,005.87	9,361.63	3,773.35	3,492.29	281.06	13.426	
19,500.00	7,108.72	6,298.00	6,287.56	58.48	228.47	63.37	-2,005.87	9,361.63	3,860.78	3,579.17	281.61	13.710	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #184B (Offset) - OH - OH

Survey Program: 350-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,600.00	7,108.76	6,298.00	6,287.56	58.78	228.47	63.37	-2,005.87	9,361.63	3,948.81	3,666.66	282.15	13.996	
19,700.00	7,108.80	6,298.00	6,287.56	59.08	228.47	63.37	-2,005.87	9,361.63	4,037.39	3,754.72	282.67	14.283	
19,800.00	7,108.84	6,298.00	6,287.56	59.38	228.47	63.37	-2,005.87	9,361.63	4,126.50	3,843.32	283.18	14.572	
19,900.00	7,108.88	6,298.00	6,287.56	59.68	228.47	63.37	-2,005.87	9,361.63	4,216.09	3,932.41	283.68	14.862	
20,000.00	7,108.92	6,298.00	6,287.56	59.98	228.47	63.37	-2,005.87	9,361.63	4,306.14	4,021.98	284.16	15.154	
20,100.00	7,108.96	6,298.00	6,287.56	60.28	228.47	63.37	-2,005.87	9,361.63	4,396.63	4,111.99	284.64	15.446	
20,208.46	7,109.00	6,298.00	6,287.56	60.60	228.47	63.37	-2,005.87	9,361.63	4,495.22	4,210.07	285.14	15.765	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	175.51	175.51	0.00	1.62	95.95	-631.84	6,059.83	6,092.68				
100.00	100.00	284.48	275.51	0.23	2.68	95.95	-631.84	6,059.83	6,092.68	6,089.78	2.90	2,099.057	
200.00	200.00	375.52	375.51	0.53	4.47	95.95	-631.84	6,059.83	6,092.68	6,087.69	4.99	1,220.511	
300.00	300.00	475.52	475.51	0.83	6.43	95.95	-631.84	6,059.83	6,092.68	6,085.42	7.26	839.503	
357.29	357.29	532.81	532.80	1.00	7.56	95.95	-631.29	6,059.83	6,092.62	6,084.07	8.56	712.132	
400.00	400.00	575.05	575.05	1.13	8.39	95.95	-631.31	6,059.83	6,092.63	6,083.11	9.51	640.389	
500.00	500.00	673.98	673.97	1.43	10.33	95.95	-631.46	6,059.83	6,092.64	6,080.88	11.76	518.154	
600.00	599.98	772.89	772.88	1.73	12.28	-59.68	-631.79	6,059.83	6,091.80	6,077.79	14.00	435.049	
644.12	644.06	819.62	819.57	1.86	13.20	-59.72	-631.84	6,059.83	6,090.85	6,075.80	15.05	404.578	
700.00	699.87	875.43	875.38	2.03	14.30	-59.74	-631.84	6,059.83	6,089.43	6,073.11	16.32	373.090	
800.00	799.74	975.30	975.26	2.33	16.26	-59.78	-631.84	6,059.83	6,086.90	6,068.31	18.59	327.454	
900.00	899.62	1,074.37	1,074.31	2.63	18.21	-59.83	-630.77	6,059.83	6,084.26	6,063.42	20.84	291.956	
1,000.00	999.49	1,172.19	1,172.13	2.93	20.14	-59.87	-631.06	6,059.83	6,081.76	6,058.69	23.07	263.666	
1,100.00	1,099.36	1,270.05	1,269.97	3.23	22.07	-59.90	-631.69	6,059.83	6,079.30	6,054.01	25.29	240.352	
1,200.00	1,199.24	1,374.84	1,374.75	3.53	24.13	-59.94	-631.84	6,059.83	6,076.79	6,049.13	27.66	219.716	
1,300.00	1,299.11	1,474.72	1,474.62	3.83	26.10	-59.98	-631.84	6,059.83	6,074.27	6,044.35	29.92	202.985	
1,400.00	1,398.98	1,574.22	1,574.12	4.13	28.06	-60.03	-631.31	6,059.83	6,071.70	6,039.52	32.18	188.652	
1,500.00	1,498.86	1,673.08	1,672.99	4.43	30.01	-60.07	-631.45	6,059.83	6,069.20	6,034.77	34.43	176.266	
1,600.00	1,598.73	1,771.97	1,771.87	4.73	31.95	-60.11	-631.77	6,059.83	6,066.72	6,030.04	36.68	165.397	
1,700.00	1,698.60	1,874.25	1,874.12	5.03	34.03	-60.15	-631.84	6,059.83	6,064.22	6,025.17	39.05	155.275	
1,800.00	1,798.48	1,974.13	1,973.99	5.33	36.07	-60.19	-631.84	6,059.83	6,061.72	6,020.33	41.39	146.445	
1,900.00	1,898.35	2,073.34	2,073.19	5.63	38.09	-60.24	-630.77	6,059.83	6,059.12	6,015.40	43.72	138.599	
2,000.00	1,998.22	2,171.31	2,171.16	5.93	40.09	-60.28	-631.05	6,059.83	6,056.65	6,010.63	46.02	131.621	
2,100.00	2,098.10	2,269.31	2,269.15	6.23	42.09	-60.31	-631.66	6,059.83	6,054.21	6,005.90	48.32	125.306	
2,200.00	2,197.97	2,373.68	2,373.48	6.53	44.22	-60.36	-631.84	6,059.83	6,051.74	6,000.99	50.75	119.255	
2,300.00	2,297.84	2,473.55	2,473.36	6.83	46.26	-60.40	-631.84	6,059.83	6,049.25	5,996.16	53.09	113.952	
2,400.00	2,397.72	2,572.86	2,572.66	7.13	48.29	-60.45	-631.06	6,059.83	6,046.69	5,991.28	55.41	109.119	
2,500.00	2,497.59	2,671.31	2,671.11	7.43	50.30	-60.48	-631.30	6,059.83	6,044.23	5,986.51	57.72	104.709	
2,600.00	2,597.46	2,769.79	2,769.58	7.73	52.31	-60.52	-631.79	6,059.83	6,041.80	5,981.76	60.04	100.638	
2,700.00	2,697.34	2,873.11	2,872.85	8.03	54.49	-60.56	-631.84	6,059.83	6,039.33	5,976.81	62.52	96.603	
2,800.00	2,797.21	2,972.98	2,972.72	8.33	56.61	-60.60	-631.84	6,059.83	6,036.86	5,971.92	64.93	92.972	
2,900.00	2,897.09	3,071.78	3,071.52	8.63	58.70	-60.65	-630.86	6,059.83	6,034.30	5,966.98	67.32	89.630	
3,000.00	2,996.96	3,169.82	3,169.54	8.93	60.77	-60.69	-631.24	6,059.83	6,031.87	5,962.17	69.70	86.540	
3,100.00	3,096.83	3,272.67	3,272.35	9.23	62.91	-60.73	-631.84	6,059.83	6,029.46	5,957.32	72.14	83.583	
3,200.00	3,196.71	3,372.55	3,372.22	9.53	64.80	-60.77	-631.84	6,059.83	6,027.00	5,952.67	74.33	81.085	
3,300.00	3,296.58	3,472.42	3,472.09	9.83	66.70	-60.81	-631.84	6,059.83	6,024.54	5,948.02	76.52	78.730	
3,400.00	3,396.45	3,571.09	3,570.75	10.13	68.56	-60.86	-630.84	6,059.83	6,022.01	5,943.31	78.69	76.527	
3,500.00	3,496.33	3,669.28	3,668.94	10.43	70.43	-60.90	-631.25	6,059.83	6,019.59	5,938.74	80.85	74.452	
3,600.00	3,596.20	3,772.07	3,771.71	10.73	72.40	-60.94	-631.84	6,059.83	6,017.19	5,934.06	83.13	72.383	
3,700.00	3,696.07	3,871.95	3,871.59	11.03	74.44	-60.98	-631.84	6,059.83	6,014.75	5,929.28	85.47	70.372	
3,800.00	3,795.95	3,971.58	3,971.22	11.33	76.48	-61.02	-631.65	6,059.83	6,012.29	5,924.49	87.81	68.472	
3,900.00	3,895.82	4,070.88	4,070.52	11.63	78.51	-61.06	-631.76	6,059.83	6,009.87	5,919.73	90.14	66.676	
4,000.00	3,995.69	4,171.62	4,171.21	11.93	80.66	-61.10	-631.84	6,059.83	6,007.44	5,914.85	92.59	64.884	
4,100.00	4,095.57	4,271.49	4,271.08	12.23	82.86	-61.15	-631.84	6,059.83	6,005.01	5,909.92	95.08	63.156	
4,200.00	4,195.44	4,371.36	4,370.95	12.53	85.05	-61.19	-631.84	6,059.83	6,002.58	5,905.00	97.58	61.516	
4,300.00	4,295.31	4,471.24	4,470.83	12.83	87.25	-61.23	-631.84	6,059.83	6,000.16	5,900.08	100.07	59.958	
4,400.00	4,395.19	4,571.11	4,570.70	13.13	89.44	-61.27	-631.84	6,059.83	5,997.73	5,895.17	102.57	58.476	
4,500.00	4,495.06	4,670.98	4,670.57	13.43	91.64	-61.32	-631.84	6,059.83	5,995.32	5,890.25	105.06	57.064	
4,600.00	4,594.93	4,769.88	4,769.41	13.73	93.81	-61.39	-628.27	6,059.83	5,992.64	5,885.10	107.54	55.726	
4,700.00	4,694.81	4,868.79	4,868.31	14.03	95.98	-61.43	-628.61	6,059.83	5,990.25	5,880.24	110.01	54.451	
4,800.00	4,794.68	4,967.73	4,967.24	14.33	98.16	-61.47	-629.18	6,059.83	5,987.89	5,875.40	112.49	53.232	
4,900.00	4,894.55	5,066.69	5,066.19	14.63	100.33	-61.50	-629.97	6,059.83	5,985.54	5,870.58	114.96	52.066	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,000.00	4,994.43	5,165.68	5,165.16	14.93	102.51	-61.53	-630.99	6,059.83	5,983.22	5,865.78	117.44	50.948	
5,100.00	5,094.30	5,270.45	5,269.82	15.23	104.76	-61.57	-631.84	6,059.83	5,980.88	5,860.89	119.99	49.847	
5,200.00	5,194.18	5,370.32	5,369.69	15.53	106.80	-61.61	-631.84	6,059.83	5,978.48	5,856.16	122.33	48.873	
5,300.00	5,294.05	5,470.20	5,469.56	15.83	108.84	-61.65	-631.84	6,059.83	5,976.09	5,851.42	124.67	47.935	
5,400.00	5,393.92	5,570.07	5,569.44	16.13	110.89	-61.70	-631.84	6,059.83	5,973.70	5,846.69	127.01	47.032	
5,500.00	5,493.80	5,669.94	5,669.31	16.43	112.93	-61.74	-631.84	6,059.83	5,971.32	5,841.96	129.35	46.162	
5,600.00	5,593.67	5,769.82	5,769.18	16.73	114.97	-61.78	-631.84	6,059.83	5,968.94	5,837.24	131.70	45.323	
5,700.00	5,693.54	5,869.69	5,869.06	17.03	117.01	-61.82	-631.84	6,059.83	5,966.56	5,832.52	134.04	44.513	
5,800.00	5,793.42	5,969.56	5,968.93	17.33	119.06	-61.87	-631.84	6,059.83	5,964.18	5,827.80	136.38	43.731	
5,900.00	5,893.29	6,069.44	6,068.80	17.63	121.10	-61.91	-631.84	6,059.83	5,961.81	5,823.09	138.72	42.976	
6,000.00	5,993.16	6,169.31	6,168.68	17.93	123.14	-61.95	-631.84	6,059.83	5,959.44	5,818.38	141.07	42.245	
6,100.00	6,093.04	6,269.18	6,268.55	18.23	125.18	-61.99	-631.84	6,059.83	5,957.08	5,813.67	143.41	41.539	
6,200.00	6,192.91	6,369.06	6,368.42	18.53	127.23	-62.04	-631.84	6,059.83	5,954.72	5,808.96	145.75	40.855	
6,300.00	6,292.78	6,468.93	6,468.30	18.83	129.27	-62.08	-631.84	6,059.83	5,952.36	5,804.26	148.09	40.193	
6,400.00	6,392.66	6,568.80	6,568.17	19.13	131.31	-62.12	-631.84	6,059.83	5,950.00	5,799.56	150.44	39.552	
6,428.15	6,420.77	6,596.92	6,596.28	19.21	131.89	-62.13	-631.84	6,059.83	5,949.34	5,798.24	151.10	39.375	
6,500.00	6,492.53	6,476.00	6,475.22	19.43	129.41	-62.08	-631.84	6,059.83	5,950.77	5,802.00	148.77	39.999	
6,551.20	6,543.67	6,476.00	6,475.22	19.58	129.41	-62.08	-631.84	6,059.83	5,951.45	5,802.56	148.89	39.973	
6,600.00	6,592.30	6,476.00	6,475.22	19.73	129.41	-20.10	-631.84	6,059.83	5,950.43	5,801.44	148.99	39.939	
6,650.00	6,641.67	6,476.00	6,475.22	19.88	129.41	-10.11	-631.84	6,059.83	5,945.50	5,796.42	149.08	39.881	
6,700.00	6,690.21	6,476.00	6,475.22	20.03	129.41	-6.05	-631.84	6,059.83	5,936.67	5,787.51	149.16	39.799	
6,750.00	6,737.54	6,476.00	6,475.22	20.18	129.41	-3.84	-631.84	6,059.83	5,923.99	5,774.75	149.24	39.694	
6,800.00	6,783.30	6,476.00	6,475.22	20.33	129.41	-2.43	-631.84	6,059.83	5,907.54	5,758.22	149.31	39.565	
6,850.00	6,827.15	6,476.00	6,475.22	20.48	129.41	-1.41	-631.84	6,059.83	5,887.40	5,738.02	149.38	39.412	
6,900.00	6,868.74	6,476.00	6,475.22	20.63	129.41	-0.62	-631.84	6,059.83	5,863.69	5,714.25	149.44	39.237	
6,950.00	6,907.77	6,476.00	6,475.22	20.78	129.41	0.06	-631.84	6,059.83	5,836.55	5,687.05	149.50	39.041	
7,000.00	6,943.94	6,476.00	6,475.22	20.93	129.41	0.69	-631.84	6,059.83	5,806.14	5,656.58	149.56	38.822	
7,050.00	6,976.97	6,476.00	6,475.22	21.08	129.41	1.32	-631.84	6,059.83	5,772.64	5,623.03	149.61	38.584	
7,100.00	7,006.62	6,476.00	6,475.22	21.23	129.41	1.98	-631.84	6,059.83	5,736.26	5,586.59	149.67	38.325	
7,150.00	7,032.64	6,476.00	6,475.22	21.38	129.41	2.74	-631.84	6,059.83	5,697.22	5,547.48	149.74	38.048	
7,200.00	7,054.86	6,476.00	6,475.22	21.53	129.41	3.65	-631.84	6,059.83	5,655.76	5,505.96	149.81	37.754	
7,250.00	7,073.09	6,476.00	6,475.22	21.68	129.41	4.85	-631.84	6,059.83	5,612.16	5,462.28	149.88	37.444	
7,300.00	7,087.20	6,476.00	6,475.22	21.83	129.41	6.52	-631.84	6,059.83	5,566.69	5,416.72	149.97	37.120	
7,350.00	7,097.08	6,476.00	6,475.22	21.98	129.41	9.10	-631.84	6,059.83	5,519.66	5,369.59	150.06	36.783	
7,400.00	7,102.66	6,476.00	6,475.22	22.13	129.41	13.61	-631.84	6,059.83	5,471.39	5,321.22	150.17	36.435	
7,438.94	7,104.00	6,476.00	6,475.22	22.25	129.41	20.41	-631.84	6,059.83	5,433.16	5,282.90	150.26	36.158	
7,500.00	7,104.02	6,476.00	6,475.22	22.43	129.41	20.41	-631.84	6,059.83	5,372.88	5,222.46	150.41	35.720	
7,600.00	7,104.06	6,476.00	6,475.22	22.74	129.41	20.41	-631.84	6,059.83	5,274.19	5,123.53	150.66	35.007	
7,700.00	7,104.10	6,476.00	6,475.22	23.04	129.41	20.41	-631.84	6,059.83	5,175.56	5,024.65	150.91	34.297	
7,800.00	7,104.14	6,476.00	6,475.22	23.34	129.41	20.41	-631.84	6,059.83	5,076.97	4,925.83	151.15	33.590	
7,900.00	7,104.18	6,476.00	6,475.22	23.64	129.41	20.41	-631.84	6,059.83	4,978.45	4,827.07	151.38	32.887	
8,000.00	7,104.22	6,476.00	6,475.22	23.94	129.41	20.41	-631.84	6,059.83	4,879.99	4,728.37	151.61	32.187	
8,100.00	7,104.26	6,476.00	6,475.22	24.24	129.41	20.41	-631.84	6,059.83	4,781.58	4,629.74	151.84	31.490	
8,200.00	7,104.30	6,476.00	6,475.22	24.54	129.41	20.41	-631.84	6,059.83	4,683.25	4,531.18	152.07	30.797	
8,300.00	7,104.34	6,476.00	6,475.22	24.84	129.41	20.41	-631.84	6,059.83	4,584.99	4,432.70	152.29	30.108	
8,400.00	7,104.38	6,476.00	6,475.22	25.14	129.41	20.41	-631.84	6,059.83	4,486.81	4,334.31	152.50	29.422	
8,500.00	7,104.42	6,476.00	6,475.22	25.44	129.41	20.41	-631.84	6,059.83	4,388.70	4,236.00	152.71	28.740	
8,600.00	7,104.45	6,476.00	6,475.22	25.74	129.41	20.41	-631.84	6,059.83	4,290.69	4,137.78	152.91	28.061	
8,700.00	7,104.49	6,476.00	6,475.22	26.04	129.41	20.41	-631.84	6,059.83	4,192.77	4,039.67	153.10	27.386	
8,800.00	7,104.53	6,476.00	6,475.22	26.34	129.41	20.41	-631.84	6,059.83	4,094.95	3,941.66	153.29	26.714	
8,900.00	7,104.57	6,476.00	6,475.22	26.64	129.41	20.41	-631.84	6,059.83	3,997.24	3,843.77	153.46	26.047	
9,000.00	7,104.61	6,476.00	6,475.22	26.95	129.41	20.41	-631.84	6,059.83	3,899.64	3,746.01	153.63	25.383	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	6,476.00	6,475.22	27.25	129.41	20.41	-631.84	6,059.83	3,802.17	3,648.38	153.79	24.723	
9,200.00	7,104.69	6,476.00	6,475.22	27.55	129.41	20.41	-631.84	6,059.83	3,704.83	3,550.90	153.94	24.067	
9,300.00	7,104.73	6,476.00	6,475.22	27.85	129.41	20.41	-631.84	6,059.83	3,607.64	3,453.57	154.07	23.416	
9,400.00	7,104.77	6,476.00	6,475.22	28.15	129.41	20.41	-631.84	6,059.83	3,510.61	3,356.42	154.19	22.768	
9,500.00	7,104.81	6,476.00	6,475.22	28.45	129.41	20.41	-631.84	6,059.83	3,413.75	3,259.45	154.29	22.125	
9,600.00	7,104.85	6,476.00	6,475.22	28.75	129.41	20.41	-631.84	6,059.83	3,317.07	3,162.69	154.38	21.486	
9,700.00	7,104.89	6,476.00	6,475.22	29.05	129.41	20.41	-631.84	6,059.83	3,220.60	3,066.15	154.45	20.852	
9,800.00	7,104.92	6,476.00	6,475.22	29.35	129.41	20.41	-631.84	6,059.83	3,124.35	2,969.85	154.49	20.223	
9,900.00	7,104.96	6,476.00	6,475.22	29.65	129.41	20.41	-631.84	6,059.83	3,028.34	2,873.83	154.51	19.599	
10,000.00	7,105.00	6,476.00	6,475.22	29.95	129.41	20.41	-631.84	6,059.83	2,932.60	2,778.09	154.50	18.981	
10,100.00	7,105.04	6,476.00	6,475.22	30.25	129.41	20.41	-631.84	6,059.83	2,837.15	2,682.68	154.47	18.367	
10,200.00	7,105.08	6,476.00	6,475.22	30.55	129.41	20.41	-631.84	6,059.83	2,742.03	2,587.63	154.39	17.760	
10,300.00	7,105.12	6,476.00	6,475.22	30.85	129.41	20.41	-631.84	6,059.83	2,647.26	2,492.99	154.28	17.159	
10,400.00	7,105.16	6,476.00	6,475.22	31.15	129.41	20.41	-631.84	6,059.83	2,552.90	2,398.78	154.11	16.565	
10,500.00	7,105.20	6,476.00	6,475.22	31.45	129.41	20.41	-631.84	6,059.83	2,458.98	2,305.08	153.90	15.978	
10,600.00	7,105.24	6,476.00	6,475.22	31.75	129.41	20.41	-631.84	6,059.83	2,365.56	2,211.94	153.62	15.399	
10,700.00	7,105.28	6,476.00	6,475.22	32.05	129.41	20.41	-631.84	6,059.83	2,272.70	2,119.43	153.27	14.828	
10,800.00	7,105.32	6,476.00	6,475.22	32.35	129.41	20.41	-631.84	6,059.83	2,180.47	2,027.64	152.84	14.267	
10,900.00	7,105.36	6,476.00	6,475.22	32.66	129.41	20.41	-631.84	6,059.83	2,088.96	1,936.66	152.30	13.716	
11,000.00	7,105.39	6,476.00	6,475.22	32.96	129.41	20.41	-631.84	6,059.83	1,998.26	1,846.61	151.66	13.176	
11,100.00	7,105.43	6,476.00	6,475.22	33.26	129.41	20.41	-631.84	6,059.83	1,908.49	1,757.62	150.87	12.650	
11,200.00	7,105.47	6,476.00	6,475.22	33.56	129.41	20.41	-631.84	6,059.83	1,819.79	1,669.86	149.93	12.138	
11,300.00	7,105.51	6,476.00	6,475.22	33.86	129.41	20.41	-631.84	6,059.83	1,732.32	1,583.52	148.80	11.642	
11,400.00	7,105.55	6,476.00	6,475.22	34.16	129.41	20.41	-631.84	6,059.83	1,646.28	1,498.84	147.43	11.166	
11,500.00	7,105.59	6,476.00	6,475.22	34.46	129.41	20.41	-631.84	6,059.83	1,561.89	1,416.10	145.80	10.713	
11,600.00	7,105.63	6,476.00	6,475.22	34.76	129.41	20.41	-631.84	6,059.83	1,479.46	1,335.62	143.84	10.286	
11,700.00	7,105.67	6,476.00	6,475.22	35.06	129.41	20.41	-631.84	6,059.83	1,399.32	1,257.84	141.49	9.890	
11,800.00	7,105.71	6,476.00	6,475.22	35.36	129.41	20.41	-631.84	6,059.83	1,321.89	1,183.22	138.67	9.533	
11,900.00	7,105.75	6,476.00	6,475.22	35.66	129.41	20.41	-631.84	6,059.83	1,247.67	1,112.37	135.30	9.221	
12,000.00	7,105.79	6,476.00	6,475.22	35.96	129.41	20.41	-631.84	6,059.83	1,177.28	1,045.98	131.29	8.967	
12,100.00	7,105.83	6,476.00	6,475.22	36.26	129.41	20.41	-631.84	6,059.83	1,111.43	984.87	126.56	8.782	
12,200.00	7,105.86	6,476.00	6,475.22	36.56	129.41	20.41	-631.84	6,059.83	1,050.98	929.94	121.04	8.683	
12,300.00	7,105.90	6,476.00	6,475.22	36.86	129.41	20.41	-631.84	6,059.83	996.93	882.18	114.75	8.688	
12,400.00	7,105.94	6,476.00	6,475.22	37.16	129.41	20.41	-631.84	6,059.83	950.34	842.52	107.83	8.814	
12,500.00	7,105.98	6,476.00	6,475.22	37.46	129.41	20.41	-631.84	6,059.83	912.38	811.72	100.67	9.063	
12,600.00	7,106.02	6,476.00	6,475.22	37.76	129.41	20.41	-631.84	6,059.83	884.16	790.12	94.04	9.402	
12,700.00	7,106.06	6,476.00	6,475.22	38.06	129.41	20.41	-631.84	6,059.83	866.62	777.45	89.17	9.719	
12,800.00	7,106.10	6,476.00	6,475.22	38.36	129.41	20.41	-631.84	6,059.83	860.42	773.01	87.42	9.843	
12,803.53	7,106.10	6,476.00	6,475.22	38.37	129.41	20.41	-631.84	6,059.83	860.41	772.99	87.42	9.842	CC, ES
12,900.00	7,106.14	6,476.00	6,475.22	38.66	129.41	20.41	-631.84	6,059.83	865.81	776.32	89.48	9.676	
13,000.00	7,106.18	6,476.00	6,475.22	38.96	129.41	20.41	-631.84	6,059.83	882.56	787.80	94.76	9.314	
13,100.00	7,106.22	6,476.00	6,475.22	39.26	129.41	20.41	-631.84	6,059.83	910.06	808.16	101.89	8.931	
13,200.00	7,106.26	6,476.00	6,475.22	39.56	129.41	20.41	-631.84	6,059.83	947.36	837.72	109.64	8.641	
13,300.00	7,106.30	6,476.00	6,475.22	39.86	129.41	20.41	-631.84	6,059.83	993.37	876.18	117.19	8.476	
13,400.00	7,106.33	6,476.00	6,475.22	40.16	129.41	20.41	-631.84	6,059.83	1,046.94	922.80	124.14	8.434	SF
13,500.00	7,106.37	6,476.00	6,475.22	40.46	129.41	20.41	-631.84	6,059.83	1,106.97	976.65	130.32	8.494	
13,600.00	7,106.41	6,476.00	6,475.22	40.76	129.41	20.41	-631.84	6,059.83	1,172.46	1,036.75	135.71	8.640	
13,700.00	7,106.45	6,476.00	6,475.22	41.06	129.41	20.41	-631.84	6,059.83	1,242.56	1,102.19	140.37	8.852	
13,800.00	7,106.49	6,476.00	6,475.22	41.36	129.41	20.41	-631.84	6,059.83	1,316.53	1,172.15	144.38	9.118	
13,900.00	7,106.53	6,476.00	6,475.22	41.67	129.41	20.41	-631.84	6,059.83	1,393.75	1,245.92	147.84	9.428	
14,000.00	7,106.57	6,476.00	6,475.22	41.97	129.41	20.41	-631.84	6,059.83	1,473.72	1,322.89	150.82	9.771	
14,100.00	7,106.61	6,476.00	6,475.22	42.27	129.41	20.41	-631.84	6,059.83	1,556.00	1,402.59	153.41	10.143	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,200.00	7,106.65	6,476.00	6,475.22	42.57	129.41	20.41	-631.84	6,059.83	1,640.25	1,484.58	155.67	10.537	
14,300.00	7,106.69	6,476.00	6,475.22	42.87	129.41	20.41	-631.84	6,059.83	1,726.19	1,568.53	157.65	10.949	
14,400.00	7,106.73	6,476.00	6,475.22	43.17	129.41	20.41	-631.84	6,059.83	1,813.56	1,654.16	159.41	11.377	
14,500.00	7,106.76	6,476.00	6,475.22	43.47	129.41	20.41	-631.84	6,059.83	1,902.18	1,741.22	160.97	11.817	
14,600.00	7,106.80	6,476.00	6,475.22	43.77	129.41	20.41	-631.84	6,059.83	1,991.88	1,829.52	162.36	12.268	
14,700.00	7,106.84	6,476.00	6,475.22	44.07	129.41	20.41	-631.84	6,059.83	2,082.52	1,918.90	163.62	12.728	
14,800.00	7,106.88	6,476.00	6,475.22	44.37	129.41	20.41	-631.84	6,059.83	2,173.98	2,009.22	164.76	13.195	
14,900.00	7,106.92	6,476.00	6,475.22	44.67	129.41	20.41	-631.84	6,059.83	2,266.16	2,100.36	165.80	13.668	
15,000.00	7,106.96	6,476.00	6,475.22	44.97	129.41	20.41	-631.84	6,059.83	2,358.98	2,192.22	166.76	14.146	
15,100.00	7,107.00	6,476.00	6,475.22	45.27	129.41	20.41	-631.84	6,059.83	2,452.36	2,284.71	167.65	14.628	
15,200.00	7,107.04	6,476.00	6,475.22	45.57	129.41	20.41	-631.84	6,059.83	2,546.24	2,377.78	168.47	15.114	
15,300.00	7,107.08	6,476.00	6,475.22	45.87	129.41	20.41	-631.84	6,059.83	2,640.58	2,471.34	169.24	15.603	
15,400.00	7,107.12	6,476.00	6,475.22	46.17	129.41	20.41	-631.84	6,059.83	2,735.31	2,565.36	169.96	16.094	
15,500.00	7,107.16	6,476.00	6,475.22	46.47	129.41	20.41	-631.84	6,059.83	2,830.41	2,659.78	170.63	16.588	
15,600.00	7,107.20	6,476.00	6,475.22	46.77	129.41	20.41	-631.84	6,059.83	2,925.84	2,754.56	171.28	17.082	
15,700.00	7,107.23	6,476.00	6,475.22	47.07	129.41	20.41	-631.84	6,059.83	3,021.56	2,849.67	171.89	17.579	
15,800.00	7,107.27	6,476.00	6,475.22	47.37	129.41	20.41	-631.84	6,059.83	3,117.55	2,945.08	172.47	18.076	
15,900.00	7,107.31	6,476.00	6,475.22	47.67	129.41	20.41	-631.84	6,059.83	3,213.78	3,040.76	173.03	18.574	
16,000.00	7,107.35	6,476.00	6,475.22	47.97	129.41	20.41	-631.84	6,059.83	3,310.24	3,136.68	173.57	19.072	
16,100.00	7,107.39	6,476.00	6,475.22	48.27	129.41	20.41	-631.84	6,059.83	3,406.90	3,232.82	174.08	19.571	
16,200.00	7,107.43	6,476.00	6,475.22	48.57	129.41	20.41	-631.84	6,059.83	3,503.75	3,329.17	174.58	20.070	
16,300.00	7,107.47	6,476.00	6,475.22	48.87	129.41	20.41	-631.84	6,059.83	3,600.78	3,425.71	175.06	20.568	
16,400.00	7,107.51	6,476.00	6,475.22	49.17	129.41	20.41	-631.84	6,059.83	3,697.96	3,522.42	175.53	21.067	
16,500.00	7,107.55	6,476.00	6,475.22	49.47	129.41	20.41	-631.84	6,059.83	3,795.28	3,619.29	175.99	21.566	
16,600.00	7,107.59	6,476.00	6,475.22	49.77	129.41	20.41	-631.84	6,059.83	3,892.74	3,716.31	176.43	22.064	
16,700.00	7,107.63	6,476.00	6,475.22	50.07	129.41	20.41	-631.84	6,059.83	3,990.33	3,813.47	176.87	22.561	
16,800.00	7,107.67	6,476.00	6,475.22	50.37	129.41	20.41	-631.84	6,059.83	4,088.04	3,910.75	177.29	23.058	
16,900.00	7,107.70	6,476.00	6,475.22	50.67	129.41	20.41	-631.84	6,059.83	4,185.85	4,008.14	177.71	23.555	
17,000.00	7,107.74	6,476.00	6,475.22	50.97	129.41	20.41	-631.84	6,059.83	4,283.76	4,105.65	178.12	24.051	
17,100.00	7,107.78	6,476.00	6,475.22	51.27	129.41	20.41	-631.84	6,059.83	4,381.77	4,203.26	178.52	24.546	
17,200.00	7,107.82	6,476.00	6,475.22	51.57	129.41	20.41	-631.84	6,059.83	4,479.87	4,300.96	178.91	25.040	
17,300.00	7,107.86	6,476.00	6,475.22	51.87	129.41	20.41	-631.84	6,059.83	4,578.05	4,398.75	179.30	25.533	
17,400.00	7,107.90	6,476.00	6,475.22	52.17	129.41	20.41	-631.84	6,059.83	4,676.30	4,496.62	179.68	26.025	
17,500.00	7,107.94	6,476.00	6,475.22	52.47	129.41	20.41	-631.84	6,059.83	4,774.63	4,594.57	180.06	26.517	
17,600.00	7,107.98	6,476.00	6,475.22	52.77	129.41	20.41	-631.84	6,059.83	4,873.03	4,692.59	180.43	27.007	
17,700.00	7,108.02	6,476.00	6,475.22	53.07	129.41	20.41	-631.84	6,059.83	4,971.49	4,790.68	180.80	27.497	
17,800.00	7,108.06	6,476.00	6,475.22	53.37	129.41	20.41	-631.84	6,059.83	5,070.01	4,888.84	181.17	27.985	
17,900.00	7,108.10	6,476.00	6,475.22	53.67	129.41	20.41	-631.84	6,059.83	5,168.59	4,987.06	181.53	28.473	
18,000.00	7,108.14	6,476.00	6,475.22	53.97	129.41	20.41	-631.84	6,059.83	5,267.22	5,085.33	181.89	28.959	
18,100.00	7,108.17	6,476.00	6,475.22	54.27	129.41	20.41	-631.84	6,059.83	5,365.90	5,183.66	182.24	29.444	
18,200.00	7,108.21	6,476.00	6,475.22	54.57	129.41	20.41	-631.84	6,059.83	5,464.63	5,282.03	182.59	29.928	
18,300.00	7,108.25	6,476.00	6,475.22	54.87	129.41	20.41	-631.84	6,059.83	5,563.40	5,380.46	182.94	30.411	
18,400.00	7,108.29	6,476.00	6,475.22	55.17	129.41	20.41	-631.84	6,059.83	5,662.22	5,478.93	183.29	30.892	
18,500.00	7,108.33	6,476.00	6,475.22	55.47	129.41	20.41	-631.84	6,059.83	5,761.08	5,577.45	183.63	31.373	
18,600.00	7,108.37	6,476.00	6,475.22	55.77	129.41	20.41	-631.84	6,059.83	5,859.98	5,676.00	183.98	31.852	
18,700.00	7,108.41	6,476.00	6,475.22	56.07	129.41	20.41	-631.84	6,059.83	5,958.91	5,774.59	184.32	32.330	
18,800.00	7,108.45	6,476.00	6,475.22	56.37	129.41	20.41	-631.84	6,059.83	6,057.88	5,873.23	184.65	32.807	
18,900.00	7,108.49	6,476.00	6,475.22	56.67	129.41	20.41	-631.84	6,059.83	6,156.88	5,971.89	184.99	33.282	
19,000.00	7,108.53	6,476.00	6,475.22	56.97	129.41	20.41	-631.84	6,059.83	6,255.92	6,070.59	185.32	33.757	
19,100.00	7,108.57	6,476.00	6,475.22	57.28	129.41	20.41	-631.84	6,059.83	6,354.98	6,169.32	185.66	34.230	
19,200.00	7,108.61	6,476.00	6,475.22	57.58	129.41	20.41	-631.84	6,059.83	6,454.07	6,268.09	185.99	34.701	
19,300.00	7,108.64	6,476.00	6,475.22	57.88	129.41	20.41	-631.84	6,059.83	6,553.20	6,366.88	186.32	35.172	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188 (Offset) - OH - OH

Survey Program: 280-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,400.00	7,108.68	6,476.00	6,475.22	58.18	129.41	20.41	-631.84	6,059.83	6,652.34	6,465.70	186.65	35.641	
19,500.00	7,108.72	6,476.00	6,475.22	58.48	129.41	20.41	-631.84	6,059.83	6,751.52	6,564.54	186.98	36.109	
19,600.00	7,108.76	6,476.00	6,475.22	58.78	129.41	20.41	-631.84	6,059.83	6,850.71	6,663.41	187.30	36.576	
19,700.00	7,108.80	6,476.00	6,475.22	59.08	129.41	20.41	-631.84	6,059.83	6,949.93	6,762.30	187.63	37.041	
19,800.00	7,108.84	6,476.00	6,475.22	59.38	129.41	20.41	-631.84	6,059.83	7,049.17	6,861.22	187.95	37.505	
19,900.00	7,108.88	6,476.00	6,475.22	59.68	129.41	20.41	-631.84	6,059.83	7,148.44	6,960.16	188.27	37.968	
20,000.00	7,108.92	6,476.00	6,475.22	59.98	129.41	20.41	-631.84	6,059.83	7,247.72	7,059.12	188.60	38.430	
20,100.00	7,108.96	6,476.00	6,475.22	60.28	129.41	20.41	-631.84	6,059.83	7,347.02	7,158.10	188.92	38.890	
20,208.46	7,109.00	6,476.00	6,475.22	60.60	129.41	20.41	-631.84	6,059.83	7,454.74	7,265.48	189.27	39.388	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	167.44	167.44	0.00	0.14	104.63	-1,767.56	6,770.99	6,997.90				
100.00	100.00	246.56	246.55	0.23	0.25	104.63	-1,767.00	6,771.23	6,998.03	6,997.67	0.36	N/A	
200.00	200.00	350.06	350.06	0.53	0.38	104.62	-1,766.22	6,771.71	6,998.28	6,997.55	0.74	9,498.376	
300.00	300.00	446.50	446.49	0.83	0.51	104.61	-1,765.38	6,772.25	6,998.61	6,997.50	1.11	6,300.314	
400.00	400.00	545.65	545.64	1.13	0.64	104.60	-1,764.61	6,772.83	6,998.98	6,997.49	1.49	4,697.039	
500.00	500.00	640.38	640.36	1.43	0.76	104.60	-1,763.90	6,773.40	6,999.37	6,997.50	1.87	3,748.446	
600.00	599.98	737.85	737.82	1.73	0.89	-51.04	-1,763.12	6,774.05	6,998.72	6,996.47	2.25	3,112.901	
644.12	644.06	775.86	775.83	1.86	0.94	-51.07	-1,762.77	6,774.33	6,997.75	6,995.34	2.41	2,900.972	
700.00	699.87	825.75	825.71	2.03	1.00	-51.09	-1,762.30	6,774.76	6,996.31	6,993.69	2.62	2,667.814	
800.00	799.74	911.05	911.01	2.33	1.11	-51.13	-1,761.44	6,775.61	6,993.87	6,990.87	3.00	2,333.305	
900.00	899.62	1,005.56	1,005.51	2.63	1.23	-51.16	-1,760.54	6,776.74	6,991.62	6,988.24	3.39	2,065.083	
1,000.00	999.49	1,107.77	1,107.71	2.93	1.36	-51.21	-1,759.65	6,777.90	6,989.35	6,985.57	3.78	1,847.583	
1,100.00	1,099.36	1,213.34	1,213.26	3.23	1.50	-51.25	-1,758.52	6,779.16	6,987.09	6,982.91	4.18	1,671.420	
1,200.00	1,199.24	1,330.95	1,330.85	3.53	1.65	-51.31	-1,756.90	6,780.26	6,984.49	6,979.92	4.57	1,527.014	
1,300.00	1,299.11	1,429.44	1,429.33	3.83	1.78	-51.35	-1,755.45	6,781.16	6,981.87	6,976.92	4.95	1,410.321	
1,400.00	1,398.98	1,505.62	1,505.50	4.13	1.88	-51.39	-1,754.31	6,782.03	6,979.46	6,974.15	5.31	1,313.513	
1,500.00	1,498.86	1,605.97	1,605.84	4.43	2.01	-51.43	-1,753.07	6,783.26	6,977.22	6,971.51	5.70	1,223.258	
1,600.00	1,598.73	1,667.24	1,667.09	4.73	2.09	-51.46	-1,752.20	6,784.22	6,975.25	6,969.19	6.06	1,150.920	
1,700.00	1,698.60	1,765.97	1,765.79	5.03	2.21	-51.51	-1,750.85	6,785.98	6,973.51	6,967.05	6.46	1,080.173	
1,800.00	1,798.48	1,851.98	1,851.78	5.33	2.32	-51.55	-1,749.65	6,787.78	6,972.05	6,965.21	6.84	1,018.987	
1,900.00	1,898.35	1,946.90	1,946.66	5.63	2.44	-51.59	-1,748.33	6,789.68	6,970.54	6,963.31	7.24	963.195	
2,000.00	1,998.22	2,025.00	2,024.74	5.93	2.54	-51.63	-1,747.07	6,791.49	6,969.28	6,961.67	7.62	915.192	
2,100.00	2,098.10	2,100.24	2,099.94	6.23	2.64	-51.67	-1,746.06	6,793.52	6,968.44	6,960.45	8.00	871.535	
2,200.00	2,197.97	2,211.38	2,211.04	6.53	2.77	-51.72	-1,744.85	6,796.38	6,967.55	6,959.13	8.42	827.759	
2,300.00	2,297.84	2,289.68	2,289.30	6.83	2.87	-51.76	-1,743.88	6,798.55	6,966.83	6,958.03	8.80	791.400	
2,400.00	2,397.72	2,398.27	2,397.84	7.13	3.00	-51.81	-1,742.66	6,801.62	6,966.19	6,956.97	9.22	755.218	
2,500.00	2,497.59	2,475.00	2,474.53	7.43	3.09	-51.84	-1,741.75	6,803.98	6,965.76	6,956.15	9.61	724.809	
2,600.00	2,597.46	2,558.32	2,557.81	7.73	3.20	-51.88	-1,740.71	6,806.54	6,965.38	6,955.37	10.00	696.264	
2,673.23	2,670.60	2,625.00	2,624.44	7.95	3.28	-51.92	-1,739.89	6,808.81	6,965.33	6,955.03	10.30	676.278	
2,700.00	2,697.34	2,640.18	2,639.61	8.03	3.30	-51.92	-1,739.68	6,809.36	6,965.35	6,954.95	10.40	669.928	
2,800.00	2,797.21	2,723.81	2,723.18	8.33	3.40	-51.97	-1,738.67	6,812.60	6,965.71	6,954.92	10.79	645.336	
2,900.00	2,897.09	2,792.96	2,792.26	8.63	3.48	-52.00	-1,737.64	6,815.49	6,966.33	6,955.16	11.17	623.468	
3,000.00	2,996.96	2,891.06	2,890.24	8.93	3.60	-52.05	-1,736.22	6,819.90	6,967.27	6,955.69	11.59	601.298	
3,100.00	3,096.83	3,010.99	3,010.05	9.23	3.75	-52.12	-1,734.29	6,824.94	6,967.87	6,955.85	12.02	579.533	
3,200.00	3,196.71	3,086.56	3,085.54	9.53	3.85	-52.16	-1,733.03	6,828.24	6,968.64	6,956.23	12.41	561.536	
3,300.00	3,296.58	3,175.00	3,173.87	9.83	3.96	-52.21	-1,731.36	6,832.24	6,969.55	6,956.74	12.81	544.056	
3,400.00	3,396.45	3,245.31	3,244.08	10.13	4.05	-52.25	-1,730.07	6,835.74	6,970.89	6,957.69	13.19	528.426	
3,500.00	3,496.33	3,334.28	3,332.91	10.43	4.16	-52.30	-1,728.42	6,840.44	6,972.53	6,958.93	13.60	512.874	
3,600.00	3,596.20	3,420.45	3,418.94	10.73	4.26	-52.35	-1,726.75	6,845.14	6,974.33	6,960.34	14.00	498.337	
3,700.00	3,696.07	3,597.55	3,595.78	11.03	4.48	-52.45	-1,723.97	6,854.27	6,976.11	6,961.61	14.50	481.036	
3,800.00	3,795.95	3,694.18	3,692.32	11.33	4.60	-52.49	-1,723.13	6,858.25	6,976.87	6,961.96	14.92	467.639	
3,900.00	3,895.82	3,817.38	3,815.42	11.63	4.75	-52.55	-1,722.12	6,863.03	6,977.37	6,962.00	15.37	454.009	
4,000.00	3,995.69	3,928.30	3,926.26	11.93	4.89	-52.60	-1,721.25	6,867.20	6,977.80	6,962.00	15.80	441.547	
4,100.00	4,095.57	4,150.66	4,148.53	12.23	5.15	-52.69	-1,720.49	6,873.71	6,977.81	6,961.43	16.38	426.041	
4,200.00	4,195.44	4,280.09	4,277.94	12.53	5.28	-52.73	-1,721.04	6,875.52	6,976.22	6,959.38	16.84	414.181	
4,300.00	4,295.31	4,445.39	4,443.22	12.83	5.36	-52.78	-1,722.35	6,876.62	6,974.03	6,956.71	17.32	402.658	
4,400.00	4,395.19	4,582.46	4,580.30	13.13	5.34	-52.82	-1,722.49	6,876.41	6,970.80	6,953.17	17.63	395.445	
4,500.00	4,495.06	4,670.25	4,668.09	13.43	5.33	-52.85	-1,722.79	6,876.16	6,967.57	6,949.63	17.94	388.385	
4,600.00	4,594.93	4,773.24	4,771.07	13.73	5.31	-52.88	-1,723.70	6,875.96	6,964.54	6,946.25	18.29	380.733	
4,700.00	4,694.81	4,865.62	4,863.44	14.03	5.31	-52.90	-1,724.64	6,875.81	6,961.56	6,942.92	18.64	373.398	
4,800.00	4,794.68	4,960.46	4,958.28	14.33	5.31	-52.92	-1,725.61	6,875.72	6,958.65	6,939.65	19.00	366.218	
4,900.00	4,894.55	5,066.32	5,064.14	14.63	5.30	-52.95	-1,726.62	6,875.46	6,955.58	6,936.23	19.35	359.372	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188C (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,000.00	4,994.43	5,168.66	5,166.48	14.93	5.31	-52.97	-1,727.62	6,875.36	6,952.68	6,932.96	19.72	352.609	
5,100.00	5,094.30	5,261.07	5,258.88	15.23	5.31	-53.00	-1,728.65	6,875.22	6,949.74	6,929.67	20.07	346.231	
5,200.00	5,194.18	5,364.35	5,362.14	15.53	5.32	-53.02	-1,729.82	6,875.07	6,946.81	6,926.38	20.43	339.963	
5,300.00	5,294.05	5,469.44	5,467.23	15.83	5.33	-53.05	-1,731.08	6,874.87	6,943.87	6,923.08	20.80	333.916	
5,400.00	5,393.92	5,559.99	5,557.77	16.13	5.35	-53.07	-1,732.14	6,874.74	6,940.95	6,919.80	21.15	328.161	
5,500.00	5,493.80	5,657.78	5,655.56	16.43	5.38	-53.09	-1,733.15	6,874.79	6,938.20	6,916.68	21.52	322.377	
5,600.00	5,593.67	5,740.17	5,737.94	16.73	5.41	-53.11	-1,733.97	6,874.82	6,935.43	6,913.55	21.88	316.962	
5,700.00	5,693.54	5,825.00	5,822.77	17.03	5.46	-53.13	-1,734.69	6,875.04	6,932.85	6,910.59	22.26	311.497	
5,800.00	5,793.42	5,932.96	5,930.71	17.33	5.51	-53.15	-1,736.78	6,875.28	6,930.47	6,907.83	22.64	306.103	
5,900.00	5,893.29	6,037.53	6,035.25	17.63	5.55	-53.17	-1,739.32	6,875.22	6,927.92	6,904.91	23.01	301.058	
6,000.00	5,993.16	6,167.01	6,164.70	17.93	5.59	-53.19	-1,741.97	6,874.92	6,925.13	6,901.74	23.39	296.054	
6,100.00	6,093.04	6,266.67	6,264.35	18.23	5.62	-53.21	-1,743.59	6,874.57	6,922.13	6,898.38	23.75	291.504	
6,200.00	6,192.91	6,363.34	6,361.01	18.53	5.66	-53.23	-1,745.04	6,874.23	6,919.09	6,895.00	24.10	287.114	
6,300.00	6,292.78	6,470.78	6,468.44	18.83	5.70	-53.25	-1,746.67	6,873.86	6,916.07	6,891.61	24.46	282.775	
6,400.00	6,392.66	6,577.88	6,575.51	19.13	5.74	-53.27	-1,748.37	6,873.47	6,913.06	6,888.24	24.82	278.553	
6,500.00	6,492.53	6,664.78	6,662.40	19.43	5.77	-53.29	-1,749.71	6,873.19	6,910.04	6,884.88	25.17	274.576	
6,551.20	6,543.67	6,705.88	6,703.51	19.58	5.79	-53.30	-1,750.27	6,873.11	6,908.55	6,883.21	25.34	272.586	
6,600.00	6,592.30	6,753.73	6,751.36	19.73	5.82	-11.26	-1,750.85	6,873.01	6,905.08	6,879.56	25.52	270.578	
6,650.00	6,641.67	6,806.10	6,803.71	19.88	5.85	-1.13	-1,751.52	6,872.96	6,897.41	6,871.70	25.70	268.340	
6,700.00	6,690.21	6,850.00	6,847.61	20.03	5.87	3.15	-1,751.97	6,872.90	6,885.51	6,859.63	25.88	266.040	
6,750.00	6,737.54	6,892.77	6,890.38	20.18	5.90	5.66	-1,752.47	6,872.91	6,869.60	6,843.54	26.06	263.587	
6,800.00	6,783.30	6,954.19	6,951.80	20.33	5.93	7.50	-1,753.19	6,872.83	6,849.67	6,823.42	26.25	260.923	
6,850.00	6,827.15	6,996.80	6,994.40	20.48	5.96	9.05	-1,753.57	6,872.76	6,825.88	6,799.45	26.43	258.293	
6,900.00	6,868.74	7,040.76	7,038.36	20.63	5.98	10.54	-1,753.94	6,872.69	6,798.45	6,771.85	26.60	255.555	
6,950.00	6,907.77	7,074.59	7,072.19	20.78	6.00	12.10	-1,754.23	6,872.63	6,767.61	6,740.84	26.77	252.778	
7,000.00	6,943.94	7,119.15	7,116.75	20.93	6.02	13.87	-1,754.57	6,872.56	6,733.58	6,706.63	26.95	249.863	
7,050.00	6,976.97	7,149.21	7,146.81	21.08	6.04	15.95	-1,754.81	6,872.49	6,696.62	6,669.50	27.12	246.963	
7,100.00	7,006.62	7,175.85	7,173.45	21.23	6.05	18.53	-1,755.05	6,872.44	6,657.04	6,629.75	27.28	244.010	
7,150.00	7,032.64	7,192.49	7,190.09	21.38	6.06	21.80	-1,755.22	6,872.43	6,615.15	6,587.70	27.44	241.048	
7,200.00	7,054.86	7,210.00	7,207.60	21.53	6.08	26.20	-1,755.39	6,872.43	6,571.27	6,543.66	27.61	238.036	
7,250.00	7,073.09	7,230.11	7,227.71	21.68	6.09	32.37	-1,755.55	6,872.45	6,525.71	6,497.94	27.77	234.975	
7,300.00	7,087.20	7,256.37	7,253.97	21.83	6.11	41.49	-1,755.72	6,872.44	6,478.80	6,450.85	27.94	231.876	
7,350.00	7,097.08	7,268.18	7,265.78	21.98	6.12	54.70	-1,755.81	6,872.42	6,430.90	6,402.81	28.10	228.870	
7,400.00	7,102.66	7,274.77	7,272.37	22.13	6.12	73.13	-1,755.86	6,872.41	6,382.41	6,354.16	28.25	225.902	
7,438.94	7,104.00	7,276.29	7,273.88	22.25	6.12	89.92	-1,755.87	6,872.41	6,344.47	6,316.10	28.37	223.625	
7,500.00	7,104.02	7,276.18	7,273.77	22.43	6.12	89.91	-1,755.87	6,872.41	6,284.97	6,256.42	28.55	220.103	
7,600.00	7,104.06	7,276.00	7,273.59	22.74	6.12	89.91	-1,755.87	6,872.41	6,187.60	6,158.74	28.86	214.435	
7,700.00	7,104.10	7,275.82	7,273.41	23.04	6.12	89.90	-1,755.86	6,872.41	6,090.31	6,061.15	29.16	208.888	
7,800.00	7,104.14	7,275.64	7,273.24	23.34	6.12	89.89	-1,755.86	6,872.41	5,993.11	5,963.65	29.46	203.457	
7,900.00	7,104.18	7,275.47	7,273.06	23.64	6.12	89.88	-1,755.86	6,872.41	5,896.00	5,866.25	29.76	198.139	
8,000.00	7,104.22	7,275.29	7,272.89	23.94	6.12	89.88	-1,755.86	6,872.41	5,799.00	5,768.94	30.06	192.931	
8,100.00	7,104.26	7,275.12	7,272.72	24.24	6.12	89.87	-1,755.86	6,872.41	5,702.09	5,671.73	30.36	187.830	
8,200.00	7,104.30	7,274.95	7,272.55	24.54	6.12	89.86	-1,755.86	6,872.41	5,605.29	5,574.64	30.66	182.833	
8,300.00	7,104.34	7,274.79	7,272.38	24.84	6.12	89.86	-1,755.86	6,872.41	5,508.61	5,477.66	30.96	177.937	
8,400.00	7,104.38	7,274.62	7,272.21	25.14	6.12	89.85	-1,755.86	6,872.41	5,412.05	5,380.79	31.26	173.139	
8,500.00	7,104.42	7,274.45	7,272.05	25.44	6.12	89.84	-1,755.85	6,872.41	5,315.62	5,284.06	31.56	168.437	
8,600.00	7,104.45	7,274.29	7,271.89	25.74	6.12	89.84	-1,755.85	6,872.41	5,219.32	5,187.46	31.86	163.828	
8,700.00	7,104.49	7,274.13	7,271.73	26.04	6.12	89.83	-1,755.85	6,872.41	5,123.16	5,091.00	32.16	159.311	
8,800.00	7,104.53	7,273.97	7,271.57	26.34	6.12	89.82	-1,755.85	6,872.41	5,027.15	4,994.70	32.46	154.881	
8,900.00	7,104.57	7,273.81	7,271.41	26.64	6.12	89.82	-1,755.85	6,872.41	4,931.31	4,898.55	32.76	150.538	
9,000.00	7,104.61	7,273.66	7,271.25	26.95	6.12	89.81	-1,755.85	6,872.41	4,835.62	4,802.57	33.06	146.280	
9,100.00	7,104.65	7,273.50	7,271.10	27.25	6.12	89.80	-1,755.85	6,872.41	4,740.12	4,706.77	33.36	142.104	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188C (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,200.00	7,104.69	7,273.35	7,270.94	27.55	6.12	89.80	-1,755.84	6,872.42	4,644.81	4,611.15	33.66	138.008	
9,300.00	7,104.73	7,273.20	7,270.79	27.85	6.12	89.79	-1,755.84	6,872.42	4,549.70	4,515.74	33.96	133.991	
9,400.00	7,104.77	7,273.05	7,270.64	28.15	6.12	89.79	-1,755.84	6,872.42	4,454.80	4,420.54	34.25	130.051	
9,500.00	7,104.81	7,272.90	7,270.49	28.45	6.12	89.78	-1,755.84	6,872.42	4,360.13	4,325.58	34.55	126.187	
9,600.00	7,104.85	7,272.75	7,270.35	28.75	6.12	89.77	-1,755.84	6,872.42	4,265.70	4,230.85	34.85	122.396	
9,700.00	7,104.89	7,272.60	7,270.20	29.05	6.12	89.77	-1,755.84	6,872.42	4,171.54	4,136.39	35.15	118.678	
9,800.00	7,104.92	7,272.46	7,270.05	29.35	6.12	89.76	-1,755.84	6,872.42	4,077.65	4,042.20	35.45	115.032	
9,900.00	7,104.96	7,272.32	7,269.91	29.65	6.12	89.76	-1,755.84	6,872.42	3,984.06	3,948.31	35.75	111.455	
10,000.00	7,105.00	7,272.17	7,269.77	29.95	6.12	89.75	-1,755.84	6,872.42	3,890.78	3,854.74	36.04	107.947	
10,100.00	7,105.04	7,272.03	7,269.63	30.25	6.12	89.75	-1,755.83	6,872.42	3,797.85	3,761.51	36.34	104.507	
10,200.00	7,105.08	7,271.89	7,269.49	30.55	6.12	89.74	-1,755.83	6,872.42	3,705.29	3,668.65	36.64	101.134	
10,300.00	7,105.12	7,271.76	7,269.35	30.85	6.12	89.73	-1,755.83	6,872.42	3,613.12	3,576.19	36.93	97.826	
10,400.00	7,105.16	7,271.62	7,269.21	31.15	6.12	89.73	-1,755.83	6,872.42	3,521.39	3,484.16	37.23	94.584	
10,500.00	7,105.20	7,271.48	7,269.08	31.45	6.12	89.72	-1,755.83	6,872.42	3,430.11	3,392.58	37.53	91.407	
10,600.00	7,105.24	7,271.35	7,268.94	31.75	6.12	89.72	-1,755.83	6,872.42	3,339.33	3,301.51	37.82	88.294	
10,700.00	7,105.28	7,271.21	7,268.81	32.05	6.12	89.71	-1,755.83	6,872.42	3,249.10	3,210.98	38.11	85.245	
10,800.00	7,105.32	7,271.08	7,268.68	32.35	6.12	89.71	-1,755.83	6,872.42	3,159.45	3,121.04	38.41	82.259	
10,900.00	7,105.36	7,270.95	7,268.55	32.66	6.12	89.70	-1,755.83	6,872.42	3,070.44	3,031.74	38.70	79.337	
11,000.00	7,105.39	7,270.82	7,268.42	32.96	6.12	89.70	-1,755.83	6,872.42	2,982.13	2,943.14	38.99	76.478	
11,100.00	7,105.43	7,270.69	7,268.29	33.26	6.12	89.69	-1,755.82	6,872.42	2,894.58	2,855.30	39.28	73.682	
11,200.00	7,105.47	7,270.57	7,268.16	33.56	6.12	89.69	-1,755.82	6,872.42	2,807.86	2,768.29	39.57	70.951	
11,300.00	7,105.51	7,270.44	7,268.03	33.86	6.12	89.68	-1,755.82	6,872.42	2,722.05	2,682.19	39.86	68.285	
11,400.00	7,105.55	7,270.31	7,267.91	34.16	6.12	89.68	-1,755.82	6,872.42	2,637.25	2,597.10	40.15	65.684	
11,500.00	7,105.59	7,270.19	7,267.78	34.46	6.12	89.67	-1,755.82	6,872.42	2,553.54	2,513.10	40.44	63.150	
11,600.00	7,105.63	7,270.07	7,267.66	34.76	6.12	89.67	-1,755.82	6,872.42	2,471.04	2,430.32	40.72	60.684	
11,700.00	7,105.67	7,269.94	7,267.54	35.06	6.12	89.66	-1,755.82	6,872.42	2,389.88	2,348.88	41.00	58.287	
11,800.00	7,105.71	7,269.82	7,267.42	35.36	6.12	89.66	-1,755.82	6,872.42	2,310.20	2,268.92	41.28	55.962	
11,900.00	7,105.75	7,269.70	7,267.30	35.66	6.12	89.65	-1,755.82	6,872.42	2,232.16	2,190.60	41.56	53.711	
12,000.00	7,105.79	7,269.58	7,267.18	35.96	6.12	89.65	-1,755.82	6,872.42	2,155.93	2,114.09	41.83	51.536	
12,100.00	7,105.83	7,269.47	7,267.06	36.26	6.12	89.64	-1,755.82	6,872.42	2,081.71	2,039.60	42.10	49.441	
12,200.00	7,105.86	7,269.35	7,266.95	36.56	6.12	89.64	-1,755.81	6,872.42	2,009.73	1,967.35	42.37	47.430	
12,300.00	7,105.90	7,269.23	7,266.83	36.86	6.12	89.63	-1,755.81	6,872.42	1,940.23	1,897.59	42.64	45.506	
12,400.00	7,105.94	7,269.12	7,266.71	37.16	6.12	89.63	-1,755.81	6,872.42	1,873.49	1,830.60	42.90	43.674	
12,500.00	7,105.98	7,269.00	7,266.60	37.46	6.12	89.62	-1,755.81	6,872.42	1,809.83	1,766.67	43.15	41.939	
12,600.00	7,106.02	7,268.89	7,266.49	37.76	6.12	89.62	-1,755.81	6,872.42	1,749.56	1,706.15	43.41	40.307	
12,700.00	7,106.06	7,268.78	7,266.37	38.06	6.12	89.61	-1,755.81	6,872.42	1,693.06	1,649.41	43.65	38.784	
12,800.00	7,106.10	7,268.67	7,266.26	38.36	6.12	89.61	-1,755.81	6,872.42	1,640.71	1,596.82	43.90	37.377	
12,900.00	7,106.14	7,268.56	7,266.15	38.66	6.12	89.61	-1,755.81	6,872.42	1,592.93	1,548.80	44.14	36.091	
13,000.00	7,106.18	7,268.45	7,266.04	38.96	6.12	89.60	-1,755.81	6,872.42	1,550.14	1,505.76	44.37	34.934	
13,100.00	7,106.22	7,268.34	7,265.94	39.26	6.12	89.60	-1,755.81	6,872.42	1,512.75	1,468.14	44.61	33.911	
13,200.00	7,106.26	7,268.23	7,265.83	39.56	6.12	89.59	-1,755.81	6,872.42	1,481.18	1,436.34	44.85	33.029	
13,300.00	7,106.30	7,268.13	7,265.72	39.86	6.12	89.59	-1,755.81	6,872.42	1,455.81	1,410.73	45.08	32.292	
13,400.00	7,106.33	7,268.02	7,265.61	40.16	6.12	89.58	-1,755.80	6,872.42	1,436.97	1,391.65	45.33	31.703	
13,500.00	7,106.37	7,267.91	7,265.51	40.46	6.12	89.58	-1,755.80	6,872.42	1,424.91	1,379.34	45.57	31.266	
13,600.00	7,106.41	7,267.81	7,265.41	40.76	6.12	89.58	-1,755.80	6,872.42	1,419.81	1,373.98	45.83	30.979	
13,622.55	7,106.42	7,267.79	7,265.38	40.83	6.12	89.57	-1,755.80	6,872.42	1,419.63	1,373.74	45.89	30.935	CC, ES
13,700.00	7,106.45	7,267.71	7,265.30	41.06	6.12	89.57	-1,755.80	6,872.42	1,421.74	1,375.65	46.10	30.841	SF
13,800.00	7,106.49	7,267.60	7,265.20	41.36	6.11	89.57	-1,755.80	6,872.42	1,430.68	1,384.30	46.38	30.848	
13,900.00	7,106.53	7,267.50	7,265.10	41.67	6.11	89.56	-1,755.80	6,872.43	1,446.49	1,399.82	46.67	30.994	
14,000.00	7,106.57	7,267.40	7,265.00	41.97	6.11	89.56	-1,755.80	6,872.43	1,468.96	1,421.98	46.97	31.273	
14,100.00	7,106.61	7,267.30	7,264.90	42.27	6.11	89.55	-1,755.80	6,872.43	1,497.77	1,450.49	47.28	31.676	
14,200.00	7,106.65	7,267.20	7,264.80	42.57	6.11	89.55	-1,755.80	6,872.43	1,532.58	1,484.98	47.61	32.194	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188C (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	7,267.10	7,264.70	42.87	6.11	89.55	-1,755.80	6,872.43	1,572.99	1,525.06	47.93	32.816	
14,400.00	7,106.73	7,267.01	7,264.60	43.17	6.11	89.54	-1,755.80	6,872.43	1,618.58	1,570.31	48.27	33.534	
14,500.00	7,106.76	7,266.91	7,264.50	43.47	6.11	89.54	-1,755.80	6,872.43	1,668.92	1,620.31	48.60	34.337	
14,600.00	7,106.80	7,266.81	7,264.41	43.77	6.11	89.53	-1,755.80	6,872.43	1,723.59	1,674.65	48.94	35.216	
14,700.00	7,106.84	7,266.72	7,264.31	44.07	6.11	89.53	-1,755.79	6,872.43	1,782.21	1,732.92	49.28	36.162	
14,800.00	7,106.88	7,266.62	7,264.22	44.37	6.11	89.53	-1,755.79	6,872.43	1,844.38	1,794.76	49.62	37.167	
14,900.00	7,106.92	7,266.53	7,264.12	44.67	6.11	89.52	-1,755.79	6,872.43	1,909.78	1,859.81	49.96	38.223	
15,000.00	7,106.96	7,266.43	7,264.03	44.97	6.11	89.52	-1,755.79	6,872.43	1,978.06	1,927.76	50.30	39.323	
15,100.00	7,107.00	7,266.34	7,263.94	45.27	6.11	89.52	-1,755.79	6,872.43	2,048.96	1,998.32	50.64	40.461	
15,200.00	7,107.04	7,266.25	7,263.84	45.57	6.11	89.51	-1,755.79	6,872.43	2,122.20	2,071.22	50.98	41.632	
15,300.00	7,107.08	7,266.16	7,263.75	45.87	6.11	89.51	-1,755.79	6,872.43	2,197.55	2,146.24	51.31	42.830	
15,400.00	7,107.12	7,266.07	7,263.66	46.17	6.11	89.50	-1,755.79	6,872.43	2,274.80	2,223.16	51.64	44.051	
15,500.00	7,107.16	7,265.98	7,263.57	46.47	6.11	89.50	-1,755.79	6,872.43	2,353.76	2,301.79	51.97	45.291	
15,600.00	7,107.20	7,265.89	7,263.48	46.77	6.11	89.50	-1,755.79	6,872.43	2,434.27	2,381.97	52.30	46.547	
15,700.00	7,107.23	7,265.80	7,263.39	47.07	6.11	89.49	-1,755.79	6,872.43	2,516.18	2,463.56	52.62	47.815	
15,800.00	7,107.27	7,265.71	7,263.31	47.37	6.11	89.49	-1,755.79	6,872.43	2,599.36	2,546.41	52.95	49.093	
15,900.00	7,107.31	7,265.62	7,263.22	47.67	6.11	89.49	-1,755.79	6,872.43	2,683.68	2,630.41	53.27	50.379	
16,000.00	7,107.35	7,265.54	7,263.13	47.97	6.11	89.48	-1,755.79	6,872.43	2,769.05	2,715.46	53.59	51.670	
16,100.00	7,107.39	7,265.45	7,263.04	48.27	6.11	89.48	-1,755.79	6,872.43	2,855.37	2,801.46	53.91	52.964	
16,200.00	7,107.43	7,265.36	7,262.96	48.57	6.11	89.48	-1,755.78	6,872.43	2,942.55	2,888.32	54.23	54.261	
16,300.00	7,107.47	7,265.28	7,262.87	48.87	6.11	89.47	-1,755.78	6,872.43	3,030.53	2,975.98	54.55	55.558	
16,400.00	7,107.51	7,265.19	7,262.79	49.17	6.11	89.47	-1,755.78	6,872.43	3,119.23	3,064.37	54.86	56.855	
16,500.00	7,107.55	7,265.11	7,262.71	49.47	6.11	89.47	-1,755.78	6,872.43	3,208.60	3,153.42	55.18	58.150	
16,600.00	7,107.59	7,265.03	7,262.62	49.77	6.11	89.46	-1,755.78	6,872.43	3,298.57	3,243.08	55.49	59.442	
16,700.00	7,107.63	7,264.95	7,262.54	50.07	6.11	89.46	-1,755.78	6,872.43	3,389.11	3,333.30	55.81	60.730	
16,800.00	7,107.67	7,264.86	7,262.46	50.37	6.11	89.46	-1,755.78	6,872.43	3,480.17	3,424.05	56.12	62.014	
16,900.00	7,107.70	7,264.78	7,262.38	50.67	6.11	89.45	-1,755.78	6,872.43	3,571.70	3,515.27	56.43	63.294	
17,000.00	7,107.74	7,264.70	7,262.30	50.97	6.11	89.45	-1,755.78	6,872.43	3,663.68	3,606.94	56.74	64.568	
17,100.00	7,107.78	7,264.62	7,262.22	51.27	6.11	89.45	-1,755.78	6,872.43	3,756.07	3,699.01	57.05	65.836	
17,200.00	7,107.82	7,264.54	7,262.14	51.57	6.11	89.44	-1,755.78	6,872.43	3,848.83	3,791.47	57.36	67.097	
17,300.00	7,107.86	7,264.46	7,262.06	51.87	6.11	89.44	-1,755.78	6,872.43	3,941.95	3,884.28	57.67	68.352	
17,400.00	7,107.90	7,264.38	7,261.98	52.17	6.11	89.44	-1,755.78	6,872.43	4,035.41	3,977.43	57.98	69.600	
17,500.00	7,107.94	7,264.31	7,261.90	52.47	6.11	89.43	-1,755.78	6,872.43	4,129.16	4,070.87	58.29	70.840	
17,600.00	7,107.98	7,264.23	7,261.82	52.77	6.11	89.43	-1,755.78	6,872.43	4,223.21	4,164.61	58.60	72.073	
17,700.00	7,108.02	7,264.15	7,261.75	53.07	6.11	89.43	-1,755.78	6,872.43	4,317.52	4,258.61	58.90	73.297	
17,800.00	7,108.06	7,264.07	7,261.67	53.37	6.11	89.42	-1,755.78	6,872.43	4,412.08	4,352.87	59.21	74.514	
17,900.00	7,108.10	7,264.00	7,261.59	53.67	6.11	89.42	-1,755.77	6,872.43	4,506.88	4,447.36	59.52	75.723	
18,000.00	7,108.14	7,263.92	7,261.52	53.97	6.11	89.42	-1,755.77	6,872.43	4,601.90	4,542.07	59.82	76.923	
18,100.00	7,108.17	7,263.85	7,261.44	54.27	6.11	89.42	-1,755.77	6,872.43	4,697.12	4,636.99	60.13	78.115	
18,200.00	7,108.21	7,263.77	7,261.37	54.57	6.11	89.41	-1,755.77	6,872.43	4,792.54	4,732.10	60.44	79.299	
18,300.00	7,108.25	7,263.70	7,261.29	54.87	6.11	89.41	-1,755.77	6,872.43	4,888.14	4,827.40	60.74	80.474	
18,400.00	7,108.29	7,263.63	7,261.22	55.17	6.11	89.41	-1,755.77	6,872.43	4,983.91	4,922.87	61.05	81.640	
18,500.00	7,108.33	7,263.55	7,261.15	55.47	6.11	89.40	-1,755.77	6,872.43	5,079.85	5,018.50	61.35	82.798	
18,600.00	7,108.37	7,263.48	7,261.08	55.77	6.11	89.40	-1,755.77	6,872.43	5,175.94	5,114.28	61.66	83.947	
18,700.00	7,108.41	7,263.41	7,261.00	56.07	6.11	89.40	-1,755.77	6,872.43	5,272.18	5,210.22	61.96	85.087	
18,800.00	7,108.45	7,263.34	7,260.93	56.37	6.11	89.39	-1,755.77	6,872.43	5,368.55	5,306.29	62.27	86.219	
18,900.00	7,108.49	7,263.27	7,260.86	56.67	6.11	89.39	-1,755.77	6,872.43	5,465.06	5,402.49	62.57	87.342	
19,000.00	7,108.53	7,263.20	7,260.79	56.97	6.11	89.39	-1,755.77	6,872.43	5,561.68	5,498.81	62.87	88.456	
19,100.00	7,108.57	7,263.13	7,260.72	57.28	6.11	89.39	-1,755.77	6,872.43	5,658.43	5,595.25	63.18	89.562	
19,200.00	7,108.61	7,263.06	7,260.65	57.58	6.11	89.38	-1,755.77	6,872.43	5,755.29	5,691.80	63.48	90.659	
19,300.00	7,108.64	7,262.99	7,260.58	57.88	6.11	89.38	-1,755.77	6,872.43	5,852.25	5,788.46	63.79	91.748	
19,400.00	7,108.68	7,262.92	7,260.51	58.18	6.11	89.38	-1,755.77	6,872.43	5,949.31	5,885.22	64.09	92.828	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #188C (Offset) - OH - OH

Survey Program: 100-Standard Keeper 104

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,500.00	7,108.72	7,262.85	7,260.44	58.48	6.11	89.37	-1,755.77	6,872.43	6,046.47	5,982.08	64.39	93.899	
19,600.00	7,108.76	7,262.78	7,260.38	58.78	6.11	89.37	-1,755.77	6,872.43	6,143.72	6,079.02	64.70	94.963	
19,700.00	7,108.80	7,262.71	7,260.31	59.08	6.11	89.37	-1,755.77	6,872.43	6,241.05	6,176.06	65.00	96.017	
19,800.00	7,108.84	7,262.65	7,260.24	59.38	6.11	89.37	-1,755.77	6,872.43	6,338.47	6,273.17	65.30	97.064	
19,900.00	7,108.88	7,262.58	7,260.18	59.68	6.11	89.36	-1,755.76	6,872.43	6,435.97	6,370.37	65.61	98.102	
20,000.00	7,108.92	7,262.51	7,260.11	59.98	6.11	89.36	-1,755.76	6,872.43	6,533.55	6,467.64	65.91	99.131	
20,100.00	7,108.96	7,262.45	7,260.04	60.28	6.11	89.36	-1,755.76	6,872.43	6,631.19	6,564.98	66.21	100.153	
20,208.46	7,109.00	7,262.38	7,259.97	60.60	6.11	89.36	-1,755.76	6,872.43	6,737.18	6,670.64	66.54	101.252	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	15.49	-15.49	0.00	0.14	-98.45	-1,386.44	-9,335.41	9,437.81				
100.00	100.00	84.51	84.51	0.23	0.75	-98.45	-1,386.44	-9,335.41	9,437.81	9,436.83	0.98	9,676.973	
200.00	200.00	275.49	184.51	0.53	2.86	-98.45	-1,386.44	-9,335.41	9,437.81	9,434.42	3.38	2,788.855	
300.00	300.00	284.51	284.51	0.83	3.02	-98.45	-1,386.44	-9,335.41	9,437.81	9,433.96	3.85	2,453.358	
400.00	400.00	384.51	384.51	1.13	4.82	-98.45	-1,386.44	-9,335.41	9,437.81	9,431.86	5.95	1,586.186	
500.00	500.00	484.51	484.51	1.43	6.63	-98.45	-1,386.44	-9,335.41	9,437.81	9,429.75	8.05	1,171.946	CC
600.00	599.98	583.90	583.89	1.73	8.42	105.95	-1,386.13	-9,335.41	9,438.24	9,428.09	10.15	930.328	
644.12	644.06	627.53	627.53	1.86	9.21	105.95	-1,386.16	-9,335.41	9,438.76	9,427.70	11.06	853.090	
700.00	699.87	682.78	682.78	2.03	10.20	105.96	-1,386.21	-9,335.41	9,439.54	9,427.31	12.23	771.960	
800.00	799.74	781.65	781.65	2.33	11.98	105.99	-1,386.36	-9,335.41	9,440.95	9,426.64	14.31	659.707	
900.00	899.62	884.14	884.13	2.63	13.86	106.02	-1,386.44	-9,335.41	9,442.35	9,425.87	16.48	572.808	
1,000.00	999.49	984.02	984.00	2.93	15.70	106.05	-1,386.44	-9,335.41	9,443.74	9,425.11	18.63	507.035	
1,100.00	1,099.36	1,081.98	1,081.96	3.23	17.50	106.08	-1,386.06	-9,335.41	9,445.08	9,424.35	20.73	455.595	
1,200.00	1,199.24	1,178.95	1,178.93	3.53	19.29	106.11	-1,386.30	-9,335.41	9,446.51	9,423.69	22.82	413.977	
1,300.00	1,299.11	1,283.65	1,283.62	3.83	21.26	106.14	-1,386.44	-9,335.41	9,447.93	9,422.85	25.08	376.679	
1,400.00	1,398.98	1,383.52	1,383.50	4.13	23.15	106.17	-1,386.44	-9,335.41	9,449.33	9,422.06	27.27	346.482	
1,500.00	1,498.86	1,482.92	1,482.89	4.43	25.03	106.20	-1,385.91	-9,335.41	9,450.65	9,421.20	29.45	320.870	
1,600.00	1,598.73	1,580.49	1,580.46	4.73	26.87	106.23	-1,386.02	-9,335.41	9,452.08	9,420.48	31.60	299.121	
1,700.00	1,698.60	1,678.07	1,678.04	5.03	28.72	106.26	-1,386.31	-9,335.41	9,453.53	9,419.78	33.75	280.136	
1,800.00	1,798.48	1,783.05	1,782.99	5.33	30.79	106.29	-1,386.44	-9,335.41	9,454.96	9,418.84	36.12	261.799	
1,900.00	1,898.35	1,882.92	1,882.86	5.63	32.79	106.31	-1,386.44	-9,335.41	9,456.37	9,417.95	38.42	246.143	
2,000.00	1,998.22	1,982.03	1,981.97	5.93	34.78	106.35	-1,385.63	-9,335.41	9,457.67	9,416.96	40.71	232.342	
2,100.00	2,098.10	2,078.59	2,078.52	6.23	36.72	106.38	-1,385.81	-9,335.41	9,459.11	9,416.17	42.94	220.276	
2,200.00	2,197.97	2,175.16	2,175.09	6.53	38.65	106.40	-1,386.23	-9,335.41	9,460.60	9,415.42	45.18	209.402	
2,300.00	2,297.84	2,282.47	2,282.36	6.83	40.86	106.43	-1,386.44	-9,335.41	9,462.04	9,414.36	47.69	198.416	
2,400.00	2,397.72	2,382.35	2,382.23	7.13	42.94	106.46	-1,386.44	-9,335.41	9,463.47	9,413.40	50.07	189.009	
2,500.00	2,497.59	2,481.12	2,480.99	7.43	45.00	106.50	-1,385.37	-9,335.41	9,464.75	9,412.32	52.43	180.532	
2,600.00	2,597.46	2,576.64	2,576.50	7.73	46.99	106.52	-1,385.62	-9,335.41	9,466.22	9,411.50	54.72	173.002	
2,700.00	2,697.34	2,672.20	2,672.06	8.03	48.98	106.55	-1,386.18	-9,335.41	9,467.73	9,410.72	57.01	166.076	
2,800.00	2,797.21	2,781.92	2,781.72	8.33	51.28	106.58	-1,386.44	-9,335.41	9,469.20	9,409.59	59.61	158.859	
2,900.00	2,897.09	2,881.79	2,881.60	8.63	53.38	106.61	-1,386.44	-9,335.41	9,470.63	9,408.63	62.01	152.739	
3,000.00	2,996.96	2,981.66	2,981.47	8.93	55.48	106.63	-1,386.44	-9,335.41	9,472.07	9,407.67	64.40	147.075	
3,100.00	3,096.83	3,079.08	3,078.88	9.23	57.52	106.67	-1,385.17	-9,335.41	9,473.34	9,406.60	66.75	141.924	
3,200.00	3,196.71	3,175.51	3,175.30	9.53	59.55	106.70	-1,385.49	-9,335.41	9,474.83	9,405.76	69.07	137.168	
3,300.00	3,296.58	3,271.97	3,271.75	9.83	61.57	106.72	-1,386.07	-9,335.41	9,476.36	9,404.96	71.40	132.721	
3,400.00	3,396.45	3,337.00	3,336.71	10.13	62.94	106.74	-1,386.44	-9,335.41	9,477.96	9,404.89	73.07	129.716	ES
3,500.00	3,496.33	3,337.00	3,336.71	10.43	62.94	106.74	-1,386.44	-9,335.41	9,480.41	9,407.05	73.36	129.230	
3,600.00	3,596.20	3,337.00	3,336.71	10.73	62.94	106.74	-1,386.44	-9,335.41	9,483.90	9,410.26	73.65	128.774	
3,700.00	3,696.07	3,337.00	3,336.71	11.03	62.94	106.74	-1,386.44	-9,335.41	9,488.46	9,414.53	73.93	128.348	
3,800.00	3,795.95	3,337.00	3,336.71	11.33	62.94	106.74	-1,386.44	-9,335.41	9,494.06	9,419.86	74.20	127.951	
3,900.00	3,895.82	3,337.00	3,336.71	11.63	62.94	106.74	-1,386.44	-9,335.41	9,500.71	9,426.24	74.47	127.582	
4,000.00	3,995.69	3,337.00	3,336.71	11.93	62.94	106.74	-1,386.44	-9,335.41	9,508.41	9,433.68	74.73	127.241	
4,100.00	4,095.57	3,337.00	3,336.71	12.23	62.94	106.74	-1,386.44	-9,335.41	9,517.15	9,442.17	74.98	126.928	
4,200.00	4,195.44	3,337.00	3,336.71	12.53	62.94	106.74	-1,386.44	-9,335.41	9,526.94	9,451.71	75.23	126.641	
4,300.00	4,295.31	3,337.00	3,336.71	12.83	62.94	106.74	-1,386.44	-9,335.41	9,537.76	9,462.29	75.47	126.382	
4,400.00	4,395.19	3,337.00	3,336.71	13.13	62.94	106.74	-1,386.44	-9,335.41	9,549.62	9,473.92	75.70	126.148	
4,500.00	4,495.06	3,337.00	3,336.71	13.43	62.94	106.74	-1,386.44	-9,335.41	9,562.51	9,486.58	75.93	125.940	
4,600.00	4,594.93	3,337.00	3,336.71	13.73	62.94	106.74	-1,386.44	-9,335.41	9,576.42	9,500.27	76.15	125.757	
4,700.00	4,694.81	3,337.00	3,336.71	14.03	62.94	106.74	-1,386.44	-9,335.41	9,591.36	9,515.00	76.37	125.598	
4,800.00	4,794.68	3,337.00	3,336.71	14.33	62.94	106.74	-1,386.44	-9,335.41	9,607.32	9,530.74	76.57	125.464	
4,900.00	4,894.55	3,337.00	3,336.71	14.63	62.94	106.74	-1,386.44	-9,335.41	9,624.29	9,547.51	76.78	125.354	
5,000.00	4,994.43	3,337.00	3,336.71	14.93	62.94	106.74	-1,386.44	-9,335.41	9,642.26	9,565.29	76.97	125.266	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	3,337.00	3,336.71	15.23	62.94	106.74	-1,386.44	-9,335.41	9,661.24	9,584.08	77.17	125.202	
5,200.00	5,194.18	3,337.00	3,336.71	15.53	62.94	106.74	-1,386.44	-9,335.41	9,681.22	9,603.87	77.35	125.161	
5,300.00	5,294.05	3,337.00	3,336.71	15.83	62.94	106.74	-1,386.44	-9,335.41	9,702.18	9,624.65	77.53	125.141	SF
5,400.00	5,393.92	3,337.00	3,336.71	16.13	62.94	106.74	-1,386.44	-9,335.41	9,724.13	9,646.42	77.70	125.143	
5,500.00	5,493.80	3,337.00	3,336.71	16.43	62.94	106.74	-1,386.44	-9,335.41	9,747.05	9,669.18	77.87	125.166	
5,600.00	5,593.67	3,337.00	3,336.71	16.73	62.94	106.74	-1,386.44	-9,335.41	9,770.94	9,692.91	78.04	125.210	
5,700.00	5,693.54	3,337.00	3,336.71	17.03	62.94	106.74	-1,386.44	-9,335.41	9,795.80	9,717.60	78.19	125.274	
5,800.00	5,793.42	3,337.00	3,336.71	17.33	62.94	106.74	-1,386.44	-9,335.41	9,821.61	9,743.26	78.35	125.358	
5,900.00	5,893.29	3,337.00	3,336.71	17.63	62.94	106.74	-1,386.44	-9,335.41	9,848.37	9,769.87	78.50	125.462	
6,000.00	5,993.16	3,337.00	3,336.71	17.93	62.94	106.74	-1,386.44	-9,335.41	9,876.07	9,797.43	78.64	125.585	
6,100.00	6,093.04	3,337.00	3,336.71	18.23	62.94	106.74	-1,386.44	-9,335.41	9,904.70	9,825.92	78.78	125.727	
6,200.00	6,192.91	3,337.00	3,336.71	18.53	62.94	106.74	-1,386.44	-9,335.41	9,934.25	9,855.34	78.91	125.887	
6,300.00	6,292.78	3,337.00	3,336.71	18.83	62.94	106.74	-1,386.44	-9,335.41	9,964.73	9,885.68	79.04	126.065	
6,400.00	6,392.66	3,337.00	3,336.71	19.13	62.94	106.74	-1,386.44	-9,335.41	9,996.10	9,916.93	79.17	126.261	
6,500.00	6,492.53	3,337.00	3,336.71	19.43	62.94	106.74	-1,386.44	-9,335.41	10,028.38	9,949.09	79.29	126.474	
6,551.20	6,543.67	3,337.00	3,336.71	19.58	62.94	106.74	-1,386.44	-9,335.41	10,045.25	9,965.90	79.35	126.590	
6,600.00	6,592.30	3,337.00	3,336.71	19.73	62.94	148.44	-1,386.44	-9,335.41	10,063.47	9,984.05	79.41	126.722	
6,650.00	6,641.67	3,337.00	3,336.71	19.88	62.94	158.03	-1,386.44	-9,335.41	10,086.21	10,006.73	79.48	126.905	
6,700.00	6,690.21	3,337.00	3,336.71	20.03	62.94	161.55	-1,386.44	-9,335.41	10,112.89	10,033.34	79.55	127.132	
6,750.00	6,737.54	3,337.00	3,336.71	20.18	62.94	163.06	-1,386.44	-9,335.41	10,143.27	10,063.65	79.62	127.397	
6,800.00	6,783.30	3,337.00	3,336.71	20.33	62.94	163.56	-1,386.44	-9,335.41	10,177.08	10,097.39	79.70	127.697	
6,850.00	6,827.15	3,337.00	3,336.71	20.48	62.94	163.38	-1,386.44	-9,335.41	10,214.04	10,134.26	79.78	128.025	
6,900.00	6,868.74	3,337.00	3,336.71	20.63	62.94	162.61	-1,386.44	-9,335.41	10,253.84	10,173.97	79.87	128.378	
6,950.00	6,907.77	3,337.00	3,336.71	20.78	62.94	161.16	-1,386.44	-9,335.41	10,296.13	10,216.16	79.97	128.749	
7,000.00	6,943.94	3,337.00	3,336.71	20.93	62.94	158.79	-1,386.44	-9,335.41	10,340.58	10,260.50	80.08	129.134	
7,050.00	6,976.97	3,337.00	3,336.71	21.08	62.94	154.98	-1,386.44	-9,335.41	10,386.80	10,306.61	80.19	129.527	
7,100.00	7,006.62	3,337.00	3,336.71	21.23	62.94	148.54	-1,386.44	-9,335.41	10,434.44	10,354.13	80.31	129.923	
7,150.00	7,032.64	3,337.00	3,336.71	21.38	62.94	136.68	-1,386.44	-9,335.41	10,483.11	10,402.67	80.44	130.316	
7,200.00	7,054.86	3,337.00	3,336.71	21.53	62.94	113.09	-1,386.44	-9,335.41	10,532.44	10,451.85	80.58	130.702	
7,250.00	7,073.09	3,337.00	3,336.71	21.68	62.94	75.28	-1,386.44	-9,335.41	10,582.03	10,501.30	80.73	131.076	
7,300.00	7,087.20	3,337.00	3,336.71	21.83	62.94	44.95	-1,386.44	-9,335.41	10,631.51	10,550.62	80.89	131.433	
7,350.00	7,097.08	3,337.00	3,336.71	21.98	62.94	29.23	-1,386.44	-9,335.41	10,680.51	10,599.45	81.05	131.770	
7,400.00	7,102.66	3,337.00	3,336.71	22.13	62.94	20.91	-1,386.44	-9,335.41	10,728.66	10,647.43	81.23	132.081	
7,438.94	7,104.00	3,337.00	3,336.71	22.25	62.94	16.90	-1,386.44	-9,335.41	10,765.35	10,683.98	81.37	132.303	
7,500.00	7,104.02	3,337.00	3,336.71	22.43	62.94	16.90	-1,386.44	-9,335.41	10,822.25	10,740.65	81.59	132.636	
7,600.00	7,104.06	3,337.00	3,336.71	22.74	62.94	16.90	-1,386.44	-9,335.41	10,915.53	10,833.57	81.96	133.181	
7,700.00	7,104.10	3,337.00	3,336.71	23.04	62.94	16.90	-1,386.44	-9,335.41	11,008.93	10,926.60	82.33	133.725	
7,800.00	7,104.14	3,337.00	3,336.71	23.34	62.94	16.90	-1,386.44	-9,335.41	11,102.44	11,019.75	82.69	134.268	
7,900.00	7,104.18	3,337.00	3,336.71	23.64	62.94	16.90	-1,386.44	-9,335.41	11,196.07	11,113.01	83.05	134.810	
8,000.00	7,104.22	3,337.00	3,336.71	23.94	62.94	16.90	-1,386.44	-9,335.41	11,289.80	11,206.39	83.41	135.351	
8,100.00	7,104.26	3,337.00	3,336.71	24.24	62.94	16.90	-1,386.44	-9,335.41	11,383.64	11,299.87	83.77	135.891	
8,200.00	7,104.30	3,337.00	3,336.71	24.54	62.94	16.90	-1,386.44	-9,335.41	11,477.59	11,393.46	84.13	136.431	
8,300.00	7,104.34	3,337.00	3,336.71	24.84	62.94	16.90	-1,386.44	-9,335.41	11,571.63	11,487.15	84.48	136.969	
8,400.00	7,104.38	3,337.00	3,336.71	25.14	62.94	16.90	-1,386.44	-9,335.41	11,665.78	11,580.94	84.84	137.506	
8,500.00	7,104.42	3,337.00	3,336.71	25.44	62.94	16.90	-1,386.44	-9,335.41	11,760.02	11,674.83	85.19	138.041	
8,600.00	7,104.45	3,337.00	3,336.71	25.74	62.94	16.90	-1,386.44	-9,335.41	11,854.36	11,768.81	85.54	138.576	
8,700.00	7,104.49	3,337.00	3,336.71	26.04	62.94	16.90	-1,386.44	-9,335.41	11,948.79	11,862.89	85.90	139.109	
8,800.00	7,104.53	3,337.00	3,336.71	26.34	62.94	16.90	-1,386.44	-9,335.41	12,043.31	11,957.06	86.25	139.640	
8,900.00	7,104.57	3,337.00	3,336.71	26.64	62.94	16.90	-1,386.44	-9,335.41	12,137.91	12,051.32	86.59	140.171	
9,000.00	7,104.61	3,337.00	3,336.71	26.95	62.94	16.90	-1,386.44	-9,335.41	12,232.61	12,145.66	86.94	140.699	
9,100.00	7,104.65	3,337.00	3,336.71	27.25	62.94	16.90	-1,386.44	-9,335.41	12,327.38	12,240.09	87.29	141.227	
9,200.00	7,104.69	3,337.00	3,336.71	27.55	62.94	16.90	-1,386.44	-9,335.41	12,422.24	12,334.61	87.63	141.752	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	3,337.00	3,336.71	27.85	62.94	16.90	-1,386.44	-9,335.41	12,517.18	12,429.20	87.98	142.277	
9,400.00	7,104.77	3,337.00	3,336.71	28.15	62.94	16.90	-1,386.44	-9,335.41	12,612.19	12,523.87	88.32	142.799	
9,500.00	7,104.81	3,337.00	3,336.71	28.45	62.94	16.90	-1,386.44	-9,335.41	12,707.29	12,618.62	88.66	143.320	
9,600.00	7,104.85	3,337.00	3,336.71	28.75	62.94	16.90	-1,386.44	-9,335.41	12,802.46	12,713.45	89.01	143.839	
9,700.00	7,104.89	3,337.00	3,336.71	29.05	62.94	16.90	-1,386.44	-9,335.41	12,897.70	12,808.35	89.35	144.357	
9,800.00	7,104.92	3,337.00	3,336.71	29.35	62.94	16.90	-1,386.44	-9,335.41	12,993.01	12,903.32	89.69	144.873	
9,900.00	7,104.96	3,337.00	3,336.71	29.65	62.94	16.90	-1,386.44	-9,335.41	13,088.39	12,998.37	90.02	145.387	
10,000.00	7,105.00	3,337.00	3,336.71	29.95	62.94	16.90	-1,386.44	-9,335.41	13,183.84	13,093.48	90.36	145.900	
10,100.00	7,105.04	3,337.00	3,336.71	30.25	62.94	16.90	-1,386.44	-9,335.41	13,279.36	13,188.66	90.70	146.410	
10,200.00	7,105.08	3,337.00	3,336.71	30.55	62.94	16.90	-1,386.44	-9,335.41	13,374.94	13,283.91	91.04	146.919	
10,300.00	7,105.12	3,337.00	3,336.71	30.85	62.94	16.90	-1,386.44	-9,335.41	13,470.59	13,379.22	91.37	147.426	
10,400.00	7,105.16	3,337.00	3,336.71	31.15	62.94	16.90	-1,386.44	-9,335.41	13,566.30	13,474.59	91.71	147.931	
10,500.00	7,105.20	3,337.00	3,336.71	31.45	62.94	16.90	-1,386.44	-9,335.41	13,662.07	13,570.03	92.04	148.435	
10,600.00	7,105.24	3,337.00	3,336.71	31.75	62.94	16.90	-1,386.44	-9,335.41	13,757.90	13,665.53	92.37	148.936	
10,700.00	7,105.28	3,337.00	3,336.71	32.05	62.94	16.90	-1,386.44	-9,335.41	13,853.79	13,761.09	92.71	149.436	
10,800.00	7,105.32	3,337.00	3,336.71	32.35	62.94	16.90	-1,386.44	-9,335.41	13,949.74	13,856.70	93.04	149.934	
10,900.00	7,105.36	3,337.00	3,336.71	32.66	62.94	16.90	-1,386.44	-9,335.41	14,045.75	13,952.38	93.37	150.430	
11,000.00	7,105.39	3,337.00	3,336.71	32.96	62.94	16.90	-1,386.44	-9,335.41	14,141.81	14,048.11	93.70	150.924	
11,100.00	7,105.43	3,337.00	3,336.71	33.26	62.94	16.90	-1,386.44	-9,335.41	14,237.92	14,143.89	94.03	151.416	
11,200.00	7,105.47	3,337.00	3,336.71	33.56	62.94	16.90	-1,386.44	-9,335.41	14,334.09	14,239.73	94.36	151.906	
11,300.00	7,105.51	3,337.00	3,336.71	33.86	62.94	16.90	-1,386.44	-9,335.41	14,430.31	14,335.62	94.69	152.394	
11,400.00	7,105.55	3,337.00	3,336.71	34.16	62.94	16.90	-1,386.44	-9,335.41	14,526.58	14,431.56	95.02	152.880	
11,500.00	7,105.59	3,337.00	3,336.71	34.46	62.94	16.90	-1,386.44	-9,335.41	14,622.90	14,527.56	95.35	153.365	
11,600.00	7,105.63	3,337.00	3,336.71	34.76	62.94	16.90	-1,386.44	-9,335.41	14,719.27	14,623.60	95.67	153.847	
11,700.00	7,105.67	3,337.00	3,336.71	35.06	62.94	16.90	-1,386.44	-9,335.41	14,815.69	14,719.69	96.00	154.328	
11,800.00	7,105.71	3,337.00	3,336.71	35.36	62.94	16.90	-1,386.44	-9,335.41	14,912.16	14,815.83	96.33	154.806	
11,900.00	7,105.75	3,337.00	3,336.71	35.66	62.94	16.90	-1,386.44	-9,335.41	15,008.67	14,912.01	96.65	155.283	
12,000.00	7,105.79	3,337.00	3,336.71	35.96	62.94	16.90	-1,386.44	-9,335.41	15,105.22	15,008.25	96.98	155.758	
12,100.00	7,105.83	3,337.00	3,336.71	36.26	62.94	16.90	-1,386.44	-9,335.41	15,201.83	15,104.52	97.30	156.231	
12,200.00	7,105.86	3,337.00	3,336.71	36.56	62.94	16.90	-1,386.44	-9,335.41	15,298.47	15,200.84	97.63	156.701	
12,300.00	7,105.90	3,337.00	3,336.71	36.86	62.94	16.90	-1,386.44	-9,335.41	15,395.16	15,297.21	97.95	157.170	
12,400.00	7,105.94	3,337.00	3,336.71	37.16	62.94	16.90	-1,386.44	-9,335.41	15,491.89	15,393.61	98.28	157.637	
12,500.00	7,105.98	3,337.00	3,336.71	37.46	62.94	16.90	-1,386.44	-9,335.41	15,588.66	15,490.06	98.60	158.102	
12,600.00	7,106.02	3,337.00	3,336.71	37.76	62.94	16.90	-1,386.44	-9,335.41	15,685.47	15,586.55	98.92	158.565	
12,700.00	7,106.06	3,337.00	3,336.71	38.06	62.94	16.90	-1,386.44	-9,335.41	15,782.32	15,683.08	99.24	159.026	
12,800.00	7,106.10	3,337.00	3,336.71	38.36	62.94	16.90	-1,386.44	-9,335.41	15,879.21	15,779.65	99.57	159.485	
12,900.00	7,106.14	3,337.00	3,336.71	38.66	62.94	16.90	-1,386.44	-9,335.41	15,976.14	15,876.26	99.89	159.942	
13,000.00	7,106.18	3,337.00	3,336.71	38.96	62.94	16.90	-1,386.44	-9,335.41	16,073.11	15,972.90	100.21	160.398	
13,100.00	7,106.22	3,337.00	3,336.71	39.26	62.94	16.90	-1,386.44	-9,335.41	16,170.11	16,069.58	100.53	160.851	
13,200.00	7,106.26	3,337.00	3,336.71	39.56	62.94	16.90	-1,386.44	-9,335.41	16,267.15	16,166.30	100.85	161.302	
13,300.00	7,106.30	3,337.00	3,336.71	39.86	62.94	16.90	-1,386.44	-9,335.41	16,364.23	16,263.06	101.17	161.752	
13,400.00	7,106.33	3,337.00	3,336.71	40.16	62.94	16.90	-1,386.44	-9,335.41	16,461.34	16,359.85	101.49	162.199	
13,500.00	7,106.37	3,337.00	3,336.71	40.46	62.94	16.90	-1,386.44	-9,335.41	16,558.48	16,456.68	101.81	162.645	
13,600.00	7,106.41	3,337.00	3,336.71	40.76	62.94	16.90	-1,386.44	-9,335.41	16,655.66	16,553.54	102.13	163.088	
13,700.00	7,106.45	3,337.00	3,336.71	41.06	62.94	16.90	-1,386.44	-9,335.41	16,752.87	16,650.43	102.45	163.530	
13,800.00	7,106.49	3,337.00	3,336.71	41.36	62.94	16.90	-1,386.44	-9,335.41	16,850.12	16,747.35	102.76	163.970	
13,900.00	7,106.53	3,337.00	3,336.71	41.67	62.94	16.90	-1,386.44	-9,335.41	16,947.40	16,844.31	103.08	164.407	
14,000.00	7,106.57	3,337.00	3,336.71	41.97	62.94	16.90	-1,386.44	-9,335.41	17,044.70	16,941.30	103.40	164.843	
14,100.00	7,106.61	3,337.00	3,336.71	42.27	62.94	16.90	-1,386.44	-9,335.41	17,142.04	17,038.33	103.72	165.278	
14,200.00	7,106.65	3,337.00	3,336.71	42.57	62.94	16.90	-1,386.44	-9,335.41	17,239.41	17,135.38	104.03	165.710	
14,300.00	7,106.69	3,337.00	3,336.71	42.87	62.94	16.90	-1,386.44	-9,335.41	17,336.81	17,232.46	104.35	166.140	
14,400.00	7,106.73	3,337.00	3,336.71	43.17	62.94	16.90	-1,386.44	-9,335.41	17,434.24	17,329.57	104.67	166.568	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	3,337.00	3,336.71	43.47	62.94	16.90	-1,386.44	-9,335.41	17,531.70	17,426.71	104.98	166.995	
14,600.00	7,106.80	3,337.00	3,336.71	43.77	62.94	16.90	-1,386.44	-9,335.41	17,629.18	17,523.89	105.30	167.420	
14,700.00	7,106.84	3,337.00	3,336.71	44.07	62.94	16.90	-1,386.44	-9,335.41	17,726.70	17,621.08	105.62	167.842	
14,800.00	7,106.88	3,337.00	3,336.71	44.37	62.94	16.90	-1,386.44	-9,335.41	17,824.24	17,718.31	105.93	168.263	
14,900.00	7,106.92	3,337.00	3,336.71	44.67	62.94	16.90	-1,386.44	-9,335.41	17,921.81	17,815.56	106.25	168.683	
15,000.00	7,106.96	3,337.00	3,336.71	44.97	62.94	16.90	-1,386.44	-9,335.41	18,019.41	17,912.84	106.56	169.100	
15,100.00	7,107.00	3,337.00	3,336.71	45.27	62.94	16.90	-1,386.44	-9,335.41	18,117.03	18,010.15	106.88	169.515	
15,200.00	7,107.04	3,337.00	3,336.71	45.57	62.94	16.90	-1,386.44	-9,335.41	18,214.67	18,107.48	107.19	169.929	
15,300.00	7,107.08	3,337.00	3,336.71	45.87	62.94	16.90	-1,386.44	-9,335.41	18,312.35	18,204.84	107.50	170.341	
15,400.00	7,107.12	3,337.00	3,336.71	46.17	62.94	16.90	-1,386.44	-9,335.41	18,410.05	18,302.23	107.82	170.751	
15,500.00	7,107.16	3,337.00	3,336.71	46.47	62.94	16.90	-1,386.44	-9,335.41	18,507.77	18,399.64	108.13	171.159	
15,600.00	7,107.20	3,337.00	3,336.71	46.77	62.94	16.90	-1,386.44	-9,335.41	18,605.52	18,497.07	108.45	171.565	
15,700.00	7,107.23	3,337.00	3,336.71	47.07	62.94	16.90	-1,386.44	-9,335.41	18,703.29	18,594.53	108.76	171.970	
15,800.00	7,107.27	3,337.00	3,336.71	47.37	62.94	16.90	-1,386.44	-9,335.41	18,801.08	18,692.01	109.07	172.373	
15,900.00	7,107.31	3,337.00	3,336.71	47.67	62.94	16.90	-1,386.44	-9,335.41	18,898.90	18,789.51	109.39	172.774	
16,000.00	7,107.35	3,337.00	3,336.71	47.97	62.94	16.90	-1,386.44	-9,335.41	18,996.74	18,887.04	109.70	173.173	
16,100.00	7,107.39	3,337.00	3,336.71	48.27	62.94	16.90	-1,386.44	-9,335.41	19,094.60	18,984.59	110.01	173.570	
16,200.00	7,107.43	3,337.00	3,336.71	48.57	62.94	16.90	-1,386.44	-9,335.41	19,192.48	19,082.16	110.32	173.966	
16,300.00	7,107.47	3,337.00	3,336.71	48.87	62.94	16.90	-1,386.44	-9,335.41	19,290.39	19,179.75	110.64	174.360	
16,400.00	7,107.51	3,337.00	3,336.71	49.17	62.94	16.90	-1,386.44	-9,335.41	19,388.32	19,277.37	110.95	174.752	
16,500.00	7,107.55	3,337.00	3,336.71	49.47	62.94	16.90	-1,386.44	-9,335.41	19,486.27	19,375.01	111.26	175.143	
16,600.00	7,107.59	3,337.00	3,336.71	49.77	62.94	16.90	-1,386.44	-9,335.41	19,584.23	19,472.66	111.57	175.532	
16,700.00	7,107.63	3,337.00	3,336.71	50.07	62.94	16.90	-1,386.44	-9,335.41	19,682.22	19,570.34	111.88	175.919	
16,800.00	7,107.67	3,337.00	3,336.71	50.37	62.94	16.90	-1,386.44	-9,335.41	19,780.23	19,668.04	112.19	176.304	
16,900.00	7,107.70	3,337.00	3,336.71	50.67	62.94	16.90	-1,386.44	-9,335.41	19,878.26	19,765.76	112.50	176.688	
17,000.00	7,107.74	3,337.00	3,336.71	50.97	62.94	16.90	-1,386.44	-9,335.41	19,976.31	19,863.50	112.82	177.070	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231A (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-105.46	-1,767.83	-6,391.24	6,631.93				
100.00	100.00	3.51	3.51	0.23	0.04	-105.46	-1,767.83	-6,391.24	6,631.23	6,630.96	0.26	N/A	
200.00	200.00	103.51	103.51	0.53	1.10	-105.46	-1,767.83	-6,391.24	6,631.23	6,629.60	1.63	4,072.772	
300.00	300.00	203.51	203.51	0.83	2.17	-105.46	-1,767.83	-6,391.24	6,631.23	6,628.23	2.99	2,216.107	
400.00	400.00	340.47	303.51	1.13	3.80	-105.46	-1,767.83	-6,391.24	6,631.23	6,626.30	4.93	1,344.901	
500.00	500.00	403.53	403.51	1.43	5.09	-105.46	-1,767.83	-6,391.24	6,631.23	6,624.71	6.52	1,017.129	CC
600.00	599.98	503.51	503.49	1.73	7.14	98.94	-1,767.83	-6,391.24	6,631.50	6,622.63	8.86	748.213	
644.12	644.06	547.59	547.57	1.86	8.04	98.95	-1,767.83	-6,391.24	6,631.79	6,621.89	9.90	670.118	
700.00	699.87	599.91	599.89	2.03	9.11	98.98	-1,766.89	-6,391.24	6,631.98	6,620.85	11.13	595.674	
800.00	799.74	693.48	693.45	2.33	11.02	99.02	-1,767.25	-6,391.24	6,632.87	6,619.52	13.35	496.992	
900.00	899.62	803.20	803.13	2.63	13.26	99.06	-1,767.83	-6,391.24	6,633.81	6,617.92	15.89	417.511	
1,000.00	999.49	903.07	903.00	2.93	15.30	99.10	-1,767.83	-6,391.24	6,634.60	6,616.37	18.23	363.914	
1,100.00	1,099.36	1,002.95	1,002.88	3.23	17.35	99.15	-1,767.83	-6,391.24	6,635.40	6,614.83	20.57	322.522	
1,200.00	1,199.24	1,101.00	1,100.92	3.53	19.35	99.20	-1,766.94	-6,391.24	6,635.97	6,613.09	22.88	290.052	
1,300.00	1,299.11	1,197.01	1,196.93	3.83	21.32	99.23	-1,767.14	-6,391.24	6,636.83	6,611.69	25.14	263.976	
1,400.00	1,398.98	1,293.04	1,292.95	4.13	23.28	99.27	-1,767.57	-6,391.24	6,637.76	6,610.35	27.41	242.206	
1,500.00	1,498.86	1,402.51	1,402.37	4.43	25.57	99.32	-1,767.83	-6,391.24	6,638.63	6,608.63	30.00	221.308	
1,600.00	1,598.73	1,502.38	1,502.24	4.73	27.69	99.36	-1,767.83	-6,391.24	6,639.45	6,607.03	32.42	204.790	
1,700.00	1,698.60	1,599.26	1,599.11	5.03	29.75	99.41	-1,766.92	-6,391.24	6,640.03	6,605.25	34.78	190.912	
1,800.00	1,798.48	1,692.76	1,692.61	5.33	31.74	99.45	-1,767.25	-6,391.24	6,640.95	6,603.88	37.07	179.153	
1,900.00	1,898.35	1,802.07	1,801.86	5.63	34.07	99.49	-1,767.83	-6,391.24	6,641.92	6,602.23	39.69	167.332	
2,000.00	1,998.22	1,901.94	1,901.74	5.93	36.19	99.53	-1,767.83	-6,391.24	6,642.75	6,600.64	42.12	157.720	
2,100.00	2,098.10	2,001.81	2,001.61	6.23	38.32	99.57	-1,767.83	-6,391.24	6,643.59	6,599.05	44.54	149.154	
2,200.00	2,197.97	2,097.32	2,097.11	6.53	40.35	99.62	-1,766.84	-6,391.24	6,644.18	6,597.30	46.87	141.747	
2,300.00	2,297.84	2,191.65	2,191.43	6.83	42.35	99.66	-1,767.24	-6,391.24	6,645.13	6,595.95	49.18	135.118	
2,400.00	2,397.72	2,301.51	2,301.23	7.13	44.69	99.70	-1,767.83	-6,391.24	6,646.12	6,594.30	51.82	128.261	
2,500.00	2,497.59	2,401.38	2,401.10	7.43	46.82	99.74	-1,767.83	-6,391.24	6,646.97	6,592.73	54.24	122.543	
2,600.00	2,597.46	2,501.26	2,500.98	7.73	48.94	99.79	-1,767.83	-6,391.24	6,647.82	6,591.15	56.67	117.314	
2,700.00	2,697.34	2,596.72	2,596.43	8.03	50.97	99.84	-1,766.85	-6,391.24	6,648.43	6,589.43	59.00	112.689	
2,800.00	2,797.21	2,691.11	2,690.81	8.33	52.98	99.87	-1,767.25	-6,391.24	6,649.40	6,588.10	61.31	108.462	
2,900.00	2,897.09	2,800.95	2,800.60	8.63	55.29	99.91	-1,767.83	-6,391.24	6,650.41	6,586.49	63.92	104.047	
3,000.00	2,996.96	2,900.83	2,900.47	8.93	57.33	99.96	-1,767.83	-6,391.24	6,651.27	6,585.02	66.26	100.384	
3,100.00	3,096.83	2,995.96	2,995.60	9.23	59.28	100.00	-1,767.17	-6,391.24	6,651.98	6,583.48	68.50	97.105	
3,200.00	3,196.71	3,088.07	3,087.70	9.53	61.16	100.04	-1,767.65	-6,391.24	6,652.99	6,582.30	70.69	94.121	
3,300.00	3,296.58	3,200.49	3,200.09	9.83	63.38	100.09	-1,767.83	-6,391.24	6,653.90	6,580.69	73.21	90.891	
3,400.00	3,396.45	3,300.36	3,299.97	10.13	65.34	100.13	-1,767.83	-6,391.24	6,654.79	6,579.32	75.47	88.182	
3,500.00	3,496.33	3,400.23	3,399.84	10.43	67.30	100.17	-1,767.83	-6,391.24	6,655.67	6,577.95	77.72	85.631	ES
3,600.00	3,596.20	3,384.00	3,383.58	10.73	66.98	100.16	-1,767.83	-6,391.24	6,657.58	6,579.88	77.70	85.687	
3,700.00	3,696.07	3,384.00	3,383.58	11.03	66.98	100.16	-1,767.83	-6,391.24	6,660.96	6,582.99	77.97	85.427	
3,800.00	3,795.95	3,384.00	3,383.58	11.33	66.98	100.16	-1,767.83	-6,391.24	6,665.85	6,587.61	78.23	85.205	
3,900.00	3,895.82	3,384.00	3,383.58	11.63	66.98	100.16	-1,767.83	-6,391.24	6,672.22	6,593.74	78.48	85.018	
4,000.00	3,995.69	3,384.00	3,383.58	11.93	66.98	100.16	-1,767.83	-6,391.24	6,680.09	6,601.38	78.71	84.867	
4,100.00	4,095.57	3,384.00	3,383.58	12.23	66.98	100.16	-1,767.83	-6,391.24	6,689.45	6,610.52	78.93	84.752	
4,200.00	4,195.44	3,384.00	3,383.58	12.53	66.98	100.16	-1,767.83	-6,391.24	6,700.28	6,621.15	79.13	84.670	
4,300.00	4,295.31	3,384.00	3,383.58	12.83	66.98	100.16	-1,767.83	-6,391.24	6,712.59	6,633.27	79.32	84.623	
4,400.00	4,395.19	3,384.00	3,383.58	13.13	66.98	100.16	-1,767.83	-6,391.24	6,726.36	6,646.86	79.50	84.608	SF
4,500.00	4,495.06	3,384.00	3,383.58	13.43	66.98	100.16	-1,767.83	-6,391.24	6,741.59	6,661.93	79.66	84.626	
4,600.00	4,594.93	3,384.00	3,383.58	13.73	66.98	100.16	-1,767.83	-6,391.24	6,758.26	6,678.45	79.81	84.676	
4,700.00	4,694.81	3,384.00	3,383.58	14.03	66.98	100.16	-1,767.83	-6,391.24	6,776.37	6,696.42	79.95	84.758	
4,800.00	4,794.68	3,384.00	3,383.58	14.33	66.98	100.16	-1,767.83	-6,391.24	6,795.90	6,715.83	80.07	84.870	
4,900.00	4,894.55	3,384.00	3,383.58	14.63	66.98	100.16	-1,767.83	-6,391.24	6,816.85	6,736.66	80.19	85.012	
5,000.00	4,994.43	3,384.00	3,383.58	14.93	66.98	100.16	-1,767.83	-6,391.24	6,839.19	6,758.90	80.29	85.184	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	3,384.00	3,383.58	15.23	66.98	100.16	-1,767.83	-6,391.24	6,862.91	6,782.53	80.38	85.385	
5,200.00	5,194.18	3,384.00	3,383.58	15.53	66.98	100.16	-1,767.83	-6,391.24	6,888.01	6,807.55	80.45	85.614	
5,300.00	5,294.05	3,384.00	3,383.58	15.83	66.98	100.16	-1,767.83	-6,391.24	6,914.46	6,833.93	80.52	85.871	
5,400.00	5,393.92	3,384.00	3,383.58	16.13	66.98	100.16	-1,767.83	-6,391.24	6,942.25	6,861.67	80.58	86.155	
5,500.00	5,493.80	3,384.00	3,383.58	16.43	66.98	100.16	-1,767.83	-6,391.24	6,971.36	6,890.74	80.63	86.466	
5,600.00	5,593.67	3,384.00	3,383.58	16.73	66.98	100.16	-1,767.83	-6,391.24	7,001.78	6,921.12	80.66	86.803	
5,700.00	5,693.54	3,384.00	3,383.58	17.03	66.98	100.16	-1,767.83	-6,391.24	7,033.49	6,952.80	80.69	87.165	
5,800.00	5,793.42	3,384.00	3,383.58	17.33	66.98	100.16	-1,767.83	-6,391.24	7,066.48	6,985.77	80.71	87.552	
5,900.00	5,893.29	3,384.00	3,383.58	17.63	66.98	100.16	-1,767.83	-6,391.24	7,100.72	7,019.99	80.72	87.963	
6,000.00	5,993.16	3,384.00	3,383.58	17.93	66.98	100.16	-1,767.83	-6,391.24	7,136.19	7,055.47	80.73	88.398	
6,100.00	6,093.04	3,384.00	3,383.58	18.23	66.98	100.16	-1,767.83	-6,391.24	7,172.89	7,092.17	80.72	88.856	
6,200.00	6,192.91	3,384.00	3,383.58	18.53	66.98	100.16	-1,767.83	-6,391.24	7,210.79	7,130.07	80.71	89.337	
6,300.00	6,292.78	3,384.00	3,383.58	18.83	66.98	100.16	-1,767.83	-6,391.24	7,249.86	7,169.17	80.70	89.839	
6,400.00	6,392.66	3,384.00	3,383.58	19.13	66.98	100.16	-1,767.83	-6,391.24	7,290.10	7,209.43	80.68	90.363	
6,500.00	6,492.53	3,384.00	3,383.58	19.43	66.98	100.16	-1,767.83	-6,391.24	7,331.49	7,250.84	80.65	90.908	
6,551.20	6,543.67	3,384.00	3,383.58	19.58	66.98	100.16	-1,767.83	-6,391.24	7,353.11	7,272.48	80.63	91.195	
6,600.00	6,592.30	3,384.00	3,383.58	19.73	66.98	141.49	-1,767.83	-6,391.24	7,375.78	7,295.16	80.62	91.488	
6,650.00	6,641.67	3,384.00	3,383.58	19.88	66.98	150.58	-1,767.83	-6,391.24	7,402.85	7,322.24	80.62	91.829	
6,700.00	6,690.21	3,384.00	3,383.58	20.03	66.98	153.48	-1,767.83	-6,391.24	7,433.56	7,352.94	80.62	92.205	
6,750.00	6,737.54	3,384.00	3,383.58	20.18	66.98	154.17	-1,767.83	-6,391.24	7,467.64	7,387.01	80.64	92.610	
6,800.00	6,783.30	3,384.00	3,383.58	20.33	66.98	153.63	-1,767.83	-6,391.24	7,504.78	7,424.12	80.66	93.040	
6,850.00	6,827.15	3,384.00	3,383.58	20.48	66.98	152.06	-1,767.83	-6,391.24	7,544.65	7,463.95	80.70	93.488	
6,900.00	6,868.74	3,384.00	3,383.58	20.63	66.98	149.39	-1,767.83	-6,391.24	7,586.92	7,506.17	80.76	93.948	
6,950.00	6,907.77	3,384.00	3,383.58	20.78	66.98	145.30	-1,767.83	-6,391.24	7,631.22	7,550.40	80.83	94.416	
7,000.00	6,943.94	3,384.00	3,383.58	20.93	66.98	139.10	-1,767.83	-6,391.24	7,677.19	7,596.28	80.91	94.885	
7,050.00	6,976.97	3,384.00	3,383.58	21.08	66.98	129.67	-1,767.83	-6,391.24	7,724.44	7,643.43	81.01	95.351	
7,100.00	7,006.62	3,384.00	3,383.58	21.23	66.98	115.35	-1,767.83	-6,391.24	7,772.60	7,691.47	81.13	95.806	
7,150.00	7,032.64	3,384.00	3,383.58	21.38	66.98	95.31	-1,767.83	-6,391.24	7,821.28	7,740.02	81.26	96.248	
7,200.00	7,054.86	3,384.00	3,383.58	21.53	66.98	72.82	-1,767.83	-6,391.24	7,870.12	7,788.71	81.41	96.671	
7,250.00	7,073.09	3,384.00	3,383.58	21.68	66.98	53.94	-1,767.83	-6,391.24	7,918.74	7,837.16	81.58	97.070	
7,300.00	7,087.20	3,384.00	3,383.58	21.83	66.98	40.74	-1,767.83	-6,391.24	7,966.78	7,885.02	81.76	97.442	
7,350.00	7,097.08	3,384.00	3,383.58	21.98	66.98	31.94	-1,767.83	-6,391.24	8,013.88	7,931.92	81.96	97.783	
7,400.00	7,102.66	3,384.00	3,383.58	22.13	66.98	25.96	-1,767.83	-6,391.24	8,059.71	7,977.54	82.17	98.091	
7,438.94	7,104.00	3,384.00	3,383.58	22.25	66.98	22.55	-1,767.83	-6,391.24	8,094.30	8,011.96	82.34	98.304	
7,500.00	7,104.02	3,384.00	3,383.58	22.43	66.98	22.55	-1,767.83	-6,391.24	8,147.78	8,065.16	82.62	98.620	
7,600.00	7,104.06	3,384.00	3,383.58	22.74	66.98	22.55	-1,767.83	-6,391.24	8,235.58	8,152.51	83.07	99.140	
7,700.00	7,104.10	3,384.00	3,383.58	23.04	66.98	22.55	-1,767.83	-6,391.24	8,323.65	8,240.13	83.52	99.663	
7,800.00	7,104.14	3,384.00	3,383.58	23.34	66.98	22.55	-1,767.83	-6,391.24	8,411.99	8,328.03	83.96	100.189	
7,900.00	7,104.18	3,384.00	3,383.58	23.64	66.98	22.55	-1,767.83	-6,391.24	8,500.59	8,416.19	84.40	100.718	
8,000.00	7,104.22	3,384.00	3,383.58	23.94	66.98	22.55	-1,767.83	-6,391.24	8,589.44	8,504.61	84.83	101.249	
8,100.00	7,104.26	3,384.00	3,383.58	24.24	66.98	22.55	-1,767.83	-6,391.24	8,678.54	8,593.27	85.27	101.782	
8,200.00	7,104.30	3,384.00	3,383.58	24.54	66.98	22.55	-1,767.83	-6,391.24	8,767.87	8,682.17	85.69	102.318	
8,300.00	7,104.34	3,384.00	3,383.58	24.84	66.98	22.55	-1,767.83	-6,391.24	8,857.42	8,771.31	86.12	102.855	
8,400.00	7,104.38	3,384.00	3,383.58	25.14	66.98	22.55	-1,767.83	-6,391.24	8,947.20	8,860.66	86.53	103.394	
8,500.00	7,104.42	3,384.00	3,383.58	25.44	66.98	22.55	-1,767.83	-6,391.24	9,037.19	8,950.24	86.95	103.935	
8,600.00	7,104.45	3,384.00	3,383.58	25.74	66.98	22.55	-1,767.83	-6,391.24	9,127.39	9,040.03	87.36	104.476	
8,700.00	7,104.49	3,384.00	3,383.58	26.04	66.98	22.55	-1,767.83	-6,391.24	9,217.79	9,130.02	87.77	105.019	
8,800.00	7,104.53	3,384.00	3,383.58	26.34	66.98	22.55	-1,767.83	-6,391.24	9,308.39	9,220.21	88.18	105.563	
8,900.00	7,104.57	3,384.00	3,383.58	26.64	66.98	22.55	-1,767.83	-6,391.24	9,399.18	9,310.60	88.58	106.107	
9,000.00	7,104.61	3,384.00	3,383.58	26.95	66.98	22.55	-1,767.83	-6,391.24	9,490.16	9,401.18	88.98	106.652	
9,100.00	7,104.65	3,384.00	3,383.58	27.25	66.98	22.55	-1,767.83	-6,391.24	9,581.31	9,491.93	89.38	107.198	
9,200.00	7,104.69	3,384.00	3,383.58	27.55	66.98	22.55	-1,767.83	-6,391.24	9,672.64	9,582.87	89.77	107.744	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	3,384.00	3,383.58	27.85	66.98	22.55	-1,767.83	-6,391.24	9,764.14	9,673.98	90.17	108.290	
9,400.00	7,104.77	3,384.00	3,383.58	28.15	66.98	22.55	-1,767.83	-6,391.24	9,855.81	9,765.25	90.56	108.836	
9,500.00	7,104.81	3,384.00	3,383.58	28.45	66.98	22.55	-1,767.83	-6,391.24	9,947.63	9,856.69	90.94	109.383	
9,600.00	7,104.85	3,384.00	3,383.58	28.75	66.98	22.55	-1,767.83	-6,391.24	10,039.61	9,948.28	91.33	109.929	
9,700.00	7,104.89	3,384.00	3,383.58	29.05	66.98	22.55	-1,767.83	-6,391.24	10,131.75	10,040.04	91.71	110.475	
9,800.00	7,104.92	3,384.00	3,383.58	29.35	66.98	22.55	-1,767.83	-6,391.24	10,224.03	10,131.94	92.09	111.021	
9,900.00	7,104.96	3,384.00	3,383.58	29.65	66.98	22.55	-1,767.83	-6,391.24	10,316.45	10,223.98	92.47	111.566	
10,000.00	7,105.00	3,384.00	3,383.58	29.95	66.98	22.55	-1,767.83	-6,391.24	10,409.02	10,316.17	92.85	112.111	
10,100.00	7,105.04	3,384.00	3,383.58	30.25	66.98	22.55	-1,767.83	-6,391.24	10,501.72	10,408.50	93.22	112.655	
10,200.00	7,105.08	3,384.00	3,383.58	30.55	66.98	22.55	-1,767.83	-6,391.24	10,594.55	10,500.96	93.59	113.199	
10,300.00	7,105.12	3,384.00	3,383.58	30.85	66.98	22.55	-1,767.83	-6,391.24	10,687.52	10,593.55	93.96	113.742	
10,400.00	7,105.16	3,384.00	3,383.58	31.15	66.98	22.55	-1,767.83	-6,391.24	10,780.61	10,686.27	94.33	114.284	
10,500.00	7,105.20	3,384.00	3,383.58	31.45	66.98	22.55	-1,767.83	-6,391.24	10,873.82	10,779.12	94.70	114.826	
10,600.00	7,105.24	3,384.00	3,383.58	31.75	66.98	22.55	-1,767.83	-6,391.24	10,967.15	10,872.09	95.06	115.366	
10,700.00	7,105.28	3,384.00	3,383.58	32.05	66.98	22.55	-1,767.83	-6,391.24	11,060.60	10,965.17	95.43	115.906	
10,800.00	7,105.32	3,384.00	3,383.58	32.35	66.98	22.55	-1,767.83	-6,391.24	11,154.16	11,058.37	95.79	116.445	
10,900.00	7,105.36	3,384.00	3,383.58	32.66	66.98	22.55	-1,767.83	-6,391.24	11,247.83	11,151.68	96.15	116.982	
11,000.00	7,105.39	3,384.00	3,383.58	32.96	66.98	22.55	-1,767.83	-6,391.24	11,341.61	11,245.10	96.51	117.519	
11,100.00	7,105.43	3,384.00	3,383.58	33.26	66.98	22.55	-1,767.83	-6,391.24	11,435.50	11,338.63	96.87	118.054	
11,200.00	7,105.47	3,384.00	3,383.58	33.56	66.98	22.55	-1,767.83	-6,391.24	11,529.49	11,432.26	97.22	118.588	
11,300.00	7,105.51	3,384.00	3,383.58	33.86	66.98	22.55	-1,767.83	-6,391.24	11,623.58	11,526.00	97.58	119.121	
11,400.00	7,105.55	3,384.00	3,383.58	34.16	66.98	22.55	-1,767.83	-6,391.24	11,717.76	11,619.83	97.93	119.653	
11,500.00	7,105.59	3,384.00	3,383.58	34.46	66.98	22.55	-1,767.83	-6,391.24	11,812.05	11,713.76	98.28	120.183	
11,600.00	7,105.63	3,384.00	3,383.58	34.76	66.98	22.55	-1,767.83	-6,391.24	11,906.42	11,807.79	98.63	120.712	
11,700.00	7,105.67	3,384.00	3,383.58	35.06	66.98	22.55	-1,767.83	-6,391.24	12,000.89	11,901.90	98.98	121.240	
11,800.00	7,105.71	3,384.00	3,383.58	35.36	66.98	22.55	-1,767.83	-6,391.24	12,095.45	11,996.11	99.33	121.766	
11,900.00	7,105.75	3,384.00	3,383.58	35.66	66.98	22.55	-1,767.83	-6,391.24	12,190.09	12,090.41	99.68	122.291	
12,000.00	7,105.79	3,384.00	3,383.58	35.96	66.98	22.55	-1,767.83	-6,391.24	12,284.82	12,184.79	100.03	122.814	
12,100.00	7,105.83	3,384.00	3,383.58	36.26	66.98	22.55	-1,767.83	-6,391.24	12,379.63	12,279.25	100.37	123.336	
12,200.00	7,105.86	3,384.00	3,383.58	36.56	66.98	22.55	-1,767.83	-6,391.24	12,474.52	12,373.80	100.72	123.856	
12,300.00	7,105.90	3,384.00	3,383.58	36.86	66.98	22.55	-1,767.83	-6,391.24	12,569.49	12,468.43	101.06	124.375	
12,400.00	7,105.94	3,384.00	3,383.58	37.16	66.98	22.55	-1,767.83	-6,391.24	12,664.54	12,563.13	101.40	124.892	
12,500.00	7,105.98	3,384.00	3,383.58	37.46	66.98	22.55	-1,767.83	-6,391.24	12,759.66	12,657.92	101.75	125.408	
12,600.00	7,106.02	3,384.00	3,383.58	37.76	66.98	22.55	-1,767.83	-6,391.24	12,854.86	12,752.77	102.09	125.922	
12,700.00	7,106.06	3,384.00	3,383.58	38.06	66.98	22.55	-1,767.83	-6,391.24	12,950.13	12,847.71	102.43	126.434	
12,800.00	7,106.10	3,384.00	3,383.58	38.36	66.98	22.55	-1,767.83	-6,391.24	13,045.47	12,942.71	102.77	126.945	
12,900.00	7,106.14	3,384.00	3,383.58	38.66	66.98	22.55	-1,767.83	-6,391.24	13,140.88	13,037.78	103.10	127.454	
13,000.00	7,106.18	3,384.00	3,383.58	38.96	66.98	22.55	-1,767.83	-6,391.24	13,236.36	13,132.92	103.44	127.961	
13,100.00	7,106.22	3,384.00	3,383.58	39.26	66.98	22.55	-1,767.83	-6,391.24	13,331.91	13,228.13	103.78	128.467	
13,200.00	7,106.26	3,384.00	3,383.58	39.56	66.98	22.55	-1,767.83	-6,391.24	13,427.52	13,323.40	104.11	128.971	
13,300.00	7,106.30	3,384.00	3,383.58	39.86	66.98	22.55	-1,767.83	-6,391.24	13,523.19	13,418.74	104.45	129.473	
13,400.00	7,106.33	3,384.00	3,383.58	40.16	66.98	22.55	-1,767.83	-6,391.24	13,618.92	13,514.14	104.78	129.974	
13,500.00	7,106.37	3,384.00	3,383.58	40.46	66.98	22.55	-1,767.83	-6,391.24	13,714.72	13,609.60	105.12	130.473	
13,600.00	7,106.41	3,384.00	3,383.58	40.76	66.98	22.55	-1,767.83	-6,391.24	13,810.58	13,705.13	105.45	130.970	
13,700.00	7,106.45	3,384.00	3,383.58	41.06	66.98	22.55	-1,767.83	-6,391.24	13,906.49	13,800.71	105.78	131.466	
13,800.00	7,106.49	3,384.00	3,383.58	41.36	66.98	22.55	-1,767.83	-6,391.24	14,002.46	13,896.35	106.11	131.959	
13,900.00	7,106.53	3,384.00	3,383.58	41.67	66.98	22.55	-1,767.83	-6,391.24	14,098.49	13,992.04	106.44	132.451	
14,000.00	7,106.57	3,384.00	3,383.58	41.97	66.98	22.55	-1,767.83	-6,391.24	14,194.57	14,087.80	106.77	132.941	
14,100.00	7,106.61	3,384.00	3,383.58	42.27	66.98	22.55	-1,767.83	-6,391.24	14,290.71	14,183.60	107.10	133.430	
14,200.00	7,106.65	3,384.00	3,383.58	42.57	66.98	22.55	-1,767.83	-6,391.24	14,386.89	14,279.46	107.43	133.916	
14,300.00	7,106.69	3,384.00	3,383.58	42.87	66.98	22.55	-1,767.83	-6,391.24	14,483.13	14,375.37	107.76	134.401	
14,400.00	7,106.73	3,384.00	3,383.58	43.17	66.98	22.55	-1,767.83	-6,391.24	14,579.42	14,471.34	108.09	134.884	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	3,384.00	3,383.58	43.47	66.98	22.55	-1,767.83	-6,391.24	14,675.76	14,567.35	108.42	135.365	
14,600.00	7,106.80	3,384.00	3,383.58	43.77	66.98	22.55	-1,767.83	-6,391.24	14,772.15	14,663.41	108.74	135.845	
14,700.00	7,106.84	3,384.00	3,383.58	44.07	66.98	22.55	-1,767.83	-6,391.24	14,868.59	14,759.52	109.07	136.323	
14,800.00	7,106.88	3,384.00	3,383.58	44.37	66.98	22.55	-1,767.83	-6,391.24	14,965.07	14,855.68	109.39	136.799	
14,900.00	7,106.92	3,384.00	3,383.58	44.67	66.98	22.55	-1,767.83	-6,391.24	15,061.60	14,951.88	109.72	137.273	
15,000.00	7,106.96	3,384.00	3,383.58	44.97	66.98	22.55	-1,767.83	-6,391.24	15,158.18	15,048.13	110.05	137.745	
15,100.00	7,107.00	3,384.00	3,383.58	45.27	66.98	22.55	-1,767.83	-6,391.24	15,254.80	15,144.43	110.37	138.215	
15,200.00	7,107.04	3,384.00	3,383.58	45.57	66.98	22.55	-1,767.83	-6,391.24	15,351.46	15,240.76	110.69	138.684	
15,300.00	7,107.08	3,384.00	3,383.58	45.87	66.98	22.55	-1,767.83	-6,391.24	15,448.16	15,337.14	111.02	139.151	
15,400.00	7,107.12	3,384.00	3,383.58	46.17	66.98	22.55	-1,767.83	-6,391.24	15,544.91	15,433.57	111.34	139.616	
15,500.00	7,107.16	3,384.00	3,383.58	46.47	66.98	22.55	-1,767.83	-6,391.24	15,641.69	15,530.03	111.66	140.080	
15,600.00	7,107.20	3,384.00	3,383.58	46.77	66.98	22.55	-1,767.83	-6,391.24	15,738.52	15,626.54	111.99	140.541	
15,700.00	7,107.23	3,384.00	3,383.58	47.07	66.98	22.55	-1,767.83	-6,391.24	15,835.39	15,723.08	112.31	141.001	
15,800.00	7,107.27	3,384.00	3,383.58	47.37	66.98	22.55	-1,767.83	-6,391.24	15,932.29	15,819.66	112.63	141.459	
15,900.00	7,107.31	3,384.00	3,383.58	47.67	66.98	22.55	-1,767.83	-6,391.24	16,029.24	15,916.29	112.95	141.915	
16,000.00	7,107.35	3,384.00	3,383.58	47.97	66.98	22.55	-1,767.83	-6,391.24	16,126.22	16,012.95	113.27	142.369	
16,100.00	7,107.39	3,384.00	3,383.58	48.27	66.98	22.55	-1,767.83	-6,391.24	16,223.23	16,109.64	113.59	142.822	
16,200.00	7,107.43	3,384.00	3,383.58	48.57	66.98	22.55	-1,767.83	-6,391.24	16,320.29	16,206.38	113.91	143.273	
16,300.00	7,107.47	3,384.00	3,383.58	48.87	66.98	22.55	-1,767.83	-6,391.24	16,417.38	16,303.15	114.23	143.722	
16,400.00	7,107.51	3,384.00	3,383.58	49.17	66.98	22.55	-1,767.83	-6,391.24	16,514.50	16,399.95	114.55	144.169	
16,500.00	7,107.55	3,384.00	3,383.58	49.47	66.98	22.55	-1,767.83	-6,391.24	16,611.66	16,496.79	114.87	144.615	
16,600.00	7,107.59	3,384.00	3,383.58	49.77	66.98	22.55	-1,767.83	-6,391.24	16,708.85	16,593.66	115.19	145.058	
16,700.00	7,107.63	3,384.00	3,383.58	50.07	66.98	22.55	-1,767.83	-6,391.24	16,806.07	16,690.57	115.51	145.500	
16,800.00	7,107.67	3,384.00	3,383.58	50.37	66.98	22.55	-1,767.83	-6,391.24	16,903.33	16,787.51	115.82	145.941	
16,900.00	7,107.70	3,384.00	3,383.58	50.67	66.98	22.55	-1,767.83	-6,391.24	17,000.62	16,884.48	116.14	146.379	
17,000.00	7,107.74	3,384.00	3,383.58	50.97	66.98	22.55	-1,767.83	-6,391.24	17,097.94	16,981.48	116.46	146.816	
17,100.00	7,107.78	3,384.00	3,383.58	51.27	66.98	22.55	-1,767.83	-6,391.24	17,195.29	17,078.51	116.78	147.251	
17,200.00	7,107.82	3,384.00	3,383.58	51.57	66.98	22.55	-1,767.83	-6,391.24	17,292.67	17,175.57	117.09	147.684	
17,300.00	7,107.86	3,384.00	3,383.58	51.87	66.98	22.55	-1,767.83	-6,391.24	17,390.08	17,272.67	117.41	148.115	
17,400.00	7,107.90	3,384.00	3,383.58	52.17	66.98	22.55	-1,767.83	-6,391.24	17,487.52	17,369.79	117.73	148.545	
17,500.00	7,107.94	3,384.00	3,383.58	52.47	66.98	22.55	-1,767.83	-6,391.24	17,584.98	17,466.94	118.04	148.973	
17,600.00	7,107.98	3,384.00	3,383.58	52.77	66.98	22.55	-1,767.83	-6,391.24	17,682.48	17,564.12	118.36	149.400	
17,700.00	7,108.02	3,384.00	3,383.58	53.07	66.98	22.55	-1,767.83	-6,391.24	17,780.01	17,661.33	118.67	149.824	
17,800.00	7,108.06	3,384.00	3,383.58	53.37	66.98	22.55	-1,767.83	-6,391.24	17,877.56	17,758.57	118.99	150.247	
17,900.00	7,108.10	3,384.00	3,383.58	53.67	66.98	22.55	-1,767.83	-6,391.24	17,975.14	17,855.83	119.30	150.668	
18,000.00	7,108.14	3,384.00	3,383.58	53.97	66.98	22.55	-1,767.83	-6,391.24	18,072.74	17,953.12	119.62	151.088	
18,100.00	7,108.17	3,384.00	3,383.58	54.27	66.98	22.55	-1,767.83	-6,391.24	18,170.37	18,050.44	119.93	151.506	
18,200.00	7,108.21	3,384.00	3,383.58	54.57	66.98	22.55	-1,767.83	-6,391.24	18,268.03	18,147.78	120.25	151.922	
18,300.00	7,108.25	3,384.00	3,383.58	54.87	66.98	22.55	-1,767.83	-6,391.24	18,365.71	18,245.15	120.56	152.337	
18,400.00	7,108.29	3,384.00	3,383.58	55.17	66.98	22.55	-1,767.83	-6,391.24	18,463.42	18,342.54	120.87	152.749	
18,500.00	7,108.33	3,384.00	3,383.58	55.47	66.98	22.55	-1,767.83	-6,391.24	18,561.15	18,439.96	121.19	153.160	
18,600.00	7,108.37	3,384.00	3,383.58	55.77	66.98	22.55	-1,767.83	-6,391.24	18,658.90	18,537.40	121.50	153.570	
18,700.00	7,108.41	3,384.00	3,383.58	56.07	66.98	22.55	-1,767.83	-6,391.24	18,756.68	18,634.87	121.81	153.978	
18,800.00	7,108.45	3,384.00	3,383.58	56.37	66.98	22.55	-1,767.83	-6,391.24	18,854.48	18,732.36	122.13	154.384	
18,900.00	7,108.49	3,384.00	3,383.58	56.67	66.98	22.55	-1,767.83	-6,391.24	18,952.31	18,829.87	122.44	154.789	
19,000.00	7,108.53	3,384.00	3,383.58	56.97	66.98	22.55	-1,767.83	-6,391.24	19,050.16	18,927.41	122.75	155.192	
19,100.00	7,108.57	3,384.00	3,383.58	57.28	66.98	22.55	-1,767.83	-6,391.24	19,148.03	19,024.96	123.06	155.593	
19,200.00	7,108.61	3,384.00	3,383.58	57.58	66.98	22.55	-1,767.83	-6,391.24	19,245.92	19,122.54	123.38	155.993	
19,300.00	7,108.64	3,384.00	3,383.58	57.88	66.98	22.55	-1,767.83	-6,391.24	19,343.83	19,220.14	123.69	156.391	
19,400.00	7,108.68	3,384.00	3,383.58	58.18	66.98	22.55	-1,767.83	-6,391.24	19,441.77	19,317.77	124.00	156.787	
19,500.00	7,108.72	3,384.00	3,383.58	58.48	66.98	22.55	-1,767.83	-6,391.24	19,539.72	19,415.41	124.31	157.182	
19,600.00	7,108.76	3,384.00	3,383.58	58.78	66.98	22.55	-1,767.83	-6,391.24	19,637.70	19,513.07	124.62	157.575	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #231A (Offset) - OH - OH

Survey Program: 322-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,700.00	7,108.80	3,384.00	3,383.58	59.08	66.98	22.55	-1,767.83	-6,391.24	19,735.70	19,610.76	124.94	157.967	
19,800.00	7,108.84	3,384.00	3,383.58	59.38	66.98	22.55	-1,767.83	-6,391.24	19,833.71	19,708.47	125.25	158.357	
19,900.00	7,108.88	3,384.00	3,383.58	59.68	66.98	22.55	-1,767.83	-6,391.24	19,931.75	19,806.19	125.56	158.746	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-178.39	-1,365.80	-38.36	1,366.88				
100.00	100.00	61.51	61.51	0.23	0.57	-178.39	-1,365.80	-38.36	1,366.34	1,365.54	0.80	1,718.228	
200.00	200.00	161.51	161.51	0.53	1.49	-178.39	-1,365.80	-38.36	1,366.34	1,364.32	2.02	676.607	
300.00	300.00	261.52	261.51	0.83	2.66	-178.39	-1,365.80	-38.36	1,366.34	1,362.85	3.49	391.644	
400.00	400.00	361.52	361.51	1.13	4.51	-178.39	-1,365.80	-38.36	1,366.34	1,360.70	5.64	242.376	
500.00	500.00	461.52	461.51	1.43	6.36	-178.39	-1,365.80	-38.36	1,366.34	1,358.55	7.79	175.491	
600.00	599.98	560.23	560.22	1.73	8.18	26.05	-1,365.24	-38.36	1,364.21	1,354.30	9.91	137.653	
644.12	644.06	603.35	603.35	1.86	8.98	26.09	-1,365.30	-38.36	1,362.58	1,351.74	10.84	125.698	
700.00	699.87	657.96	657.95	2.03	9.99	26.15	-1,365.41	-38.36	1,360.17	1,348.16	12.02	113.185	
800.00	799.74	755.70	755.69	2.33	11.80	26.24	-1,365.73	-38.36	1,355.99	1,341.87	14.12	96.007	
900.00	899.62	861.15	861.13	2.63	13.79	26.34	-1,365.80	-38.36	1,351.53	1,335.11	16.42	82.306	
1,000.00	999.49	961.03	961.00	2.93	15.69	26.43	-1,365.80	-38.36	1,347.03	1,328.41	18.62	72.344	
1,100.00	1,099.36	1,060.65	1,060.63	3.23	17.59	26.53	-1,365.19	-38.36	1,341.92	1,321.11	20.81	64.472	
1,200.00	1,199.24	1,158.48	1,158.45	3.53	19.45	26.62	-1,365.29	-38.36	1,337.52	1,314.54	22.97	58.219	
1,300.00	1,299.11	1,256.32	1,256.29	3.83	21.31	26.72	-1,365.53	-38.36	1,333.27	1,308.14	25.13	53.047	
1,400.00	1,398.98	1,360.55	1,360.50	4.13	23.33	26.82	-1,365.80	-38.36	1,329.04	1,301.59	27.46	48.405	
1,500.00	1,498.86	1,460.43	1,460.37	4.43	25.35	26.92	-1,365.80	-38.36	1,324.56	1,294.78	29.78	44.483	
1,600.00	1,598.73	1,560.30	1,560.24	4.73	27.37	27.01	-1,365.80	-38.36	1,320.07	1,287.98	32.10	41.128	
1,700.00	1,698.60	1,657.21	1,657.15	5.03	29.33	27.11	-1,365.09	-38.36	1,314.89	1,280.53	34.36	38.271	
1,800.00	1,798.48	1,753.74	1,753.67	5.33	31.28	27.21	-1,365.43	-38.36	1,310.77	1,274.16	36.61	35.804	
1,900.00	1,898.35	1,859.98	1,859.86	5.63	33.46	27.31	-1,365.80	-38.36	1,306.65	1,267.56	39.09	33.425	
2,000.00	1,998.22	1,959.85	1,959.74	5.93	35.56	27.42	-1,365.80	-38.36	1,302.18	1,260.69	41.49	31.385	
2,100.00	2,098.10	2,059.73	2,059.61	6.23	37.66	27.52	-1,365.80	-38.36	1,297.72	1,253.83	43.89	29.568	
2,200.00	2,197.97	2,155.49	2,155.36	6.53	39.67	27.62	-1,364.87	-38.36	1,292.33	1,246.13	46.20	27.972	
2,300.00	2,297.84	2,251.06	2,250.92	6.83	41.68	27.72	-1,365.33	-38.36	1,288.37	1,239.86	48.51	26.560	
2,400.00	2,397.72	2,359.42	2,359.23	7.13	43.96	27.83	-1,365.80	-38.36	1,284.35	1,233.26	51.09	25.139	
2,500.00	2,497.59	2,459.29	2,459.10	7.43	46.07	27.93	-1,365.80	-38.36	1,279.91	1,226.41	53.50	23.924	
2,600.00	2,597.46	2,559.17	2,558.98	7.73	48.18	28.04	-1,365.80	-38.36	1,275.47	1,219.56	55.91	22.813	
2,700.00	2,697.34	2,655.34	2,655.13	8.03	50.21	28.15	-1,364.81	-38.36	1,270.04	1,211.80	58.24	21.807	
2,800.00	2,797.21	2,751.14	2,750.93	8.33	52.24	28.25	-1,365.24	-38.36	1,266.06	1,205.50	60.56	20.905	
2,900.00	2,897.09	2,858.87	2,858.60	8.63	54.51	28.36	-1,365.80	-38.36	1,262.17	1,199.03	63.14	19.990	
3,000.00	2,996.96	2,958.74	2,958.47	8.93	56.63	28.47	-1,365.80	-38.36	1,257.74	1,192.19	65.55	19.186	
3,100.00	3,096.83	3,056.69	3,056.41	9.23	58.70	28.58	-1,364.97	-38.36	1,252.50	1,184.57	67.93	18.439	
3,200.00	3,196.71	3,151.34	3,151.06	9.53	60.71	28.68	-1,365.32	-38.36	1,248.45	1,178.22	70.23	17.776	
3,300.00	3,296.58	3,258.42	3,258.09	9.83	62.97	28.80	-1,365.80	-38.36	1,244.50	1,171.70	72.80	17.095	
3,400.00	3,396.45	3,358.29	3,357.97	10.13	65.09	28.91	-1,365.80	-38.36	1,240.09	1,164.88	75.22	16.487	
3,498.23	3,494.55	3,402.00	3,401.64	10.42	66.02	28.96	-1,365.80	-38.36	1,236.97	1,160.59	76.38	16.196	CC, ES
3,500.00	3,496.33	3,402.00	3,401.64	10.43	66.02	28.96	-1,365.80	-38.36	1,236.97	1,160.59	76.38	16.196	SF
3,600.00	3,596.20	3,402.00	3,401.64	10.73	66.02	28.96	-1,365.80	-38.36	1,241.15	1,164.91	76.23	16.281	
3,700.00	3,696.07	3,402.00	3,401.64	11.03	66.02	28.96	-1,365.80	-38.36	1,253.32	1,177.62	75.69	16.558	
3,800.00	3,795.95	3,402.00	3,401.64	11.33	66.02	28.96	-1,365.80	-38.36	1,273.25	1,198.46	74.79	17.025	
3,900.00	3,895.82	3,402.00	3,401.64	11.63	66.02	28.96	-1,365.80	-38.36	1,300.58	1,227.01	73.58	17.677	
4,000.00	3,995.69	3,402.00	3,401.64	11.93	66.02	28.96	-1,365.80	-38.36	1,334.87	1,262.74	72.12	18.508	
4,100.00	4,095.57	3,402.00	3,401.64	12.23	66.02	28.96	-1,365.80	-38.36	1,375.58	1,305.08	70.50	19.513	
4,200.00	4,195.44	3,402.00	3,401.64	12.53	66.02	28.96	-1,365.80	-38.36	1,422.17	1,353.42	68.76	20.685	
4,300.00	4,295.31	3,402.00	3,401.64	12.83	66.02	28.96	-1,365.80	-38.36	1,474.09	1,407.13	66.96	22.015	
4,400.00	4,395.19	3,402.00	3,401.64	13.13	66.02	28.96	-1,365.80	-38.36	1,530.78	1,465.63	65.15	23.495	
4,500.00	4,495.06	3,402.00	3,401.64	13.43	66.02	28.96	-1,365.80	-38.36	1,591.74	1,528.37	63.37	25.118	
4,600.00	4,594.93	3,402.00	3,401.64	13.73	66.02	28.96	-1,365.80	-38.36	1,656.50	1,594.86	61.64	26.872	
4,700.00	4,694.81	3,402.00	3,401.64	14.03	66.02	28.96	-1,365.80	-38.36	1,724.63	1,664.64	59.99	28.750	
4,800.00	4,794.68	3,402.00	3,401.64	14.33	66.02	28.96	-1,365.80	-38.36	1,795.75	1,737.33	58.41	30.742	
4,900.00	4,894.55	3,402.00	3,401.64	14.63	66.02	28.96	-1,365.80	-38.36	1,869.51	1,812.57	56.93	32.837	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,000.00	4,994.43	3,402.00	3,401.64	14.93	66.02	28.96	-1,365.80	-38.36	1,945.61	1,890.07	55.54	35.028	
5,100.00	5,094.30	3,402.00	3,401.64	15.23	66.02	28.96	-1,365.80	-38.36	2,023.80	1,969.55	54.25	37.304	
5,200.00	5,194.18	3,402.00	3,401.64	15.53	66.02	28.96	-1,365.80	-38.36	2,103.84	2,050.78	53.05	39.656	
5,300.00	5,294.05	3,402.00	3,401.64	15.83	66.02	28.96	-1,365.80	-38.36	2,185.52	2,133.57	51.94	42.076	
5,400.00	5,393.92	3,402.00	3,401.64	16.13	66.02	28.96	-1,365.80	-38.36	2,268.66	2,217.75	50.92	44.555	
5,500.00	5,493.80	3,402.00	3,401.64	16.43	66.02	28.96	-1,365.80	-38.36	2,353.12	2,303.15	49.98	47.086	
5,600.00	5,593.67	3,402.00	3,401.64	16.73	66.02	28.96	-1,365.80	-38.36	2,438.76	2,389.65	49.11	49.660	
5,700.00	5,693.54	3,402.00	3,401.64	17.03	66.02	28.96	-1,365.80	-38.36	2,525.45	2,477.13	48.32	52.270	
5,800.00	5,793.42	3,402.00	3,401.64	17.33	66.02	28.96	-1,365.80	-38.36	2,613.09	2,565.50	47.59	54.909	
5,900.00	5,893.29	3,402.00	3,401.64	17.63	66.02	28.96	-1,365.80	-38.36	2,701.59	2,654.67	46.93	57.570	
6,000.00	5,993.16	3,402.00	3,401.64	17.93	66.02	28.96	-1,365.80	-38.36	2,790.87	2,744.55	46.32	60.249	
6,100.00	6,093.04	3,402.00	3,401.64	18.23	66.02	28.96	-1,365.80	-38.36	2,880.85	2,835.08	45.77	62.938	
6,200.00	6,192.91	3,402.00	3,401.64	18.53	66.02	28.96	-1,365.80	-38.36	2,971.48	2,926.20	45.27	65.633	
6,300.00	6,292.78	3,402.00	3,401.64	18.83	66.02	28.96	-1,365.80	-38.36	3,062.68	3,017.86	44.82	68.329	
6,400.00	6,392.66	3,402.00	3,401.64	19.13	66.02	28.96	-1,365.80	-38.36	3,154.42	3,110.01	44.42	71.021	
6,500.00	6,492.53	3,402.00	3,401.64	19.43	66.02	28.96	-1,365.80	-38.36	3,246.65	3,202.60	44.05	73.706	
6,551.20	6,543.67	3,402.00	3,401.64	19.58	66.02	28.96	-1,365.80	-38.36	3,294.05	3,250.17	43.88	75.076	
6,600.00	6,592.30	3,402.00	3,401.64	19.73	66.02	58.82	-1,365.80	-38.36	3,339.33	3,295.60	43.73	76.370	
6,650.00	6,641.67	3,402.00	3,401.64	19.88	66.02	56.93	-1,365.80	-38.36	3,385.61	3,342.01	43.59	77.665	
6,700.00	6,690.21	3,402.00	3,401.64	20.03	66.02	50.57	-1,365.80	-38.36	3,431.43	3,387.94	43.48	78.915	
6,750.00	6,737.54	3,402.00	3,401.64	20.18	66.02	44.14	-1,365.80	-38.36	3,476.47	3,433.07	43.40	80.104	
6,800.00	6,783.30	3,402.00	3,401.64	20.33	66.02	38.59	-1,365.80	-38.36	3,520.42	3,477.08	43.35	81.217	
6,850.00	6,827.15	3,402.00	3,401.64	20.48	66.02	34.05	-1,365.80	-38.36	3,563.00	3,519.68	43.32	82.239	
6,900.00	6,868.74	3,402.00	3,401.64	20.63	66.02	30.39	-1,365.80	-38.36	3,603.94	3,560.60	43.34	83.155	
6,950.00	6,907.77	3,402.00	3,401.64	20.78	66.02	27.43	-1,365.80	-38.36	3,642.97	3,599.58	43.39	83.950	
7,000.00	6,943.94	3,402.00	3,401.64	20.93	66.02	25.04	-1,365.80	-38.36	3,679.88	3,636.39	43.49	84.613	
7,050.00	6,976.97	3,402.00	3,401.64	21.08	66.02	23.09	-1,365.80	-38.36	3,714.45	3,670.82	43.63	85.133	
7,100.00	7,006.62	3,402.00	3,401.64	21.23	66.02	21.50	-1,365.80	-38.36	3,746.48	3,702.67	43.82	85.500	
7,150.00	7,032.64	3,402.00	3,401.64	21.38	66.02	20.20	-1,365.80	-38.36	3,775.80	3,731.75	44.05	85.710	
7,200.00	7,054.86	3,402.00	3,401.64	21.53	66.02	19.12	-1,365.80	-38.36	3,802.25	3,757.92	44.34	85.758	
7,250.00	7,073.09	3,402.00	3,401.64	21.68	66.02	18.25	-1,365.80	-38.36	3,825.69	3,781.02	44.67	85.646	
7,300.00	7,087.20	3,402.00	3,401.64	21.83	66.02	17.53	-1,365.80	-38.36	3,846.00	3,800.95	45.05	85.374	
7,350.00	7,097.08	3,402.00	3,401.64	21.98	66.02	16.96	-1,365.80	-38.36	3,863.07	3,817.60	45.47	84.950	
7,400.00	7,102.66	3,402.00	3,401.64	22.13	66.02	16.51	-1,365.80	-38.36	3,876.82	3,830.87	45.95	84.379	
7,438.94	7,104.00	3,402.00	3,401.64	22.25	66.02	16.24	-1,365.80	-38.36	3,885.18	3,838.84	46.34	83.838	
7,500.00	7,104.02	3,402.00	3,401.64	22.43	66.02	16.24	-1,365.80	-38.36	3,897.12	3,850.12	47.00	82.919	
7,600.00	7,104.06	3,402.00	3,401.64	22.74	66.02	16.24	-1,365.80	-38.36	3,918.66	3,870.54	48.12	81.433	
7,700.00	7,104.10	3,402.00	3,401.64	23.04	66.02	16.24	-1,365.80	-38.36	3,942.62	3,893.33	49.29	79.986	
7,800.00	7,104.14	3,402.00	3,401.64	23.34	66.02	16.24	-1,365.80	-38.36	3,968.95	3,918.45	50.50	78.596	
7,900.00	7,104.18	3,402.00	3,401.64	23.64	66.02	16.24	-1,365.80	-38.36	3,997.61	3,945.88	51.73	77.274	
8,000.00	7,104.22	3,402.00	3,401.64	23.94	66.02	16.24	-1,365.80	-38.36	4,028.55	3,975.57	52.99	76.029	
8,100.00	7,104.26	3,402.00	3,401.64	24.24	66.02	16.24	-1,365.80	-38.36	4,061.72	4,007.47	54.25	74.866	
8,200.00	7,104.30	3,402.00	3,401.64	24.54	66.02	16.24	-1,365.80	-38.36	4,097.06	4,041.54	55.53	73.787	
8,300.00	7,104.34	3,402.00	3,401.64	24.84	66.02	16.24	-1,365.80	-38.36	4,134.52	4,077.72	56.80	72.794	
8,400.00	7,104.38	3,402.00	3,401.64	25.14	66.02	16.24	-1,365.80	-38.36	4,174.04	4,115.97	58.07	71.885	
8,500.00	7,104.42	3,402.00	3,401.64	25.44	66.02	16.24	-1,365.80	-38.36	4,215.56	4,156.23	59.33	71.058	
8,600.00	7,104.45	3,402.00	3,401.64	25.74	66.02	16.24	-1,365.80	-38.36	4,259.02	4,198.45	60.57	70.312	
8,700.00	7,104.49	3,402.00	3,401.64	26.04	66.02	16.24	-1,365.80	-38.36	4,304.37	4,242.57	61.81	69.644	
8,800.00	7,104.53	3,402.00	3,401.64	26.34	66.02	16.24	-1,365.80	-38.36	4,351.55	4,288.52	63.02	69.049	
8,900.00	7,104.57	3,402.00	3,401.64	26.64	66.02	16.24	-1,365.80	-38.36	4,400.49	4,336.27	64.22	68.524	
9,000.00	7,104.61	3,402.00	3,401.64	26.95	66.02	16.24	-1,365.80	-38.36	4,451.14	4,385.74	65.39	68.066	
9,100.00	7,104.65	3,402.00	3,401.64	27.25	66.02	16.24	-1,365.80	-38.36	4,503.44	4,436.89	66.55	67.672	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,200.00	7,104.69	3,402.00	3,401.64	27.55	66.02	16.24	-1,365.80	-38.36	4,557.33	4,489.65	67.68	67.336	
9,300.00	7,104.73	3,402.00	3,401.64	27.85	66.02	16.24	-1,365.80	-38.36	4,612.77	4,543.98	68.79	67.057	
9,400.00	7,104.77	3,402.00	3,401.64	28.15	66.02	16.24	-1,365.80	-38.36	4,669.69	4,599.81	69.87	66.830	
9,500.00	7,104.81	3,402.00	3,401.64	28.45	66.02	16.24	-1,365.80	-38.36	4,728.03	4,657.10	70.94	66.652	
9,600.00	7,104.85	3,402.00	3,401.64	28.75	66.02	16.24	-1,365.80	-38.36	4,787.76	4,715.79	71.97	66.521	
9,700.00	7,104.89	3,402.00	3,401.64	29.05	66.02	16.24	-1,365.80	-38.36	4,848.81	4,775.82	72.99	66.433	
9,800.00	7,104.92	3,402.00	3,401.64	29.35	66.02	16.24	-1,365.80	-38.36	4,911.14	4,837.16	73.98	66.386	
9,900.00	7,104.96	3,402.00	3,401.64	29.65	66.02	16.24	-1,365.80	-38.36	4,974.70	4,899.76	74.95	66.377	
10,000.00	7,105.00	3,402.00	3,401.64	29.95	66.02	16.24	-1,365.80	-38.36	5,039.44	4,963.55	75.89	66.404	
10,100.00	7,105.04	3,402.00	3,401.64	30.25	66.02	16.24	-1,365.80	-38.36	5,105.32	5,028.51	76.81	66.464	
10,200.00	7,105.08	3,402.00	3,401.64	30.55	66.02	16.24	-1,365.80	-38.36	5,172.30	5,094.58	77.71	66.555	
10,300.00	7,105.12	3,402.00	3,401.64	30.85	66.02	16.24	-1,365.80	-38.36	5,240.32	5,161.73	78.59	66.676	
10,400.00	7,105.16	3,402.00	3,401.64	31.15	66.02	16.24	-1,365.80	-38.36	5,309.36	5,229.91	79.45	66.824	
10,500.00	7,105.20	3,402.00	3,401.64	31.45	66.02	16.24	-1,365.80	-38.36	5,379.38	5,299.08	80.29	66.998	
10,600.00	7,105.24	3,402.00	3,401.64	31.75	66.02	16.24	-1,365.80	-38.36	5,450.32	5,369.21	81.11	67.196	
10,700.00	7,105.28	3,402.00	3,401.64	32.05	66.02	16.24	-1,365.80	-38.36	5,522.17	5,440.26	81.91	67.417	
10,800.00	7,105.32	3,402.00	3,401.64	32.35	66.02	16.24	-1,365.80	-38.36	5,594.88	5,512.19	82.69	67.658	
10,900.00	7,105.36	3,402.00	3,401.64	32.66	66.02	16.24	-1,365.80	-38.36	5,668.42	5,584.97	83.46	67.920	
11,000.00	7,105.39	3,402.00	3,401.64	32.96	66.02	16.24	-1,365.80	-38.36	5,742.77	5,658.56	84.21	68.200	
11,100.00	7,105.43	3,402.00	3,401.64	33.26	66.02	16.24	-1,365.80	-38.36	5,817.88	5,732.94	84.94	68.497	
11,200.00	7,105.47	3,402.00	3,401.64	33.56	66.02	16.24	-1,365.80	-38.36	5,893.73	5,808.08	85.65	68.810	
11,300.00	7,105.51	3,402.00	3,401.64	33.86	66.02	16.24	-1,365.80	-38.36	5,970.29	5,883.94	86.35	69.139	
11,400.00	7,105.55	3,402.00	3,401.64	34.16	66.02	16.24	-1,365.80	-38.36	6,047.54	5,960.50	87.04	69.482	
11,500.00	7,105.59	3,402.00	3,401.64	34.46	66.02	16.24	-1,365.80	-38.36	6,125.44	6,037.73	87.71	69.838	
11,600.00	7,105.63	3,402.00	3,401.64	34.76	66.02	16.24	-1,365.80	-38.36	6,203.98	6,115.61	88.37	70.207	
11,700.00	7,105.67	3,402.00	3,401.64	35.06	66.02	16.24	-1,365.80	-38.36	6,283.13	6,194.12	89.01	70.587	
11,800.00	7,105.71	3,402.00	3,401.64	35.36	66.02	16.24	-1,365.80	-38.36	6,362.87	6,273.22	89.65	70.978	
11,900.00	7,105.75	3,402.00	3,401.64	35.66	66.02	16.24	-1,365.80	-38.36	6,443.17	6,352.90	90.27	71.380	
12,000.00	7,105.79	3,402.00	3,401.64	35.96	66.02	16.24	-1,365.80	-38.36	6,524.01	6,433.14	90.88	71.791	
12,100.00	7,105.83	3,402.00	3,401.64	36.26	66.02	16.24	-1,365.80	-38.36	6,605.38	6,513.91	91.47	72.211	
12,200.00	7,105.86	3,402.00	3,401.64	36.56	66.02	16.24	-1,365.80	-38.36	6,687.26	6,595.20	92.06	72.639	
12,300.00	7,105.90	3,402.00	3,401.64	36.86	66.02	16.24	-1,365.80	-38.36	6,769.62	6,676.98	92.64	73.076	
12,400.00	7,105.94	3,402.00	3,401.64	37.16	66.02	16.24	-1,365.80	-38.36	6,852.45	6,759.25	93.21	73.519	
12,500.00	7,105.98	3,402.00	3,401.64	37.46	66.02	16.24	-1,365.80	-38.36	6,935.74	6,841.97	93.76	73.970	
12,600.00	7,106.02	3,402.00	3,401.64	37.76	66.02	16.24	-1,365.80	-38.36	7,019.46	6,925.14	94.31	74.427	
12,700.00	7,106.06	3,402.00	3,401.64	38.06	66.02	16.24	-1,365.80	-38.36	7,103.60	7,008.74	94.85	74.889	
12,800.00	7,106.10	3,402.00	3,401.64	38.36	66.02	16.24	-1,365.80	-38.36	7,188.15	7,092.76	95.39	75.358	
12,900.00	7,106.14	3,402.00	3,401.64	38.66	66.02	16.24	-1,365.80	-38.36	7,273.09	7,177.17	95.91	75.831	
13,000.00	7,106.18	3,402.00	3,401.64	38.96	66.02	16.24	-1,365.80	-38.36	7,358.40	7,261.98	96.43	76.309	
13,100.00	7,106.22	3,402.00	3,401.64	39.26	66.02	16.24	-1,365.80	-38.36	7,444.09	7,347.15	96.94	76.792	
13,200.00	7,106.26	3,402.00	3,401.64	39.56	66.02	16.24	-1,365.80	-38.36	7,530.13	7,432.68	97.44	77.279	
13,300.00	7,106.30	3,402.00	3,401.64	39.86	66.02	16.24	-1,365.80	-38.36	7,616.50	7,518.57	97.94	77.770	
13,400.00	7,106.33	3,402.00	3,401.64	40.16	66.02	16.24	-1,365.80	-38.36	7,703.21	7,604.79	98.43	78.264	
13,500.00	7,106.37	3,402.00	3,401.64	40.46	66.02	16.24	-1,365.80	-38.36	7,790.24	7,691.33	98.91	78.761	
13,600.00	7,106.41	3,402.00	3,401.64	40.76	66.02	16.24	-1,365.80	-38.36	7,877.57	7,778.19	99.39	79.262	
13,700.00	7,106.45	3,402.00	3,401.64	41.06	66.02	16.24	-1,365.80	-38.36	7,965.20	7,865.35	99.86	79.765	
13,800.00	7,106.49	3,402.00	3,401.64	41.36	66.02	16.24	-1,365.80	-38.36	8,053.12	7,952.80	100.32	80.271	
13,900.00	7,106.53	3,402.00	3,401.64	41.67	66.02	16.24	-1,365.80	-38.36	8,141.32	8,040.54	100.79	80.779	
14,000.00	7,106.57	3,402.00	3,401.64	41.97	66.02	16.24	-1,365.80	-38.36	8,229.79	8,128.55	101.24	81.289	
14,100.00	7,106.61	3,402.00	3,401.64	42.27	66.02	16.24	-1,365.80	-38.36	8,318.52	8,216.83	101.69	81.801	
14,200.00	7,106.65	3,402.00	3,401.64	42.57	66.02	16.24	-1,365.80	-38.36	8,407.51	8,305.37	102.14	82.315	
14,300.00	7,106.69	3,402.00	3,401.64	42.87	66.02	16.24	-1,365.80	-38.36	8,496.73	8,394.16	102.58	82.831	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,400.00	7,106.73	3,402.00	3,401.64	43.17	66.02	16.24	-1,365.80	-38.36	8,586.20	8,483.18	103.02	83.348	
14,500.00	7,106.76	3,402.00	3,401.64	43.47	66.02	16.24	-1,365.80	-38.36	8,675.90	8,572.45	103.45	83.866	
14,600.00	7,106.80	3,402.00	3,401.64	43.77	66.02	16.24	-1,365.80	-38.36	8,765.82	8,661.94	103.88	84.385	
14,700.00	7,106.84	3,402.00	3,401.64	44.07	66.02	16.24	-1,365.80	-38.36	8,855.95	8,751.65	104.30	84.905	
14,800.00	7,106.88	3,402.00	3,401.64	44.37	66.02	16.24	-1,365.80	-38.36	8,946.29	8,841.57	104.73	85.426	
14,900.00	7,106.92	3,402.00	3,401.64	44.67	66.02	16.24	-1,365.80	-38.36	9,036.84	8,931.70	105.14	85.948	
15,000.00	7,106.96	3,402.00	3,401.64	44.97	66.02	16.24	-1,365.80	-38.36	9,127.59	9,022.03	105.56	86.470	
15,100.00	7,107.00	3,402.00	3,401.64	45.27	66.02	16.24	-1,365.80	-38.36	9,218.52	9,112.56	105.97	86.993	
15,200.00	7,107.04	3,402.00	3,401.64	45.57	66.02	16.24	-1,365.80	-38.36	9,309.65	9,203.27	106.38	87.516	
15,300.00	7,107.08	3,402.00	3,401.64	45.87	66.02	16.24	-1,365.80	-38.36	9,400.95	9,294.17	106.78	88.039	
15,400.00	7,107.12	3,402.00	3,401.64	46.17	66.02	16.24	-1,365.80	-38.36	9,492.43	9,385.25	107.18	88.563	
15,500.00	7,107.16	3,402.00	3,401.64	46.47	66.02	16.24	-1,365.80	-38.36	9,584.08	9,476.50	107.58	89.086	
15,600.00	7,107.20	3,402.00	3,401.64	46.77	66.02	16.24	-1,365.80	-38.36	9,675.89	9,567.91	107.98	89.610	
15,700.00	7,107.23	3,402.00	3,401.64	47.07	66.02	16.24	-1,365.80	-38.36	9,767.87	9,659.50	108.37	90.133	
15,800.00	7,107.27	3,402.00	3,401.64	47.37	66.02	16.24	-1,365.80	-38.36	9,860.00	9,751.24	108.76	90.656	
15,900.00	7,107.31	3,402.00	3,401.64	47.67	66.02	16.24	-1,365.80	-38.36	9,952.28	9,843.13	109.15	91.179	
16,000.00	7,107.35	3,402.00	3,401.64	47.97	66.02	16.24	-1,365.80	-38.36	10,044.71	9,935.18	109.54	91.702	
16,100.00	7,107.39	3,402.00	3,401.64	48.27	66.02	16.24	-1,365.80	-38.36	10,137.29	10,027.37	109.92	92.224	
16,200.00	7,107.43	3,402.00	3,401.64	48.57	66.02	16.24	-1,365.80	-38.36	10,230.00	10,119.70	110.30	92.746	
16,300.00	7,107.47	3,402.00	3,401.64	48.87	66.02	16.24	-1,365.80	-38.36	10,322.85	10,212.17	110.68	93.267	
16,400.00	7,107.51	3,402.00	3,401.64	49.17	66.02	16.24	-1,365.80	-38.36	10,415.83	10,304.78	111.06	93.787	
16,500.00	7,107.55	3,402.00	3,401.64	49.47	66.02	16.24	-1,365.80	-38.36	10,508.95	10,397.51	111.43	94.307	
16,600.00	7,107.59	3,402.00	3,401.64	49.77	66.02	16.24	-1,365.80	-38.36	10,602.18	10,490.38	111.81	94.826	
16,700.00	7,107.63	3,402.00	3,401.64	50.07	66.02	16.24	-1,365.80	-38.36	10,695.54	10,583.36	112.18	95.345	
16,800.00	7,107.67	3,402.00	3,401.64	50.37	66.02	16.24	-1,365.80	-38.36	10,789.02	10,676.47	112.55	95.862	
16,900.00	7,107.70	3,402.00	3,401.64	50.67	66.02	16.24	-1,365.80	-38.36	10,882.61	10,769.70	112.91	96.379	
17,000.00	7,107.74	3,402.00	3,401.64	50.97	66.02	16.24	-1,365.80	-38.36	10,976.32	10,863.04	113.28	96.895	
17,100.00	7,107.78	3,402.00	3,401.64	51.27	66.02	16.24	-1,365.80	-38.36	11,070.14	10,956.49	113.64	97.410	
17,200.00	7,107.82	3,402.00	3,401.64	51.57	66.02	16.24	-1,365.80	-38.36	11,164.06	11,050.05	114.01	97.924	
17,300.00	7,107.86	3,402.00	3,401.64	51.87	66.02	16.24	-1,365.80	-38.36	11,258.09	11,143.72	114.37	98.437	
17,400.00	7,107.90	3,402.00	3,401.64	52.17	66.02	16.24	-1,365.80	-38.36	11,352.22	11,237.49	114.73	98.949	
17,500.00	7,107.94	3,402.00	3,401.64	52.47	66.02	16.24	-1,365.80	-38.36	11,446.45	11,331.37	115.09	99.459	
17,600.00	7,107.98	3,402.00	3,401.64	52.77	66.02	16.24	-1,365.80	-38.36	11,540.78	11,425.34	115.44	99.969	
17,700.00	7,108.02	3,402.00	3,401.64	53.07	66.02	16.24	-1,365.80	-38.36	11,635.20	11,519.41	115.80	100.478	
17,800.00	7,108.06	3,402.00	3,401.64	53.37	66.02	16.24	-1,365.80	-38.36	11,729.72	11,613.57	116.15	100.985	
17,900.00	7,108.10	3,402.00	3,401.64	53.67	66.02	16.24	-1,365.80	-38.36	11,824.32	11,707.82	116.51	101.491	
18,000.00	7,108.14	3,402.00	3,401.64	53.97	66.02	16.24	-1,365.80	-38.36	11,919.02	11,802.16	116.86	101.996	
18,100.00	7,108.17	3,402.00	3,401.64	54.27	66.02	16.24	-1,365.80	-38.36	12,013.80	11,896.59	117.21	102.500	
18,200.00	7,108.21	3,402.00	3,401.64	54.57	66.02	16.24	-1,365.80	-38.36	12,108.66	11,991.10	117.56	103.003	
18,300.00	7,108.25	3,402.00	3,401.64	54.87	66.02	16.24	-1,365.80	-38.36	12,203.61	12,085.70	117.90	103.504	
18,400.00	7,108.29	3,402.00	3,401.64	55.17	66.02	16.24	-1,365.80	-38.36	12,298.63	12,180.38	118.25	104.004	
18,500.00	7,108.33	3,402.00	3,401.64	55.47	66.02	16.24	-1,365.80	-38.36	12,393.74	12,275.14	118.60	104.502	
18,600.00	7,108.37	3,402.00	3,401.64	55.77	66.02	16.24	-1,365.80	-38.36	12,488.92	12,369.97	118.94	105.000	
18,700.00	7,108.41	3,402.00	3,401.64	56.07	66.02	16.24	-1,365.80	-38.36	12,584.17	12,464.88	119.29	105.495	
18,800.00	7,108.45	3,402.00	3,401.64	56.37	66.02	16.24	-1,365.80	-38.36	12,679.50	12,559.87	119.63	105.990	
18,900.00	7,108.49	3,402.00	3,401.64	56.67	66.02	16.24	-1,365.80	-38.36	12,774.90	12,654.93	119.97	106.483	
19,000.00	7,108.53	3,402.00	3,401.64	56.97	66.02	16.24	-1,365.80	-38.36	12,870.37	12,750.06	120.31	106.975	
19,100.00	7,108.57	3,402.00	3,401.64	57.28	66.02	16.24	-1,365.80	-38.36	12,965.91	12,845.25	120.65	107.465	
19,200.00	7,108.61	3,402.00	3,401.64	57.58	66.02	16.24	-1,365.80	-38.36	13,061.51	12,940.52	120.99	107.954	
19,300.00	7,108.64	3,402.00	3,401.64	57.88	66.02	16.24	-1,365.80	-38.36	13,157.18	13,035.85	121.33	108.441	
19,400.00	7,108.68	3,402.00	3,401.64	58.18	66.02	16.24	-1,365.80	-38.36	13,252.91	13,131.25	121.67	108.927	
19,500.00	7,108.72	3,402.00	3,401.64	58.48	66.02	16.24	-1,365.80	-38.36	13,348.71	13,226.71	122.00	109.412	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259 (Offset) - OH - OH

Survey Program: 235-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,600.00	7,108.76	3,402.00	3,401.64	58.78	66.02	16.24	-1,365.80	-38.36	13,444.57	13,322.23	122.34	109.895	
19,700.00	7,108.80	3,402.00	3,401.64	59.08	66.02	16.24	-1,365.80	-38.36	13,540.48	13,417.81	122.68	110.377	
19,800.00	7,108.84	3,402.00	3,401.64	59.38	66.02	16.24	-1,365.80	-38.36	13,636.46	13,513.45	123.01	110.857	
19,900.00	7,108.88	3,402.00	3,401.64	59.68	66.02	16.24	-1,365.80	-38.36	13,732.49	13,609.15	123.34	111.335	
20,000.00	7,108.92	3,402.00	3,401.64	59.98	66.02	16.24	-1,365.80	-38.36	13,828.58	13,704.91	123.68	111.812	
20,100.00	7,108.96	3,402.00	3,401.64	60.28	66.02	16.24	-1,365.80	-38.36	13,924.73	13,800.72	124.01	112.288	
20,208.46	7,109.00	3,402.00	3,401.64	60.60	66.02	16.24	-1,365.80	-38.36	14,029.07	13,904.70	124.37	112.802	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259A (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	108.12	-1,051.75	3,213.90	3,381.95				
100.00	100.00	52.51	52.51	0.23	0.49	108.12	-1,051.75	3,213.90	3,381.62	3,380.91	0.71	4,749.716	
200.00	200.00	152.51	152.51	0.53	1.91	108.12	-1,051.75	3,213.90	3,381.62	3,379.18	2.44	1,385.771	
224.98	224.98	177.50	177.50	0.60	2.39	108.12	-1,051.59	3,213.90	3,381.57	3,378.58	2.99	1,130.728	
300.00	300.00	248.27	248.27	0.83	3.74	108.12	-1,051.73	3,213.90	3,381.61	3,377.05	4.56	741.203	
400.00	400.00	352.52	352.51	1.13	5.66	108.12	-1,051.75	3,213.90	3,381.62	3,374.83	6.79	497.950	
420.91	420.91	372.68	372.67	1.19	6.04	108.12	-1,051.41	3,213.90	3,381.51	3,374.28	7.23	467.953	
500.00	500.00	447.00	446.98	1.43	7.41	108.12	-1,051.63	3,213.90	3,381.58	3,372.75	8.84	382.701	
600.00	599.98	552.51	552.49	1.73	9.36	-47.53	-1,051.75	3,213.90	3,380.44	3,369.35	11.09	304.931	
644.12	644.06	596.59	596.57	1.86	10.17	-47.57	-1,051.75	3,213.90	3,379.17	3,367.14	12.03	280.826	
700.00	699.87	652.40	652.38	2.03	11.21	-47.60	-1,051.75	3,213.90	3,377.27	3,364.04	13.23	255.234	
800.00	799.74	752.08	752.06	2.33	13.05	-47.67	-1,051.47	3,213.90	3,373.80	3,358.42	15.37	219.442	
900.00	899.62	851.10	851.08	2.63	14.88	-47.73	-1,051.53	3,213.90	3,370.43	3,352.92	17.50	192.546	
1,000.00	999.49	950.13	950.11	2.93	16.71	-47.79	-1,051.67	3,213.90	3,367.09	3,347.45	19.63	171.486	
1,100.00	1,099.36	1,051.92	1,051.88	3.23	18.69	-47.86	-1,051.75	3,213.90	3,363.73	3,341.82	21.92	153.466	
1,200.00	1,199.24	1,151.79	1,151.75	3.53	20.71	-47.92	-1,051.75	3,213.90	3,360.36	3,336.13	24.24	138.657	
1,300.00	1,299.11	1,251.37	1,251.33	3.83	22.72	-48.00	-1,050.94	3,213.90	3,356.74	3,330.20	26.55	126.451	
1,400.00	1,398.98	1,348.66	1,348.61	4.13	24.68	-48.06	-1,051.10	3,213.90	3,353.43	3,324.62	28.81	116.397	
1,500.00	1,498.86	1,445.97	1,445.92	4.43	26.65	-48.11	-1,051.50	3,213.90	3,350.19	3,319.11	31.08	107.809	
1,600.00	1,598.73	1,551.34	1,551.24	4.73	28.78	-48.18	-1,051.75	3,213.90	3,346.90	3,313.39	33.51	99.874	
1,700.00	1,698.60	1,651.22	1,651.12	5.03	30.82	-48.24	-1,051.75	3,213.90	3,343.55	3,307.71	35.84	93.286	
1,800.00	1,798.48	1,750.67	1,750.56	5.33	32.84	-48.32	-1,050.67	3,213.90	3,339.88	3,301.71	38.16	87.514	
1,900.00	1,898.35	1,847.21	1,847.10	5.63	34.80	-48.38	-1,050.87	3,213.90	3,336.60	3,296.17	40.43	82.535	
2,000.00	1,998.22	1,943.80	1,943.68	5.93	36.76	-48.43	-1,051.40	3,213.90	3,333.42	3,290.73	42.69	78.084	
2,100.00	2,098.10	2,050.77	2,050.61	6.23	38.99	-48.50	-1,051.75	3,213.90	3,330.18	3,284.97	45.21	73.656	
2,200.00	2,197.97	2,150.64	2,150.48	6.53	41.09	-48.56	-1,051.75	3,213.90	3,326.85	3,279.23	47.62	69.864	
2,300.00	2,297.84	2,250.18	2,250.01	6.83	43.19	-48.64	-1,050.94	3,213.90	3,323.28	3,273.26	50.02	66.442	
2,400.00	2,397.72	2,347.59	2,347.42	7.13	45.25	-48.70	-1,051.10	3,213.90	3,320.00	3,267.63	52.37	63.393	
2,500.00	2,497.59	2,445.02	2,444.85	7.43	47.30	-48.76	-1,051.51	3,213.90	3,316.81	3,262.08	54.73	60.607	
2,600.00	2,597.46	2,550.21	2,549.98	7.73	49.48	-48.82	-1,051.75	3,213.90	3,313.56	3,256.36	57.20	57.927	
2,700.00	2,697.34	2,650.09	2,649.85	8.03	51.52	-48.89	-1,051.75	3,213.90	3,310.25	3,250.71	59.54	55.595	
2,800.00	2,797.21	2,749.96	2,749.72	8.33	53.55	-48.95	-1,051.75	3,213.90	3,306.94	3,245.06	61.88	53.440	
2,900.00	2,897.09	2,849.26	2,849.00	8.63	55.58	-49.05	-1,049.88	3,213.90	3,303.10	3,238.89	64.21	51.443	
3,000.00	2,996.96	2,946.27	2,946.01	8.93	57.56	-49.11	-1,050.09	3,213.90	3,299.87	3,233.38	66.49	49.629	
3,100.00	3,096.83	3,043.32	3,043.05	9.23	59.55	-49.17	-1,050.60	3,213.90	3,296.73	3,227.95	68.77	47.937	
3,200.00	3,196.71	3,140.40	3,140.12	9.53	61.53	-49.22	-1,051.41	3,213.90	3,293.67	3,222.62	71.05	46.354	
3,300.00	3,296.58	3,249.41	3,249.09	9.83	63.59	-49.28	-1,051.75	3,213.90	3,290.47	3,217.06	73.42	44.819	
3,400.00	3,396.45	3,349.29	3,348.97	10.13	65.41	-49.35	-1,051.75	3,213.90	3,287.19	3,211.65	75.54	43.516	
3,500.00	3,496.33	3,414.00	3,413.67	10.43	66.59	-49.39	-1,051.75	3,213.90	3,284.11	3,207.09	77.02	42.642	
3,572.38	3,568.62	3,414.00	3,413.67	10.64	66.59	-49.39	-1,051.75	3,213.90	3,283.31	3,206.10	77.20	42.529	CC, ES
3,600.00	3,596.20	3,414.00	3,413.67	10.73	66.59	-49.39	-1,051.75	3,213.90	3,283.42	3,206.16	77.27	42.495	
3,700.00	3,696.07	3,414.00	3,413.67	11.03	66.59	-49.39	-1,051.75	3,213.90	3,285.79	3,208.33	77.45	42.422	
3,800.00	3,795.95	3,414.00	3,413.67	11.33	66.59	-49.39	-1,051.75	3,213.90	3,291.19	3,213.60	77.58	42.421	SF
3,900.00	3,895.82	3,414.00	3,413.67	11.63	66.59	-49.39	-1,051.75	3,213.90	3,299.61	3,221.96	77.65	42.491	
4,000.00	3,995.69	3,414.00	3,413.67	11.93	66.59	-49.39	-1,051.75	3,213.90	3,311.04	3,233.37	77.67	42.630	
4,100.00	4,095.57	3,414.00	3,413.67	12.23	66.59	-49.39	-1,051.75	3,213.90	3,325.43	3,247.80	77.63	42.838	
4,200.00	4,195.44	3,414.00	3,413.67	12.53	66.59	-49.39	-1,051.75	3,213.90	3,342.75	3,265.22	77.54	43.112	
4,300.00	4,295.31	3,414.00	3,413.67	12.83	66.59	-49.39	-1,051.75	3,213.90	3,362.96	3,285.57	77.39	43.453	
4,400.00	4,395.19	3,414.00	3,413.67	13.13	66.59	-49.39	-1,051.75	3,213.90	3,386.01	3,308.80	77.20	43.858	
4,500.00	4,495.06	3,414.00	3,413.67	13.43	66.59	-49.39	-1,051.75	3,213.90	3,411.83	3,334.86	76.97	44.326	
4,600.00	4,594.93	3,414.00	3,413.67	13.73	66.59	-49.39	-1,051.75	3,213.90	3,440.36	3,363.67	76.70	44.856	
4,700.00	4,694.81	3,414.00	3,413.67	14.03	66.59	-49.39	-1,051.75	3,213.90	3,471.55	3,395.16	76.39	45.446	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,800.00	4,794.68	3,414.00	3,413.67	14.33	66.59	-49.39	-1,051.75	3,213.90	3,505.30	3,429.26	76.05	46.094	
4,900.00	4,894.55	3,414.00	3,413.67	14.63	66.59	-49.39	-1,051.75	3,213.90	3,541.56	3,465.89	75.67	46.800	
5,000.00	4,994.43	3,414.00	3,413.67	14.93	66.59	-49.39	-1,051.75	3,213.90	3,580.25	3,504.97	75.28	47.561	
5,100.00	5,094.30	3,414.00	3,413.67	15.23	66.59	-49.39	-1,051.75	3,213.90	3,621.29	3,546.43	74.86	48.376	
5,200.00	5,194.18	3,414.00	3,413.67	15.53	66.59	-49.39	-1,051.75	3,213.90	3,664.59	3,590.17	74.42	49.242	
5,300.00	5,294.05	3,414.00	3,413.67	15.83	66.59	-49.39	-1,051.75	3,213.90	3,710.09	3,636.12	73.97	50.160	
5,400.00	5,393.92	3,414.00	3,413.67	16.13	66.59	-49.39	-1,051.75	3,213.90	3,757.70	3,684.20	73.50	51.126	
5,500.00	5,493.80	3,414.00	3,413.67	16.43	66.59	-49.39	-1,051.75	3,213.90	3,807.34	3,734.31	73.02	52.139	
5,600.00	5,593.67	3,414.00	3,413.67	16.73	66.59	-49.39	-1,051.75	3,213.90	3,858.93	3,786.39	72.54	53.197	
5,700.00	5,693.54	3,414.00	3,413.67	17.03	66.59	-49.39	-1,051.75	3,213.90	3,912.40	3,840.35	72.05	54.299	
5,800.00	5,793.42	3,414.00	3,413.67	17.33	66.59	-49.39	-1,051.75	3,213.90	3,967.67	3,896.10	71.56	55.442	
5,900.00	5,893.29	3,414.00	3,413.67	17.63	66.59	-49.39	-1,051.75	3,213.90	4,024.66	3,953.59	71.07	56.626	
6,000.00	5,993.16	3,414.00	3,413.67	17.93	66.59	-49.39	-1,051.75	3,213.90	4,083.31	4,012.72	70.59	57.847	
6,100.00	6,093.04	3,414.00	3,413.67	18.23	66.59	-49.39	-1,051.75	3,213.90	4,143.54	4,073.44	70.11	59.105	
6,200.00	6,192.91	3,414.00	3,413.67	18.53	66.59	-49.39	-1,051.75	3,213.90	4,205.29	4,135.66	69.63	60.397	
6,300.00	6,292.78	3,414.00	3,413.67	18.83	66.59	-49.39	-1,051.75	3,213.90	4,268.49	4,199.33	69.16	61.722	
6,400.00	6,392.66	3,414.00	3,413.67	19.13	66.59	-49.39	-1,051.75	3,213.90	4,333.07	4,264.38	68.69	63.078	
6,500.00	6,492.53	3,414.00	3,413.67	19.43	66.59	-49.39	-1,051.75	3,213.90	4,398.98	4,330.74	68.24	64.463	
6,551.20	6,543.67	3,414.00	3,413.67	19.58	66.59	-49.39	-1,051.75	3,213.90	4,433.22	4,365.21	68.01	65.184	
6,600.00	6,592.30	3,414.00	3,413.67	19.73	66.59	-8.50	-1,051.75	3,213.90	4,464.65	4,396.87	67.78	65.870	
6,650.00	6,641.67	3,414.00	3,413.67	19.88	66.59	0.56	-1,051.75	3,213.90	4,493.91	4,426.39	67.52	66.559	
6,700.00	6,690.21	3,414.00	3,413.67	20.03	66.59	3.85	-1,051.75	3,213.90	4,520.04	4,452.80	67.23	67.229	
6,750.00	6,737.54	3,414.00	3,413.67	20.18	66.59	5.40	-1,051.75	3,213.90	4,542.88	4,475.95	66.93	67.877	
6,800.00	6,783.30	3,414.00	3,413.67	20.33	66.59	6.25	-1,051.75	3,213.90	4,562.32	4,495.71	66.61	68.497	
6,850.00	6,827.15	3,414.00	3,413.67	20.48	66.59	6.78	-1,051.75	3,213.90	4,578.25	4,511.98	66.27	69.086	
6,900.00	6,868.74	3,414.00	3,413.67	20.63	66.59	7.14	-1,051.75	3,213.90	4,590.59	4,524.67	65.92	69.641	
6,950.00	6,907.77	3,414.00	3,413.67	20.78	66.59	7.43	-1,051.75	3,213.90	4,599.27	4,533.71	65.56	70.157	
7,000.00	6,943.94	3,414.00	3,413.67	20.93	66.59	7.68	-1,051.75	3,213.90	4,604.25	4,539.06	65.19	70.631	
7,050.00	6,976.97	3,414.00	3,413.67	21.08	66.59	7.92	-1,051.75	3,213.90	4,605.50	4,540.69	64.81	71.058	
7,100.00	7,006.62	3,414.00	3,413.67	21.23	66.59	8.18	-1,051.75	3,213.90	4,603.02	4,538.59	64.44	71.434	
7,150.00	7,032.64	3,414.00	3,413.67	21.38	66.59	8.47	-1,051.75	3,213.90	4,596.82	4,532.76	64.06	71.756	
7,200.00	7,054.86	3,414.00	3,413.67	21.53	66.59	8.80	-1,051.75	3,213.90	4,586.93	4,523.24	63.69	72.019	
7,250.00	7,073.09	3,414.00	3,413.67	21.68	66.59	9.18	-1,051.75	3,213.90	4,573.40	4,510.07	63.33	72.220	
7,300.00	7,087.20	3,414.00	3,413.67	21.83	66.59	9.63	-1,051.75	3,213.90	4,556.30	4,493.33	62.97	72.356	
7,350.00	7,097.08	3,414.00	3,413.67	21.98	66.59	10.17	-1,051.75	3,213.90	4,535.73	4,473.10	62.63	72.422	
7,400.00	7,102.66	3,414.00	3,413.67	22.13	66.59	10.82	-1,051.75	3,213.90	4,511.79	4,449.49	62.30	72.415	
7,438.94	7,104.00	3,414.00	3,413.67	22.25	66.59	11.41	-1,051.75	3,213.90	4,490.91	4,428.84	62.07	72.357	
7,500.00	7,104.02	3,414.00	3,413.67	22.43	66.59	11.41	-1,051.75	3,213.90	4,456.93	4,395.23	61.70	72.236	
7,600.00	7,104.06	3,414.00	3,413.67	22.74	66.59	11.41	-1,051.75	3,213.90	4,402.55	4,341.47	61.08	72.081	
7,700.00	7,104.10	3,414.00	3,413.67	23.04	66.59	11.41	-1,051.75	3,213.90	4,349.79	4,289.37	60.43	71.985	
7,800.00	7,104.14	3,414.00	3,413.67	23.34	66.59	11.41	-1,051.75	3,213.90	4,298.71	4,238.97	59.75	71.949	
7,900.00	7,104.18	3,414.00	3,413.67	23.64	66.59	11.41	-1,051.75	3,213.90	4,249.37	4,190.33	59.04	71.975	
8,000.00	7,104.22	3,414.00	3,413.67	23.94	66.59	11.41	-1,051.75	3,213.90	4,201.83	4,143.53	58.31	72.066	
8,100.00	7,104.26	3,414.00	3,413.67	24.24	66.59	11.41	-1,051.75	3,213.90	4,156.16	4,098.61	57.55	72.222	
8,200.00	7,104.30	3,414.00	3,413.67	24.54	66.59	11.41	-1,051.75	3,213.90	4,112.40	4,055.64	56.77	72.445	
8,300.00	7,104.34	3,414.00	3,413.67	24.84	66.59	11.41	-1,051.75	3,213.90	4,070.64	4,014.68	55.96	72.737	
8,400.00	7,104.38	3,414.00	3,413.67	25.14	66.59	11.41	-1,051.75	3,213.90	4,030.92	3,975.78	55.15	73.096	
8,500.00	7,104.42	3,414.00	3,413.67	25.44	66.59	11.41	-1,051.75	3,213.90	3,993.32	3,939.00	54.31	73.524	
8,600.00	7,104.45	3,414.00	3,413.67	25.74	66.59	11.41	-1,051.75	3,213.90	3,957.88	3,904.41	53.47	74.016	
8,700.00	7,104.49	3,414.00	3,413.67	26.04	66.59	11.41	-1,051.75	3,213.90	3,924.67	3,872.04	52.63	74.570	
8,800.00	7,104.53	3,414.00	3,413.67	26.34	66.59	11.41	-1,051.75	3,213.90	3,893.75	3,841.96	51.79	75.180	
8,900.00	7,104.57	3,414.00	3,413.67	26.64	66.59	11.41	-1,051.75	3,213.90	3,865.17	3,814.20	50.97	75.837	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,000.00	7,104.61	3,414.00	3,413.67	26.95	66.59	11.41	-1,051.75	3,213.90	3,838.98	3,788.81	50.16	76.529	
9,100.00	7,104.65	3,414.00	3,413.67	27.25	66.59	11.41	-1,051.75	3,213.90	3,815.23	3,765.84	49.40	77.239	
9,200.00	7,104.69	3,414.00	3,413.67	27.55	66.59	11.41	-1,051.75	3,213.90	3,793.97	3,745.30	48.67	77.945	
9,300.00	7,104.73	3,414.00	3,413.67	27.85	66.59	11.41	-1,051.75	3,213.90	3,775.24	3,727.23	48.02	78.622	
9,400.00	7,104.77	3,414.00	3,413.67	28.15	66.59	11.41	-1,051.75	3,213.90	3,759.08	3,711.64	47.44	79.237	
9,500.00	7,104.81	3,414.00	3,413.67	28.45	66.59	11.41	-1,051.75	3,213.90	3,745.52	3,698.56	46.96	79.753	
9,600.00	7,104.85	3,414.00	3,413.67	28.75	66.59	11.41	-1,051.75	3,213.90	3,734.59	3,687.98	46.61	80.130	
9,700.00	7,104.89	3,414.00	3,413.67	29.05	66.59	11.41	-1,051.75	3,213.90	3,726.31	3,679.92	46.39	80.330	
9,800.00	7,104.92	3,414.00	3,413.67	29.35	66.59	11.41	-1,051.75	3,213.90	3,720.70	3,674.38	46.32	80.318	
9,900.00	7,104.96	3,414.00	3,413.67	29.65	66.59	11.41	-1,051.75	3,213.90	3,717.78	3,671.35	46.43	80.071	
9,958.82	7,104.99	3,414.00	3,413.67	29.83	66.59	11.41	-1,051.75	3,213.90	3,717.31	3,670.74	46.58	79.813	
10,000.00	7,105.00	3,414.00	3,413.67	29.95	66.59	11.41	-1,051.75	3,213.90	3,717.54	3,670.83	46.71	79.582	
10,100.00	7,105.04	3,414.00	3,413.67	30.25	66.59	11.41	-1,051.75	3,213.90	3,719.99	3,672.82	47.17	78.857	
10,200.00	7,105.08	3,414.00	3,413.67	30.55	66.59	11.41	-1,051.75	3,213.90	3,725.13	3,677.32	47.81	77.923	
10,300.00	7,105.12	3,414.00	3,413.67	30.85	66.59	11.41	-1,051.75	3,213.90	3,732.94	3,684.34	48.60	76.816	
10,400.00	7,105.16	3,414.00	3,413.67	31.15	66.59	11.41	-1,051.75	3,213.90	3,743.40	3,693.87	49.53	75.580	
10,500.00	7,105.20	3,414.00	3,413.67	31.45	66.59	11.41	-1,051.75	3,213.90	3,756.50	3,705.91	50.59	74.261	
10,600.00	7,105.24	3,414.00	3,413.67	31.75	66.59	11.41	-1,051.75	3,213.90	3,772.20	3,720.46	51.74	72.900	
10,700.00	7,105.28	3,414.00	3,413.67	32.05	66.59	11.41	-1,051.75	3,213.90	3,790.48	3,737.49	52.99	71.533	
10,800.00	7,105.32	3,414.00	3,413.67	32.35	66.59	11.41	-1,051.75	3,213.90	3,811.30	3,757.00	54.30	70.190	
10,900.00	7,105.36	3,414.00	3,413.67	32.66	66.59	11.41	-1,051.75	3,213.90	3,834.61	3,778.95	55.66	68.892	
11,000.00	7,105.39	3,414.00	3,413.67	32.96	66.59	11.41	-1,051.75	3,213.90	3,860.37	3,803.31	57.06	67.654	
11,100.00	7,105.43	3,414.00	3,413.67	33.26	66.59	11.41	-1,051.75	3,213.90	3,888.53	3,830.05	58.48	66.489	
11,200.00	7,105.47	3,414.00	3,413.67	33.56	66.59	11.41	-1,051.75	3,213.90	3,919.05	3,859.13	59.92	65.403	
11,300.00	7,105.51	3,414.00	3,413.67	33.86	66.59	11.41	-1,051.75	3,213.90	3,951.86	3,890.49	61.37	64.398	
11,400.00	7,105.55	3,414.00	3,413.67	34.16	66.59	11.41	-1,051.75	3,213.90	3,986.90	3,924.10	62.81	63.477	
11,500.00	7,105.59	3,414.00	3,413.67	34.46	66.59	11.41	-1,051.75	3,213.90	4,024.13	3,959.89	64.24	62.638	
11,600.00	7,105.63	3,414.00	3,413.67	34.76	66.59	11.41	-1,051.75	3,213.90	4,063.48	3,997.81	65.67	61.879	
11,700.00	7,105.67	3,414.00	3,413.67	35.06	66.59	11.41	-1,051.75	3,213.90	4,104.89	4,037.81	67.08	61.198	
11,800.00	7,105.71	3,414.00	3,413.67	35.36	66.59	11.41	-1,051.75	3,213.90	4,148.30	4,079.83	68.46	60.592	
11,900.00	7,105.75	3,414.00	3,413.67	35.66	66.59	11.41	-1,051.75	3,213.90	4,193.64	4,123.81	69.83	60.057	
12,000.00	7,105.79	3,414.00	3,413.67	35.96	66.59	11.41	-1,051.75	3,213.90	4,240.85	4,169.68	71.17	59.589	
12,100.00	7,105.83	3,414.00	3,413.67	36.26	66.59	11.41	-1,051.75	3,213.90	4,289.88	4,217.40	72.48	59.185	
12,200.00	7,105.86	3,414.00	3,413.67	36.56	66.59	11.41	-1,051.75	3,213.90	4,340.66	4,266.89	73.77	58.841	
12,300.00	7,105.90	3,414.00	3,413.67	36.86	66.59	11.41	-1,051.75	3,213.90	4,393.12	4,318.09	75.03	58.553	
12,400.00	7,105.94	3,414.00	3,413.67	37.16	66.59	11.41	-1,051.75	3,213.90	4,447.22	4,370.96	76.26	58.318	
12,500.00	7,105.98	3,414.00	3,413.67	37.46	66.59	11.41	-1,051.75	3,213.90	4,502.89	4,425.43	77.46	58.132	
12,600.00	7,106.02	3,414.00	3,413.67	37.76	66.59	11.41	-1,051.75	3,213.90	4,560.07	4,481.44	78.63	57.993	
12,700.00	7,106.06	3,414.00	3,413.67	38.06	66.59	11.41	-1,051.75	3,213.90	4,618.71	4,538.93	79.77	57.897	
12,800.00	7,106.10	3,414.00	3,413.67	38.36	66.59	11.41	-1,051.75	3,213.90	4,678.75	4,597.86	80.89	57.842	
12,900.00	7,106.14	3,414.00	3,413.67	38.66	66.59	11.41	-1,051.75	3,213.90	4,740.14	4,658.17	81.97	57.824	
13,000.00	7,106.18	3,414.00	3,413.67	38.96	66.59	11.41	-1,051.75	3,213.90	4,802.83	4,719.80	83.03	57.842	
13,100.00	7,106.22	3,414.00	3,413.67	39.26	66.59	11.41	-1,051.75	3,213.90	4,866.77	4,782.70	84.06	57.894	
13,200.00	7,106.26	3,414.00	3,413.67	39.56	66.59	11.41	-1,051.75	3,213.90	4,931.90	4,846.83	85.07	57.976	
13,300.00	7,106.30	3,414.00	3,413.67	39.86	66.59	11.41	-1,051.75	3,213.90	4,998.19	4,912.14	86.05	58.087	
13,400.00	7,106.33	3,414.00	3,413.67	40.16	66.59	11.41	-1,051.75	3,213.90	5,065.58	4,978.58	87.00	58.226	
13,500.00	7,106.37	3,414.00	3,413.67	40.46	66.59	11.41	-1,051.75	3,213.90	5,134.04	5,046.11	87.93	58.389	
13,600.00	7,106.41	3,414.00	3,413.67	40.76	66.59	11.41	-1,051.75	3,213.90	5,203.52	5,114.68	88.83	58.577	
13,700.00	7,106.45	3,414.00	3,413.67	41.06	66.59	11.41	-1,051.75	3,213.90	5,273.98	5,184.26	89.71	58.786	
13,800.00	7,106.49	3,414.00	3,413.67	41.36	66.59	11.41	-1,051.75	3,213.90	5,345.38	5,254.80	90.57	59.016	
13,900.00	7,106.53	3,414.00	3,413.67	41.67	66.59	11.41	-1,051.75	3,213.90	5,417.68	5,326.27	91.41	59.266	
14,000.00	7,106.57	3,414.00	3,413.67	41.97	66.59	11.41	-1,051.75	3,213.90	5,490.86	5,398.63	92.23	59.534	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,100.00	7,106.61	3,414.00	3,413.67	42.27	66.59	11.41	-1,051.75	3,213.90	5,564.87	5,471.84	93.03	59.818	
14,200.00	7,106.65	3,414.00	3,413.67	42.57	66.59	11.41	-1,051.75	3,213.90	5,639.68	5,545.87	93.81	60.119	
14,300.00	7,106.69	3,414.00	3,413.67	42.87	66.59	11.41	-1,051.75	3,213.90	5,715.26	5,620.69	94.57	60.434	
14,400.00	7,106.73	3,414.00	3,413.67	43.17	66.59	11.41	-1,051.75	3,213.90	5,791.59	5,696.27	95.31	60.764	
14,500.00	7,106.76	3,414.00	3,413.67	43.47	66.59	11.41	-1,051.75	3,213.90	5,868.62	5,772.58	96.04	61.106	
14,600.00	7,106.80	3,414.00	3,413.67	43.77	66.59	11.41	-1,051.75	3,213.90	5,946.34	5,849.59	96.75	61.461	
14,700.00	7,106.84	3,414.00	3,413.67	44.07	66.59	11.41	-1,051.75	3,213.90	6,024.71	5,927.27	97.44	61.827	
14,800.00	7,106.88	3,414.00	3,413.67	44.37	66.59	11.41	-1,051.75	3,213.90	6,103.72	6,005.60	98.13	62.204	
14,900.00	7,106.92	3,414.00	3,413.67	44.67	66.59	11.41	-1,051.75	3,213.90	6,183.34	6,084.55	98.79	62.590	
15,000.00	7,106.96	3,414.00	3,413.67	44.97	66.59	11.41	-1,051.75	3,213.90	6,263.54	6,164.09	99.44	62.986	
15,100.00	7,107.00	3,414.00	3,413.67	45.27	66.59	11.41	-1,051.75	3,213.90	6,344.30	6,244.22	100.08	63.391	
15,200.00	7,107.04	3,414.00	3,413.67	45.57	66.59	11.41	-1,051.75	3,213.90	6,425.60	6,324.89	100.71	63.804	
15,300.00	7,107.08	3,414.00	3,413.67	45.87	66.59	11.41	-1,051.75	3,213.90	6,507.43	6,406.10	101.32	64.224	
15,400.00	7,107.12	3,414.00	3,413.67	46.17	66.59	11.41	-1,051.75	3,213.90	6,589.75	6,487.83	101.93	64.652	
15,500.00	7,107.16	3,414.00	3,413.67	46.47	66.59	11.41	-1,051.75	3,213.90	6,672.56	6,570.04	102.52	65.087	
15,600.00	7,107.20	3,414.00	3,413.67	46.77	66.59	11.41	-1,051.75	3,213.90	6,755.84	6,652.74	103.10	65.527	
15,700.00	7,107.23	3,414.00	3,413.67	47.07	66.59	11.41	-1,051.75	3,213.90	6,839.56	6,735.89	103.67	65.974	
15,800.00	7,107.27	3,414.00	3,413.67	47.37	66.59	11.41	-1,051.75	3,213.90	6,923.71	6,819.48	104.23	66.425	
15,900.00	7,107.31	3,414.00	3,413.67	47.67	66.59	11.41	-1,051.75	3,213.90	7,008.28	6,903.50	104.79	66.882	
16,000.00	7,107.35	3,414.00	3,413.67	47.97	66.59	11.41	-1,051.75	3,213.90	7,093.25	6,987.93	105.33	67.344	
16,100.00	7,107.39	3,414.00	3,413.67	48.27	66.59	11.41	-1,051.75	3,213.90	7,178.61	7,072.75	105.86	67.810	
16,200.00	7,107.43	3,414.00	3,413.67	48.57	66.59	11.41	-1,051.75	3,213.90	7,264.35	7,157.96	106.39	68.280	
16,300.00	7,107.47	3,414.00	3,413.67	48.87	66.59	11.41	-1,051.75	3,213.90	7,350.44	7,243.53	106.91	68.754	
16,400.00	7,107.51	3,414.00	3,413.67	49.17	66.59	11.41	-1,051.75	3,213.90	7,436.88	7,329.46	107.42	69.231	
16,500.00	7,107.55	3,414.00	3,413.67	49.47	66.59	11.41	-1,051.75	3,213.90	7,523.66	7,415.73	107.93	69.711	
16,600.00	7,107.59	3,414.00	3,413.67	49.77	66.59	11.41	-1,051.75	3,213.90	7,610.76	7,502.34	108.42	70.195	
16,700.00	7,107.63	3,414.00	3,413.67	50.07	66.59	11.41	-1,051.75	3,213.90	7,698.18	7,589.26	108.91	70.681	
16,800.00	7,107.67	3,414.00	3,413.67	50.37	66.59	11.41	-1,051.75	3,213.90	7,785.89	7,676.49	109.40	71.170	
16,900.00	7,107.70	3,414.00	3,413.67	50.67	66.59	11.41	-1,051.75	3,213.90	7,873.90	7,764.03	109.88	71.661	
17,000.00	7,107.74	3,414.00	3,413.67	50.97	66.59	11.41	-1,051.75	3,213.90	7,962.20	7,851.85	110.35	72.154	
17,100.00	7,107.78	3,414.00	3,413.67	51.27	66.59	11.41	-1,051.75	3,213.90	8,050.77	7,939.95	110.82	72.650	
17,200.00	7,107.82	3,414.00	3,413.67	51.57	66.59	11.41	-1,051.75	3,213.90	8,139.60	8,028.32	111.28	73.146	
17,300.00	7,107.86	3,414.00	3,413.67	51.87	66.59	11.41	-1,051.75	3,213.90	8,228.69	8,116.95	111.73	73.645	
17,400.00	7,107.90	3,414.00	3,413.67	52.17	66.59	11.41	-1,051.75	3,213.90	8,318.03	8,205.84	112.19	74.145	
17,500.00	7,107.94	3,414.00	3,413.67	52.47	66.59	11.41	-1,051.75	3,213.90	8,407.60	8,294.97	112.63	74.646	
17,600.00	7,107.98	3,414.00	3,413.67	52.77	66.59	11.41	-1,051.75	3,213.90	8,497.41	8,384.34	113.07	75.149	
17,700.00	7,108.02	3,414.00	3,413.67	53.07	66.59	11.41	-1,051.75	3,213.90	8,587.45	8,473.94	113.51	75.652	
17,800.00	7,108.06	3,414.00	3,413.67	53.37	66.59	11.41	-1,051.75	3,213.90	8,677.70	8,563.76	113.95	76.156	
17,900.00	7,108.10	3,414.00	3,413.67	53.67	66.59	11.41	-1,051.75	3,213.90	8,768.17	8,653.79	114.38	76.661	
18,000.00	7,108.14	3,414.00	3,413.67	53.97	66.59	11.41	-1,051.75	3,213.90	8,858.84	8,744.03	114.80	77.167	
18,100.00	7,108.17	3,414.00	3,413.67	54.27	66.59	11.41	-1,051.75	3,213.90	8,949.70	8,834.48	115.22	77.673	
18,200.00	7,108.21	3,414.00	3,413.67	54.57	66.59	11.41	-1,051.75	3,213.90	9,040.77	8,925.12	115.64	78.180	
18,300.00	7,108.25	3,414.00	3,413.67	54.87	66.59	11.41	-1,051.75	3,213.90	9,132.01	9,015.96	116.05	78.687	
18,400.00	7,108.29	3,414.00	3,413.67	55.17	66.59	11.41	-1,051.75	3,213.90	9,223.44	9,106.98	116.47	79.194	
18,500.00	7,108.33	3,414.00	3,413.67	55.47	66.59	11.41	-1,051.75	3,213.90	9,315.05	9,198.18	116.87	79.702	
18,600.00	7,108.37	3,414.00	3,413.67	55.77	66.59	11.41	-1,051.75	3,213.90	9,406.83	9,289.55	117.28	80.209	
18,700.00	7,108.41	3,414.00	3,413.67	56.07	66.59	11.41	-1,051.75	3,213.90	9,498.77	9,381.09	117.68	80.716	
18,800.00	7,108.45	3,414.00	3,413.67	56.37	66.59	11.41	-1,051.75	3,213.90	9,590.87	9,472.79	118.08	81.224	
18,900.00	7,108.49	3,414.00	3,413.67	56.67	66.59	11.41	-1,051.75	3,213.90	9,683.13	9,564.66	118.48	81.731	
19,000.00	7,108.53	3,414.00	3,413.67	56.97	66.59	11.41	-1,051.75	3,213.90	9,775.55	9,656.68	118.87	82.238	
19,100.00	7,108.57	3,414.00	3,413.67	57.28	66.59	11.41	-1,051.75	3,213.90	9,868.11	9,748.85	119.26	82.744	
19,200.00	7,108.61	3,414.00	3,413.67	57.58	66.59	11.41	-1,051.75	3,213.90	9,960.81	9,841.16	119.65	83.251	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #259A (Offset) - OH - OH

Survey Program: 101-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,300.00	7,108.64	3,414.00	3,413.67	57.88	66.59	11.41	-1,051.75	3,213.90	10,053.66	9,933.62	120.03	83.757	
19,400.00	7,108.68	3,414.00	3,413.67	58.18	66.59	11.41	-1,051.75	3,213.90	10,146.64	10,026.22	120.42	84.262	
19,500.00	7,108.72	3,414.00	3,413.67	58.48	66.59	11.41	-1,051.75	3,213.90	10,239.75	10,118.95	120.80	84.767	
19,600.00	7,108.76	3,414.00	3,413.67	58.78	66.59	11.41	-1,051.75	3,213.90	10,332.99	10,211.81	121.18	85.271	
19,700.00	7,108.80	3,414.00	3,413.67	59.08	66.59	11.41	-1,051.75	3,213.90	10,426.36	10,304.80	121.56	85.775	
19,800.00	7,108.84	3,414.00	3,413.67	59.38	66.59	11.41	-1,051.75	3,213.90	10,519.85	10,397.92	121.93	86.277	
19,900.00	7,108.88	3,414.00	3,413.67	59.68	66.59	11.41	-1,051.75	3,213.90	10,613.46	10,491.15	122.30	86.780	
20,000.00	7,108.92	3,414.00	3,413.67	59.98	66.59	11.41	-1,051.75	3,213.90	10,707.18	10,584.50	122.67	87.281	
20,100.00	7,108.96	3,414.00	3,413.67	60.28	66.59	11.41	-1,051.75	3,213.90	10,801.01	10,677.97	123.04	87.782	
20,208.46	7,109.00	3,414.00	3,413.67	60.60	66.59	11.41	-1,051.75	3,213.90	10,902.91	10,779.47	123.44	88.324	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #269A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	52.69	0.00	0.00	98.13	-1,190.67	8,336.63	8,421.28				
100.00	100.00	217.95	217.94	0.23	0.65	98.12	-1,189.20	8,335.37	8,420.33	8,419.45	0.88	9,564.784	
200.00	200.00	303.68	303.66	0.53	0.91	98.12	-1,188.81	8,334.42	8,419.18	8,417.74	1.44	5,856.635	
300.00	300.00	377.33	377.31	0.83	1.13	98.12	-1,188.86	8,333.81	8,418.37	8,416.41	1.96	4,298.385	
400.00	400.00	430.96	430.94	1.13	1.29	98.12	-1,189.49	8,333.47	8,417.94	8,415.52	2.42	3,479.347	
419.46	419.46	441.00	440.97	1.18	1.32	98.12	-1,189.70	8,333.44	8,417.93	8,415.42	2.51	3,356.587	
500.00	500.00	472.00	471.96	1.43	1.42	98.13	-1,190.53	8,333.37	8,418.13	8,415.29	2.84	2,961.503	
600.00	599.98	512.90	512.83	1.73	1.54	-57.47	-1,191.97	8,333.50	8,418.08	8,414.81	3.27	2,578.135	
644.12	644.06	531.00	530.92	1.86	1.59	-57.48	-1,192.75	8,333.66	8,417.71	8,414.26	3.45	2,438.616	
700.00	699.87	548.57	548.46	2.03	1.65	-57.48	-1,193.61	8,333.86	8,417.22	8,413.55	3.67	2,292.164	
784.40	784.16	578.26	578.10	2.28	1.73	-57.47	-1,195.27	8,334.34	8,416.95	8,412.94	4.01	2,096.673	
800.00	799.74	592.00	591.81	2.33	1.78	-57.47	-1,196.13	8,334.61	8,416.97	8,412.87	4.10	2,051.697	
900.00	899.62	620.00	619.74	2.63	1.86	-57.47	-1,197.99	8,335.26	8,417.44	8,412.96	4.49	1,876.207	
1,000.00	999.49	651.00	650.65	2.93	1.95	-57.46	-1,200.24	8,336.15	8,418.69	8,413.81	4.88	1,725.362	
1,100.00	1,099.36	681.00	680.53	3.23	2.04	-57.46	-1,202.67	8,337.19	8,420.73	8,415.46	5.27	1,598.062	
1,200.00	1,199.24	713.00	712.38	3.53	2.14	-57.45	-1,205.53	8,338.50	8,423.57	8,417.91	5.67	1,486.875	
1,300.00	1,299.11	744.00	743.18	3.83	2.23	-57.44	-1,208.59	8,340.08	8,427.32	8,421.26	6.06	1,391.055	
1,400.00	1,398.98	775.00	773.96	4.13	2.33	-57.43	-1,211.90	8,341.86	8,431.87	8,425.41	6.45	1,307.028	
1,500.00	1,498.86	806.00	804.70	4.43	2.42	-57.41	-1,215.39	8,343.80	8,437.16	8,430.32	6.84	1,232.762	
1,600.00	1,598.73	836.00	834.39	4.73	2.51	-57.40	-1,219.08	8,345.96	8,443.36	8,436.13	7.23	1,167.173	
1,700.00	1,698.60	867.00	865.01	5.03	2.60	-57.38	-1,223.19	8,348.50	8,450.47	8,442.85	7.63	1,107.975	
1,800.00	1,798.48	898.00	895.60	5.33	2.69	-57.37	-1,227.47	8,351.20	8,458.34	8,450.32	8.02	1,054.670	
1,900.00	1,898.35	930.00	927.12	5.63	2.79	-57.35	-1,232.13	8,354.15	8,466.96	8,458.54	8.42	1,006.076	
2,000.00	1,998.22	972.10	968.49	5.93	2.92	-57.32	-1,238.74	8,358.25	8,476.29	8,467.44	8.84	958.633	
2,100.00	2,098.10	1,020.06	1,015.47	6.23	3.06	-57.28	-1,247.00	8,363.26	8,486.39	8,477.11	9.29	913.904	
2,200.00	2,197.97	1,056.00	1,050.57	6.53	3.17	-57.25	-1,253.67	8,367.09	8,497.08	8,487.38	9.69	876.564	
2,300.00	2,297.84	1,091.28	1,084.95	6.83	3.27	-57.22	-1,260.54	8,371.08	8,508.53	8,498.43	10.10	842.483	
2,400.00	2,397.72	1,118.00	1,110.92	7.13	3.35	-57.19	-1,265.99	8,374.23	8,520.73	8,510.25	10.48	813.094	
2,500.00	2,497.59	1,159.34	1,151.02	7.43	3.48	-57.15	-1,274.59	8,379.38	8,533.67	8,522.77	10.90	782.671	
2,600.00	2,597.46	1,213.61	1,203.60	7.73	3.64	-57.10	-1,285.95	8,386.61	8,547.35	8,535.99	11.37	752.009	
2,700.00	2,697.34	1,269.52	1,257.70	8.03	3.81	-57.04	-1,297.88	8,394.16	8,561.43	8,549.59	11.83	723.479	
2,800.00	2,797.21	1,323.62	1,309.93	8.33	3.97	-56.98	-1,309.72	8,401.80	8,576.12	8,563.82	12.30	697.477	
2,900.00	2,897.09	1,393.42	1,377.27	8.63	4.18	-56.91	-1,325.16	8,411.77	8,591.12	8,578.32	12.81	670.904	
3,000.00	2,996.96	1,450.90	1,432.55	8.93	4.35	-56.85	-1,338.44	8,420.20	8,606.65	8,593.38	13.28	648.206	
3,100.00	3,096.83	3,100.00	1,566.08	9.23	9.30	-56.68	-1,371.87	8,440.45	8,622.35	8,603.83	18.53	465.432	
3,200.00	3,196.71	1,677.00	1,649.62	9.53	5.03	-56.58	-1,392.68	8,452.71	8,637.59	8,623.03	14.56	593.399	
3,300.00	3,296.58	2,050.00	2,009.88	9.83	6.15	-56.18	-1,477.14	8,499.34	8,649.79	8,633.82	15.98	541.431	
3,400.00	3,396.45	2,114.00	2,071.94	10.13	6.34	-56.11	-1,490.80	8,506.96	8,662.42	8,645.95	16.47	526.023	
3,500.00	3,496.33	2,180.98	2,136.97	10.43	6.54	-56.05	-1,504.49	8,515.30	8,675.44	8,658.47	16.97	511.263	
3,600.00	3,596.20	2,386.10	2,335.78	10.73	7.16	-55.84	-1,548.76	8,539.51	8,688.20	8,670.32	17.88	485.804	
3,700.00	3,696.07	3,512.00	3,448.77	11.03	10.54	-55.46	-1,668.13	8,614.69	8,688.81	8,667.24	21.56	402.962	
3,800.00	3,795.95	3,512.00	3,448.77	11.33	10.54	-55.46	-1,668.13	8,614.69	8,689.62	8,667.76	21.86	397.470	
3,900.00	3,895.82	3,512.00	3,448.77	11.63	10.54	-55.46	-1,668.13	8,614.69	8,691.59	8,669.43	22.16	392.179	
4,000.00	3,995.69	3,512.00	3,448.77	11.93	10.54	-55.46	-1,668.13	8,614.69	8,694.71	8,672.25	22.46	387.080	
4,100.00	4,095.57	3,512.00	3,448.77	12.23	10.54	-55.46	-1,668.13	8,614.69	8,698.98	8,676.22	22.76	382.166	
4,200.00	4,195.44	3,512.00	3,448.77	12.53	10.54	-55.46	-1,668.13	8,614.69	8,704.39	8,681.33	23.06	377.430	
4,300.00	4,295.31	3,512.00	3,448.77	12.83	10.54	-55.46	-1,668.13	8,614.69	8,710.95	8,687.59	23.36	372.865	
4,400.00	4,395.19	3,512.00	3,448.77	13.13	10.54	-55.46	-1,668.13	8,614.69	8,718.65	8,694.99	23.66	368.463	
4,500.00	4,495.06	3,512.00	3,448.77	13.43	10.54	-55.46	-1,668.13	8,614.69	8,727.49	8,703.53	23.96	364.219	
4,600.00	4,594.93	3,512.00	3,448.77	13.73	10.54	-55.46	-1,668.13	8,614.69	8,737.47	8,713.20	24.26	360.127	
4,700.00	4,694.81	3,512.00	3,448.77	14.03	10.54	-55.46	-1,668.13	8,614.69	8,748.57	8,724.01	24.56	356.181	
4,800.00	4,794.68	3,512.00	3,448.77	14.33	10.54	-55.46	-1,668.13	8,614.69	8,760.81	8,735.95	24.86	352.376	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #269A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,900.00	4,894.55	3,512.00	3,448.77	14.63	10.54	-55.46	-1,668.13	8,614.69	8,774.16	8,749.00	25.16	348.705	
5,000.00	4,994.43	3,512.00	3,448.77	14.93	10.54	-55.46	-1,668.13	8,614.69	8,788.64	8,763.18	25.46	345.166	
5,100.00	5,094.30	3,512.00	3,448.77	15.23	10.54	-55.46	-1,668.13	8,614.69	8,804.23	8,778.46	25.76	341.751	
5,200.00	5,194.18	3,512.00	3,448.77	15.53	10.54	-55.46	-1,668.13	8,614.69	8,820.92	8,794.86	26.06	338.458	
5,300.00	5,294.05	3,512.00	3,448.77	15.83	10.54	-55.46	-1,668.13	8,614.69	8,838.71	8,812.35	26.36	335.282	
5,400.00	5,393.92	3,512.00	3,448.77	16.13	10.54	-55.46	-1,668.13	8,614.69	8,857.60	8,830.94	26.66	332.218	
5,500.00	5,493.80	3,512.00	3,448.77	16.43	10.54	-55.46	-1,668.13	8,614.69	8,877.57	8,850.61	26.96	329.262	
5,600.00	5,593.67	3,512.00	3,448.77	16.73	10.54	-55.46	-1,668.13	8,614.69	8,898.62	8,871.36	27.26	326.411	
5,700.00	5,693.54	3,512.00	3,448.77	17.03	10.54	-55.46	-1,668.13	8,614.69	8,920.75	8,893.18	27.56	323.661	
5,800.00	5,793.42	3,512.00	3,448.77	17.33	10.54	-55.46	-1,668.13	8,614.69	8,943.93	8,916.07	27.86	321.009	
5,900.00	5,893.29	3,512.00	3,448.77	17.63	10.54	-55.46	-1,668.13	8,614.69	8,968.17	8,940.01	28.16	318.450	
6,000.00	5,993.16	3,512.00	3,448.77	17.93	10.54	-55.46	-1,668.13	8,614.69	8,993.46	8,965.00	28.46	315.982	
6,100.00	6,093.04	3,512.00	3,448.77	18.23	10.54	-55.46	-1,668.13	8,614.69	9,019.79	8,991.03	28.76	313.602	
6,200.00	6,192.91	3,512.00	3,448.77	18.53	10.54	-55.46	-1,668.13	8,614.69	9,047.14	9,018.08	29.06	311.306	
6,300.00	6,292.78	3,512.00	3,448.77	18.83	10.54	-55.46	-1,668.13	8,614.69	9,075.52	9,046.15	29.36	309.092	
6,400.00	6,392.66	3,512.00	3,448.77	19.13	10.54	-55.46	-1,668.13	8,614.69	9,104.90	9,075.24	29.66	306.957	
6,500.00	6,492.53	3,512.00	3,448.77	19.43	10.54	-55.46	-1,668.13	8,614.69	9,135.29	9,105.32	29.96	304.897	
6,551.20	6,543.67	3,512.00	3,448.77	19.58	10.54	-55.46	-1,668.13	8,614.69	9,151.23	9,121.11	30.12	303.872	
6,600.00	6,592.30	3,512.00	3,448.77	19.73	10.54	-13.71	-1,668.13	8,614.69	9,164.70	9,134.44	30.26	302.866	
6,650.00	6,641.67	3,512.00	3,448.77	19.88	10.54	-3.92	-1,668.13	8,614.69	9,174.64	9,144.23	30.41	301.719	
6,700.00	6,690.21	3,512.00	3,448.77	20.03	10.54	-0.01	-1,668.13	8,614.69	9,180.59	9,150.03	30.56	300.454	
6,750.00	6,737.54	3,512.00	3,448.77	20.18	10.54	2.09	-1,668.13	8,614.69	9,182.52	9,151.82	30.70	299.071	
6,800.00	6,783.30	3,512.00	3,448.77	20.33	10.54	3.43	-1,668.13	8,614.69	9,180.43	9,149.58	30.85	297.570	
6,850.00	6,827.15	3,512.00	3,448.77	20.48	10.54	4.41	-1,668.13	8,614.69	9,174.31	9,143.31	31.00	295.954	
6,900.00	6,868.74	3,512.00	3,448.77	20.63	10.54	5.20	-1,668.13	8,614.69	9,164.22	9,133.07	31.15	294.225	
6,950.00	6,907.77	3,512.00	3,448.77	20.78	10.54	5.91	-1,668.13	8,614.69	9,150.21	9,118.91	31.29	292.386	
7,000.00	6,943.94	3,512.00	3,448.77	20.93	10.54	6.59	-1,668.13	8,614.69	9,132.37	9,100.93	31.44	290.443	
7,050.00	6,976.97	3,512.00	3,448.77	21.08	10.54	7.29	-1,668.13	8,614.69	9,110.82	9,079.23	31.59	288.399	
7,100.00	7,006.62	3,512.00	3,448.77	21.23	10.54	8.05	-1,668.13	8,614.69	9,085.70	9,053.96	31.74	286.260	
7,150.00	7,032.64	3,512.00	3,448.77	21.38	10.54	8.91	-1,668.13	8,614.69	9,057.16	9,025.28	31.89	284.032	
7,200.00	7,054.86	3,512.00	3,448.77	21.53	10.54	9.92	-1,668.13	8,614.69	9,025.40	8,993.36	32.04	281.723	
7,250.00	7,073.09	3,512.00	3,448.77	21.68	10.54	11.13	-1,668.13	8,614.69	8,990.62	8,958.43	32.19	279.340	
7,300.00	7,087.20	3,512.00	3,448.77	21.83	10.54	12.64	-1,668.13	8,614.69	8,953.05	8,920.72	32.33	276.891	
7,350.00	7,097.08	3,512.00	3,448.77	21.98	10.54	14.57	-1,668.13	8,614.69	8,912.95	8,880.47	32.48	274.384	
7,400.00	7,102.66	3,512.00	3,448.77	22.13	10.54	17.13	-1,668.13	8,614.69	8,870.59	8,837.96	32.63	271.829	
7,438.94	7,104.00	3,512.00	3,448.77	22.25	10.54	19.77	-1,668.13	8,614.69	8,836.22	8,803.47	32.75	269.811	
7,500.00	7,104.02	3,512.00	3,448.77	22.43	10.54	19.77	-1,668.13	8,614.69	8,781.51	8,748.57	32.93	266.643	
7,600.00	7,104.06	3,512.00	3,448.77	22.74	10.54	19.77	-1,668.13	8,614.69	8,692.08	8,658.85	33.23	261.536	
7,700.00	7,104.10	3,512.00	3,448.77	23.04	10.54	19.77	-1,668.13	8,614.69	8,602.89	8,569.35	33.54	256.529	
7,800.00	7,104.14	3,512.00	3,448.77	23.34	10.54	19.77	-1,668.13	8,614.69	8,513.94	8,480.10	33.84	251.618	
7,900.00	7,104.18	3,512.00	3,448.77	23.64	10.54	19.77	-1,668.13	8,614.69	8,425.23	8,391.09	34.14	246.801	
8,000.00	7,104.22	3,512.00	3,448.77	23.94	10.54	19.77	-1,668.13	8,614.69	8,336.78	8,302.35	34.44	242.076	
8,100.00	7,104.26	3,512.00	3,448.77	24.24	10.54	19.77	-1,668.13	8,614.69	8,248.60	8,213.86	34.74	237.441	
8,200.00	7,104.30	3,512.00	3,448.77	24.54	10.54	19.77	-1,668.13	8,614.69	8,160.69	8,125.65	35.04	232.893	
8,300.00	7,104.34	3,512.00	3,448.77	24.84	10.54	19.77	-1,668.13	8,614.69	8,073.06	8,037.72	35.34	228.431	
8,400.00	7,104.38	3,512.00	3,448.77	25.14	10.54	19.77	-1,668.13	8,614.69	7,985.72	7,950.07	35.64	224.053	
8,500.00	7,104.42	3,512.00	3,448.77	25.44	10.54	19.77	-1,668.13	8,614.69	7,898.68	7,862.73	35.94	219.757	
8,600.00	7,104.45	3,512.00	3,448.77	25.74	10.54	19.77	-1,668.13	8,614.69	7,811.95	7,775.70	36.24	215.540	
8,700.00	7,104.49	3,512.00	3,448.77	26.04	10.54	19.77	-1,668.13	8,614.69	7,725.54	7,688.99	36.54	211.402	
8,800.00	7,104.53	3,512.00	3,448.77	26.34	10.54	19.77	-1,668.13	8,614.69	7,639.46	7,602.62	36.84	207.341	
8,900.00	7,104.57	3,512.00	3,448.77	26.64	10.54	19.77	-1,668.13	8,614.69	7,553.73	7,516.58	37.15	203.355	
9,000.00	7,104.61	3,512.00	3,448.77	26.95	10.54	19.77	-1,668.13	8,614.69	7,468.35	7,430.90	37.45	199.442	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #269A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	3,512.00	3,448.77	27.25	10.54	19.77	-1,668.13	8,614.69	7,383.34	7,345.59	37.75	195.602	
9,200.00	7,104.69	3,512.00	3,448.77	27.55	10.54	19.77	-1,668.13	8,614.69	7,298.70	7,260.66	38.05	191.832	
9,300.00	7,104.73	3,512.00	3,448.77	27.85	10.54	19.77	-1,668.13	8,614.69	7,214.46	7,176.12	38.35	188.132	
9,400.00	7,104.77	3,512.00	3,448.77	28.15	10.54	19.77	-1,668.13	8,614.69	7,130.63	7,091.98	38.65	184.501	
9,500.00	7,104.81	3,512.00	3,448.77	28.45	10.54	19.77	-1,668.13	8,614.69	7,047.22	7,008.27	38.95	180.936	
9,600.00	7,104.85	3,512.00	3,448.77	28.75	10.54	19.77	-1,668.13	8,614.69	6,964.25	6,925.00	39.25	177.437	
9,700.00	7,104.89	3,512.00	3,448.77	29.05	10.54	19.77	-1,668.13	8,614.69	6,881.73	6,842.18	39.55	174.003	
9,800.00	7,104.92	3,512.00	3,448.77	29.35	10.54	19.77	-1,668.13	8,614.69	6,799.68	6,759.83	39.85	170.632	
9,900.00	7,104.96	3,512.00	3,448.77	29.65	10.54	19.77	-1,668.13	8,614.69	6,718.11	6,677.96	40.15	167.325	
10,000.00	7,105.00	3,512.00	3,448.77	29.95	10.54	19.77	-1,668.13	8,614.69	6,637.05	6,596.60	40.45	164.078	
10,100.00	7,105.04	3,512.00	3,448.77	30.25	10.54	19.77	-1,668.13	8,614.69	6,556.52	6,515.77	40.75	160.893	
10,200.00	7,105.08	3,512.00	3,448.77	30.55	10.54	19.77	-1,668.13	8,614.69	6,476.52	6,435.47	41.05	157.768	
10,300.00	7,105.12	3,512.00	3,448.77	30.85	10.54	19.77	-1,668.13	8,614.69	6,397.09	6,355.74	41.35	154.702	
10,400.00	7,105.16	3,512.00	3,448.77	31.15	10.54	19.77	-1,668.13	8,614.69	6,318.24	6,276.59	41.65	151.694	
10,500.00	7,105.20	3,512.00	3,448.77	31.45	10.54	19.77	-1,668.13	8,614.69	6,240.00	6,198.05	41.95	148.743	
10,600.00	7,105.24	3,512.00	3,448.77	31.75	10.54	19.77	-1,668.13	8,614.69	6,162.39	6,120.14	42.25	145.850	
10,700.00	7,105.28	3,512.00	3,448.77	32.05	10.54	19.77	-1,668.13	8,614.69	6,085.43	6,042.88	42.55	143.013	
10,800.00	7,105.32	3,512.00	3,448.77	32.35	10.54	19.77	-1,668.13	8,614.69	6,009.15	5,966.30	42.85	140.231	
10,900.00	7,105.36	3,512.00	3,448.77	32.66	10.54	19.77	-1,668.13	8,614.69	5,933.58	5,890.42	43.15	137.505	
11,000.00	7,105.39	3,512.00	3,448.77	32.96	10.54	19.77	-1,668.13	8,614.69	5,858.73	5,815.28	43.45	134.833	
11,100.00	7,105.43	3,512.00	3,448.77	33.26	10.54	19.77	-1,668.13	8,614.69	5,784.65	5,740.90	43.75	132.216	
11,200.00	7,105.47	3,512.00	3,448.77	33.56	10.54	19.77	-1,668.13	8,614.69	5,711.36	5,667.31	44.05	129.652	
11,300.00	7,105.51	3,512.00	3,448.77	33.86	10.54	19.77	-1,668.13	8,614.69	5,638.89	5,594.53	44.35	127.141	
11,400.00	7,105.55	3,512.00	3,448.77	34.16	10.54	19.77	-1,668.13	8,614.69	5,567.27	5,522.62	44.65	124.683	
11,500.00	7,105.59	3,512.00	3,448.77	34.46	10.54	19.77	-1,668.13	8,614.69	5,496.53	5,451.58	44.95	122.278	
11,600.00	7,105.63	3,512.00	3,448.77	34.76	10.54	19.77	-1,668.13	8,614.69	5,426.72	5,381.47	45.25	119.925	
11,700.00	7,105.67	3,512.00	3,448.77	35.06	10.54	19.77	-1,668.13	8,614.69	5,357.87	5,312.32	45.55	117.625	
11,800.00	7,105.71	3,512.00	3,448.77	35.36	10.54	19.77	-1,668.13	8,614.69	5,290.01	5,244.16	45.85	115.376	
11,900.00	7,105.75	3,512.00	3,448.77	35.66	10.54	19.77	-1,668.13	8,614.69	5,223.18	5,177.03	46.15	113.178	
12,000.00	7,105.79	3,512.00	3,448.77	35.96	10.54	19.77	-1,668.13	8,614.69	5,157.42	5,110.97	46.45	111.033	
12,100.00	7,105.83	3,512.00	3,448.77	36.26	10.54	19.77	-1,668.13	8,614.69	5,092.78	5,046.03	46.75	108.938	
12,200.00	7,105.86	3,512.00	3,448.77	36.56	10.54	19.77	-1,668.13	8,614.69	5,029.30	4,982.25	47.05	106.896	
12,300.00	7,105.90	3,512.00	3,448.77	36.86	10.54	19.77	-1,668.13	8,614.69	4,967.02	4,919.67	47.35	104.904	
12,400.00	7,105.94	3,512.00	3,448.77	37.16	10.54	19.77	-1,668.13	8,614.69	4,905.99	4,858.34	47.65	102.964	
12,500.00	7,105.98	3,512.00	3,448.77	37.46	10.54	19.77	-1,668.13	8,614.69	4,846.25	4,798.30	47.95	101.075	
12,600.00	7,106.02	3,512.00	3,448.77	37.76	10.54	19.77	-1,668.13	8,614.69	4,787.86	4,739.61	48.25	99.237	
12,700.00	7,106.06	3,512.00	3,448.77	38.06	10.54	19.77	-1,668.13	8,614.69	4,730.86	4,682.31	48.55	97.451	
12,800.00	7,106.10	3,512.00	3,448.77	38.36	10.54	19.77	-1,668.13	8,614.69	4,675.30	4,626.45	48.85	95.716	
12,900.00	7,106.14	3,512.00	3,448.77	38.66	10.54	19.77	-1,668.13	8,614.69	4,621.24	4,572.09	49.14	94.033	
13,000.00	7,106.18	3,512.00	3,448.77	38.96	10.54	19.77	-1,668.13	8,614.69	4,568.73	4,519.28	49.44	92.402	
13,100.00	7,106.22	3,512.00	3,448.77	39.26	10.54	19.77	-1,668.13	8,614.69	4,517.82	4,468.08	49.74	90.822	
13,200.00	7,106.26	3,512.00	3,448.77	39.56	10.54	19.77	-1,668.13	8,614.69	4,468.57	4,418.53	50.04	89.295	
13,300.00	7,106.30	3,512.00	3,448.77	39.86	10.54	19.77	-1,668.13	8,614.69	4,421.04	4,370.69	50.34	87.820	
13,400.00	7,106.33	3,512.00	3,448.77	40.16	10.54	19.77	-1,668.13	8,614.69	4,375.27	4,324.63	50.64	86.397	
13,500.00	7,106.37	3,512.00	3,448.77	40.46	10.54	19.77	-1,668.13	8,614.69	4,331.33	4,280.39	50.94	85.027	
13,600.00	7,106.41	3,512.00	3,448.77	40.76	10.54	19.77	-1,668.13	8,614.69	4,289.27	4,238.03	51.24	83.710	
13,700.00	7,106.45	3,512.00	3,448.77	41.06	10.54	19.77	-1,668.13	8,614.69	4,249.15	4,197.61	51.54	82.445	
13,800.00	7,106.49	3,512.00	3,448.77	41.36	10.54	19.77	-1,668.13	8,614.69	4,211.02	4,159.18	51.84	81.234	
13,900.00	7,106.53	3,512.00	3,448.77	41.67	10.54	19.77	-1,668.13	8,614.69	4,174.94	4,122.80	52.14	80.075	
14,000.00	7,106.57	3,512.00	3,448.77	41.97	10.54	19.77	-1,668.13	8,614.69	4,140.96	4,088.52	52.44	78.970	
14,100.00	7,106.61	3,512.00	3,448.77	42.27	10.54	19.77	-1,668.13	8,614.69	4,109.13	4,056.40	52.74	77.919	
14,200.00	7,106.65	3,512.00	3,448.77	42.57	10.54	19.77	-1,668.13	8,614.69	4,079.51	4,026.47	53.04	76.920	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #269A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	3,512.00	3,448.77	42.87	10.54	19.77	-1,668.13	8,614.69	4,052.14	3,998.80	53.33	75.975	
14,400.00	7,106.73	3,512.00	3,448.77	43.17	10.54	19.77	-1,668.13	8,614.69	4,027.06	3,973.43	53.63	75.084	
14,500.00	7,106.76	3,512.00	3,448.77	43.47	10.54	19.77	-1,668.13	8,614.69	4,004.33	3,950.40	53.93	74.246	
14,600.00	7,106.80	3,512.00	3,448.77	43.77	10.54	19.77	-1,668.13	8,614.69	3,983.98	3,929.75	54.23	73.460	
14,700.00	7,106.84	3,512.00	3,448.77	44.07	10.54	19.77	-1,668.13	8,614.69	3,966.05	3,911.51	54.53	72.728	
14,800.00	7,106.88	3,512.00	3,448.77	44.37	10.54	19.77	-1,668.13	8,614.69	3,950.56	3,895.73	54.83	72.048	
14,900.00	7,106.92	3,512.00	3,448.77	44.67	10.54	19.77	-1,668.13	8,614.69	3,937.56	3,882.43	55.13	71.421	
15,000.00	7,106.96	3,512.00	3,448.77	44.97	10.54	19.77	-1,668.13	8,614.69	3,927.06	3,871.63	55.43	70.846	
15,100.00	7,107.00	3,512.00	3,448.77	45.27	10.54	19.77	-1,668.13	8,614.69	3,919.08	3,863.35	55.73	70.322	
15,200.00	7,107.04	3,512.00	3,448.77	45.57	10.54	19.77	-1,668.13	8,614.69	3,913.65	3,857.62	56.03	69.848	
15,300.00	7,107.08	3,512.00	3,448.77	45.87	10.54	19.77	-1,668.13	8,614.69	3,910.76	3,854.43	56.33	69.425	
15,362.87	7,107.10	3,512.00	3,448.77	46.06	10.54	19.77	-1,668.13	8,614.69	3,910.26	3,853.74	56.52	69.185	CC, ES
15,400.00	7,107.12	3,512.00	3,448.77	46.17	10.54	19.77	-1,668.13	8,614.69	3,910.43	3,853.80	56.63	69.052	
15,500.00	7,107.16	3,512.00	3,448.77	46.47	10.54	19.77	-1,668.13	8,614.69	3,912.66	3,855.73	56.93	68.727	
15,600.00	7,107.20	3,512.00	3,448.77	46.77	10.54	19.77	-1,668.13	8,614.69	3,917.44	3,860.21	57.23	68.450	
15,700.00	7,107.23	3,512.00	3,448.77	47.07	10.54	19.77	-1,668.13	8,614.69	3,924.77	3,867.23	57.53	68.220	
15,800.00	7,107.27	3,512.00	3,448.77	47.37	10.54	19.77	-1,668.13	8,614.69	3,934.62	3,876.79	57.83	68.037	
15,900.00	7,107.31	3,512.00	3,448.77	47.67	10.54	19.77	-1,668.13	8,614.69	3,946.98	3,888.85	58.13	67.898	
16,000.00	7,107.35	3,512.00	3,448.77	47.97	10.54	19.77	-1,668.13	8,614.69	3,961.83	3,903.39	58.43	67.803	
16,100.00	7,107.39	3,512.00	3,448.77	48.27	10.54	19.77	-1,668.13	8,614.69	3,979.13	3,920.40	58.73	67.751	
16,200.00	7,107.43	3,512.00	3,448.77	48.57	10.54	19.77	-1,668.13	8,614.69	3,998.86	3,939.83	59.03	67.740	SF
16,300.00	7,107.47	3,512.00	3,448.77	48.87	10.54	19.77	-1,668.13	8,614.69	4,020.99	3,961.65	59.33	67.770	
16,400.00	7,107.51	3,512.00	3,448.77	49.17	10.54	19.77	-1,668.13	8,614.69	4,045.46	3,985.83	59.63	67.839	
16,500.00	7,107.55	3,512.00	3,448.77	49.47	10.54	19.77	-1,668.13	8,614.69	4,072.25	4,012.31	59.93	67.945	
16,600.00	7,107.59	3,512.00	3,448.77	49.77	10.54	19.77	-1,668.13	8,614.69	4,101.29	4,041.06	60.24	68.088	
16,700.00	7,107.63	3,512.00	3,448.77	50.07	10.54	19.77	-1,668.13	8,614.69	4,132.56	4,072.02	60.54	68.266	
16,800.00	7,107.67	3,512.00	3,448.77	50.37	10.54	19.77	-1,668.13	8,614.69	4,165.99	4,105.15	60.84	68.478	
16,900.00	7,107.70	3,512.00	3,448.77	50.67	10.54	19.77	-1,668.13	8,614.69	4,201.53	4,140.40	61.14	68.723	
17,000.00	7,107.74	3,512.00	3,448.77	50.97	10.54	19.77	-1,668.13	8,614.69	4,239.14	4,177.70	61.44	68.998	
17,100.00	7,107.78	3,512.00	3,448.77	51.27	10.54	19.77	-1,668.13	8,614.69	4,278.76	4,217.02	61.74	69.303	
17,200.00	7,107.82	3,512.00	3,448.77	51.57	10.54	19.77	-1,668.13	8,614.69	4,320.32	4,258.28	62.04	69.637	
17,300.00	7,107.86	3,512.00	3,448.77	51.87	10.54	19.77	-1,668.13	8,614.69	4,363.78	4,301.44	62.34	69.998	
17,400.00	7,107.90	3,512.00	3,448.77	52.17	10.54	19.77	-1,668.13	8,614.69	4,409.08	4,346.44	62.64	70.385	
17,500.00	7,107.94	3,512.00	3,448.77	52.47	10.54	19.77	-1,668.13	8,614.69	4,456.17	4,393.23	62.94	70.796	
17,600.00	7,107.98	3,512.00	3,448.77	52.77	10.54	19.77	-1,668.13	8,614.69	4,504.98	4,441.74	63.24	71.231	
17,700.00	7,108.02	3,512.00	3,448.77	53.07	10.54	19.77	-1,668.13	8,614.69	4,555.47	4,491.92	63.55	71.688	
17,800.00	7,108.06	3,512.00	3,448.77	53.37	10.54	19.77	-1,668.13	8,614.69	4,607.57	4,543.73	63.85	72.166	
17,900.00	7,108.10	3,512.00	3,448.77	53.67	10.54	19.77	-1,668.13	8,614.69	4,661.24	4,597.09	64.15	72.664	
18,000.00	7,108.14	3,512.00	3,448.77	53.97	10.54	19.77	-1,668.13	8,614.69	4,716.42	4,651.97	64.45	73.181	
18,100.00	7,108.17	3,512.00	3,448.77	54.27	10.54	19.77	-1,668.13	8,614.69	4,773.05	4,708.30	64.75	73.715	
18,200.00	7,108.21	3,512.00	3,448.77	54.57	10.54	19.77	-1,668.13	8,614.69	4,831.09	4,766.04	65.05	74.266	
18,300.00	7,108.25	3,512.00	3,448.77	54.87	10.54	19.77	-1,668.13	8,614.69	4,890.49	4,825.13	65.35	74.833	
18,400.00	7,108.29	3,512.00	3,448.77	55.17	10.54	19.77	-1,668.13	8,614.69	4,951.19	4,885.54	65.65	75.414	
18,500.00	7,108.33	3,512.00	3,448.77	55.47	10.54	19.77	-1,668.13	8,614.69	5,013.15	4,947.20	65.95	76.009	
18,600.00	7,108.37	3,512.00	3,448.77	55.77	10.54	19.77	-1,668.13	8,614.69	5,076.33	5,010.08	66.26	76.618	
18,700.00	7,108.41	3,512.00	3,448.77	56.07	10.54	19.77	-1,668.13	8,614.69	5,140.68	5,074.12	66.56	77.238	
18,800.00	7,108.45	3,512.00	3,448.77	56.37	10.54	19.77	-1,668.13	8,614.69	5,206.15	5,139.29	66.86	77.869	
18,900.00	7,108.49	3,512.00	3,448.77	56.67	10.54	19.77	-1,668.13	8,614.69	5,272.71	5,205.55	67.16	78.511	
19,000.00	7,108.53	3,512.00	3,448.77	56.97	10.54	19.77	-1,668.13	8,614.69	5,340.30	5,272.84	67.46	79.163	
19,100.00	7,108.57	3,512.00	3,448.77	57.28	10.54	19.77	-1,668.13	8,614.69	5,408.91	5,341.15	67.76	79.824	
19,200.00	7,108.61	3,512.00	3,448.77	57.58	10.54	19.77	-1,668.13	8,614.69	5,478.48	5,410.41	68.06	80.493	
19,300.00	7,108.64	3,512.00	3,448.77	57.88	10.54	19.77	-1,668.13	8,614.69	5,548.98	5,480.61	68.36	81.170	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #269A (Offset) - OH - OH

Survey Program: 71-MWD-SDI

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,400.00	7,108.68	3,512.00	3,448.77	58.18	10.54	19.77	-1,668.13	8,614.69	5,620.37	5,551.71	68.66	81.854	
19,500.00	7,108.72	3,512.00	3,448.77	58.48	10.54	19.77	-1,668.13	8,614.69	5,692.62	5,623.66	68.96	82.545	
19,600.00	7,108.76	3,512.00	3,448.77	58.78	10.54	19.77	-1,668.13	8,614.69	5,765.71	5,696.44	69.27	83.241	
19,700.00	7,108.80	3,512.00	3,448.77	59.08	10.54	19.77	-1,668.13	8,614.69	5,839.59	5,770.03	69.57	83.943	
19,800.00	7,108.84	3,512.00	3,448.77	59.38	10.54	19.77	-1,668.13	8,614.69	5,914.24	5,844.37	69.87	84.650	
19,900.00	7,108.88	3,512.00	3,448.77	59.68	10.54	19.77	-1,668.13	8,614.69	5,989.63	5,919.46	70.17	85.362	
20,000.00	7,108.92	3,512.00	3,448.77	59.98	10.54	19.77	-1,668.13	8,614.69	6,065.73	5,995.26	70.47	86.077	
20,100.00	7,108.96	3,512.00	3,448.77	60.28	10.54	19.77	-1,668.13	8,614.69	6,142.52	6,071.75	70.77	86.796	
20,208.46	7,109.00	3,512.00	3,448.77	60.60	10.54	19.77	-1,668.13	8,614.69	6,226.54	6,155.45	71.10	87.580	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #270 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	168.51	168.51	0.00	1.79	95.78	-601.32	5,943.76	5,974.10				
100.00	100.00	268.53	268.51	0.23	3.16	95.78	-601.32	5,943.76	5,974.10	5,970.71	3.39	1,764.032	
200.00	200.00	368.53	368.51	0.53	5.13	95.78	-601.32	5,943.76	5,974.10	5,968.45	5.65	1,056.743	
300.00	300.00	468.53	468.51	0.83	7.09	95.78	-601.32	5,943.76	5,974.10	5,966.18	7.92	754.305	
339.99	339.99	507.99	507.97	0.95	7.87	95.77	-600.25	5,943.76	5,973.99	5,965.18	8.82	677.615	
400.00	400.00	566.76	566.74	1.13	9.03	95.77	-600.36	5,943.76	5,974.00	5,963.85	10.15	588.451	
500.00	500.00	664.71	664.68	1.43	10.95	95.77	-600.82	5,943.76	5,974.05	5,961.67	12.38	482.617	
600.00	599.98	768.55	768.49	1.73	12.97	-59.86	-601.32	5,943.76	5,973.22	5,958.53	14.70	406.475	
644.12	644.06	812.63	812.57	1.86	13.81	-59.89	-601.32	5,943.76	5,972.28	5,956.62	15.66	381.258	
700.00	699.87	868.44	868.38	2.03	14.87	-59.92	-601.32	5,943.76	5,970.87	5,953.98	16.89	353.469	
800.00	799.74	968.31	968.26	2.33	16.76	-59.96	-601.32	5,943.76	5,968.35	5,949.26	19.09	312.661	
900.00	899.62	1,067.28	1,067.22	2.63	18.64	-60.00	-600.85	5,943.76	5,965.78	5,944.52	21.27	280.499	
1,000.00	999.49	1,166.16	1,166.10	2.93	20.52	-60.04	-601.08	5,943.76	5,963.29	5,939.85	23.45	254.339	
1,100.00	1,099.36	1,267.96	1,267.88	3.23	22.48	-60.08	-601.32	5,943.76	5,960.80	5,935.10	25.71	231.867	
1,200.00	1,199.24	1,367.84	1,367.75	3.53	24.45	-60.12	-601.32	5,943.76	5,958.29	5,930.32	27.98	212.986	
1,300.00	1,299.11	1,467.71	1,467.62	3.83	26.42	-60.17	-601.32	5,943.76	5,955.79	5,925.55	30.24	196.935	
1,400.00	1,398.98	1,566.55	1,566.45	4.13	28.36	-60.22	-600.53	5,943.76	5,953.21	5,920.72	32.49	183.236	
1,500.00	1,498.86	1,665.07	1,664.98	4.43	30.30	-60.25	-600.83	5,943.76	5,950.74	5,916.01	34.73	171.343	
1,600.00	1,598.73	1,767.37	1,767.24	4.73	32.32	-60.29	-601.32	5,943.76	5,948.29	5,911.25	37.05	160.569	
1,700.00	1,698.60	1,867.25	1,867.12	5.03	34.29	-60.33	-601.32	5,943.76	5,945.80	5,906.49	39.31	151.244	
1,800.00	1,798.48	1,967.12	1,966.99	5.33	36.25	-60.38	-601.32	5,943.76	5,943.31	5,901.73	41.58	142.937	
1,900.00	1,898.35	2,066.12	2,065.98	5.63	38.20	-60.43	-600.56	5,943.76	5,940.75	5,896.92	43.83	135.541	
2,000.00	1,998.22	2,164.62	2,164.48	5.93	40.14	-60.46	-600.85	5,943.76	5,938.30	5,892.23	46.07	128.896	
2,100.00	2,098.10	2,266.78	2,266.61	6.23	42.16	-60.50	-601.32	5,943.76	5,935.86	5,887.48	48.38	122.685	
2,200.00	2,197.97	2,366.66	2,366.48	6.53	44.12	-60.55	-601.32	5,943.76	5,933.38	5,882.73	50.65	117.144	
2,300.00	2,297.84	2,466.34	2,466.16	6.83	46.09	-60.59	-600.66	5,943.76	5,930.85	5,877.94	52.91	112.085	
2,400.00	2,397.72	2,564.58	2,564.39	7.13	48.02	-60.63	-600.85	5,943.76	5,928.40	5,873.25	55.15	107.498	
2,500.00	2,497.59	2,666.31	2,666.10	7.43	50.03	-60.67	-601.32	5,943.76	5,925.97	5,868.51	57.46	103.133	
2,600.00	2,597.46	2,766.19	2,765.98	7.73	52.07	-60.71	-601.32	5,943.76	5,923.51	5,863.71	59.80	99.059	
2,700.00	2,697.34	2,865.95	2,865.73	8.03	54.11	-60.76	-600.66	5,943.76	5,920.99	5,858.86	62.13	95.296	
2,800.00	2,797.21	2,964.24	2,964.02	8.33	56.11	-60.80	-600.84	5,943.76	5,918.55	5,854.11	64.44	91.848	
2,900.00	2,897.09	3,065.85	3,065.60	8.63	58.19	-60.84	-601.32	5,943.76	5,916.14	5,849.32	66.82	88.545	
3,000.00	2,996.96	3,165.73	3,165.47	8.93	60.30	-60.88	-601.32	5,943.76	5,913.69	5,844.46	69.23	85.425	
3,100.00	3,096.83	3,264.94	3,264.68	9.23	62.40	-60.93	-600.57	5,943.76	5,911.18	5,839.55	71.62	82.531	
3,200.00	3,196.71	3,362.52	3,362.25	9.53	64.46	-60.97	-600.94	5,943.76	5,908.76	5,834.78	73.99	79.863	
3,300.00	3,296.58	3,465.40	3,465.09	9.83	66.64	-61.01	-601.32	5,943.76	5,906.35	5,829.89	76.46	77.245	
3,400.00	3,396.45	3,565.28	3,564.97	10.13	68.75	-61.05	-601.32	5,943.76	5,903.91	5,825.04	78.88	74.851	
3,500.00	3,496.33	3,597.00	3,596.66	10.43	69.42	-61.07	-601.32	5,943.76	5,901.87	5,822.03	79.84	73.919	
3,575.48	3,571.71	3,597.00	3,596.66	10.65	69.42	-61.07	-601.32	5,943.76	5,901.39	5,821.34	80.05	73.718	
3,600.00	3,596.20	3,597.00	3,596.66	10.73	69.42	-61.07	-601.32	5,943.76	5,901.44	5,821.32	80.12	73.658	
3,700.00	3,696.07	3,597.00	3,596.66	11.03	69.42	-61.07	-601.32	5,943.76	5,902.70	5,822.33	80.38	73.437	
3,800.00	3,795.95	3,597.00	3,596.66	11.33	69.42	-61.07	-601.32	5,943.76	5,905.66	5,825.04	80.62	73.257	
3,900.00	3,895.82	3,597.00	3,596.66	11.63	69.42	-61.07	-601.32	5,943.76	5,910.31	5,829.47	80.84	73.115	
4,000.00	3,995.69	3,597.00	3,596.66	11.93	69.42	-61.07	-601.32	5,943.76	5,916.64	5,835.61	81.04	73.013	
4,100.00	4,095.57	3,597.00	3,596.66	12.23	69.42	-61.07	-601.32	5,943.76	5,924.66	5,843.44	81.22	72.949	
4,200.00	4,195.44	3,597.00	3,596.66	12.53	69.42	-61.07	-601.32	5,943.76	5,934.34	5,852.96	81.38	72.922	
4,300.00	4,295.31	3,597.00	3,596.66	12.83	69.42	-61.07	-601.32	5,943.76	5,945.70	5,864.18	81.52	72.932	
4,400.00	4,395.19	3,597.00	3,596.66	13.13	69.42	-61.07	-601.32	5,943.76	5,958.71	5,877.06	81.65	72.978	
4,500.00	4,495.06	3,597.00	3,596.66	13.43	69.42	-61.07	-601.32	5,943.76	5,973.37	5,891.61	81.76	73.060	
4,600.00	4,594.93	3,597.00	3,596.66	13.73	69.42	-61.07	-601.32	5,943.76	5,989.66	5,907.81	81.85	73.177	
4,700.00	4,694.81	3,597.00	3,596.66	14.03	69.42	-61.07	-601.32	5,943.76	6,007.58	5,925.65	81.93	73.328	
4,800.00	4,794.68	3,597.00	3,596.66	14.33	69.42	-61.07	-601.32	5,943.76	6,027.09	5,945.11	81.99	73.513	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #270 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,900.00	4,894.55	3,597.00	3,596.66	14.63	69.42	-61.07	-601.32	5,943.76	6,048.20	5,966.17	82.03	73.731	
5,000.00	4,994.43	3,597.00	3,596.66	14.93	69.42	-61.07	-601.32	5,943.76	6,070.89	5,988.83	82.06	73.982	
5,100.00	5,094.30	3,597.00	3,596.66	15.23	69.42	-61.07	-601.32	5,943.76	6,095.13	6,013.05	82.07	74.265	
5,200.00	5,194.18	3,597.00	3,596.66	15.53	69.42	-61.07	-601.32	5,943.76	6,120.91	6,038.83	82.07	74.578	
5,300.00	5,294.05	3,597.00	3,596.66	15.83	69.42	-61.07	-601.32	5,943.76	6,148.20	6,066.14	82.06	74.923	
5,400.00	5,393.92	3,597.00	3,596.66	16.13	69.42	-61.07	-601.32	5,943.76	6,177.00	6,094.96	82.03	75.298	
5,500.00	5,493.80	3,597.00	3,596.66	16.43	69.42	-61.07	-601.32	5,943.76	6,207.27	6,125.27	82.00	75.702	
5,600.00	5,593.67	3,597.00	3,596.66	16.73	69.42	-61.07	-601.32	5,943.76	6,239.00	6,157.05	81.95	76.134	
5,700.00	5,693.54	3,597.00	3,596.66	17.03	69.42	-61.07	-601.32	5,943.76	6,272.16	6,190.27	81.89	76.595	
5,800.00	5,793.42	3,597.00	3,596.66	17.33	69.42	-61.07	-601.32	5,943.76	6,306.74	6,224.92	81.82	77.084	
5,900.00	5,893.29	3,597.00	3,596.66	17.63	69.42	-61.07	-601.32	5,943.76	6,342.70	6,260.96	81.74	77.599	
6,000.00	5,993.16	3,597.00	3,596.66	17.93	69.42	-61.07	-601.32	5,943.76	6,380.02	6,298.38	81.65	78.140	
6,100.00	6,093.04	3,597.00	3,596.66	18.23	69.42	-61.07	-601.32	5,943.76	6,418.69	6,337.14	81.55	78.707	
6,200.00	6,192.91	3,597.00	3,596.66	18.53	69.42	-61.07	-601.32	5,943.76	6,458.68	6,377.23	81.45	79.298	
6,300.00	6,292.78	3,597.00	3,596.66	18.83	69.42	-61.07	-601.32	5,943.76	6,499.96	6,418.62	81.34	79.914	
6,400.00	6,392.66	3,597.00	3,596.66	19.13	69.42	-61.07	-601.32	5,943.76	6,542.50	6,461.28	81.22	80.554	
6,500.00	6,492.53	3,597.00	3,596.66	19.43	69.42	-61.07	-601.32	5,943.76	6,586.29	6,505.20	81.10	81.216	
6,551.20	6,543.67	3,597.00	3,596.66	19.58	69.42	-61.07	-601.32	5,943.76	6,609.19	6,528.16	81.03	81.564	
6,600.00	6,592.30	3,597.00	3,596.66	19.73	69.42	-19.25	-601.32	5,943.76	6,629.43	6,548.47	80.96	81.885	
6,650.00	6,641.67	3,597.00	3,596.66	19.88	69.42	-9.42	-601.32	5,943.76	6,646.51	6,565.63	80.88	82.178	
6,700.00	6,690.21	3,597.00	3,596.66	20.03	69.42	-5.50	-601.32	5,943.76	6,659.79	6,579.01	80.79	82.435	
6,750.00	6,737.54	3,597.00	3,596.66	20.18	69.42	-3.44	-601.32	5,943.76	6,669.19	6,588.50	80.69	82.651	
6,800.00	6,783.30	3,597.00	3,596.66	20.33	69.42	-2.17	-601.32	5,943.76	6,674.65	6,594.07	80.59	82.825	
6,850.00	6,827.15	3,597.00	3,596.66	20.48	69.42	-1.30	-601.32	5,943.76	6,676.15	6,595.67	80.48	82.954	
6,900.00	6,868.74	3,597.00	3,596.66	20.63	69.42	-0.66	-601.32	5,943.76	6,673.66	6,593.29	80.37	83.038	
6,950.00	6,907.77	3,597.00	3,596.66	20.78	69.42	-0.16	-601.32	5,943.76	6,667.22	6,586.96	80.26	83.074	
7,000.00	6,943.94	3,597.00	3,596.66	20.93	69.42	0.26	-601.32	5,943.76	6,656.84	6,576.70	80.14	83.061	
7,050.00	6,976.97	3,597.00	3,596.66	21.08	69.42	0.63	-601.32	5,943.76	6,642.61	6,562.57	80.03	82.998	
7,100.00	7,006.62	3,597.00	3,596.66	21.23	69.42	0.98	-601.32	5,943.76	6,624.59	6,544.66	79.93	82.883	
7,150.00	7,032.64	3,597.00	3,596.66	21.38	69.42	1.32	-601.32	5,943.76	6,602.90	6,523.07	79.83	82.717	
7,200.00	7,054.86	3,597.00	3,596.66	21.53	69.42	1.67	-601.32	5,943.76	6,577.66	6,497.93	79.73	82.498	
7,250.00	7,073.09	3,597.00	3,596.66	21.68	69.42	2.05	-601.32	5,943.76	6,549.04	6,469.39	79.65	82.226	
7,300.00	7,087.20	3,597.00	3,596.66	21.83	69.42	2.48	-601.32	5,943.76	6,517.19	6,437.62	79.57	81.902	
7,350.00	7,097.08	3,597.00	3,596.66	21.98	69.42	2.99	-601.32	5,943.76	6,482.33	6,402.81	79.51	81.526	
7,400.00	7,102.66	3,597.00	3,596.66	22.13	69.42	3.61	-601.32	5,943.76	6,444.66	6,365.19	79.47	81.098	
7,438.94	7,104.00	3,597.00	3,596.66	22.25	69.42	4.20	-601.32	5,943.76	6,413.54	6,334.10	79.44	80.730	
7,500.00	7,104.02	3,597.00	3,596.66	22.43	69.42	4.20	-601.32	5,943.76	6,363.68	6,284.26	79.42	80.131	
7,600.00	7,104.06	3,597.00	3,596.66	22.74	69.42	4.20	-601.32	5,943.76	6,282.45	6,203.09	79.36	79.166	
7,700.00	7,104.10	3,597.00	3,596.66	23.04	69.42	4.20	-601.32	5,943.76	6,201.77	6,122.48	79.29	78.220	
7,800.00	7,104.14	3,597.00	3,596.66	23.34	69.42	4.20	-601.32	5,943.76	6,121.66	6,042.46	79.20	77.294	
7,900.00	7,104.18	3,597.00	3,596.66	23.64	69.42	4.20	-601.32	5,943.76	6,042.14	5,963.04	79.10	76.389	
8,000.00	7,104.22	3,597.00	3,596.66	23.94	69.42	4.20	-601.32	5,943.76	5,963.24	5,884.26	78.98	75.504	
8,100.00	7,104.26	3,597.00	3,596.66	24.24	69.42	4.20	-601.32	5,943.76	5,884.98	5,806.14	78.84	74.640	
8,200.00	7,104.30	3,597.00	3,596.66	24.54	69.42	4.20	-601.32	5,943.76	5,807.39	5,728.70	78.69	73.799	
8,300.00	7,104.34	3,597.00	3,596.66	24.84	69.42	4.20	-601.32	5,943.76	5,730.49	5,651.97	78.52	72.980	
8,400.00	7,104.38	3,597.00	3,596.66	25.14	69.42	4.20	-601.32	5,943.76	5,654.32	5,575.98	78.33	72.184	
8,500.00	7,104.42	3,597.00	3,596.66	25.44	69.42	4.20	-601.32	5,943.76	5,578.89	5,500.77	78.12	71.412	
8,600.00	7,104.45	3,597.00	3,596.66	25.74	69.42	4.20	-601.32	5,943.76	5,504.26	5,426.36	77.89	70.665	
8,700.00	7,104.49	3,597.00	3,596.66	26.04	69.42	4.20	-601.32	5,943.76	5,430.43	5,352.79	77.64	69.943	
8,800.00	7,104.53	3,597.00	3,596.66	26.34	69.42	4.20	-601.32	5,943.76	5,357.46	5,280.09	77.37	69.248	
8,900.00	7,104.57	3,597.00	3,596.66	26.64	69.42	4.20	-601.32	5,943.76	5,285.37	5,208.30	77.07	68.580	
9,000.00	7,104.61	3,597.00	3,596.66	26.95	69.42	4.20	-601.32	5,943.76	5,214.20	5,137.45	76.75	67.941	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #270 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	3,597.00	3,596.66	27.25	69.42	4.20	-601.32	5,943.76	5,143.99	5,067.59	76.40	67.331	
9,200.00	7,104.69	3,597.00	3,596.66	27.55	69.42	4.20	-601.32	5,943.76	5,074.78	4,998.76	76.02	66.752	
9,300.00	7,104.73	3,597.00	3,596.66	27.85	69.42	4.20	-601.32	5,943.76	5,006.61	4,930.99	75.62	66.205	
9,400.00	7,104.77	3,597.00	3,596.66	28.15	69.42	4.20	-601.32	5,943.76	4,939.53	4,864.34	75.19	65.691	
9,500.00	7,104.81	3,597.00	3,596.66	28.45	69.42	4.20	-601.32	5,943.76	4,873.57	4,798.84	74.73	65.211	
9,600.00	7,104.85	3,597.00	3,596.66	28.75	69.42	4.20	-601.32	5,943.76	4,808.79	4,734.55	74.25	64.768	
9,700.00	7,104.89	3,597.00	3,596.66	29.05	69.42	4.20	-601.32	5,943.76	4,745.23	4,671.51	73.73	64.363	
9,800.00	7,104.92	3,597.00	3,596.66	29.35	69.42	4.20	-601.32	5,943.76	4,682.95	4,609.77	73.17	63.998	
9,900.00	7,104.96	3,597.00	3,596.66	29.65	69.42	4.20	-601.32	5,943.76	4,621.99	4,549.40	72.59	63.674	
10,000.00	7,105.00	3,597.00	3,596.66	29.95	69.42	4.20	-601.32	5,943.76	4,562.40	4,490.43	71.97	63.393	
10,100.00	7,105.04	3,597.00	3,596.66	30.25	69.42	4.20	-601.32	5,943.76	4,504.25	4,432.94	71.32	63.158	
10,200.00	7,105.08	3,597.00	3,596.66	30.55	69.42	4.20	-601.32	5,943.76	4,447.59	4,376.96	70.63	62.971	
10,300.00	7,105.12	3,597.00	3,596.66	30.85	69.42	4.20	-601.32	5,943.76	4,392.47	4,322.57	69.91	62.834	
10,400.00	7,105.16	3,597.00	3,596.66	31.15	69.42	4.20	-601.32	5,943.76	4,338.96	4,269.81	69.15	62.749	
10,500.00	7,105.20	3,597.00	3,596.66	31.45	69.42	4.20	-601.32	5,943.76	4,287.12	4,218.76	68.35	62.720	
10,600.00	7,105.24	3,597.00	3,596.66	31.75	69.42	4.20	-601.32	5,943.76	4,236.99	4,169.47	67.52	62.749	
10,700.00	7,105.28	3,597.00	3,596.66	32.05	69.42	4.20	-601.32	5,943.76	4,188.66	4,122.00	66.66	62.838	
10,800.00	7,105.32	3,597.00	3,596.66	32.35	69.42	4.20	-601.32	5,943.76	4,142.18	4,076.42	65.76	62.990	
10,900.00	7,105.36	3,597.00	3,596.66	32.66	69.42	4.20	-601.32	5,943.76	4,097.61	4,032.78	64.83	63.209	
11,000.00	7,105.39	3,597.00	3,596.66	32.96	69.42	4.20	-601.32	5,943.76	4,055.02	3,991.16	63.86	63.496	
11,100.00	7,105.43	3,597.00	3,596.66	33.26	69.42	4.20	-601.32	5,943.76	4,014.47	3,951.60	62.87	63.855	
11,200.00	7,105.47	3,597.00	3,596.66	33.56	69.42	4.20	-601.32	5,943.76	3,976.02	3,914.17	61.85	64.286	
11,300.00	7,105.51	3,597.00	3,596.66	33.86	69.42	4.20	-601.32	5,943.76	3,939.73	3,878.93	60.81	64.793	
11,400.00	7,105.55	3,597.00	3,596.66	34.16	69.42	4.20	-601.32	5,943.76	3,905.67	3,845.92	59.74	65.374	
11,500.00	7,105.59	3,597.00	3,596.66	34.46	69.42	4.20	-601.32	5,943.76	3,873.89	3,815.22	58.67	66.030	
11,600.00	7,105.63	3,597.00	3,596.66	34.76	69.42	4.20	-601.32	5,943.76	3,844.45	3,786.86	57.59	66.757	
11,700.00	7,105.67	3,597.00	3,596.66	35.06	69.42	4.20	-601.32	5,943.76	3,817.40	3,760.89	56.51	67.550	
11,800.00	7,105.71	3,597.00	3,596.66	35.36	69.42	4.20	-601.32	5,943.76	3,792.80	3,737.35	55.45	68.400	
11,900.00	7,105.75	3,597.00	3,596.66	35.66	69.42	4.20	-601.32	5,943.76	3,770.68	3,716.27	54.42	69.293	
12,000.00	7,105.79	3,597.00	3,596.66	35.96	69.42	4.20	-601.32	5,943.76	3,751.11	3,697.68	53.43	70.206	
12,100.00	7,105.83	3,597.00	3,596.66	36.26	69.42	4.20	-601.32	5,943.76	3,734.11	3,681.60	52.51	71.110	
12,200.00	7,105.86	3,597.00	3,596.66	36.56	69.42	4.20	-601.32	5,943.76	3,719.73	3,668.04	51.69	71.962	
12,300.00	7,105.90	3,597.00	3,596.66	36.86	69.42	4.20	-601.32	5,943.76	3,707.98	3,656.98	51.00	72.709	
12,400.00	7,105.94	3,597.00	3,596.66	37.16	69.42	4.20	-601.32	5,943.76	3,698.90	3,648.43	50.47	73.286	
12,500.00	7,105.98	3,597.00	3,596.66	37.46	69.42	4.20	-601.32	5,943.76	3,692.51	3,642.36	50.15	73.623	
12,600.00	7,106.02	3,597.00	3,596.66	37.76	69.42	4.20	-601.32	5,943.76	3,688.82	3,638.74	50.08	73.658	
12,686.18	7,106.05	3,597.00	3,596.66	38.02	69.42	4.20	-601.32	5,943.76	3,687.82	3,637.58	50.23	73.415	CC
12,700.00	7,106.06	3,597.00	3,596.66	38.06	69.42	4.20	-601.32	5,943.76	3,687.84	3,637.57	50.28	73.351	ES
12,800.00	7,106.10	3,597.00	3,596.66	38.36	69.42	4.20	-601.32	5,943.76	3,689.57	3,638.82	50.75	72.701	
12,900.00	7,106.14	3,597.00	3,596.66	38.66	69.42	4.20	-601.32	5,943.76	3,694.01	3,642.52	51.49	71.745	
13,000.00	7,106.18	3,597.00	3,596.66	38.96	69.42	4.20	-601.32	5,943.76	3,701.14	3,648.68	52.46	70.549	
13,100.00	7,106.22	3,597.00	3,596.66	39.26	69.42	4.20	-601.32	5,943.76	3,710.96	3,657.33	53.63	69.192	
13,200.00	7,106.26	3,597.00	3,596.66	39.56	69.42	4.20	-601.32	5,943.76	3,723.44	3,668.48	54.96	67.746	
13,300.00	7,106.30	3,597.00	3,596.66	39.86	69.42	4.20	-601.32	5,943.76	3,738.55	3,682.14	56.41	66.274	
13,400.00	7,106.33	3,597.00	3,596.66	40.16	69.42	4.20	-601.32	5,943.76	3,756.27	3,698.32	57.95	64.821	
13,500.00	7,106.37	3,597.00	3,596.66	40.46	69.42	4.20	-601.32	5,943.76	3,776.55	3,717.00	59.55	63.419	
13,600.00	7,106.41	3,597.00	3,596.66	40.76	69.42	4.20	-601.32	5,943.76	3,799.35	3,738.16	61.19	62.089	
13,700.00	7,106.45	3,597.00	3,596.66	41.06	69.42	4.20	-601.32	5,943.76	3,824.63	3,761.78	62.86	60.845	
13,800.00	7,106.49	3,597.00	3,596.66	41.36	69.42	4.20	-601.32	5,943.76	3,852.35	3,787.81	64.54	59.691	
13,900.00	7,106.53	3,597.00	3,596.66	41.67	69.42	4.20	-601.32	5,943.76	3,882.44	3,816.22	66.22	58.632	
14,000.00	7,106.57	3,597.00	3,596.66	41.97	69.42	4.20	-601.32	5,943.76	3,914.86	3,846.97	67.89	57.665	
14,100.00	7,106.61	3,597.00	3,596.66	42.27	69.42	4.20	-601.32	5,943.76	3,949.54	3,879.99	69.55	56.789	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #270 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,200.00	7,106.65	3,597.00	3,596.66	42.57	69.42	4.20	-601.32	5,943.76	3,986.43	3,915.25	71.19	56.000	
14,300.00	7,106.69	3,597.00	3,596.66	42.87	69.42	4.20	-601.32	5,943.76	4,025.47	3,952.67	72.80	55.295	
14,400.00	7,106.73	3,597.00	3,596.66	43.17	69.42	4.20	-601.32	5,943.76	4,066.59	3,992.21	74.39	54.668	
14,500.00	7,106.76	3,597.00	3,596.66	43.47	69.42	4.20	-601.32	5,943.76	4,109.74	4,033.79	75.94	54.115	
14,600.00	7,106.80	3,597.00	3,596.66	43.77	69.42	4.20	-601.32	5,943.76	4,154.84	4,077.37	77.47	53.633	
14,700.00	7,106.84	3,597.00	3,596.66	44.07	69.42	4.20	-601.32	5,943.76	4,201.84	4,122.88	78.96	53.215	
14,800.00	7,106.88	3,597.00	3,596.66	44.37	69.42	4.20	-601.32	5,943.76	4,250.67	4,170.26	80.42	52.858	
14,900.00	7,106.92	3,597.00	3,596.66	44.67	69.42	4.20	-601.32	5,943.76	4,301.28	4,219.44	81.84	52.558	
15,000.00	7,106.96	3,597.00	3,596.66	44.97	69.42	4.20	-601.32	5,943.76	4,353.59	4,270.37	83.22	52.312	
15,100.00	7,107.00	3,597.00	3,596.66	45.27	69.42	4.20	-601.32	5,943.76	4,407.55	4,322.98	84.57	52.114	
15,200.00	7,107.04	3,597.00	3,596.66	45.57	69.42	4.20	-601.32	5,943.76	4,463.10	4,377.21	85.89	51.963	
15,300.00	7,107.08	3,597.00	3,596.66	45.87	69.42	4.20	-601.32	5,943.76	4,520.18	4,433.01	87.17	51.855	
15,400.00	7,107.12	3,597.00	3,596.66	46.17	69.42	4.20	-601.32	5,943.76	4,578.74	4,490.32	88.41	51.787	
15,500.00	7,107.16	3,597.00	3,596.66	46.47	69.42	4.20	-601.32	5,943.76	4,638.71	4,549.08	89.62	51.757 SF	
15,600.00	7,107.20	3,597.00	3,596.66	46.77	69.42	4.20	-601.32	5,943.76	4,700.04	4,609.24	90.80	51.761	
15,700.00	7,107.23	3,597.00	3,596.66	47.07	69.42	4.20	-601.32	5,943.76	4,762.68	4,670.73	91.95	51.798	
15,800.00	7,107.27	3,597.00	3,596.66	47.37	69.42	4.20	-601.32	5,943.76	4,826.58	4,733.52	93.06	51.865	
15,900.00	7,107.31	3,597.00	3,596.66	47.67	69.42	4.20	-601.32	5,943.76	4,891.69	4,797.55	94.14	51.961	
16,000.00	7,107.35	3,597.00	3,596.66	47.97	69.42	4.20	-601.32	5,943.76	4,957.96	4,862.77	95.19	52.082	
16,100.00	7,107.39	3,597.00	3,596.66	48.27	69.42	4.20	-601.32	5,943.76	5,025.35	4,929.14	96.22	52.229	
16,200.00	7,107.43	3,597.00	3,596.66	48.57	69.42	4.20	-601.32	5,943.76	5,093.81	4,996.60	97.21	52.398	
16,300.00	7,107.47	3,597.00	3,596.66	48.87	69.42	4.20	-601.32	5,943.76	5,163.30	5,065.12	98.18	52.589	
16,400.00	7,107.51	3,597.00	3,596.66	49.17	69.42	4.20	-601.32	5,943.76	5,233.78	5,134.66	99.12	52.801	
16,500.00	7,107.55	3,597.00	3,596.66	49.47	69.42	4.20	-601.32	5,943.76	5,305.21	5,205.17	100.04	53.030	
16,600.00	7,107.59	3,597.00	3,596.66	49.77	69.42	4.20	-601.32	5,943.76	5,377.55	5,276.61	100.93	53.278	
16,700.00	7,107.63	3,597.00	3,596.66	50.07	69.42	4.20	-601.32	5,943.76	5,450.76	5,348.95	101.80	53.542	
16,800.00	7,107.67	3,597.00	3,596.66	50.37	69.42	4.20	-601.32	5,943.76	5,524.81	5,422.16	102.65	53.821	
16,900.00	7,107.70	3,597.00	3,596.66	50.67	69.42	4.20	-601.32	5,943.76	5,599.67	5,496.19	103.48	54.115	
17,000.00	7,107.74	3,597.00	3,596.66	50.97	69.42	4.20	-601.32	5,943.76	5,675.30	5,571.02	104.28	54.422	
17,100.00	7,107.78	3,597.00	3,596.66	51.27	69.42	4.20	-601.32	5,943.76	5,751.68	5,646.61	105.07	54.742	
17,200.00	7,107.82	3,597.00	3,596.66	51.57	69.42	4.20	-601.32	5,943.76	5,828.77	5,722.94	105.84	55.073	
17,300.00	7,107.86	3,597.00	3,596.66	51.87	69.42	4.20	-601.32	5,943.76	5,906.55	5,799.97	106.59	55.416	
17,400.00	7,107.90	3,597.00	3,596.66	52.17	69.42	4.20	-601.32	5,943.76	5,984.99	5,877.67	107.32	55.769	
17,500.00	7,107.94	3,597.00	3,596.66	52.47	69.42	4.20	-601.32	5,943.76	6,064.06	5,956.03	108.03	56.131	
17,600.00	7,107.98	3,597.00	3,596.66	52.77	69.42	4.20	-601.32	5,943.76	6,143.75	6,035.02	108.73	56.503	
17,700.00	7,108.02	3,597.00	3,596.66	53.07	69.42	4.20	-601.32	5,943.76	6,224.02	6,114.60	109.42	56.883	
17,800.00	7,108.06	3,597.00	3,596.66	53.37	69.42	4.20	-601.32	5,943.76	6,304.85	6,194.77	110.09	57.271	
17,900.00	7,108.10	3,597.00	3,596.66	53.67	69.42	4.20	-601.32	5,943.76	6,386.23	6,275.49	110.74	57.667	
18,000.00	7,108.14	3,597.00	3,596.66	53.97	69.42	4.20	-601.32	5,943.76	6,468.13	6,356.74	111.39	58.070	
18,100.00	7,108.17	3,597.00	3,596.66	54.27	69.42	4.20	-601.32	5,943.76	6,550.53	6,438.52	112.02	58.479	
18,200.00	7,108.21	3,597.00	3,596.66	54.57	69.42	4.20	-601.32	5,943.76	6,633.42	6,520.78	112.63	58.894	
18,300.00	7,108.25	3,597.00	3,596.66	54.87	69.42	4.20	-601.32	5,943.76	6,716.77	6,603.53	113.24	59.314	
18,400.00	7,108.29	3,597.00	3,596.66	55.17	69.42	4.20	-601.32	5,943.76	6,800.57	6,686.74	113.84	59.740	
18,500.00	7,108.33	3,597.00	3,596.66	55.47	69.42	4.20	-601.32	5,943.76	6,884.80	6,770.38	114.42	60.171	
18,600.00	7,108.37	3,597.00	3,596.66	55.77	69.42	4.20	-601.32	5,943.76	6,969.45	6,854.46	114.99	60.607	
18,700.00	7,108.41	3,597.00	3,596.66	56.07	69.42	4.20	-601.32	5,943.76	7,054.51	6,938.95	115.56	61.047	
18,800.00	7,108.45	3,597.00	3,596.66	56.37	69.42	4.20	-601.32	5,943.76	7,139.95	7,023.83	116.11	61.491	
18,900.00	7,108.49	3,597.00	3,596.66	56.67	69.42	4.20	-601.32	5,943.76	7,225.76	7,109.10	116.66	61.939	
19,000.00	7,108.53	3,597.00	3,596.66	56.97	69.42	4.20	-601.32	5,943.76	7,311.93	7,194.74	117.20	62.390	
19,100.00	7,108.57	3,597.00	3,596.66	57.28	69.42	4.20	-601.32	5,943.76	7,398.45	7,280.73	117.73	62.844	
19,200.00	7,108.61	3,597.00	3,596.66	57.58	69.42	4.20	-601.32	5,943.76	7,485.31	7,367.06	118.25	63.302	
19,300.00	7,108.64	3,597.00	3,596.66	57.88	69.42	4.20	-601.32	5,943.76	7,572.49	7,453.73	118.76	63.762	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #270 (Offset) - OH - OH

Survey Program: 235-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,400.00	7,108.68	3,597.00	3,596.66	58.18	69.42	4.20	-601.32	5,943.76	7,659.99	7,540.72	119.27	64.225	
19,500.00	7,108.72	3,597.00	3,596.66	58.48	69.42	4.20	-601.32	5,943.76	7,747.79	7,628.02	119.77	64.690	
19,600.00	7,108.76	3,597.00	3,596.66	58.78	69.42	4.20	-601.32	5,943.76	7,835.88	7,715.61	120.26	65.157	
19,700.00	7,108.80	3,597.00	3,596.66	59.08	69.42	4.20	-601.32	5,943.76	7,924.25	7,803.50	120.75	65.626	
19,800.00	7,108.84	3,597.00	3,596.66	59.38	69.42	4.20	-601.32	5,943.76	8,012.89	7,891.67	121.23	66.097	
19,900.00	7,108.88	3,597.00	3,596.66	59.68	69.42	4.20	-601.32	5,943.76	8,101.80	7,980.10	121.70	66.570	
20,000.00	7,108.92	3,597.00	3,596.66	59.98	69.42	4.20	-601.32	5,943.76	8,190.97	8,068.80	122.17	67.044	
20,100.00	7,108.96	3,597.00	3,596.66	60.28	69.42	4.20	-601.32	5,943.76	8,280.38	8,157.75	122.64	67.520	
20,208.46	7,109.00	3,597.00	3,596.66	60.60	69.42	4.20	-601.32	5,943.76	8,377.63	8,254.50	123.13	68.037	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #271A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	616.04	615.36	0.00	1.81	90.95	-231.48	13,897.33	13,907.30				
100.00	100.00	668.48	667.42	0.23	1.96	90.98	-237.55	13,895.51	13,904.03	13,901.84	2.19	6,349.117	
200.00	200.00	706.00	704.59	0.53	2.08	91.00	-242.56	13,894.37	13,901.21	13,898.60	2.60	5,341.509	
300.00	300.00	733.68	731.96	0.83	2.16	91.02	-246.60	13,893.66	13,898.86	13,895.88	2.99	4,655.392	
400.00	400.00	767.00	764.85	1.13	2.26	91.04	-251.89	13,892.98	13,897.04	13,893.66	3.39	4,104.870	
500.00	500.00	794.16	791.61	1.43	2.34	91.06	-256.52	13,892.56	13,895.72	13,891.96	3.77	3,688.826	
600.00	599.98	828.00	824.88	1.73	2.44	-64.56	-262.70	13,892.17	13,894.14	13,889.98	4.17	3,333.114	
644.12	644.06	871.41	867.38	1.86	2.57	-64.54	-271.53	13,891.75	13,893.08	13,888.65	4.43	3,135.345	
700.00	699.87	910.53	905.45	2.03	2.69	-64.51	-280.49	13,891.37	13,891.57	13,886.85	4.72	2,945.560	
800.00	799.74	965.59	958.65	2.33	2.86	-64.47	-294.66	13,890.93	13,889.11	13,883.93	5.18	2,680.640	
900.00	899.62	1,009.00	1,000.24	2.63	2.99	-64.42	-307.11	13,890.68	13,887.00	13,881.39	5.61	2,474.744	
1,000.00	999.49	1,068.00	1,056.35	2.93	3.17	-64.36	-325.34	13,890.55	13,885.29	13,879.21	6.09	2,280.587	
1,100.00	1,099.36	1,099.50	1,086.18	3.23	3.26	-64.32	-335.43	13,890.61	13,884.01	13,877.53	6.48	2,141.623	
1,200.00	1,199.24	1,147.96	1,132.00	3.53	3.41	-64.27	-351.22	13,890.87	13,883.16	13,876.23	6.93	2,003.835	
1,300.00	1,299.11	1,340.97	1,314.13	3.83	3.99	-64.04	-415.12	13,891.58	13,882.30	13,874.50	7.81	1,778.098	
1,400.00	1,398.98	1,376.00	1,347.16	4.13	4.09	-63.99	-426.79	13,891.67	13,881.29	13,873.08	8.21	1,690.275	
1,500.00	1,498.86	1,426.14	1,394.45	4.43	4.24	-63.93	-443.44	13,891.99	13,880.71	13,872.05	8.66	1,602.327	
1,600.00	1,598.73	1,472.80	1,438.47	4.73	4.38	-63.88	-458.92	13,892.40	13,880.47	13,871.37	9.10	1,524.857	
1,607.60	1,606.32	1,476.01	1,441.49	4.75	4.39	-63.88	-459.99	13,892.44	13,880.47	13,871.33	9.14	1,519.448	
1,700.00	1,698.60	1,521.64	1,484.41	5.03	4.53	-63.82	-475.47	13,893.01	13,880.64	13,871.09	9.55	1,453.580	
1,800.00	1,798.48	1,800.00	1,572.40	5.33	5.37	-63.70	-507.88	13,894.32	13,881.07	13,870.38	10.68	1,299.190	
1,900.00	1,898.35	1,677.61	1,630.84	5.63	5.00	-63.63	-529.14	13,895.21	13,881.59	13,870.97	10.62	1,307.465	
2,000.00	1,998.22	1,825.64	1,769.67	5.93	5.44	-63.44	-580.46	13,897.23	13,882.10	13,870.74	11.36	1,221.876	
2,100.00	2,098.10	1,957.74	1,893.88	6.23	5.84	-63.28	-625.39	13,898.75	13,882.47	13,870.41	12.06	1,151.345	
2,200.00	2,197.97	2,037.65	1,969.29	6.53	6.08	-63.18	-651.83	13,899.59	13,882.76	13,870.16	12.60	1,102.038	
2,300.00	2,297.84	2,124.77	2,051.49	6.83	6.34	-63.08	-680.67	13,900.67	13,883.27	13,870.12	13.16	1,055.065	
2,400.00	2,397.72	2,550.84	2,453.88	7.13	7.62	-62.58	-820.69	13,899.87	13,881.76	13,867.02	14.74	941.962	
2,500.00	2,497.59	2,643.00	2,541.47	7.43	7.90	-62.48	-849.33	13,898.80	13,879.99	13,864.68	15.31	906.387	
2,600.00	2,597.46	2,679.04	2,575.71	7.73	8.00	-62.44	-860.56	13,898.44	13,878.55	13,862.83	15.72	882.767	
2,700.00	2,697.34	2,895.00	2,781.99	8.03	8.65	-62.21	-924.38	13,896.47	13,877.06	13,860.39	16.67	832.479	
2,800.00	2,797.21	2,895.00	2,781.99	8.33	8.65	-62.21	-924.38	13,896.47	13,875.49	13,858.52	16.97	817.671	
2,900.00	2,897.09	2,929.58	2,815.48	8.63	8.75	-62.18	-932.99	13,896.30	13,874.40	13,857.03	17.37	798.607	
3,000.00	2,996.96	2,958.00	2,843.12	8.93	8.84	-62.16	-939.57	13,896.49	13,873.99	13,856.23	17.76	781.261	
3,100.00	3,096.83	3,260.00	3,140.97	9.23	9.74	-62.02	-987.75	13,898.61	13,873.89	13,854.92	18.96	731.570	
3,200.00	3,196.71	3,527.00	3,407.78	9.53	10.54	-62.03	-996.15	13,897.97	13,871.24	13,851.18	20.07	691.295	
3,300.00	3,296.58	3,527.00	3,407.78	9.83	10.54	-62.03	-996.15	13,897.97	13,868.75	13,848.38	20.37	680.990	
3,400.00	3,396.45	3,527.00	3,407.78	10.13	10.54	-62.03	-996.15	13,897.97	13,866.97	13,846.31	20.67	671.019	
3,500.00	3,496.33	3,527.00	3,407.78	10.43	10.54	-62.03	-996.15	13,897.97	13,865.92	13,844.95	20.97	661.368	
3,596.07	3,592.27	3,527.00	3,407.78	10.71	10.54	-62.03	-996.15	13,897.97	13,865.59	13,844.33	21.25	652.385	
3,600.00	3,596.20	3,527.00	3,407.78	10.73	10.54	-62.03	-996.15	13,897.97	13,865.59	13,844.32	21.27	652.023	
3,700.00	3,696.07	3,527.00	3,407.78	11.03	10.54	-62.03	-996.15	13,897.97	13,865.98	13,844.41	21.57	642.971	
3,800.00	3,795.95	3,527.00	3,407.78	11.33	10.54	-62.03	-996.15	13,897.97	13,867.09	13,845.22	21.87	634.201	
3,900.00	3,895.82	3,527.00	3,407.78	11.63	10.54	-62.03	-996.15	13,897.97	13,868.92	13,846.75	22.17	625.701	
4,000.00	3,995.69	3,527.00	3,407.78	11.93	10.54	-62.03	-996.15	13,897.97	13,871.47	13,849.00	22.47	617.459	
4,100.00	4,095.57	3,527.00	3,407.78	12.23	10.54	-62.03	-996.15	13,897.97	13,874.74	13,851.97	22.77	609.467	
4,200.00	4,195.44	3,527.00	3,407.78	12.53	10.54	-62.03	-996.15	13,897.97	13,878.73	13,855.67	23.07	601.714	
4,300.00	4,295.31	3,527.00	3,407.78	12.83	10.54	-62.03	-996.15	13,897.97	13,883.44	13,860.08	23.37	594.190	
4,400.00	4,395.19	3,527.00	3,407.78	13.13	10.54	-62.03	-996.15	13,897.97	13,888.87	13,865.21	23.67	586.888	
4,500.00	4,495.06	3,527.00	3,407.78	13.43	10.54	-62.03	-996.15	13,897.97	13,895.02	13,871.05	23.97	579.798	
4,600.00	4,594.93	3,527.00	3,407.78	13.73	10.54	-62.03	-996.15	13,897.97	13,901.88	13,877.62	24.27	572.913	
4,700.00	4,694.81	3,527.00	3,407.78	14.03	10.54	-62.03	-996.15	13,897.97	13,909.46	13,884.90	24.57	566.226	
4,800.00	4,794.68	3,527.00	3,407.78	14.33	10.54	-62.03	-996.15	13,897.97	13,917.76	13,892.89	24.87	559.728	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #271A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,900.00	4,894.55	3,527.00	3,407.78	14.63	10.54	-62.03	-996.15	13,897.97	13,926.76	13,901.60	25.17	553.414	
5,000.00	4,994.43	3,527.00	3,407.78	14.93	10.54	-62.03	-996.15	13,897.97	13,936.48	13,911.02	25.47	547.277	
5,100.00	5,094.30	3,527.00	3,407.78	15.23	10.54	-62.03	-996.15	13,897.97	13,946.91	13,921.14	25.77	541.310	
5,200.00	5,194.18	3,527.00	3,407.78	15.53	10.54	-62.03	-996.15	13,897.97	13,958.05	13,931.98	26.07	535.507	
5,300.00	5,294.05	3,527.00	3,407.78	15.83	10.54	-62.03	-996.15	13,897.97	13,969.89	13,943.53	26.37	529.863	
5,400.00	5,393.92	3,527.00	3,407.78	16.13	10.54	-62.03	-996.15	13,897.97	13,982.44	13,955.78	26.67	524.373	
5,500.00	5,493.80	3,527.00	3,407.78	16.43	10.54	-62.03	-996.15	13,897.97	13,995.69	13,968.73	26.97	519.031	
5,600.00	5,593.67	3,527.00	3,407.78	16.73	10.54	-62.03	-996.15	13,897.97	14,009.65	13,982.38	27.26	513.833	
5,700.00	5,693.54	3,527.00	3,407.78	17.03	10.54	-62.03	-996.15	13,897.97	14,024.30	13,996.74	27.56	508.772	
5,800.00	5,793.42	3,527.00	3,407.78	17.33	10.54	-62.03	-996.15	13,897.97	14,039.65	14,011.79	27.86	503.846	
5,900.00	5,893.29	3,527.00	3,407.78	17.63	10.54	-62.03	-996.15	13,897.97	14,055.70	14,027.53	28.16	499.050	
6,000.00	5,993.16	3,527.00	3,407.78	17.93	10.54	-62.03	-996.15	13,897.97	14,072.43	14,043.97	28.46	494.378	
6,100.00	6,093.04	3,527.00	3,407.78	18.23	10.54	-62.03	-996.15	13,897.97	14,089.86	14,061.09	28.76	489.829	
6,200.00	6,192.91	3,527.00	3,407.78	18.53	10.54	-62.03	-996.15	13,897.97	14,107.97	14,078.91	29.06	485.396	
6,300.00	6,292.78	3,527.00	3,407.78	18.83	10.54	-62.03	-996.15	13,897.97	14,126.77	14,097.41	29.36	481.078	
6,400.00	6,392.66	3,527.00	3,407.78	19.13	10.54	-62.03	-996.15	13,897.97	14,146.25	14,116.59	29.66	476.870	
6,500.00	6,492.53	3,527.00	3,407.78	19.43	10.54	-62.03	-996.15	13,897.97	14,166.41	14,136.45	29.96	472.769	
6,551.20	6,543.67	3,527.00	3,407.78	19.58	10.54	-62.03	-996.15	13,897.97	14,177.00	14,146.88	30.12	470.709	
6,600.00	6,592.30	3,527.00	3,407.78	19.73	10.54	-20.10	-996.15	13,897.97	14,185.21	14,154.95	30.26	468.724	
6,650.00	6,641.67	3,527.00	3,407.78	19.88	10.54	-10.16	-996.15	13,897.97	14,189.53	14,159.12	30.41	466.577	
6,700.00	6,690.21	3,527.00	3,407.78	20.03	10.54	-6.15	-996.15	13,897.97	14,189.68	14,159.12	30.56	464.313	
6,750.00	6,737.54	3,527.00	3,407.78	20.18	10.54	-4.00	-996.15	13,897.97	14,185.65	14,154.94	30.71	461.936	
6,800.00	6,783.30	3,527.00	3,407.78	20.33	10.54	-2.65	-996.15	13,897.97	14,177.47	14,146.62	30.86	459.447	
6,850.00	6,827.15	3,527.00	3,407.78	20.48	10.54	-1.70	-996.15	13,897.97	14,165.20	14,134.20	31.01	456.849	
6,900.00	6,868.74	3,527.00	3,407.78	20.63	10.54	-0.97	-996.15	13,897.97	14,148.93	14,117.77	31.16	454.146	
6,950.00	6,907.77	3,527.00	3,407.78	20.78	10.54	-0.38	-996.15	13,897.97	14,128.75	14,097.44	31.30	451.343	
7,000.00	6,943.94	3,527.00	3,407.78	20.93	10.54	0.15	-996.15	13,897.97	14,104.81	14,073.35	31.45	448.445	
7,050.00	6,976.97	3,527.00	3,407.78	21.08	10.54	0.64	-996.15	13,897.97	14,077.27	14,045.67	31.60	445.459	
7,100.00	7,006.62	3,527.00	3,407.78	21.23	10.54	1.13	-996.15	13,897.97	14,046.32	14,014.57	31.75	442.392	
7,150.00	7,032.64	3,527.00	3,407.78	21.38	10.54	1.66	-996.15	13,897.97	14,012.17	13,980.27	31.90	439.251	
7,200.00	7,054.86	3,527.00	3,407.78	21.53	10.54	2.26	-996.15	13,897.97	13,975.07	13,943.02	32.05	436.045	
7,250.00	7,073.09	3,527.00	3,407.78	21.68	10.54	2.98	-996.15	13,897.97	13,935.27	13,903.07	32.20	432.783	
7,300.00	7,087.20	3,527.00	3,407.78	21.83	10.54	3.90	-996.15	13,897.97	13,893.05	13,860.70	32.35	429.474	
7,350.00	7,097.08	3,527.00	3,407.78	21.98	10.54	5.15	-996.15	13,897.97	13,848.71	13,816.22	32.50	426.128	
7,400.00	7,102.66	3,527.00	3,407.78	22.13	10.54	6.99	-996.15	13,897.97	13,802.58	13,769.93	32.65	422.756	
7,438.94	7,104.00	3,527.00	3,407.78	22.25	10.54	9.19	-996.15	13,897.97	13,765.62	13,732.86	32.77	420.117	
7,500.00	7,104.02	3,527.00	3,407.78	22.43	10.54	9.19	-996.15	13,897.97	13,707.07	13,674.12	32.95	415.995	
7,600.00	7,104.06	3,527.00	3,407.78	22.74	10.54	9.19	-996.15	13,897.97	13,611.21	13,577.96	33.25	409.344	
7,700.00	7,104.10	3,527.00	3,407.78	23.04	10.54	9.19	-996.15	13,897.97	13,515.42	13,481.87	33.55	402.815	
7,800.00	7,104.14	3,527.00	3,407.78	23.34	10.54	9.19	-996.15	13,897.97	13,419.70	13,385.84	33.85	396.405	
7,900.00	7,104.18	3,527.00	3,407.78	23.64	10.54	9.19	-996.15	13,897.97	13,324.03	13,289.87	34.15	390.109	
8,000.00	7,104.22	3,527.00	3,407.78	23.94	10.54	9.19	-996.15	13,897.97	13,228.43	13,193.97	34.46	383.926	
8,100.00	7,104.26	3,527.00	3,407.78	24.24	10.54	9.19	-996.15	13,897.97	13,132.89	13,098.13	34.76	377.852	
8,200.00	7,104.30	3,527.00	3,407.78	24.54	10.54	9.19	-996.15	13,897.97	13,037.42	13,002.36	35.06	371.885	
8,300.00	7,104.34	3,527.00	3,407.78	24.84	10.54	9.19	-996.15	13,897.97	12,942.02	12,906.66	35.36	366.021	
8,400.00	7,104.38	3,527.00	3,407.78	25.14	10.54	9.19	-996.15	13,897.97	12,846.69	12,811.03	35.66	360.259	
8,500.00	7,104.42	3,527.00	3,407.78	25.44	10.54	9.19	-996.15	13,897.97	12,751.43	12,715.47	35.96	354.595	
8,600.00	7,104.45	3,527.00	3,407.78	25.74	10.54	9.19	-996.15	13,897.97	12,656.24	12,619.98	36.26	349.028	
8,700.00	7,104.49	3,527.00	3,407.78	26.04	10.54	9.19	-996.15	13,897.97	12,561.13	12,524.57	36.56	343.554	
8,800.00	7,104.53	3,527.00	3,407.78	26.34	10.54	9.19	-996.15	13,897.97	12,466.09	12,429.23	36.86	338.172	
8,900.00	7,104.57	3,527.00	3,407.78	26.64	10.54	9.19	-996.15	13,897.97	12,371.14	12,333.97	37.16	332.880	
9,000.00	7,104.61	3,527.00	3,407.78	26.95	10.54	9.19	-996.15	13,897.97	12,276.26	12,238.80	37.46	327.674	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #271A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	3,527.00	3,407.78	27.25	10.54	9.19	-996.15	13,897.97	12,181.47	12,143.70	37.77	322.555	
9,200.00	7,104.69	3,527.00	3,407.78	27.55	10.54	9.19	-996.15	13,897.97	12,086.75	12,048.69	38.07	317.518	
9,300.00	7,104.73	3,527.00	3,407.78	27.85	10.54	9.19	-996.15	13,897.97	11,992.13	11,953.76	38.37	312.563	
9,400.00	7,104.77	3,527.00	3,407.78	28.15	10.54	9.19	-996.15	13,897.97	11,897.59	11,858.92	38.67	307.687	
9,500.00	7,104.81	3,527.00	3,407.78	28.45	10.54	9.19	-996.15	13,897.97	11,803.14	11,764.18	38.97	302.889	
9,600.00	7,104.85	3,527.00	3,407.78	28.75	10.54	9.19	-996.15	13,897.97	11,708.79	11,669.52	39.27	298.167	
9,700.00	7,104.89	3,527.00	3,407.78	29.05	10.54	9.19	-996.15	13,897.97	11,614.53	11,574.96	39.57	293.519	
9,800.00	7,104.92	3,527.00	3,407.78	29.35	10.54	9.19	-996.15	13,897.97	11,520.36	11,480.49	39.87	288.944	
9,900.00	7,104.96	3,527.00	3,407.78	29.65	10.54	9.19	-996.15	13,897.97	11,426.30	11,386.13	40.17	284.440	
10,000.00	7,105.00	3,527.00	3,407.78	29.95	10.54	9.19	-996.15	13,897.97	11,332.34	11,291.87	40.47	280.005	
10,100.00	7,105.04	3,527.00	3,407.78	30.25	10.54	9.19	-996.15	13,897.97	11,238.48	11,197.71	40.77	275.639	
10,200.00	7,105.08	3,527.00	3,407.78	30.55	10.54	9.19	-996.15	13,897.97	11,144.73	11,103.65	41.07	271.339	
10,300.00	7,105.12	3,527.00	3,407.78	30.85	10.54	9.19	-996.15	13,897.97	11,051.08	11,009.71	41.37	267.105	
10,400.00	7,105.16	3,527.00	3,407.78	31.15	10.54	9.19	-996.15	13,897.97	10,957.55	10,915.88	41.67	262.934	
10,500.00	7,105.20	3,527.00	3,407.78	31.45	10.54	9.19	-996.15	13,897.97	10,864.14	10,822.16	41.97	258.826	
10,600.00	7,105.24	3,527.00	3,407.78	31.75	10.54	9.19	-996.15	13,897.97	10,770.84	10,728.57	42.28	254.779	
10,700.00	7,105.28	3,527.00	3,407.78	32.05	10.54	9.19	-996.15	13,897.97	10,677.67	10,635.09	42.58	250.792	
10,800.00	7,105.32	3,527.00	3,407.78	32.35	10.54	9.19	-996.15	13,897.97	10,584.62	10,541.74	42.88	246.864	
10,900.00	7,105.36	3,527.00	3,407.78	32.66	10.54	9.19	-996.15	13,897.97	10,491.69	10,448.52	43.18	242.994	
11,000.00	7,105.39	3,527.00	3,407.78	32.96	10.54	9.19	-996.15	13,897.97	10,398.90	10,355.42	43.48	239.180	
11,100.00	7,105.43	3,527.00	3,407.78	33.26	10.54	9.19	-996.15	13,897.97	10,306.24	10,262.47	43.78	235.422	
11,200.00	7,105.47	3,527.00	3,407.78	33.56	10.54	9.19	-996.15	13,897.97	10,213.73	10,169.65	44.08	231.719	
11,300.00	7,105.51	3,527.00	3,407.78	33.86	10.54	9.19	-996.15	13,897.97	10,121.35	10,076.97	44.38	228.068	
11,400.00	7,105.55	3,527.00	3,407.78	34.16	10.54	9.19	-996.15	13,897.97	10,029.12	9,984.44	44.68	224.471	
11,500.00	7,105.59	3,527.00	3,407.78	34.46	10.54	9.19	-996.15	13,897.97	9,937.04	9,892.06	44.98	220.924	
11,600.00	7,105.63	3,527.00	3,407.78	34.76	10.54	9.19	-996.15	13,897.97	9,845.12	9,799.84	45.28	217.429	
11,700.00	7,105.67	3,527.00	3,407.78	35.06	10.54	9.19	-996.15	13,897.97	9,753.35	9,707.77	45.58	213.982	
11,800.00	7,105.71	3,527.00	3,407.78	35.36	10.54	9.19	-996.15	13,897.97	9,661.75	9,615.87	45.88	210.585	
11,900.00	7,105.75	3,527.00	3,407.78	35.66	10.54	9.19	-996.15	13,897.97	9,570.31	9,524.13	46.18	207.235	
12,000.00	7,105.79	3,527.00	3,407.78	35.96	10.54	9.19	-996.15	13,897.97	9,479.05	9,432.57	46.48	203.933	
12,100.00	7,105.83	3,527.00	3,407.78	36.26	10.54	9.19	-996.15	13,897.97	9,387.97	9,341.19	46.78	200.677	
12,200.00	7,105.86	3,527.00	3,407.78	36.56	10.54	9.19	-996.15	13,897.97	9,297.07	9,249.99	47.08	197.466	
12,300.00	7,105.90	3,527.00	3,407.78	36.86	10.54	9.19	-996.15	13,897.97	9,206.36	9,158.98	47.38	194.300	
12,400.00	7,105.94	3,527.00	3,407.78	37.16	10.54	9.19	-996.15	13,897.97	9,115.84	9,068.16	47.68	191.178	
12,500.00	7,105.98	3,527.00	3,407.78	37.46	10.54	9.19	-996.15	13,897.97	9,025.52	8,977.54	47.98	188.100	
12,600.00	7,106.02	3,527.00	3,407.78	37.76	10.54	9.19	-996.15	13,897.97	8,935.41	8,887.13	48.28	185.064	
12,700.00	7,106.06	3,527.00	3,407.78	38.06	10.54	9.19	-996.15	13,897.97	8,845.52	8,796.93	48.58	182.069	
12,800.00	7,106.10	3,527.00	3,407.78	38.36	10.54	9.19	-996.15	13,897.97	8,755.84	8,706.95	48.88	179.117	
12,900.00	7,106.14	3,527.00	3,407.78	38.66	10.54	9.19	-996.15	13,897.97	8,666.38	8,617.20	49.18	176.205	
13,000.00	7,106.18	3,527.00	3,407.78	38.96	10.54	9.19	-996.15	13,897.97	8,577.16	8,527.68	49.48	173.333	
13,100.00	7,106.22	3,527.00	3,407.78	39.26	10.54	9.19	-996.15	13,897.97	8,488.18	8,438.40	49.78	170.500	
13,200.00	7,106.26	3,527.00	3,407.78	39.56	10.54	9.19	-996.15	13,897.97	8,399.45	8,349.37	50.08	167.707	
13,300.00	7,106.30	3,527.00	3,407.78	39.86	10.54	9.19	-996.15	13,897.97	8,310.98	8,260.59	50.38	164.952	
13,400.00	7,106.33	3,527.00	3,407.78	40.16	10.54	9.19	-996.15	13,897.97	8,222.76	8,172.08	50.68	162.234	
13,500.00	7,106.37	3,527.00	3,407.78	40.46	10.54	9.19	-996.15	13,897.97	8,134.83	8,083.84	50.98	159.555	
13,600.00	7,106.41	3,527.00	3,407.78	40.76	10.54	9.19	-996.15	13,897.97	8,047.17	7,995.88	51.28	156.912	
13,700.00	7,106.45	3,527.00	3,407.78	41.06	10.54	9.19	-996.15	13,897.97	7,959.80	7,908.22	51.58	154.305	
13,800.00	7,106.49	3,527.00	3,407.78	41.36	10.54	9.19	-996.15	13,897.97	7,872.74	7,820.85	51.88	151.735	
13,900.00	7,106.53	3,527.00	3,407.78	41.67	10.54	9.19	-996.15	13,897.97	7,785.98	7,733.80	52.18	149.200	
14,000.00	7,106.57	3,527.00	3,407.78	41.97	10.54	9.19	-996.15	13,897.97	7,699.55	7,647.06	52.49	146.700	
14,100.00	7,106.61	3,527.00	3,407.78	42.27	10.54	9.19	-996.15	13,897.97	7,613.45	7,560.66	52.79	144.235	
14,200.00	7,106.65	3,527.00	3,407.78	42.57	10.54	9.19	-996.15	13,897.97	7,527.69	7,474.60	53.09	141.804	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #271A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	3,527.00	3,407.78	42.87	10.54	9.19	-996.15	13,897.97	7,442.29	7,388.90	53.39	139.408	
14,400.00	7,106.73	3,527.00	3,407.78	43.17	10.54	9.19	-996.15	13,897.97	7,357.25	7,303.57	53.69	137.045	
14,500.00	7,106.76	3,527.00	3,407.78	43.47	10.54	9.19	-996.15	13,897.97	7,272.60	7,218.61	53.98	134.715	
14,600.00	7,106.80	3,527.00	3,407.78	43.77	10.54	9.19	-996.15	13,897.97	7,188.34	7,134.05	54.28	132.419	
14,700.00	7,106.84	3,527.00	3,407.78	44.07	10.54	9.19	-996.15	13,897.97	7,104.49	7,049.90	54.58	130.155	
14,800.00	7,106.88	3,527.00	3,407.78	44.37	10.54	9.19	-996.15	13,897.97	7,021.06	6,966.17	54.88	127.924	
14,900.00	7,106.92	3,527.00	3,407.78	44.67	10.54	9.19	-996.15	13,897.97	6,938.07	6,882.88	55.18	125.725	
15,000.00	7,106.96	3,527.00	3,407.78	44.97	10.54	9.19	-996.15	13,897.97	6,855.53	6,800.05	55.48	123.558	
15,100.00	7,107.00	3,527.00	3,407.78	45.27	10.54	9.19	-996.15	13,897.97	6,773.47	6,717.68	55.78	121.422	
15,200.00	7,107.04	3,527.00	3,407.78	45.57	10.54	9.19	-996.15	13,897.97	6,691.89	6,635.80	56.08	119.319	
15,300.00	7,107.08	3,527.00	3,407.78	45.87	10.54	9.19	-996.15	13,897.97	6,610.82	6,554.43	56.38	117.247	
15,400.00	7,107.12	3,527.00	3,407.78	46.17	10.54	9.19	-996.15	13,897.97	6,530.27	6,473.59	56.68	115.206	
15,500.00	7,107.16	3,527.00	3,407.78	46.47	10.54	9.19	-996.15	13,897.97	6,450.27	6,393.28	56.98	113.196	
15,600.00	7,107.20	3,527.00	3,407.78	46.77	10.54	9.19	-996.15	13,897.97	6,370.83	6,313.55	57.28	111.217	
15,700.00	7,107.23	3,527.00	3,407.78	47.07	10.54	9.19	-996.15	13,897.97	6,291.98	6,234.40	57.58	109.268	
15,800.00	7,107.27	3,527.00	3,407.78	47.37	10.54	9.19	-996.15	13,897.97	6,213.74	6,155.86	57.88	107.351	
15,900.00	7,107.31	3,527.00	3,407.78	47.67	10.54	9.19	-996.15	13,897.97	6,136.13	6,077.95	58.18	105.464	
16,000.00	7,107.35	3,527.00	3,407.78	47.97	10.54	9.19	-996.15	13,897.97	6,059.18	6,000.69	58.48	103.608	
16,100.00	7,107.39	3,527.00	3,407.78	48.27	10.54	9.19	-996.15	13,897.97	5,982.90	5,924.12	58.78	101.782	
16,200.00	7,107.43	3,527.00	3,407.78	48.57	10.54	9.19	-996.15	13,897.97	5,907.34	5,848.26	59.08	99.987	
16,300.00	7,107.47	3,527.00	3,407.78	48.87	10.54	9.19	-996.15	13,897.97	5,832.51	5,773.13	59.38	98.223	
16,400.00	7,107.51	3,527.00	3,407.78	49.17	10.54	9.19	-996.15	13,897.97	5,758.45	5,698.77	59.68	96.489	
16,500.00	7,107.55	3,527.00	3,407.78	49.47	10.54	9.19	-996.15	13,897.97	5,685.18	5,625.20	59.98	94.786	
16,600.00	7,107.59	3,527.00	3,407.78	49.77	10.54	9.19	-996.15	13,897.97	5,612.73	5,552.45	60.28	93.113	
16,700.00	7,107.63	3,527.00	3,407.78	50.07	10.54	9.19	-996.15	13,897.97	5,541.15	5,480.57	60.58	91.471	
16,800.00	7,107.67	3,527.00	3,407.78	50.37	10.54	9.19	-996.15	13,897.97	5,470.45	5,409.57	60.88	89.860	
16,900.00	7,107.70	3,527.00	3,407.78	50.67	10.54	9.19	-996.15	13,897.97	5,400.68	5,339.51	61.18	88.280	
17,000.00	7,107.74	3,527.00	3,407.78	50.97	10.54	9.19	-996.15	13,897.97	5,331.88	5,270.40	61.48	86.731	
17,100.00	7,107.78	3,527.00	3,407.78	51.27	10.54	9.19	-996.15	13,897.97	5,264.07	5,202.29	61.78	85.213	
17,200.00	7,107.82	3,527.00	3,407.78	51.57	10.54	9.19	-996.15	13,897.97	5,197.30	5,135.23	62.07	83.727	
17,300.00	7,107.86	3,527.00	3,407.78	51.87	10.54	9.19	-996.15	13,897.97	5,131.62	5,069.24	62.37	82.272	
17,400.00	7,107.90	3,527.00	3,407.78	52.17	10.54	9.19	-996.15	13,897.97	5,067.05	5,004.38	62.67	80.849	
17,500.00	7,107.94	3,527.00	3,407.78	52.47	10.54	9.19	-996.15	13,897.97	5,003.65	4,940.68	62.97	79.459	
17,600.00	7,107.98	3,527.00	3,407.78	52.77	10.54	9.19	-996.15	13,897.97	4,941.46	4,878.19	63.27	78.100	
17,700.00	7,108.02	3,527.00	3,407.78	53.07	10.54	9.19	-996.15	13,897.97	4,880.53	4,816.96	63.57	76.774	
17,800.00	7,108.06	3,527.00	3,407.78	53.37	10.54	9.19	-996.15	13,897.97	4,820.91	4,757.04	63.87	75.481	
17,900.00	7,108.10	3,527.00	3,407.78	53.67	10.54	9.19	-996.15	13,897.97	4,762.63	4,698.46	64.17	74.221	
18,000.00	7,108.14	3,527.00	3,407.78	53.97	10.54	9.19	-996.15	13,897.97	4,705.76	4,641.29	64.47	72.995	
18,100.00	7,108.17	3,527.00	3,407.78	54.27	10.54	9.19	-996.15	13,897.97	4,650.35	4,585.58	64.77	71.803	
18,200.00	7,108.21	3,527.00	3,407.78	54.57	10.54	9.19	-996.15	13,897.97	4,596.44	4,531.37	65.06	70.644	
18,300.00	7,108.25	3,527.00	3,407.78	54.87	10.54	9.19	-996.15	13,897.97	4,544.09	4,478.73	65.36	69.521	
18,400.00	7,108.29	3,527.00	3,407.78	55.17	10.54	9.19	-996.15	13,897.97	4,493.36	4,427.70	65.66	68.432	
18,500.00	7,108.33	3,527.00	3,407.78	55.47	10.54	9.19	-996.15	13,897.97	4,444.30	4,378.34	65.96	67.378	
18,600.00	7,108.37	3,527.00	3,407.78	55.77	10.54	9.19	-996.15	13,897.97	4,396.97	4,330.71	66.26	66.360	
18,700.00	7,108.41	3,527.00	3,407.78	56.07	10.54	9.19	-996.15	13,897.97	4,351.42	4,284.87	66.56	65.378	
18,800.00	7,108.45	3,527.00	3,407.78	56.37	10.54	9.19	-996.15	13,897.97	4,307.72	4,240.86	66.86	64.432	
18,900.00	7,108.49	3,527.00	3,407.78	56.67	10.54	9.19	-996.15	13,897.97	4,265.91	4,198.75	67.16	63.523	
19,000.00	7,108.53	3,527.00	3,407.78	56.97	10.54	9.19	-996.15	13,897.97	4,226.05	4,158.59	67.45	62.650	
19,100.00	7,108.57	3,527.00	3,407.78	57.28	10.54	9.19	-996.15	13,897.97	4,188.20	4,120.45	67.75	61.816	
19,200.00	7,108.61	3,527.00	3,407.78	57.58	10.54	9.19	-996.15	13,897.97	4,152.41	4,084.36	68.05	61.018	
19,300.00	7,108.64	3,527.00	3,407.78	57.88	10.54	9.19	-996.15	13,897.97	4,118.75	4,050.39	68.35	60.259	
19,400.00	7,108.68	3,527.00	3,407.78	58.18	10.54	9.19	-996.15	13,897.97	4,087.25	4,018.60	68.65	59.538	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #271A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,500.00	7,108.72	3,527.00	3,407.78	58.48	10.54	9.19	-996.15	13,897.97	4,057.97	3,989.02	68.95	58.855	
19,600.00	7,108.76	3,527.00	3,407.78	58.78	10.54	9.19	-996.15	13,897.97	4,030.96	3,961.71	69.25	58.212	
19,700.00	7,108.80	3,527.00	3,407.78	59.08	10.54	9.19	-996.15	13,897.97	4,006.27	3,936.72	69.55	57.606	
19,800.00	7,108.84	3,527.00	3,407.78	59.38	10.54	9.19	-996.15	13,897.97	3,983.93	3,914.09	69.84	57.040	
19,900.00	7,108.88	3,527.00	3,407.78	59.68	10.54	9.19	-996.15	13,897.97	3,963.99	3,893.85	70.14	56.513	
20,000.00	7,108.92	3,527.00	3,407.78	59.98	10.54	9.19	-996.15	13,897.97	3,946.49	3,876.05	70.44	56.024	
20,100.00	7,108.96	3,527.00	3,407.78	60.28	10.54	9.19	-996.15	13,897.97	3,931.45	3,860.71	70.74	55.575	
20,208.46	7,109.00	3,527.00	3,407.78	60.60	10.54	9.19	-996.15	13,897.97	3,917.96	3,846.90	71.07	55.132	CC, ES, SF

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #272 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	159.51	159.51	0.00	1.47	90.86	-155.60	10,401.17	10,402.33				
100.00	100.00	259.52	259.51	0.23	2.63	90.86	-155.60	10,401.17	10,402.33	10,399.48	2.85	3,647.733	
200.00	200.00	359.52	359.51	0.53	4.47	90.86	-155.60	10,401.17	10,402.33	10,397.33	5.00	2,080.356	
300.00	300.00	459.52	459.51	0.83	6.32	90.86	-155.60	10,401.17	10,402.33	10,395.18	7.15	1,455.115	
340.68	340.68	500.16	500.15	0.95	7.07	90.85	-155.06	10,401.17	10,402.32	10,394.30	8.02	1,296.707	
400.00	400.00	559.32	559.31	1.13	8.17	90.85	-155.10	10,401.17	10,402.32	10,393.03	9.29	1,119.294	
500.00	500.00	659.05	659.04	1.43	10.01	90.86	-155.31	10,401.17	10,402.33	10,390.89	11.44	909.517	
600.00	599.98	759.51	759.49	1.73	11.88	-64.77	-155.60	10,401.17	10,401.59	10,387.98	13.61	764.476	
644.12	644.06	803.59	803.57	1.86	12.72	-64.80	-155.60	10,401.17	10,400.79	10,386.21	14.58	713.537	
700.00	699.87	859.40	859.38	2.03	13.78	-64.81	-155.60	10,401.17	10,399.59	10,383.78	15.80	658.001	
800.00	799.74	959.15	959.13	2.33	15.67	-64.84	-155.21	10,401.17	10,397.44	10,379.44	18.00	577.610	
900.00	899.62	1,058.70	1,058.67	2.63	17.57	-64.86	-155.41	10,401.17	10,395.31	10,375.11	20.19	514.800	
1,000.00	999.49	1,159.05	1,159.00	2.93	19.47	-64.89	-155.60	10,401.17	10,393.17	10,370.77	22.40	463.952	
1,100.00	1,099.36	1,258.92	1,258.88	3.23	21.38	-64.91	-155.60	10,401.17	10,391.04	10,366.43	24.60	422.370	
1,200.00	1,199.24	1,358.77	1,358.72	3.53	23.28	-64.94	-154.80	10,401.17	10,388.89	10,362.09	26.80	387.621	
1,300.00	1,299.11	1,458.32	1,458.27	3.83	25.17	-64.96	-154.95	10,401.17	10,386.76	10,357.77	29.00	358.215	
1,400.00	1,398.98	1,557.90	1,557.85	4.13	27.06	-64.99	-155.36	10,401.17	10,384.64	10,353.45	31.19	332.941	
1,500.00	1,498.86	1,658.44	1,658.37	4.43	28.98	-65.01	-155.60	10,401.17	10,382.51	10,349.11	33.40	310.816	
1,600.00	1,598.73	1,758.32	1,758.24	4.73	30.88	-65.04	-155.60	10,401.17	10,380.39	10,344.78	35.61	291.542	
1,700.00	1,698.60	1,858.13	1,858.06	5.03	32.78	-65.06	-155.10	10,401.17	10,378.26	10,340.45	37.81	274.521	
1,800.00	1,798.48	1,957.82	1,957.74	5.33	34.68	-65.09	-155.25	10,401.17	10,376.14	10,336.14	40.00	259.387	
1,900.00	1,898.35	2,057.53	2,057.45	5.63	36.57	-65.11	-155.59	10,401.17	10,374.02	10,331.82	42.20	245.828	
2,000.00	1,998.22	2,157.84	2,157.74	5.93	38.54	-65.14	-155.60	10,401.17	10,371.91	10,327.44	44.47	233.248	
2,100.00	2,098.10	2,257.71	2,257.61	6.23	40.50	-65.16	-155.60	10,401.17	10,369.79	10,323.06	46.73	221.919	
2,200.00	2,197.97	2,357.44	2,357.33	6.53	42.46	-65.19	-154.90	10,401.17	10,367.67	10,318.69	48.99	211.649	
2,300.00	2,297.84	2,457.11	2,457.00	6.83	44.42	-65.21	-155.22	10,401.17	10,365.56	10,314.32	51.24	202.287	
2,400.00	2,397.72	2,557.37	2,557.23	7.13	46.40	-65.24	-155.60	10,401.17	10,363.46	10,309.93	53.53	193.598	
2,500.00	2,497.59	2,657.25	2,657.10	7.43	48.43	-65.26	-155.60	10,401.17	10,361.35	10,305.49	55.86	185.502	
2,600.00	2,597.46	2,757.05	2,756.91	7.73	50.45	-65.29	-154.96	10,401.17	10,359.24	10,301.06	58.18	178.056	
2,700.00	2,697.34	2,856.74	2,856.59	8.03	52.47	-65.32	-155.23	10,401.17	10,357.14	10,296.64	60.50	171.190	
2,800.00	2,797.21	2,956.91	2,956.72	8.33	54.51	-65.34	-155.60	10,401.17	10,355.04	10,292.20	62.83	164.801	
2,900.00	2,897.09	3,056.79	3,056.60	8.63	56.54	-65.36	-155.60	10,401.17	10,352.94	10,287.78	65.16	158.876	
3,000.00	2,996.96	3,156.66	3,156.47	8.93	58.57	-65.39	-155.60	10,401.17	10,350.84	10,283.35	67.49	153.360	
3,100.00	3,096.83	3,256.44	3,256.24	9.23	60.60	-65.42	-154.55	10,401.17	10,348.74	10,278.92	69.82	148.216	
3,200.00	3,196.71	3,356.22	3,356.01	9.53	62.62	-65.44	-154.96	10,401.17	10,346.65	10,274.50	72.15	143.404	
3,300.00	3,296.58	3,456.34	3,456.09	9.83	64.65	-65.47	-155.60	10,401.17	10,344.56	10,270.08	74.48	138.894	
3,400.00	3,396.45	3,556.22	3,555.97	10.13	66.62	-65.49	-155.60	10,401.17	10,342.47	10,265.73	76.74	134.765	
3,500.00	3,496.33	3,569.00	3,568.74	10.43	66.87	-65.49	-155.60	10,401.17	10,340.75	10,263.46	77.29	133.785	
3,600.00	3,596.20	3,569.00	3,568.74	10.73	66.87	-65.49	-155.60	10,401.17	10,339.99	10,262.41	77.59	133.272	
3,628.74	3,624.90	3,569.00	3,568.74	10.81	66.87	-65.49	-155.60	10,401.17	10,339.95	10,262.28	77.67	133.130	
3,700.00	3,696.07	3,569.00	3,568.74	11.03	66.87	-65.49	-155.60	10,401.17	10,340.20	10,262.33	77.87	132.786	
3,800.00	3,795.95	3,569.00	3,568.74	11.33	66.87	-65.49	-155.60	10,401.17	10,341.37	10,263.22	78.15	132.326	
3,900.00	3,895.82	3,569.00	3,568.74	11.63	66.87	-65.49	-155.60	10,401.17	10,343.51	10,265.08	78.42	131.892	
4,000.00	3,995.69	3,569.00	3,568.74	11.93	66.87	-65.49	-155.60	10,401.17	10,346.61	10,267.92	78.69	131.483	
4,100.00	4,095.57	3,569.00	3,568.74	12.23	66.87	-65.49	-155.60	10,401.17	10,350.68	10,271.73	78.95	131.100	
4,200.00	4,195.44	3,569.00	3,568.74	12.53	66.87	-65.49	-155.60	10,401.17	10,355.72	10,276.51	79.21	130.740	
4,300.00	4,295.31	3,569.00	3,568.74	12.83	66.87	-65.49	-155.60	10,401.17	10,361.72	10,282.26	79.46	130.406	
4,400.00	4,395.19	3,569.00	3,568.74	13.13	66.87	-65.49	-155.60	10,401.17	10,368.68	10,288.97	79.70	130.094	
4,500.00	4,495.06	3,569.00	3,568.74	13.43	66.87	-65.49	-155.60	10,401.17	10,376.59	10,296.65	79.94	129.807	
4,600.00	4,594.93	3,569.00	3,568.74	13.73	66.87	-65.49	-155.60	10,401.17	10,385.47	10,305.30	80.17	129.542	
4,700.00	4,694.81	3,569.00	3,568.74	14.03	66.87	-65.49	-155.60	10,401.17	10,395.30	10,314.90	80.40	129.300	
4,800.00	4,794.68	3,569.00	3,568.74	14.33	66.87	-65.49	-155.60	10,401.17	10,406.08	10,325.46	80.62	129.081	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #272 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
4,900.00	4,894.55	3,569.00	3,568.74	14.63	66.87	-65.49	-155.60	10,401.17	10,417.81	10,336.97	80.83	128.883	
5,000.00	4,994.43	3,569.00	3,568.74	14.93	66.87	-65.49	-155.60	10,401.17	10,430.48	10,349.44	81.04	128.707	
5,100.00	5,094.30	3,569.00	3,568.74	15.23	66.87	-65.49	-155.60	10,401.17	10,444.10	10,362.85	81.24	128.552	
5,200.00	5,194.18	3,569.00	3,568.74	15.53	66.87	-65.49	-155.60	10,401.17	10,458.65	10,377.21	81.44	128.419	
5,300.00	5,294.05	3,569.00	3,568.74	15.83	66.87	-65.49	-155.60	10,401.17	10,474.14	10,392.51	81.63	128.306	
5,400.00	5,393.92	3,569.00	3,568.74	16.13	66.87	-65.49	-155.60	10,401.17	10,490.56	10,408.74	81.82	128.213	
5,500.00	5,493.80	3,569.00	3,568.74	16.43	66.87	-65.49	-155.60	10,401.17	10,507.91	10,425.91	82.00	128.140	
5,600.00	5,593.67	3,569.00	3,568.74	16.73	66.87	-65.49	-155.60	10,401.17	10,526.18	10,444.00	82.18	128.086	
5,700.00	5,693.54	3,569.00	3,568.74	17.03	66.87	-65.49	-155.60	10,401.17	10,545.36	10,463.01	82.35	128.052	
5,800.00	5,793.42	3,569.00	3,568.74	17.33	66.87	-65.49	-155.60	10,401.17	10,565.46	10,482.94	82.52	128.037	
5,900.00	5,893.29	3,569.00	3,568.74	17.63	66.87	-65.49	-155.60	10,401.17	10,586.46	10,503.78	82.68	128.040	
6,000.00	5,993.16	3,569.00	3,568.74	17.93	66.87	-65.49	-155.60	10,401.17	10,608.37	10,525.53	82.84	128.062	
6,100.00	6,093.04	3,569.00	3,568.74	18.23	66.87	-65.49	-155.60	10,401.17	10,631.17	10,548.18	82.99	128.101	
6,200.00	6,192.91	3,569.00	3,568.74	18.53	66.87	-65.49	-155.60	10,401.17	10,654.86	10,571.72	83.14	128.158	
6,300.00	6,292.78	3,569.00	3,568.74	18.83	66.87	-65.49	-155.60	10,401.17	10,679.43	10,596.15	83.28	128.233	
6,400.00	6,392.66	3,569.00	3,568.74	19.13	66.87	-65.49	-155.60	10,401.17	10,704.88	10,621.46	83.42	128.324	
6,500.00	6,492.53	3,569.00	3,568.74	19.43	66.87	-65.49	-155.60	10,401.17	10,731.20	10,647.65	83.56	128.432	
6,551.20	6,543.67	3,569.00	3,568.74	19.58	66.87	-65.49	-155.60	10,401.17	10,745.02	10,661.39	83.62	128.494	
6,600.00	6,592.30	3,569.00	3,568.74	19.73	66.87	-23.51	-155.60	10,401.17	10,756.38	10,672.70	83.68	128.537	
6,650.00	6,641.67	3,569.00	3,568.74	19.88	66.87	-13.55	-155.60	10,401.17	10,764.01	10,680.27	83.74	128.537	
6,700.00	6,690.21	3,569.00	3,568.74	20.03	66.87	-9.54	-155.60	10,401.17	10,767.55	10,683.75	83.80	128.491	
6,750.00	6,737.54	3,569.00	3,568.74	20.18	66.87	-7.41	-155.60	10,401.17	10,766.95	10,683.09	83.86	128.399	
6,800.00	6,783.30	3,569.00	3,568.74	20.33	66.87	-6.10	-155.60	10,401.17	10,762.23	10,678.32	83.91	128.259	
6,850.00	6,827.15	3,569.00	3,568.74	20.48	66.87	-5.23	-155.60	10,401.17	10,753.42	10,669.45	83.96	128.070	
6,900.00	6,868.74	3,569.00	3,568.74	20.63	66.87	-4.61	-155.60	10,401.17	10,740.57	10,656.55	84.02	127.834	
6,950.00	6,907.77	3,569.00	3,568.74	20.78	66.87	-4.16	-155.60	10,401.17	10,723.77	10,639.70	84.08	127.549	
7,000.00	6,943.94	3,569.00	3,568.74	20.93	66.87	-3.82	-155.60	10,401.17	10,703.13	10,618.99	84.13	127.215	
7,050.00	6,976.97	3,569.00	3,568.74	21.08	66.87	-3.56	-155.60	10,401.17	10,678.78	10,594.58	84.19	126.835	
7,100.00	7,006.62	3,569.00	3,568.74	21.23	66.87	-3.36	-155.60	10,401.17	10,650.88	10,566.62	84.26	126.407	
7,150.00	7,032.64	3,569.00	3,568.74	21.38	66.87	-3.21	-155.60	10,401.17	10,619.62	10,535.30	84.33	125.935	
7,200.00	7,054.86	3,569.00	3,568.74	21.53	66.87	-3.10	-155.60	10,401.17	10,585.21	10,500.81	84.40	125.418	
7,250.00	7,073.09	3,569.00	3,568.74	21.68	66.87	-3.03	-155.60	10,401.17	10,547.88	10,463.40	84.48	124.859	
7,300.00	7,087.20	3,569.00	3,568.74	21.83	66.87	-2.99	-155.60	10,401.17	10,507.89	10,423.32	84.56	124.261	
7,350.00	7,097.08	3,569.00	3,568.74	21.98	66.87	-2.99	-155.60	10,401.17	10,465.50	10,380.85	84.66	123.625	
7,400.00	7,102.66	3,569.00	3,568.74	22.13	66.87	-3.03	-155.60	10,401.17	10,421.02	10,336.27	84.75	122.955	
7,438.94	7,104.00	3,569.00	3,568.74	22.25	66.87	-3.09	-155.60	10,401.17	10,385.13	10,300.30	84.84	122.411	
7,500.00	7,104.02	3,569.00	3,568.74	22.43	66.87	-3.09	-155.60	10,401.17	10,328.11	10,243.14	84.97	121.545	
7,600.00	7,104.06	3,569.00	3,568.74	22.74	66.87	-3.09	-155.60	10,401.17	10,234.82	10,149.63	85.19	120.137	
7,700.00	7,104.10	3,569.00	3,568.74	23.04	66.87	-3.09	-155.60	10,401.17	10,141.67	10,056.26	85.41	118.740	
7,800.00	7,104.14	3,569.00	3,568.74	23.34	66.87	-3.09	-155.60	10,401.17	10,048.64	9,963.02	85.63	117.356	
7,900.00	7,104.18	3,569.00	3,568.74	23.64	66.87	-3.09	-155.60	10,401.17	9,955.75	9,869.91	85.84	115.983	
8,000.00	7,104.22	3,569.00	3,568.74	23.94	66.87	-3.09	-155.60	10,401.17	9,863.00	9,776.95	86.05	114.622	
8,100.00	7,104.26	3,569.00	3,568.74	24.24	66.87	-3.09	-155.60	10,401.17	9,770.39	9,684.14	86.26	113.273	
8,200.00	7,104.30	3,569.00	3,568.74	24.54	66.87	-3.09	-155.60	10,401.17	9,677.93	9,591.47	86.46	111.936	
8,300.00	7,104.34	3,569.00	3,568.74	24.84	66.87	-3.09	-155.60	10,401.17	9,585.62	9,498.96	86.66	110.610	
8,400.00	7,104.38	3,569.00	3,568.74	25.14	66.87	-3.09	-155.60	10,401.17	9,493.47	9,406.61	86.86	109.296	
8,500.00	7,104.42	3,569.00	3,568.74	25.44	66.87	-3.09	-155.60	10,401.17	9,401.47	9,314.42	87.06	107.993	
8,600.00	7,104.45	3,569.00	3,568.74	25.74	66.87	-3.09	-155.60	10,401.17	9,309.64	9,222.40	87.25	106.703	
8,700.00	7,104.49	3,569.00	3,568.74	26.04	66.87	-3.09	-155.60	10,401.17	9,217.99	9,130.55	87.44	105.423	
8,800.00	7,104.53	3,569.00	3,568.74	26.34	66.87	-3.09	-155.60	10,401.17	9,126.50	9,038.88	87.62	104.155	
8,900.00	7,104.57	3,569.00	3,568.74	26.64	66.87	-3.09	-155.60	10,401.17	9,035.20	8,947.39	87.81	102.899	
9,000.00	7,104.61	3,569.00	3,568.74	26.95	66.87	-3.09	-155.60	10,401.17	8,944.08	8,856.10	87.99	101.655	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #272 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,100.00	7,104.65	3,569.00	3,568.74	27.25	66.87	-3.09	-155.60	10,401.17	8,853.16	8,765.00	88.16	100.421	
9,200.00	7,104.69	3,569.00	3,568.74	27.55	66.87	-3.09	-155.60	10,401.17	8,762.43	8,674.10	88.33	99.200	
9,300.00	7,104.73	3,569.00	3,568.74	27.85	66.87	-3.09	-155.60	10,401.17	8,671.91	8,583.41	88.50	97.990	
9,400.00	7,104.77	3,569.00	3,568.74	28.15	66.87	-3.09	-155.60	10,401.17	8,581.59	8,492.93	88.66	96.791	
9,500.00	7,104.81	3,569.00	3,568.74	28.45	66.87	-3.09	-155.60	10,401.17	8,491.50	8,402.68	88.82	95.605	
9,600.00	7,104.85	3,569.00	3,568.74	28.75	66.87	-3.09	-155.60	10,401.17	8,401.63	8,312.65	88.97	94.429	
9,700.00	7,104.89	3,569.00	3,568.74	29.05	66.87	-3.09	-155.60	10,401.17	8,311.98	8,222.86	89.12	93.266	
9,800.00	7,104.92	3,569.00	3,568.74	29.35	66.87	-3.09	-155.60	10,401.17	8,222.58	8,133.32	89.27	92.114	
9,900.00	7,104.96	3,569.00	3,568.74	29.65	66.87	-3.09	-155.60	10,401.17	8,133.43	8,044.02	89.40	90.974	
10,000.00	7,105.00	3,569.00	3,568.74	29.95	66.87	-3.09	-155.60	10,401.17	8,044.53	7,954.99	89.54	89.846	
10,100.00	7,105.04	3,569.00	3,568.74	30.25	66.87	-3.09	-155.60	10,401.17	7,955.89	7,866.23	89.66	88.729	
10,200.00	7,105.08	3,569.00	3,568.74	30.55	66.87	-3.09	-155.60	10,401.17	7,867.53	7,777.74	89.79	87.625	
10,300.00	7,105.12	3,569.00	3,568.74	30.85	66.87	-3.09	-155.60	10,401.17	7,779.45	7,689.54	89.90	86.533	
10,400.00	7,105.16	3,569.00	3,568.74	31.15	66.87	-3.09	-155.60	10,401.17	7,691.66	7,601.64	90.01	85.452	
10,500.00	7,105.20	3,569.00	3,568.74	31.45	66.87	-3.09	-155.60	10,401.17	7,604.17	7,514.05	90.11	84.384	
10,600.00	7,105.24	3,569.00	3,568.74	31.75	66.87	-3.09	-155.60	10,401.17	7,516.99	7,426.78	90.21	83.328	
10,700.00	7,105.28	3,569.00	3,568.74	32.05	66.87	-3.09	-155.60	10,401.17	7,430.14	7,339.84	90.30	82.285	
10,800.00	7,105.32	3,569.00	3,568.74	32.35	66.87	-3.09	-155.60	10,401.17	7,343.62	7,253.24	90.38	81.254	
10,900.00	7,105.36	3,569.00	3,568.74	32.66	66.87	-3.09	-155.60	10,401.17	7,257.44	7,166.99	90.45	80.236	
11,000.00	7,105.39	3,569.00	3,568.74	32.96	66.87	-3.09	-155.60	10,401.17	7,171.63	7,081.11	90.52	79.230	
11,100.00	7,105.43	3,569.00	3,568.74	33.26	66.87	-3.09	-155.60	10,401.17	7,086.19	6,995.61	90.57	78.238	
11,200.00	7,105.47	3,569.00	3,568.74	33.56	66.87	-3.09	-155.60	10,401.17	7,001.13	6,910.51	90.62	77.258	
11,300.00	7,105.51	3,569.00	3,568.74	33.86	66.87	-3.09	-155.60	10,401.17	6,916.47	6,825.82	90.66	76.292	
11,400.00	7,105.55	3,569.00	3,568.74	34.16	66.87	-3.09	-155.60	10,401.17	6,832.23	6,741.55	90.69	75.339	
11,500.00	7,105.59	3,569.00	3,568.74	34.46	66.87	-3.09	-155.60	10,401.17	6,748.42	6,657.72	90.70	74.400	
11,600.00	7,105.63	3,569.00	3,568.74	34.76	66.87	-3.09	-155.60	10,401.17	6,665.06	6,574.34	90.71	73.475	
11,700.00	7,105.67	3,569.00	3,568.74	35.06	66.87	-3.09	-155.60	10,401.17	6,582.15	6,491.45	90.71	72.564	
11,800.00	7,105.71	3,569.00	3,568.74	35.36	66.87	-3.09	-155.60	10,401.17	6,499.73	6,409.04	90.69	71.668	
11,900.00	7,105.75	3,569.00	3,568.74	35.66	66.87	-3.09	-155.60	10,401.17	6,417.81	6,327.15	90.66	70.786	
12,000.00	7,105.79	3,569.00	3,568.74	35.96	66.87	-3.09	-155.60	10,401.17	6,336.41	6,245.79	90.62	69.919	
12,100.00	7,105.83	3,569.00	3,568.74	36.26	66.87	-3.09	-155.60	10,401.17	6,255.55	6,164.98	90.57	69.068	
12,200.00	7,105.86	3,569.00	3,568.74	36.56	66.87	-3.09	-155.60	10,401.17	6,175.25	6,084.74	90.50	68.232	
12,300.00	7,105.90	3,569.00	3,568.74	36.86	66.87	-3.09	-155.60	10,401.17	6,095.53	6,005.10	90.42	67.412	
12,400.00	7,105.94	3,569.00	3,568.74	37.16	66.87	-3.09	-155.60	10,401.17	6,016.41	5,926.09	90.33	66.608	
12,500.00	7,105.98	3,569.00	3,568.74	37.46	66.87	-3.09	-155.60	10,401.17	5,937.93	5,847.72	90.21	65.821	
12,600.00	7,106.02	3,569.00	3,568.74	37.76	66.87	-3.09	-155.60	10,401.17	5,860.10	5,770.02	90.08	65.052	
12,700.00	7,106.06	3,569.00	3,568.74	38.06	66.87	-3.09	-155.60	10,401.17	5,782.96	5,693.02	89.94	64.300	
12,800.00	7,106.10	3,569.00	3,568.74	38.36	66.87	-3.09	-155.60	10,401.17	5,706.52	5,616.75	89.77	63.566	
12,900.00	7,106.14	3,569.00	3,568.74	38.66	66.87	-3.09	-155.60	10,401.17	5,630.82	5,541.23	89.59	62.851	
13,000.00	7,106.18	3,569.00	3,568.74	38.96	66.87	-3.09	-155.60	10,401.17	5,555.89	5,466.50	89.39	62.155	
13,100.00	7,106.22	3,569.00	3,568.74	39.26	66.87	-3.09	-155.60	10,401.17	5,481.76	5,392.60	89.16	61.479	
13,200.00	7,106.26	3,569.00	3,568.74	39.56	66.87	-3.09	-155.60	10,401.17	5,408.47	5,319.54	88.92	60.823	
13,300.00	7,106.30	3,569.00	3,568.74	39.86	66.87	-3.09	-155.60	10,401.17	5,336.04	5,247.38	88.65	60.189	
13,400.00	7,106.33	3,569.00	3,568.74	40.16	66.87	-3.09	-155.60	10,401.17	5,264.51	5,176.14	88.37	59.577	
13,500.00	7,106.37	3,569.00	3,568.74	40.46	66.87	-3.09	-155.60	10,401.17	5,193.92	5,105.87	88.05	58.987	
13,600.00	7,106.41	3,569.00	3,568.74	40.76	66.87	-3.09	-155.60	10,401.17	5,124.32	5,036.60	87.71	58.420	
13,700.00	7,106.45	3,569.00	3,568.74	41.06	66.87	-3.09	-155.60	10,401.17	5,055.73	4,968.38	87.35	57.878	
13,800.00	7,106.49	3,569.00	3,568.74	41.36	66.87	-3.09	-155.60	10,401.17	4,988.21	4,901.25	86.96	57.362	
13,900.00	7,106.53	3,569.00	3,568.74	41.67	66.87	-3.09	-155.60	10,401.17	4,921.79	4,835.24	86.54	56.871	
14,000.00	7,106.57	3,569.00	3,568.74	41.97	66.87	-3.09	-155.60	10,401.17	4,856.52	4,770.42	86.10	56.408	
14,100.00	7,106.61	3,569.00	3,568.74	42.27	66.87	-3.09	-155.60	10,401.17	4,792.45	4,706.83	85.62	55.973	
14,200.00	7,106.65	3,569.00	3,568.74	42.57	66.87	-3.09	-155.60	10,401.17	4,729.62	4,644.51	85.11	55.568	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #272 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,300.00	7,106.69	3,569.00	3,568.74	42.87	66.87	-3.09	-155.60	10,401.17	4,668.10	4,583.52	84.58	55.194	
14,400.00	7,106.73	3,569.00	3,568.74	43.17	66.87	-3.09	-155.60	10,401.17	4,607.92	4,523.91	84.01	54.851	
14,500.00	7,106.76	3,569.00	3,568.74	43.47	66.87	-3.09	-155.60	10,401.17	4,549.14	4,465.74	83.41	54.542	
14,600.00	7,106.80	3,569.00	3,568.74	43.77	66.87	-3.09	-155.60	10,401.17	4,491.82	4,409.05	82.77	54.268	
14,700.00	7,106.84	3,569.00	3,568.74	44.07	66.87	-3.09	-155.60	10,401.17	4,436.02	4,353.92	82.10	54.031	
14,800.00	7,106.88	3,569.00	3,568.74	44.37	66.87	-3.09	-155.60	10,401.17	4,381.78	4,300.38	81.40	53.831	
14,900.00	7,106.92	3,569.00	3,568.74	44.67	66.87	-3.09	-155.60	10,401.17	4,329.18	4,248.52	80.66	53.671	
15,000.00	7,106.96	3,569.00	3,568.74	44.97	66.87	-3.09	-155.60	10,401.17	4,278.27	4,198.38	79.89	53.551	
15,100.00	7,107.00	3,569.00	3,568.74	45.27	66.87	-3.09	-155.60	10,401.17	4,229.11	4,150.03	79.09	53.475	
15,200.00	7,107.04	3,569.00	3,568.74	45.57	66.87	-3.09	-155.60	10,401.17	4,181.77	4,103.52	78.25	53.443	
15,300.00	7,107.08	3,569.00	3,568.74	45.87	66.87	-3.09	-155.60	10,401.17	4,136.30	4,058.92	77.38	53.457	
15,400.00	7,107.12	3,569.00	3,568.74	46.17	66.87	-3.09	-155.60	10,401.17	4,092.77	4,016.29	76.47	53.518	
15,500.00	7,107.16	3,569.00	3,568.74	46.47	66.87	-3.09	-155.60	10,401.17	4,051.24	3,975.69	75.54	53.629	
15,600.00	7,107.20	3,569.00	3,568.74	46.77	66.87	-3.09	-155.60	10,401.17	4,011.77	3,937.19	74.58	53.789	
15,700.00	7,107.23	3,569.00	3,568.74	47.07	66.87	-3.09	-155.60	10,401.17	3,974.43	3,900.83	73.60	54.000	
15,800.00	7,107.27	3,569.00	3,568.74	47.37	66.87	-3.09	-155.60	10,401.17	3,939.27	3,866.67	72.60	54.262	
15,900.00	7,107.31	3,569.00	3,568.74	47.67	66.87	-3.09	-155.60	10,401.17	3,906.36	3,834.78	71.58	54.574	
16,000.00	7,107.35	3,569.00	3,568.74	47.97	66.87	-3.09	-155.60	10,401.17	3,875.75	3,805.20	70.55	54.936	
16,100.00	7,107.39	3,569.00	3,568.74	48.27	66.87	-3.09	-155.60	10,401.17	3,847.49	3,777.97	69.52	55.343	
16,200.00	7,107.43	3,569.00	3,568.74	48.57	66.87	-3.09	-155.60	10,401.17	3,821.65	3,753.15	68.50	55.792	
16,300.00	7,107.47	3,569.00	3,568.74	48.87	66.87	-3.09	-155.60	10,401.17	3,798.26	3,730.77	67.49	56.275	
16,400.00	7,107.51	3,569.00	3,568.74	49.17	66.87	-3.09	-155.60	10,401.17	3,777.38	3,710.85	66.53	56.780	
16,500.00	7,107.55	3,569.00	3,568.74	49.47	66.87	-3.09	-155.60	10,401.17	3,759.04	3,693.42	65.61	57.293	
16,600.00	7,107.59	3,569.00	3,568.74	49.77	66.87	-3.09	-155.60	10,401.17	3,743.28	3,678.51	64.77	57.791	
16,700.00	7,107.63	3,569.00	3,568.74	50.07	66.87	-3.09	-155.60	10,401.17	3,730.14	3,666.10	64.04	58.247	
16,800.00	7,107.67	3,569.00	3,568.74	50.37	66.87	-3.09	-155.60	10,401.17	3,719.64	3,656.19	63.45	58.626	
16,900.00	7,107.70	3,569.00	3,568.74	50.67	66.87	-3.09	-155.60	10,401.17	3,711.80	3,648.77	63.03	58.887	
17,000.00	7,107.74	3,569.00	3,568.74	50.97	66.87	-3.09	-155.60	10,401.17	3,706.65	3,643.81	62.84	58.989	
17,100.00	7,107.78	3,569.00	3,568.74	51.27	66.87	-3.09	-155.60	10,401.17	3,704.19	3,641.30	62.89	58.901	
17,141.08	7,107.80	3,569.00	3,568.74	51.40	66.87	-3.09	-155.60	10,401.17	3,703.97	3,640.98	62.99	58.805	CC, ES
17,200.00	7,107.82	3,569.00	3,568.74	51.57	66.87	-3.09	-155.60	10,401.17	3,704.43	3,641.22	63.21	58.606	
17,300.00	7,107.86	3,569.00	3,568.74	51.87	66.87	-3.09	-155.60	10,401.17	3,707.37	3,643.58	63.79	58.114	
17,400.00	7,107.90	3,569.00	3,568.74	52.17	66.87	-3.09	-155.60	10,401.17	3,713.00	3,648.38	64.63	57.454	
17,500.00	7,107.94	3,569.00	3,568.74	52.47	66.87	-3.09	-155.60	10,401.17	3,721.31	3,655.65	65.67	56.669	
17,600.00	7,107.98	3,569.00	3,568.74	52.77	66.87	-3.09	-155.60	10,401.17	3,732.29	3,665.40	66.88	55.803	
17,700.00	7,108.02	3,569.00	3,568.74	53.07	66.87	-3.09	-155.60	10,401.17	3,745.90	3,677.66	68.23	54.899	
17,800.00	7,108.06	3,569.00	3,568.74	53.37	66.87	-3.09	-155.60	10,401.17	3,762.12	3,692.43	69.68	53.988	
17,900.00	7,108.10	3,569.00	3,568.74	53.67	66.87	-3.09	-155.60	10,401.17	3,780.91	3,709.71	71.21	53.097	
18,000.00	7,108.14	3,569.00	3,568.74	53.97	66.87	-3.09	-155.60	10,401.17	3,802.25	3,729.47	72.78	52.242	
18,100.00	7,108.17	3,569.00	3,568.74	54.27	66.87	-3.09	-155.60	10,401.17	3,826.08	3,751.69	74.39	51.434	
18,200.00	7,108.21	3,569.00	3,568.74	54.57	66.87	-3.09	-155.60	10,401.17	3,852.36	3,776.35	76.01	50.681	
18,300.00	7,108.25	3,569.00	3,568.74	54.87	66.87	-3.09	-155.60	10,401.17	3,881.04	3,803.40	77.64	49.987	
18,400.00	7,108.29	3,569.00	3,568.74	55.17	66.87	-3.09	-155.60	10,401.17	3,912.06	3,832.79	79.27	49.353	
18,500.00	7,108.33	3,569.00	3,568.74	55.47	66.87	-3.09	-155.60	10,401.17	3,945.38	3,864.49	80.88	48.778	
18,600.00	7,108.37	3,569.00	3,568.74	55.77	66.87	-3.09	-155.60	10,401.17	3,980.93	3,898.45	82.48	48.263	
18,700.00	7,108.41	3,569.00	3,568.74	56.07	66.87	-3.09	-155.60	10,401.17	4,018.65	3,934.59	84.06	47.806	
18,800.00	7,108.45	3,569.00	3,568.74	56.37	66.87	-3.09	-155.60	10,401.17	4,058.49	3,972.88	85.62	47.403	
18,900.00	7,108.49	3,569.00	3,568.74	56.67	66.87	-3.09	-155.60	10,401.17	4,100.38	4,013.24	87.14	47.054	
19,000.00	7,108.53	3,569.00	3,568.74	56.97	66.87	-3.09	-155.60	10,401.17	4,144.26	4,055.62	88.64	46.754	
19,100.00	7,108.57	3,569.00	3,568.74	57.28	66.87	-3.09	-155.60	10,401.17	4,190.07	4,099.97	90.11	46.502	
19,200.00	7,108.61	3,569.00	3,568.74	57.58	66.87	-3.09	-155.60	10,401.17	4,237.75	4,146.21	91.54	46.295	
19,300.00	7,108.64	3,569.00	3,568.74	57.88	66.87	-3.09	-155.60	10,401.17	4,287.22	4,194.28	92.94	46.130	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #272 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,400.00	7,108.68	3,569.00	3,568.74	58.18	66.87	-3.09	-155.60	10,401.17	4,338.44	4,244.14	94.30	46.005	
19,500.00	7,108.72	3,569.00	3,568.74	58.48	66.87	-3.09	-155.60	10,401.17	4,391.34	4,295.70	95.64	45.918	
19,600.00	7,108.76	3,569.00	3,568.74	58.78	66.87	-3.09	-155.60	10,401.17	4,445.85	4,348.92	96.93	45.865	
19,700.00	7,108.80	3,569.00	3,568.74	59.08	66.87	-3.09	-155.60	10,401.17	4,501.93	4,403.74	98.20	45.846	SF
19,800.00	7,108.84	3,569.00	3,568.74	59.38	66.87	-3.09	-155.60	10,401.17	4,559.52	4,460.09	99.43	45.859	
19,900.00	7,108.88	3,569.00	3,568.74	59.68	66.87	-3.09	-155.60	10,401.17	4,618.55	4,517.92	100.62	45.900	
20,000.00	7,108.92	3,569.00	3,568.74	59.98	66.87	-3.09	-155.60	10,401.17	4,678.97	4,577.18	101.79	45.968	
20,100.00	7,108.96	3,569.00	3,568.74	60.28	66.87	-3.09	-155.60	10,401.17	4,740.73	4,637.81	102.92	46.063	
20,208.46	7,109.00	3,569.00	3,568.74	60.60	66.87	-3.09	-155.60	10,401.17	4,809.17	4,705.06	104.11	46.192	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #334A (Offset) - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	22.49	-22.49	0.00	0.22	-93.09	-154.62	-2,868.66	2,872.82				
100.00	100.00	77.51	77.51	0.23	0.76	-93.09	-154.62	-2,868.66	2,872.82	2,871.83	0.99	2,901.423	
200.00	200.00	177.51	177.51	0.53	1.75	-93.09	-154.62	-2,868.66	2,872.82	2,870.54	2.28	1,262.744	
300.00	300.00	277.51	277.51	0.83	2.73	-93.09	-154.62	-2,868.66	2,872.82	2,869.26	3.56	806.977	
400.00	400.00	377.52	377.51	1.13	4.18	-93.09	-154.62	-2,868.66	2,872.82	2,867.51	5.31	541.442	
500.00	500.00	477.52	477.51	1.43	6.22	-93.09	-154.62	-2,868.66	2,872.82	2,865.17	7.65	375.545	CC
600.00	599.98	577.45	577.43	1.73	8.27	111.34	-153.86	-2,868.66	2,873.41	2,863.42	9.99	287.569	
644.12	644.06	621.35	621.33	1.86	9.16	111.36	-153.91	-2,868.66	2,874.10	2,863.08	11.02	260.769	
700.00	699.87	676.93	676.91	2.03	10.30	111.41	-154.04	-2,868.66	2,875.13	2,862.81	12.33	233.270	
800.00	799.74	776.43	776.41	2.33	12.33	111.50	-154.50	-2,868.66	2,877.00	2,862.34	14.66	196.262	
900.00	899.62	877.19	877.13	2.63	14.46	111.59	-154.62	-2,868.66	2,878.85	2,861.77	17.08	168.510	
1,000.00	999.49	977.07	977.00	2.93	16.58	111.68	-154.62	-2,868.66	2,880.71	2,861.20	19.51	147.682	
1,100.00	1,099.36	1,076.80	1,076.73	3.23	18.70	111.79	-153.55	-2,868.66	2,882.52	2,860.60	21.93	131.470	
1,200.00	1,199.24	1,176.26	1,176.18	3.53	20.81	111.88	-153.83	-2,868.66	2,884.41	2,860.07	24.34	118.511	
1,300.00	1,299.11	1,275.76	1,275.68	3.83	22.93	111.96	-154.46	-2,868.66	2,886.32	2,859.56	26.75	107.888	
1,400.00	1,398.98	1,376.64	1,376.50	4.13	25.14	112.05	-154.62	-2,868.66	2,888.21	2,858.94	29.27	98.685	
1,500.00	1,498.86	1,476.51	1,476.37	4.43	27.35	112.14	-154.62	-2,868.66	2,890.10	2,858.33	31.78	90.953	
1,600.00	1,598.73	1,576.26	1,576.11	4.73	29.56	112.26	-153.55	-2,868.66	2,891.96	2,857.68	34.28	84.358	
1,700.00	1,698.60	1,675.80	1,675.65	5.03	31.76	112.34	-153.84	-2,868.66	2,893.89	2,857.10	36.78	78.674	
1,800.00	1,798.48	1,775.38	1,775.22	5.33	33.96	112.42	-154.48	-2,868.66	2,895.82	2,856.54	39.29	73.712	
1,900.00	1,898.35	1,876.10	1,875.86	5.63	36.26	112.51	-154.62	-2,868.66	2,897.75	2,855.86	41.89	69.174	
2,000.00	1,998.22	1,975.97	1,975.74	5.93	38.57	112.60	-154.62	-2,868.66	2,899.68	2,855.19	44.49	65.174	
2,100.00	2,098.10	2,075.75	2,075.49	6.23	40.86	112.72	-153.25	-2,868.66	2,901.58	2,854.49	47.09	61.617	
2,200.00	2,197.97	2,175.32	2,175.06	6.53	43.16	112.81	-153.59	-2,868.66	2,903.54	2,853.86	49.68	58.440	
2,300.00	2,297.84	2,274.94	2,274.66	6.83	45.45	112.88	-154.36	-2,868.66	2,905.51	2,853.24	52.28	55.577	
2,400.00	2,397.72	2,375.59	2,375.23	7.13	47.64	112.97	-154.62	-2,868.66	2,907.48	2,852.72	54.77	53.090	
2,500.00	2,497.59	2,475.46	2,475.10	7.43	49.76	113.06	-154.62	-2,868.66	2,909.45	2,852.26	57.19	50.873	
2,600.00	2,597.46	2,575.25	2,574.88	7.73	51.89	113.18	-153.31	-2,868.66	2,911.40	2,851.78	59.61	48.837	
2,700.00	2,697.34	2,674.91	2,674.53	8.03	54.01	113.26	-153.68	-2,868.66	2,913.39	2,851.36	62.03	46.964	
2,800.00	2,797.21	2,774.62	2,774.23	8.33	56.13	113.33	-154.49	-2,868.66	2,915.40	2,850.94	64.46	45.230	
2,900.00	2,897.09	2,875.03	2,874.60	8.63	58.35	113.42	-154.62	-2,868.66	2,917.40	2,850.42	66.97	43.561	
3,000.00	2,996.96	2,974.90	2,974.47	8.93	60.56	113.51	-154.62	-2,868.66	2,919.40	2,849.91	69.49	42.014	
3,100.00	3,096.83	3,074.71	3,074.27	9.23	62.77	113.62	-153.94	-2,868.66	2,921.40	2,849.40	72.00	40.575	
3,200.00	3,196.71	3,174.51	3,174.07	9.53	64.99	113.70	-154.27	-2,868.66	2,923.43	2,848.92	74.51	39.234	
3,300.00	3,296.58	3,274.61	3,274.09	9.83	67.31	113.78	-154.62	-2,868.66	2,925.46	2,848.32	77.14	37.925	
3,400.00	3,396.45	3,374.49	3,373.97	10.13	69.80	113.87	-154.62	-2,868.66	2,927.49	2,847.57	79.92	36.628	
3,500.00	3,496.33	3,474.36	3,473.84	10.43	72.29	113.96	-154.62	-2,868.66	2,929.53	2,846.82	82.71	35.418	ES, SF
3,600.00	3,596.20	3,468.00	3,467.40	10.73	72.13	113.96	-154.62	-2,868.66	2,933.51	2,850.70	82.81	35.426	
3,700.00	3,696.07	3,468.00	3,467.40	11.03	72.13	113.96	-154.62	-2,868.66	2,940.87	2,857.89	82.98	35.441	
3,800.00	3,795.95	3,468.00	3,467.40	11.33	72.13	113.96	-154.62	-2,868.66	2,951.61	2,868.54	83.07	35.530	
3,900.00	3,895.82	3,468.00	3,467.40	11.63	72.13	113.96	-154.62	-2,868.66	2,965.68	2,882.59	83.09	35.692	
4,000.00	3,995.69	3,468.00	3,467.40	11.93	72.13	113.96	-154.62	-2,868.66	2,983.04	2,900.01	83.03	35.926	
4,100.00	4,095.57	3,468.00	3,467.40	12.23	72.13	113.96	-154.62	-2,868.66	3,003.63	2,920.73	82.91	36.229	
4,200.00	4,195.44	3,468.00	3,467.40	12.53	72.13	113.96	-154.62	-2,868.66	3,027.39	2,944.67	82.71	36.601	
4,300.00	4,295.31	3,468.00	3,467.40	12.83	72.13	113.96	-154.62	-2,868.66	3,054.23	2,971.77	82.46	37.039	
4,400.00	4,395.19	3,468.00	3,467.40	13.13	72.13	113.96	-154.62	-2,868.66	3,084.09	3,001.94	82.15	37.542	
4,500.00	4,495.06	3,468.00	3,467.40	13.43	72.13	113.96	-154.62	-2,868.66	3,116.87	3,035.08	81.79	38.108	
4,600.00	4,594.93	3,468.00	3,467.40	13.73	72.13	113.96	-154.62	-2,868.66	3,152.48	3,071.10	81.38	38.736	
4,700.00	4,694.81	3,468.00	3,467.40	14.03	72.13	113.96	-154.62	-2,868.66	3,190.83	3,109.89	80.94	39.423	
4,800.00	4,794.68	3,468.00	3,467.40	14.33	72.13	113.96	-154.62	-2,868.66	3,231.82	3,151.36	80.46	40.167	
4,900.00	4,894.55	3,468.00	3,467.40	14.63	72.13	113.96	-154.62	-2,868.66	3,275.35	3,195.40	79.95	40.968	
5,000.00	4,994.43	3,468.00	3,467.40	14.93	72.13	113.96	-154.62	-2,868.66	3,321.32	3,241.91	79.42	41.822	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #334A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,100.00	5,094.30	3,468.00	3,467.40	15.23	72.13	113.96	-154.62	-2,868.66	3,369.64	3,290.78	78.86	42.728	
5,200.00	5,194.18	3,468.00	3,467.40	15.53	72.13	113.96	-154.62	-2,868.66	3,420.19	3,341.90	78.29	43.684	
5,300.00	5,294.05	3,468.00	3,467.40	15.83	72.13	113.96	-154.62	-2,868.66	3,472.89	3,395.18	77.71	44.689	
5,400.00	5,393.92	3,468.00	3,467.40	16.13	72.13	113.96	-154.62	-2,868.66	3,527.64	3,450.52	77.13	45.739	
5,500.00	5,493.80	3,468.00	3,467.40	16.43	72.13	113.96	-154.62	-2,868.66	3,584.34	3,507.81	76.53	46.834	
5,600.00	5,593.67	3,468.00	3,467.40	16.73	72.13	113.96	-154.62	-2,868.66	3,642.91	3,566.97	75.94	47.970	
5,700.00	5,693.54	3,468.00	3,467.40	17.03	72.13	113.96	-154.62	-2,868.66	3,703.25	3,627.90	75.35	49.147	
5,800.00	5,793.42	3,468.00	3,467.40	17.33	72.13	113.96	-154.62	-2,868.66	3,765.28	3,690.52	74.76	50.362	
5,900.00	5,893.29	3,468.00	3,467.40	17.63	72.13	113.96	-154.62	-2,868.66	3,828.92	3,754.73	74.18	51.614	
6,000.00	5,993.16	3,468.00	3,467.40	17.93	72.13	113.96	-154.62	-2,868.66	3,894.08	3,820.47	73.61	52.900	
6,100.00	6,093.04	3,468.00	3,467.40	18.23	72.13	113.96	-154.62	-2,868.66	3,960.70	3,887.65	73.05	54.219	
6,200.00	6,192.91	3,468.00	3,467.40	18.53	72.13	113.96	-154.62	-2,868.66	4,028.70	3,956.20	72.50	55.569	
6,300.00	6,292.78	3,468.00	3,467.40	18.83	72.13	113.96	-154.62	-2,868.66	4,098.01	4,026.04	71.96	56.947	
6,400.00	6,392.66	3,468.00	3,467.40	19.13	72.13	113.96	-154.62	-2,868.66	4,168.56	4,097.13	71.44	58.353	
6,500.00	6,492.53	3,468.00	3,467.40	19.43	72.13	113.96	-154.62	-2,868.66	4,240.31	4,169.38	70.93	59.784	
6,551.20	6,543.67	3,468.00	3,467.40	19.58	72.13	113.96	-154.62	-2,868.66	4,277.48	4,206.81	70.67	60.526	
6,600.00	6,592.30	3,468.00	3,467.40	19.73	72.13	155.86	-154.62	-2,868.66	4,314.54	4,244.09	70.45	61.240	
6,650.00	6,641.67	3,468.00	3,467.40	19.88	72.13	165.72	-154.62	-2,868.66	4,355.37	4,285.10	70.27	61.978	
6,700.00	6,690.21	3,468.00	3,467.40	20.03	72.13	169.58	-154.62	-2,868.66	4,398.72	4,328.58	70.14	62.715	
6,750.00	6,737.54	3,468.00	3,467.40	20.18	72.13	171.49	-154.62	-2,868.66	4,444.18	4,374.13	70.05	63.441	
6,800.00	6,783.30	3,468.00	3,467.40	20.33	72.13	172.43	-154.62	-2,868.66	4,491.34	4,421.33	70.02	64.148	
6,850.00	6,827.15	3,468.00	3,467.40	20.48	72.13	172.63	-154.62	-2,868.66	4,539.81	4,469.78	70.03	64.827	
6,900.00	6,868.74	3,468.00	3,467.40	20.63	72.13	171.50	-154.62	-2,868.66	4,589.18	4,519.09	70.09	65.473	
6,950.00	6,907.77	3,468.00	3,467.40	20.78	72.13	158.36	-154.62	-2,868.66	4,639.04	4,568.84	70.20	66.079	
7,000.00	6,943.94	3,468.00	3,467.40	20.93	72.13	3.53	-154.62	-2,868.66	4,689.02	4,618.65	70.37	66.638	
7,050.00	6,976.97	3,468.00	3,467.40	21.08	72.13	-0.37	-154.62	-2,868.66	4,738.72	4,668.15	70.57	67.147	
7,100.00	7,006.62	3,468.00	3,467.40	21.23	72.13	-1.26	-154.62	-2,868.66	4,787.79	4,716.97	70.82	67.602	
7,150.00	7,032.64	3,468.00	3,467.40	21.38	72.13	-1.60	-154.62	-2,868.66	4,835.89	4,764.77	71.12	68.000	
7,200.00	7,054.86	3,468.00	3,467.40	21.53	72.13	-1.76	-154.62	-2,868.66	4,882.67	4,811.22	71.45	68.338	
7,250.00	7,073.09	3,468.00	3,467.40	21.68	72.13	-1.85	-154.62	-2,868.66	4,927.82	4,856.00	71.82	68.615	
7,300.00	7,087.20	3,468.00	3,467.40	21.83	72.13	-1.91	-154.62	-2,868.66	4,971.05	4,898.83	72.22	68.830	
7,350.00	7,097.08	3,468.00	3,467.40	21.98	72.13	-1.96	-154.62	-2,868.66	5,012.09	4,939.43	72.66	68.983	
7,400.00	7,102.66	3,468.00	3,467.40	22.13	72.13	-2.00	-154.62	-2,868.66	5,050.68	4,977.56	73.12	69.074	
7,438.94	7,104.00	3,468.00	3,467.40	22.25	72.13	-2.04	-154.62	-2,868.66	5,078.88	5,005.38	73.50	69.102	
7,500.00	7,104.02	3,468.00	3,467.40	22.43	72.13	-2.04	-154.62	-2,868.66	5,121.95	5,047.85	74.10	69.122	
7,600.00	7,104.06	3,468.00	3,467.40	22.74	72.13	-2.04	-154.62	-2,868.66	5,193.27	5,118.21	75.07	69.184	
7,700.00	7,104.10	3,468.00	3,467.40	23.04	72.13	-2.04	-154.62	-2,868.66	5,265.53	5,189.53	76.00	69.281	
7,800.00	7,104.14	3,468.00	3,467.40	23.34	72.13	-2.04	-154.62	-2,868.66	5,338.68	5,261.76	76.92	69.410	
7,900.00	7,104.18	3,468.00	3,467.40	23.64	72.13	-2.04	-154.62	-2,868.66	5,412.69	5,334.89	77.80	69.569	
8,000.00	7,104.22	3,468.00	3,467.40	23.94	72.13	-2.04	-154.62	-2,868.66	5,487.52	5,408.86	78.67	69.756	
8,100.00	7,104.26	3,468.00	3,467.40	24.24	72.13	-2.04	-154.62	-2,868.66	5,563.15	5,483.64	79.51	69.968	
8,200.00	7,104.30	3,468.00	3,467.40	24.54	72.13	-2.04	-154.62	-2,868.66	5,639.53	5,559.20	80.33	70.204	
8,300.00	7,104.34	3,468.00	3,467.40	24.84	72.13	-2.04	-154.62	-2,868.66	5,716.64	5,635.51	81.13	70.463	
8,400.00	7,104.38	3,468.00	3,467.40	25.14	72.13	-2.04	-154.62	-2,868.66	5,794.46	5,712.55	81.91	70.742	
8,500.00	7,104.42	3,468.00	3,467.40	25.44	72.13	-2.04	-154.62	-2,868.66	5,872.94	5,790.27	82.67	71.040	
8,600.00	7,104.45	3,468.00	3,467.40	25.74	72.13	-2.04	-154.62	-2,868.66	5,952.07	5,868.66	83.41	71.356	
8,700.00	7,104.49	3,468.00	3,467.40	26.04	72.13	-2.04	-154.62	-2,868.66	6,031.82	5,947.68	84.14	71.688	
8,800.00	7,104.53	3,468.00	3,467.40	26.34	72.13	-2.04	-154.62	-2,868.66	6,112.16	6,027.31	84.85	72.036	
8,900.00	7,104.57	3,468.00	3,467.40	26.64	72.13	-2.04	-154.62	-2,868.66	6,193.08	6,107.54	85.54	72.397	
9,000.00	7,104.61	3,468.00	3,467.40	26.95	72.13	-2.04	-154.62	-2,868.66	6,274.55	6,188.33	86.22	72.773	
9,100.00	7,104.65	3,468.00	3,467.40	27.25	72.13	-2.04	-154.62	-2,868.66	6,356.54	6,269.66	86.89	73.160	
9,200.00	7,104.69	3,468.00	3,467.40	27.55	72.13	-2.04	-154.62	-2,868.66	6,439.05	6,351.51	87.54	73.559	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #334A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,300.00	7,104.73	3,468.00	3,467.40	27.85	72.13	-2.04	-154.62	-2,868.66	6,522.04	6,433.87	88.17	73.969	
9,400.00	7,104.77	3,468.00	3,467.40	28.15	72.13	-2.04	-154.62	-2,868.66	6,605.51	6,516.71	88.80	74.389	
9,500.00	7,104.81	3,468.00	3,467.40	28.45	72.13	-2.04	-154.62	-2,868.66	6,689.43	6,600.02	89.41	74.818	
9,600.00	7,104.85	3,468.00	3,467.40	28.75	72.13	-2.04	-154.62	-2,868.66	6,773.78	6,683.77	90.01	75.255	
9,700.00	7,104.89	3,468.00	3,467.40	29.05	72.13	-2.04	-154.62	-2,868.66	6,858.56	6,767.96	90.60	75.701	
9,800.00	7,104.92	3,468.00	3,467.40	29.35	72.13	-2.04	-154.62	-2,868.66	6,943.74	6,852.56	91.18	76.154	
9,900.00	7,104.96	3,468.00	3,467.40	29.65	72.13	-2.04	-154.62	-2,868.66	7,029.32	6,937.57	91.75	76.614	
10,000.00	7,105.00	3,468.00	3,467.40	29.95	72.13	-2.04	-154.62	-2,868.66	7,115.26	7,022.95	92.31	77.081	
10,100.00	7,105.04	3,468.00	3,467.40	30.25	72.13	-2.04	-154.62	-2,868.66	7,201.57	7,108.72	92.86	77.553	
10,200.00	7,105.08	3,468.00	3,467.40	30.55	72.13	-2.04	-154.62	-2,868.66	7,288.24	7,194.83	93.40	78.031	
10,300.00	7,105.12	3,468.00	3,467.40	30.85	72.13	-2.04	-154.62	-2,868.66	7,375.23	7,281.30	93.93	78.515	
10,400.00	7,105.16	3,468.00	3,467.40	31.15	72.13	-2.04	-154.62	-2,868.66	7,462.56	7,368.10	94.46	79.003	
10,500.00	7,105.20	3,468.00	3,467.40	31.45	72.13	-2.04	-154.62	-2,868.66	7,550.20	7,455.22	94.98	79.495	
10,600.00	7,105.24	3,468.00	3,467.40	31.75	72.13	-2.04	-154.62	-2,868.66	7,638.14	7,542.65	95.49	79.991	
10,700.00	7,105.28	3,468.00	3,467.40	32.05	72.13	-2.04	-154.62	-2,868.66	7,726.38	7,630.39	95.99	80.492	
10,800.00	7,105.32	3,468.00	3,467.40	32.35	72.13	-2.04	-154.62	-2,868.66	7,814.90	7,718.41	96.49	80.995	
10,900.00	7,105.36	3,468.00	3,467.40	32.66	72.13	-2.04	-154.62	-2,868.66	7,903.69	7,806.71	96.98	81.502	
11,000.00	7,105.39	3,468.00	3,467.40	32.96	72.13	-2.04	-154.62	-2,868.66	7,992.75	7,895.29	97.46	82.012	
11,100.00	7,105.43	3,468.00	3,467.40	33.26	72.13	-2.04	-154.62	-2,868.66	8,082.06	7,984.13	97.94	82.524	
11,200.00	7,105.47	3,468.00	3,467.40	33.56	72.13	-2.04	-154.62	-2,868.66	8,171.62	8,073.22	98.41	83.039	
11,300.00	7,105.51	3,468.00	3,467.40	33.86	72.13	-2.04	-154.62	-2,868.66	8,261.42	8,162.55	98.87	83.556	
11,400.00	7,105.55	3,468.00	3,467.40	34.16	72.13	-2.04	-154.62	-2,868.66	8,351.46	8,252.12	99.33	84.075	
11,500.00	7,105.59	3,468.00	3,467.40	34.46	72.13	-2.04	-154.62	-2,868.66	8,441.71	8,341.92	99.79	84.595	
11,600.00	7,105.63	3,468.00	3,467.40	34.76	72.13	-2.04	-154.62	-2,868.66	8,532.19	8,431.95	100.24	85.118	
11,700.00	7,105.67	3,468.00	3,467.40	35.06	72.13	-2.04	-154.62	-2,868.66	8,622.87	8,522.19	100.69	85.641	
11,800.00	7,105.71	3,468.00	3,467.40	35.36	72.13	-2.04	-154.62	-2,868.66	8,713.76	8,612.63	101.13	86.166	
11,900.00	7,105.75	3,468.00	3,467.40	35.66	72.13	-2.04	-154.62	-2,868.66	8,804.85	8,703.28	101.56	86.692	
12,000.00	7,105.79	3,468.00	3,467.40	35.96	72.13	-2.04	-154.62	-2,868.66	8,896.13	8,794.13	102.00	87.219	
12,100.00	7,105.83	3,468.00	3,467.40	36.26	72.13	-2.04	-154.62	-2,868.66	8,987.59	8,885.16	102.43	87.747	
12,200.00	7,105.86	3,468.00	3,467.40	36.56	72.13	-2.04	-154.62	-2,868.66	9,079.23	8,976.38	102.85	88.276	
12,300.00	7,105.90	3,468.00	3,467.40	36.86	72.13	-2.04	-154.62	-2,868.66	9,171.05	9,067.78	103.27	88.805	
12,400.00	7,105.94	3,468.00	3,467.40	37.16	72.13	-2.04	-154.62	-2,868.66	9,263.04	9,159.35	103.69	89.334	
12,500.00	7,105.98	3,468.00	3,467.40	37.46	72.13	-2.04	-154.62	-2,868.66	9,355.19	9,251.08	104.10	89.864	
12,600.00	7,106.02	3,468.00	3,467.40	37.76	72.13	-2.04	-154.62	-2,868.66	9,447.50	9,342.99	104.52	90.394	
12,700.00	7,106.06	3,468.00	3,467.40	38.06	72.13	-2.04	-154.62	-2,868.66	9,539.97	9,435.04	104.92	90.924	
12,800.00	7,106.10	3,468.00	3,467.40	38.36	72.13	-2.04	-154.62	-2,868.66	9,632.58	9,527.26	105.33	91.454	
12,900.00	7,106.14	3,468.00	3,467.40	38.66	72.13	-2.04	-154.62	-2,868.66	9,725.35	9,619.62	105.73	91.984	
13,000.00	7,106.18	3,468.00	3,467.40	38.96	72.13	-2.04	-154.62	-2,868.66	9,818.25	9,712.12	106.13	92.513	
13,100.00	7,106.22	3,468.00	3,467.40	39.26	72.13	-2.04	-154.62	-2,868.66	9,911.30	9,804.77	106.52	93.043	
13,200.00	7,106.26	3,468.00	3,467.40	39.56	72.13	-2.04	-154.62	-2,868.66	10,004.47	9,897.56	106.92	93.572	
13,300.00	7,106.30	3,468.00	3,467.40	39.86	72.13	-2.04	-154.62	-2,868.66	10,097.78	9,990.47	107.31	94.101	
13,400.00	7,106.33	3,468.00	3,467.40	40.16	72.13	-2.04	-154.62	-2,868.66	10,191.22	10,083.52	107.70	94.629	
13,500.00	7,106.37	3,468.00	3,467.40	40.46	72.13	-2.04	-154.62	-2,868.66	10,284.77	10,176.69	108.08	95.157	
13,600.00	7,106.41	3,468.00	3,467.40	40.76	72.13	-2.04	-154.62	-2,868.66	10,378.45	10,269.99	108.47	95.684	
13,700.00	7,106.45	3,468.00	3,467.40	41.06	72.13	-2.04	-154.62	-2,868.66	10,472.25	10,363.40	108.85	96.210	
13,800.00	7,106.49	3,468.00	3,467.40	41.36	72.13	-2.04	-154.62	-2,868.66	10,566.16	10,456.93	109.23	96.736	
13,900.00	7,106.53	3,468.00	3,467.40	41.67	72.13	-2.04	-154.62	-2,868.66	10,660.18	10,550.57	109.60	97.261	
14,000.00	7,106.57	3,468.00	3,467.40	41.97	72.13	-2.04	-154.62	-2,868.66	10,754.31	10,644.33	109.98	97.785	
14,100.00	7,106.61	3,468.00	3,467.40	42.27	72.13	-2.04	-154.62	-2,868.66	10,848.54	10,738.19	110.35	98.308	
14,200.00	7,106.65	3,468.00	3,467.40	42.57	72.13	-2.04	-154.62	-2,868.66	10,942.88	10,832.15	110.72	98.830	
14,300.00	7,106.69	3,468.00	3,467.40	42.87	72.13	-2.04	-154.62	-2,868.66	11,037.31	10,926.22	111.09	99.352	
14,400.00	7,106.73	3,468.00	3,467.40	43.17	72.13	-2.04	-154.62	-2,868.66	11,131.84	11,020.38	111.46	99.872	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #334A (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,500.00	7,106.76	3,468.00	3,467.40	43.47	72.13	-2.04	-154.62	-2,868.66	11,226.47	11,114.64	111.83	100.391	
14,600.00	7,106.80	3,468.00	3,467.40	43.77	72.13	-2.04	-154.62	-2,868.66	11,321.19	11,209.00	112.19	100.909	
14,700.00	7,106.84	3,468.00	3,467.40	44.07	72.13	-2.04	-154.62	-2,868.66	11,416.00	11,303.44	112.55	101.426	
14,800.00	7,106.88	3,468.00	3,467.40	44.37	72.13	-2.04	-154.62	-2,868.66	11,510.90	11,397.98	112.92	101.942	
14,900.00	7,106.92	3,468.00	3,467.40	44.67	72.13	-2.04	-154.62	-2,868.66	11,605.88	11,492.60	113.28	102.457	
15,000.00	7,106.96	3,468.00	3,467.40	44.97	72.13	-2.04	-154.62	-2,868.66	11,700.95	11,587.31	113.63	102.970	
15,100.00	7,107.00	3,468.00	3,467.40	45.27	72.13	-2.04	-154.62	-2,868.66	11,796.09	11,682.10	113.99	103.483	
15,200.00	7,107.04	3,468.00	3,467.40	45.57	72.13	-2.04	-154.62	-2,868.66	11,891.32	11,776.98	114.35	103.994	
15,300.00	7,107.08	3,468.00	3,467.40	45.87	72.13	-2.04	-154.62	-2,868.66	11,986.63	11,871.93	114.70	104.503	
15,400.00	7,107.12	3,468.00	3,467.40	46.17	72.13	-2.04	-154.62	-2,868.66	12,082.01	11,966.96	115.05	105.012	
15,500.00	7,107.16	3,468.00	3,467.40	46.47	72.13	-2.04	-154.62	-2,868.66	12,177.47	12,062.06	115.41	105.519	
15,600.00	7,107.20	3,468.00	3,467.40	46.77	72.13	-2.04	-154.62	-2,868.66	12,272.99	12,157.24	115.76	106.024	
15,700.00	7,107.23	3,468.00	3,467.40	47.07	72.13	-2.04	-154.62	-2,868.66	12,368.59	12,252.49	116.11	106.529	
15,800.00	7,107.27	3,468.00	3,467.40	47.37	72.13	-2.04	-154.62	-2,868.66	12,464.26	12,347.81	116.45	107.031	
15,900.00	7,107.31	3,468.00	3,467.40	47.67	72.13	-2.04	-154.62	-2,868.66	12,560.00	12,443.19	116.80	107.533	
16,000.00	7,107.35	3,468.00	3,467.40	47.97	72.13	-2.04	-154.62	-2,868.66	12,655.80	12,538.65	117.15	108.033	
16,100.00	7,107.39	3,468.00	3,467.40	48.27	72.13	-2.04	-154.62	-2,868.66	12,751.66	12,634.17	117.49	108.532	
16,200.00	7,107.43	3,468.00	3,467.40	48.57	72.13	-2.04	-154.62	-2,868.66	12,847.59	12,729.75	117.84	109.029	
16,300.00	7,107.47	3,468.00	3,467.40	48.87	72.13	-2.04	-154.62	-2,868.66	12,943.58	12,825.40	118.18	109.524	
16,400.00	7,107.51	3,468.00	3,467.40	49.17	72.13	-2.04	-154.62	-2,868.66	13,039.63	12,921.11	118.52	110.019	
16,500.00	7,107.55	3,468.00	3,467.40	49.47	72.13	-2.04	-154.62	-2,868.66	13,135.74	13,016.88	118.86	110.511	
16,600.00	7,107.59	3,468.00	3,467.40	49.77	72.13	-2.04	-154.62	-2,868.66	13,231.91	13,112.70	119.20	111.003	
16,700.00	7,107.63	3,468.00	3,467.40	50.07	72.13	-2.04	-154.62	-2,868.66	13,328.13	13,208.59	119.54	111.492	
16,800.00	7,107.67	3,468.00	3,467.40	50.37	72.13	-2.04	-154.62	-2,868.66	13,424.41	13,304.53	119.88	111.980	
16,900.00	7,107.70	3,468.00	3,467.40	50.67	72.13	-2.04	-154.62	-2,868.66	13,520.74	13,400.52	120.22	112.467	
17,000.00	7,107.74	3,468.00	3,467.40	50.97	72.13	-2.04	-154.62	-2,868.66	13,617.13	13,496.57	120.56	112.952	
17,100.00	7,107.78	3,468.00	3,467.40	51.27	72.13	-2.04	-154.62	-2,868.66	13,713.57	13,592.67	120.89	113.436	
17,200.00	7,107.82	3,468.00	3,467.40	51.57	72.13	-2.04	-154.62	-2,868.66	13,810.06	13,688.83	121.23	113.918	
17,300.00	7,107.86	3,468.00	3,467.40	51.87	72.13	-2.04	-154.62	-2,868.66	13,906.59	13,785.03	121.56	114.398	
17,400.00	7,107.90	3,468.00	3,467.40	52.17	72.13	-2.04	-154.62	-2,868.66	14,003.18	13,881.28	121.90	114.877	
17,500.00	7,107.94	3,468.00	3,467.40	52.47	72.13	-2.04	-154.62	-2,868.66	14,099.81	13,977.58	122.23	115.354	
17,600.00	7,107.98	3,468.00	3,467.40	52.77	72.13	-2.04	-154.62	-2,868.66	14,196.49	14,073.93	122.56	115.830	
17,700.00	7,108.02	3,468.00	3,467.40	53.07	72.13	-2.04	-154.62	-2,868.66	14,293.22	14,170.32	122.90	116.304	
17,800.00	7,108.06	3,468.00	3,467.40	53.37	72.13	-2.04	-154.62	-2,868.66	14,389.99	14,266.76	123.23	116.776	
17,900.00	7,108.10	3,468.00	3,467.40	53.67	72.13	-2.04	-154.62	-2,868.66	14,486.81	14,363.25	123.56	117.247	
18,000.00	7,108.14	3,468.00	3,467.40	53.97	72.13	-2.04	-154.62	-2,868.66	14,583.66	14,459.78	123.89	117.717	
18,100.00	7,108.17	3,468.00	3,467.40	54.27	72.13	-2.04	-154.62	-2,868.66	14,680.56	14,556.35	124.22	118.185	
18,200.00	7,108.21	3,468.00	3,467.40	54.57	72.13	-2.04	-154.62	-2,868.66	14,777.51	14,652.96	124.55	118.651	
18,300.00	7,108.25	3,468.00	3,467.40	54.87	72.13	-2.04	-154.62	-2,868.66	14,874.49	14,749.61	124.87	119.115	
18,400.00	7,108.29	3,468.00	3,467.40	55.17	72.13	-2.04	-154.62	-2,868.66	14,971.51	14,846.31	125.20	119.578	
18,500.00	7,108.33	3,468.00	3,467.40	55.47	72.13	-2.04	-154.62	-2,868.66	15,068.57	14,943.04	125.53	120.040	
18,600.00	7,108.37	3,468.00	3,467.40	55.77	72.13	-2.04	-154.62	-2,868.66	15,165.67	15,039.81	125.86	120.499	
18,700.00	7,108.41	3,468.00	3,467.40	56.07	72.13	-2.04	-154.62	-2,868.66	15,262.80	15,136.62	126.18	120.958	
18,800.00	7,108.45	3,468.00	3,467.40	56.37	72.13	-2.04	-154.62	-2,868.66	15,359.98	15,233.47	126.51	121.414	
18,900.00	7,108.49	3,468.00	3,467.40	56.67	72.13	-2.04	-154.62	-2,868.66	15,457.19	15,330.35	126.83	121.869	
19,000.00	7,108.53	3,468.00	3,467.40	56.97	72.13	-2.04	-154.62	-2,868.66	15,554.43	15,427.27	127.16	122.323	
19,100.00	7,108.57	3,468.00	3,467.40	57.28	72.13	-2.04	-154.62	-2,868.66	15,651.71	15,524.23	127.48	122.774	
19,200.00	7,108.61	3,468.00	3,467.40	57.58	72.13	-2.04	-154.62	-2,868.66	15,749.02	15,621.21	127.81	123.225	
19,300.00	7,108.64	3,468.00	3,467.40	57.88	72.13	-2.04	-154.62	-2,868.66	15,846.37	15,718.24	128.13	123.673	
19,400.00	7,108.68	3,468.00	3,467.40	58.18	72.13	-2.04	-154.62	-2,868.66	15,943.75	15,815.29	128.45	124.120	
19,500.00	7,108.72	3,468.00	3,467.40	58.48	72.13	-2.04	-154.62	-2,868.66	16,041.16	15,912.38	128.78	124.566	
19,600.00	7,108.76	3,468.00	3,467.40	58.78	72.13	-2.04	-154.62	-2,868.66	16,138.60	16,009.50	129.10	125.010	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #334A (Offset) - OH - OH

Survey Program: 334-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,700.00	7,108.80	3,468.00	3,467.40	59.08	72.13	-2.04	-154.62	-2,868.66	16,236.08	16,106.66	129.42	125.452	
19,800.00	7,108.84	3,468.00	3,467.40	59.38	72.13	-2.04	-154.62	-2,868.66	16,333.58	16,203.84	129.74	125.892	
19,900.00	7,108.88	3,468.00	3,467.40	59.68	72.13	-2.04	-154.62	-2,868.66	16,431.12	16,301.05	130.06	126.332	
20,000.00	7,108.92	3,468.00	3,467.40	59.98	72.13	-2.04	-154.62	-2,868.66	16,528.68	16,398.30	130.38	126.769	
20,100.00	7,108.96	3,468.00	3,467.40	60.28	72.13	-2.04	-154.62	-2,868.66	16,626.28	16,495.57	130.70	127.205	
20,208.46	7,109.00	3,468.00	3,467.40	60.60	72.13	-2.04	-154.62	-2,868.66	16,732.15	16,601.10	131.05	127.676	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #337 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	0.00	0.00	0.00	0.00	-97.40	-619.60	-4,772.69	4,812.85				
100.00	100.00	66.51	66.51	0.23	0.66	-97.40	-619.60	-4,772.69	4,812.74	4,811.86	0.88	5,458.124	
200.00	200.00	166.52	166.51	0.53	1.73	-97.40	-619.60	-4,772.69	4,812.74	4,810.48	2.26	2,132.479	
300.00	300.00	266.52	266.51	0.83	3.77	-97.40	-619.60	-4,772.69	4,812.74	4,808.14	4.60	1,046.031	
335.47	335.47	301.99	301.98	0.93	4.50	-97.39	-619.13	-4,772.69	4,812.68	4,807.24	5.43	885.930	CC
400.00	400.00	364.75	364.75	1.13	5.78	-97.39	-619.22	-4,772.69	4,812.69	4,805.78	6.91	696.584	
500.00	500.00	466.55	466.51	1.43	7.86	-97.40	-619.60	-4,772.69	4,812.74	4,803.45	9.29	518.057	
600.00	599.98	566.53	566.49	1.73	9.91	107.01	-619.60	-4,772.69	4,813.25	4,801.61	11.63	413.704	
644.12	644.06	610.61	610.57	1.86	10.81	107.02	-619.60	-4,772.69	4,813.80	4,801.13	12.67	379.988	
700.00	699.87	666.42	666.38	2.03	11.95	107.05	-619.60	-4,772.69	4,814.62	4,800.65	13.98	344.463	
800.00	799.74	766.29	766.26	2.33	13.99	107.11	-619.60	-4,772.69	4,816.10	4,799.78	16.32	295.112	
900.00	899.62	866.17	866.13	2.63	16.04	107.16	-619.60	-4,772.69	4,817.58	4,798.92	18.66	258.150	
1,000.00	999.49	965.48	965.42	2.93	18.07	107.24	-617.58	-4,772.69	4,818.82	4,797.83	20.99	229.546	
1,100.00	1,099.36	1,064.28	1,064.22	3.23	20.09	107.30	-617.76	-4,772.69	4,820.34	4,797.03	23.31	206.764	
1,200.00	1,199.24	1,163.10	1,163.03	3.53	22.11	107.35	-618.13	-4,772.69	4,821.88	4,796.25	25.63	188.104	
1,300.00	1,299.11	1,261.94	1,261.87	3.83	24.13	107.40	-618.68	-4,772.69	4,823.45	4,795.50	27.96	172.541	
1,400.00	1,398.98	1,360.80	1,360.72	4.13	26.15	107.45	-619.41	-4,772.69	4,825.05	4,794.77	30.28	159.364	
1,500.00	1,498.86	1,465.52	1,465.37	4.43	28.29	107.50	-619.60	-4,772.69	4,826.58	4,793.87	32.72	147.519	
1,600.00	1,598.73	1,565.39	1,565.24	4.73	30.33	107.56	-619.60	-4,772.69	4,828.10	4,793.04	35.06	137.706	
1,700.00	1,698.60	1,664.46	1,664.30	5.03	32.36	107.63	-618.88	-4,772.69	4,829.54	4,792.15	37.39	129.178	
1,800.00	1,798.48	1,762.78	1,762.62	5.33	34.37	107.68	-619.16	-4,772.69	4,831.10	4,791.40	39.70	121.698	
1,900.00	1,898.35	1,865.07	1,864.86	5.63	36.46	107.73	-619.60	-4,772.69	4,832.68	4,790.59	42.09	114.820	
2,000.00	1,998.22	1,964.94	1,964.74	5.93	38.51	107.79	-619.60	-4,772.69	4,834.21	4,789.78	44.43	108.801	
2,100.00	2,098.10	2,064.81	2,064.61	6.23	40.55	107.84	-619.60	-4,772.69	4,835.75	4,788.98	46.77	103.386	
2,200.00	2,197.97	2,163.37	2,163.16	6.53	42.56	107.91	-618.60	-4,772.69	4,837.19	4,788.10	49.09	98.538	
2,300.00	2,297.84	2,261.42	2,261.20	6.83	44.57	107.96	-619.00	-4,772.69	4,838.78	4,787.39	51.39	94.150	
2,400.00	2,397.72	2,364.49	2,364.23	7.13	46.68	108.01	-619.60	-4,772.69	4,840.40	4,786.60	53.80	89.966	
2,500.00	2,497.59	2,464.37	2,464.10	7.43	48.72	108.07	-619.60	-4,772.69	4,841.96	4,785.82	56.14	86.241	
2,600.00	2,597.46	2,564.24	2,563.98	7.73	50.76	108.13	-619.60	-4,772.69	4,843.53	4,785.04	58.49	82.813	
2,700.00	2,697.34	2,663.42	2,663.15	8.03	52.79	108.19	-618.76	-4,772.69	4,845.01	4,784.19	60.82	79.667	
2,800.00	2,797.21	2,762.05	2,761.78	8.33	54.81	108.25	-619.02	-4,772.69	4,846.61	4,783.48	63.13	76.769	
2,900.00	2,897.09	2,860.71	2,860.44	8.63	56.82	108.30	-619.51	-4,772.69	4,848.24	4,782.79	65.45	74.075	
3,000.00	2,996.96	2,963.80	2,963.47	8.93	59.00	108.35	-619.60	-4,772.69	4,849.83	4,781.90	67.93	71.396	
3,100.00	3,096.83	3,063.25	3,062.92	9.23	61.12	108.42	-618.85	-4,772.69	4,851.34	4,781.00	70.34	68.968	
3,200.00	3,196.71	3,160.68	3,160.35	9.53	63.19	108.47	-619.18	-4,772.69	4,852.97	4,780.26	72.71	66.742	
3,300.00	3,296.58	3,263.47	3,263.09	9.83	65.37	108.52	-619.60	-4,772.69	4,854.61	4,779.41	75.20	64.559	
3,400.00	3,396.45	3,363.34	3,362.97	10.13	67.49	108.58	-619.60	-4,772.69	4,856.21	4,778.59	77.62	62.565	ES
3,500.00	3,496.33	3,351.00	3,350.60	10.43	67.23	108.57	-619.60	-4,772.69	4,859.11	4,781.47	77.64	62.586	
3,600.00	3,596.20	3,351.00	3,350.60	10.73	67.23	108.57	-619.60	-4,772.69	4,864.05	4,786.16	77.89	62.445	
3,700.00	3,696.07	3,351.00	3,350.60	11.03	67.23	108.57	-619.60	-4,772.69	4,871.04	4,792.92	78.12	62.352	
3,800.00	3,795.95	3,351.00	3,350.60	11.33	67.23	108.57	-619.60	-4,772.69	4,880.07	4,801.75	78.32	62.307	SF
3,900.00	3,895.82	3,351.00	3,350.60	11.63	67.23	108.57	-619.60	-4,772.69	4,891.13	4,812.63	78.50	62.310	
4,000.00	3,995.69	3,351.00	3,350.60	11.93	67.23	108.57	-619.60	-4,772.69	4,904.20	4,825.56	78.64	62.359	
4,100.00	4,095.57	3,351.00	3,350.60	12.23	67.23	108.57	-619.60	-4,772.69	4,919.27	4,840.51	78.77	62.453	
4,200.00	4,195.44	3,351.00	3,350.60	12.53	67.23	108.57	-619.60	-4,772.69	4,936.32	4,857.46	78.86	62.592	
4,300.00	4,295.31	3,351.00	3,350.60	12.83	67.23	108.57	-619.60	-4,772.69	4,955.34	4,876.40	78.94	62.775	
4,400.00	4,395.19	3,351.00	3,350.60	13.13	67.23	108.57	-619.60	-4,772.69	4,976.28	4,897.29	78.99	63.000	
4,500.00	4,495.06	3,351.00	3,350.60	13.43	67.23	108.57	-619.60	-4,772.69	4,999.14	4,920.13	79.02	63.267	
4,600.00	4,594.93	3,351.00	3,350.60	13.73	67.23	108.57	-619.60	-4,772.69	5,023.89	4,944.87	79.02	63.574	
4,700.00	4,694.81	3,351.00	3,350.60	14.03	67.23	108.57	-619.60	-4,772.69	5,050.50	4,971.49	79.01	63.922	
4,800.00	4,794.68	3,351.00	3,350.60	14.33	67.23	108.57	-619.60	-4,772.69	5,078.94	4,999.96	78.98	64.309	
4,900.00	4,894.55	3,351.00	3,350.60	14.63	67.23	108.57	-619.60	-4,772.69	5,109.17	5,030.24	78.93	64.733	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #337 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
5,000.00	4,994.43	3,351.00	3,350.60	14.93	67.23	108.57	-619.60	-4,772.69	5,141.17	5,062.32	78.86	65.195	
5,100.00	5,094.30	3,351.00	3,350.60	15.23	67.23	108.57	-619.60	-4,772.69	5,174.91	5,096.14	78.77	65.693	
5,200.00	5,194.18	3,351.00	3,350.60	15.53	67.23	108.57	-619.60	-4,772.69	5,210.35	5,131.68	78.67	66.227	
5,300.00	5,294.05	3,351.00	3,350.60	15.83	67.23	108.57	-619.60	-4,772.69	5,247.46	5,168.90	78.56	66.794	
5,400.00	5,393.92	3,351.00	3,350.60	16.13	67.23	108.57	-619.60	-4,772.69	5,286.20	5,207.76	78.44	67.395	
5,500.00	5,493.80	3,351.00	3,350.60	16.43	67.23	108.57	-619.60	-4,772.69	5,326.53	5,248.23	78.30	68.029	
5,600.00	5,593.67	3,351.00	3,350.60	16.73	67.23	108.57	-619.60	-4,772.69	5,368.42	5,290.27	78.15	68.694	
5,700.00	5,693.54	3,351.00	3,350.60	17.03	67.23	108.57	-619.60	-4,772.69	5,411.84	5,333.85	77.99	69.389	
5,800.00	5,793.42	3,351.00	3,350.60	17.33	67.23	108.57	-619.60	-4,772.69	5,456.74	5,378.92	77.83	70.115	
5,900.00	5,893.29	3,351.00	3,350.60	17.63	67.23	108.57	-619.60	-4,772.69	5,503.10	5,425.45	77.65	70.869	
6,000.00	5,993.16	3,351.00	3,350.60	17.93	67.23	108.57	-619.60	-4,772.69	5,550.87	5,473.40	77.47	71.650	
6,100.00	6,093.04	3,351.00	3,350.60	18.23	67.23	108.57	-619.60	-4,772.69	5,600.02	5,522.73	77.29	72.459	
6,200.00	6,192.91	3,351.00	3,350.60	18.53	67.23	108.57	-619.60	-4,772.69	5,650.51	5,573.41	77.09	73.294	
6,300.00	6,292.78	3,351.00	3,350.60	18.83	67.23	108.57	-619.60	-4,772.69	5,702.31	5,625.41	76.90	74.153	
6,400.00	6,392.66	3,351.00	3,350.60	19.13	67.23	108.57	-619.60	-4,772.69	5,755.37	5,678.67	76.70	75.037	
6,500.00	6,492.53	3,351.00	3,350.60	19.43	67.23	108.57	-619.60	-4,772.69	5,809.68	5,733.18	76.50	75.943	
6,551.20	6,543.67	3,351.00	3,350.60	19.58	67.23	108.57	-619.60	-4,772.69	5,837.95	5,761.56	76.40	76.416	
6,600.00	6,592.30	3,351.00	3,350.60	19.73	67.23	150.16	-619.60	-4,772.69	5,866.86	5,790.56	76.31	76.884	
6,650.00	6,641.67	3,351.00	3,350.60	19.88	67.23	159.59	-619.60	-4,772.69	5,900.07	5,823.83	76.23	77.395	
6,700.00	6,690.21	3,351.00	3,350.60	20.03	67.23	162.92	-619.60	-4,772.69	5,936.59	5,860.41	76.18	77.930	
6,750.00	6,737.54	3,351.00	3,350.60	20.18	67.23	164.13	-619.60	-4,772.69	5,976.08	5,899.94	76.14	78.484	
6,800.00	6,783.30	3,351.00	3,350.60	20.33	67.23	164.18	-619.60	-4,772.69	6,018.20	5,942.07	76.13	79.049	
6,850.00	6,827.15	3,351.00	3,350.60	20.48	67.23	163.25	-619.60	-4,772.69	6,062.58	5,986.43	76.15	79.618	
6,900.00	6,868.74	3,351.00	3,350.60	20.63	67.23	161.11	-619.60	-4,772.69	6,108.81	6,032.63	76.18	80.185	
6,950.00	6,907.77	3,351.00	3,350.60	20.78	67.23	156.94	-619.60	-4,772.69	6,156.53	6,080.28	76.25	80.744	
7,000.00	6,943.94	3,351.00	3,350.60	20.93	67.23	148.26	-619.60	-4,772.69	6,205.33	6,129.00	76.34	81.288	
7,050.00	6,976.97	3,351.00	3,350.60	21.08	67.23	126.33	-619.60	-4,772.69	6,254.83	6,178.38	76.45	81.811	
7,100.00	7,006.62	3,351.00	3,350.60	21.23	67.23	74.05	-619.60	-4,772.69	6,304.63	6,228.03	76.60	82.309	
7,150.00	7,032.64	3,351.00	3,350.60	21.38	67.23	34.77	-619.60	-4,772.69	6,354.35	6,277.59	76.77	82.776	
7,200.00	7,054.86	3,351.00	3,350.60	21.53	67.23	20.16	-619.60	-4,772.69	6,403.62	6,326.66	76.96	83.209	
7,250.00	7,073.09	3,351.00	3,350.60	21.68	67.23	13.59	-619.60	-4,772.69	6,452.08	6,374.91	77.17	83.604	
7,300.00	7,087.20	3,351.00	3,350.60	21.83	67.23	9.99	-619.60	-4,772.69	6,499.39	6,421.98	77.41	83.957	
7,350.00	7,097.08	3,351.00	3,350.60	21.98	67.23	7.74	-619.60	-4,772.69	6,545.21	6,467.53	77.67	84.265	
7,400.00	7,102.66	3,351.00	3,350.60	22.13	67.23	6.22	-619.60	-4,772.69	6,589.22	6,511.27	77.95	84.527	
7,438.94	7,104.00	3,351.00	3,350.60	22.25	67.23	5.33	-619.60	-4,772.69	6,622.06	6,543.87	78.18	84.697	
7,500.00	7,104.02	3,351.00	3,350.60	22.43	67.23	5.33	-619.60	-4,772.69	6,672.58	6,594.02	78.56	84.941	
7,600.00	7,104.06	3,351.00	3,350.60	22.74	67.23	5.33	-619.60	-4,772.69	6,755.69	6,676.53	79.15	85.349	
7,700.00	7,104.10	3,351.00	3,350.60	23.04	67.23	5.33	-619.60	-4,772.69	6,839.25	6,759.51	79.74	85.768	
7,800.00	7,104.14	3,351.00	3,350.60	23.34	67.23	5.33	-619.60	-4,772.69	6,923.24	6,842.93	80.32	86.198	
7,900.00	7,104.18	3,351.00	3,350.60	23.64	67.23	5.33	-619.60	-4,772.69	7,007.66	6,926.78	80.89	86.637	
8,000.00	7,104.22	3,351.00	3,350.60	23.94	67.23	5.33	-619.60	-4,772.69	7,092.48	7,011.04	81.44	87.085	
8,100.00	7,104.26	3,351.00	3,350.60	24.24	67.23	5.33	-619.60	-4,772.69	7,177.70	7,095.71	81.99	87.542	
8,200.00	7,104.30	3,351.00	3,350.60	24.54	67.23	5.33	-619.60	-4,772.69	7,263.29	7,180.76	82.53	88.006	
8,300.00	7,104.34	3,351.00	3,350.60	24.84	67.23	5.33	-619.60	-4,772.69	7,349.24	7,266.18	83.06	88.478	
8,400.00	7,104.38	3,351.00	3,350.60	25.14	67.23	5.33	-619.60	-4,772.69	7,435.55	7,351.96	83.59	88.956	
8,500.00	7,104.42	3,351.00	3,350.60	25.44	67.23	5.33	-619.60	-4,772.69	7,522.19	7,438.09	84.10	89.440	
8,600.00	7,104.45	3,351.00	3,350.60	25.74	67.23	5.33	-619.60	-4,772.69	7,609.16	7,524.55	84.61	89.930	
8,700.00	7,104.49	3,351.00	3,350.60	26.04	67.23	5.33	-619.60	-4,772.69	7,696.45	7,611.34	85.11	90.425	
8,800.00	7,104.53	3,351.00	3,350.60	26.34	67.23	5.33	-619.60	-4,772.69	7,784.05	7,698.44	85.61	90.926	
8,900.00	7,104.57	3,351.00	3,350.60	26.64	67.23	5.33	-619.60	-4,772.69	7,871.94	7,785.84	86.10	91.431	
9,000.00	7,104.61	3,351.00	3,350.60	26.95	67.23	5.33	-619.60	-4,772.69	7,960.11	7,873.53	86.58	91.940	
9,100.00	7,104.65	3,351.00	3,350.60	27.25	67.23	5.33	-619.60	-4,772.69	8,048.56	7,961.51	87.06	92.452	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #337 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
9,200.00	7,104.69	3,351.00	3,350.60	27.55	67.23	5.33	-619.60	-4,772.69	8,137.28	8,049.76	87.53	92.969	
9,300.00	7,104.73	3,351.00	3,350.60	27.85	67.23	5.33	-619.60	-4,772.69	8,226.26	8,138.27	87.99	93.488	
9,400.00	7,104.77	3,351.00	3,350.60	28.15	67.23	5.33	-619.60	-4,772.69	8,315.49	8,227.04	88.45	94.011	
9,500.00	7,104.81	3,351.00	3,350.60	28.45	67.23	5.33	-619.60	-4,772.69	8,404.96	8,316.06	88.91	94.536	
9,600.00	7,104.85	3,351.00	3,350.60	28.75	67.23	5.33	-619.60	-4,772.69	8,494.67	8,405.31	89.36	95.064	
9,700.00	7,104.89	3,351.00	3,350.60	29.05	67.23	5.33	-619.60	-4,772.69	8,584.60	8,494.80	89.80	95.594	
9,800.00	7,104.92	3,351.00	3,350.60	29.35	67.23	5.33	-619.60	-4,772.69	8,674.76	8,584.51	90.24	96.125	
9,900.00	7,104.96	3,351.00	3,350.60	29.65	67.23	5.33	-619.60	-4,772.69	8,765.13	8,674.45	90.68	96.659	
10,000.00	7,105.00	3,351.00	3,350.60	29.95	67.23	5.33	-619.60	-4,772.69	8,855.70	8,764.59	91.11	97.194	
10,100.00	7,105.04	3,351.00	3,350.60	30.25	67.23	5.33	-619.60	-4,772.69	8,946.48	8,854.94	91.54	97.731	
10,200.00	7,105.08	3,351.00	3,350.60	30.55	67.23	5.33	-619.60	-4,772.69	9,037.45	8,945.48	91.97	98.269	
10,300.00	7,105.12	3,351.00	3,350.60	30.85	67.23	5.33	-619.60	-4,772.69	9,128.61	9,036.22	92.39	98.808	
10,400.00	7,105.16	3,351.00	3,350.60	31.15	67.23	5.33	-619.60	-4,772.69	9,219.95	9,127.14	92.81	99.347	
10,500.00	7,105.20	3,351.00	3,350.60	31.45	67.23	5.33	-619.60	-4,772.69	9,311.47	9,218.25	93.22	99.888	
10,600.00	7,105.24	3,351.00	3,350.60	31.75	67.23	5.33	-619.60	-4,772.69	9,403.16	9,309.53	93.63	100.429	
10,700.00	7,105.28	3,351.00	3,350.60	32.05	67.23	5.33	-619.60	-4,772.69	9,495.02	9,400.99	94.04	100.971	
10,800.00	7,105.32	3,351.00	3,350.60	32.35	67.23	5.33	-619.60	-4,772.69	9,587.05	9,492.61	94.44	101.513	
10,900.00	7,105.36	3,351.00	3,350.60	32.66	67.23	5.33	-619.60	-4,772.69	9,679.23	9,584.39	94.84	102.055	
11,000.00	7,105.39	3,351.00	3,350.60	32.96	67.23	5.33	-619.60	-4,772.69	9,771.57	9,676.32	95.24	102.597	
11,100.00	7,105.43	3,351.00	3,350.60	33.26	67.23	5.33	-619.60	-4,772.69	9,864.05	9,768.41	95.64	103.139	
11,200.00	7,105.47	3,351.00	3,350.60	33.56	67.23	5.33	-619.60	-4,772.69	9,956.68	9,860.65	96.03	103.682	
11,300.00	7,105.51	3,351.00	3,350.60	33.86	67.23	5.33	-619.60	-4,772.69	10,049.45	9,953.03	96.42	104.224	
11,400.00	7,105.55	3,351.00	3,350.60	34.16	67.23	5.33	-619.60	-4,772.69	10,142.36	10,045.55	96.81	104.765	
11,500.00	7,105.59	3,351.00	3,350.60	34.46	67.23	5.33	-619.60	-4,772.69	10,235.41	10,138.21	97.20	105.307	
11,600.00	7,105.63	3,351.00	3,350.60	34.76	67.23	5.33	-619.60	-4,772.69	10,328.58	10,231.00	97.58	105.848	
11,700.00	7,105.67	3,351.00	3,350.60	35.06	67.23	5.33	-619.60	-4,772.69	10,421.88	10,323.92	97.96	106.388	
11,800.00	7,105.71	3,351.00	3,350.60	35.36	67.23	5.33	-619.60	-4,772.69	10,515.30	10,416.96	98.34	106.928	
11,900.00	7,105.75	3,351.00	3,350.60	35.66	67.23	5.33	-619.60	-4,772.69	10,608.84	10,510.13	98.72	107.467	
12,000.00	7,105.79	3,351.00	3,350.60	35.96	67.23	5.33	-619.60	-4,772.69	10,702.50	10,603.41	99.09	108.005	
12,100.00	7,105.83	3,351.00	3,350.60	36.26	67.23	5.33	-619.60	-4,772.69	10,796.28	10,696.81	99.47	108.543	
12,200.00	7,105.86	3,351.00	3,350.60	36.56	67.23	5.33	-619.60	-4,772.69	10,890.16	10,790.32	99.84	109.080	
12,300.00	7,105.90	3,351.00	3,350.60	36.86	67.23	5.33	-619.60	-4,772.69	10,984.15	10,883.95	100.21	109.615	
12,400.00	7,105.94	3,351.00	3,350.60	37.16	67.23	5.33	-619.60	-4,772.69	11,078.25	10,977.67	100.57	110.150	
12,500.00	7,105.98	3,351.00	3,350.60	37.46	67.23	5.33	-619.60	-4,772.69	11,172.45	11,071.51	100.94	110.684	
12,600.00	7,106.02	3,351.00	3,350.60	37.76	67.23	5.33	-619.60	-4,772.69	11,266.75	11,165.44	101.30	111.217	
12,700.00	7,106.06	3,351.00	3,350.60	38.06	67.23	5.33	-619.60	-4,772.69	11,361.14	11,259.48	101.67	111.748	
12,800.00	7,106.10	3,351.00	3,350.60	38.36	67.23	5.33	-619.60	-4,772.69	11,455.64	11,353.61	102.03	112.279	
12,900.00	7,106.14	3,351.00	3,350.60	38.66	67.23	5.33	-619.60	-4,772.69	11,550.22	11,447.83	102.39	112.808	
13,000.00	7,106.18	3,351.00	3,350.60	38.96	67.23	5.33	-619.60	-4,772.69	11,644.90	11,542.15	102.75	113.336	
13,100.00	7,106.22	3,351.00	3,350.60	39.26	67.23	5.33	-619.60	-4,772.69	11,739.66	11,636.56	103.10	113.863	
13,200.00	7,106.26	3,351.00	3,350.60	39.56	67.23	5.33	-619.60	-4,772.69	11,834.51	11,731.05	103.46	114.388	
13,300.00	7,106.30	3,351.00	3,350.60	39.86	67.23	5.33	-619.60	-4,772.69	11,929.44	11,825.63	103.81	114.912	
13,400.00	7,106.33	3,351.00	3,350.60	40.16	67.23	5.33	-619.60	-4,772.69	12,024.46	11,920.29	104.17	115.435	
13,500.00	7,106.37	3,351.00	3,350.60	40.46	67.23	5.33	-619.60	-4,772.69	12,119.56	12,015.04	104.52	115.957	
13,600.00	7,106.41	3,351.00	3,350.60	40.76	67.23	5.33	-619.60	-4,772.69	12,214.73	12,109.86	104.87	116.477	
13,700.00	7,106.45	3,351.00	3,350.60	41.06	67.23	5.33	-619.60	-4,772.69	12,309.98	12,204.76	105.22	116.995	
13,800.00	7,106.49	3,351.00	3,350.60	41.36	67.23	5.33	-619.60	-4,772.69	12,405.31	12,299.74	105.57	117.512	
13,900.00	7,106.53	3,351.00	3,350.60	41.67	67.23	5.33	-619.60	-4,772.69	12,500.71	12,394.79	105.91	118.028	
14,000.00	7,106.57	3,351.00	3,350.60	41.97	67.23	5.33	-619.60	-4,772.69	12,596.18	12,489.92	106.26	118.542	
14,100.00	7,106.61	3,351.00	3,350.60	42.27	67.23	5.33	-619.60	-4,772.69	12,691.72	12,585.11	106.60	119.054	
14,200.00	7,106.65	3,351.00	3,350.60	42.57	67.23	5.33	-619.60	-4,772.69	12,787.33	12,680.38	106.95	119.565	
14,300.00	7,106.69	3,351.00	3,350.60	42.87	67.23	5.33	-619.60	-4,772.69	12,883.00	12,775.71	107.29	120.075	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #337 (Offset) - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,400.00	7,106.73	3,351.00	3,350.60	43.17	67.23	5.33	-619.60	-4,772.69	12,978.74	12,871.11	107.63	120.582	
14,500.00	7,106.76	3,351.00	3,350.60	43.47	67.23	5.33	-619.60	-4,772.69	13,074.54	12,966.57	107.98	121.089	
14,600.00	7,106.80	3,351.00	3,350.60	43.77	67.23	5.33	-619.60	-4,772.69	13,170.41	13,062.10	108.32	121.593	
14,700.00	7,106.84	3,351.00	3,350.60	44.07	67.23	5.33	-619.60	-4,772.69	13,266.34	13,157.68	108.65	122.096	
14,800.00	7,106.88	3,351.00	3,350.60	44.37	67.23	5.33	-619.60	-4,772.69	13,362.33	13,253.33	108.99	122.598	
14,900.00	7,106.92	3,351.00	3,350.60	44.67	67.23	5.33	-619.60	-4,772.69	13,458.37	13,349.04	109.33	123.097	
15,000.00	7,106.96	3,351.00	3,350.60	44.97	67.23	5.33	-619.60	-4,772.69	13,554.47	13,444.81	109.67	123.595	
15,100.00	7,107.00	3,351.00	3,350.60	45.27	67.23	5.33	-619.60	-4,772.69	13,650.63	13,540.63	110.00	124.092	
15,200.00	7,107.04	3,351.00	3,350.60	45.57	67.23	5.33	-619.60	-4,772.69	13,746.85	13,636.51	110.34	124.586	
15,300.00	7,107.08	3,351.00	3,350.60	45.87	67.23	5.33	-619.60	-4,772.69	13,843.11	13,732.44	110.67	125.079	
15,400.00	7,107.12	3,351.00	3,350.60	46.17	67.23	5.33	-619.60	-4,772.69	13,939.43	13,828.42	111.01	125.571	
15,500.00	7,107.16	3,351.00	3,350.60	46.47	67.23	5.33	-619.60	-4,772.69	14,035.80	13,924.46	111.34	126.060	
15,600.00	7,107.20	3,351.00	3,350.60	46.77	67.23	5.33	-619.60	-4,772.69	14,132.23	14,020.55	111.67	126.548	
15,700.00	7,107.23	3,351.00	3,350.60	47.07	67.23	5.33	-619.60	-4,772.69	14,228.70	14,116.69	112.01	127.034	
15,800.00	7,107.27	3,351.00	3,350.60	47.37	67.23	5.33	-619.60	-4,772.69	14,325.22	14,212.88	112.34	127.519	
15,900.00	7,107.31	3,351.00	3,350.60	47.67	67.23	5.33	-619.60	-4,772.69	14,421.78	14,309.11	112.67	128.002	
16,000.00	7,107.35	3,351.00	3,350.60	47.97	67.23	5.33	-619.60	-4,772.69	14,518.40	14,405.40	113.00	128.483	
16,100.00	7,107.39	3,351.00	3,350.60	48.27	67.23	5.33	-619.60	-4,772.69	14,615.05	14,501.73	113.33	128.962	
16,200.00	7,107.43	3,351.00	3,350.60	48.57	67.23	5.33	-619.60	-4,772.69	14,711.76	14,598.10	113.66	129.440	
16,300.00	7,107.47	3,351.00	3,350.60	48.87	67.23	5.33	-619.60	-4,772.69	14,808.51	14,694.52	113.99	129.915	
16,400.00	7,107.51	3,351.00	3,350.60	49.17	67.23	5.33	-619.60	-4,772.69	14,905.30	14,790.98	114.31	130.390	
16,500.00	7,107.55	3,351.00	3,350.60	49.47	67.23	5.33	-619.60	-4,772.69	15,002.13	14,887.49	114.64	130.862	
16,600.00	7,107.59	3,351.00	3,350.60	49.77	67.23	5.33	-619.60	-4,772.69	15,099.00	14,984.03	114.97	131.333	
16,700.00	7,107.63	3,351.00	3,350.60	50.07	67.23	5.33	-619.60	-4,772.69	15,195.92	15,080.62	115.29	131.802	
16,800.00	7,107.67	3,351.00	3,350.60	50.37	67.23	5.33	-619.60	-4,772.69	15,292.87	15,177.25	115.62	132.269	
16,900.00	7,107.70	3,351.00	3,350.60	50.67	67.23	5.33	-619.60	-4,772.69	15,389.86	15,273.92	115.94	132.734	
17,000.00	7,107.74	3,351.00	3,350.60	50.97	67.23	5.33	-619.60	-4,772.69	15,486.89	15,370.62	116.27	133.198	
17,100.00	7,107.78	3,351.00	3,350.60	51.27	67.23	5.33	-619.60	-4,772.69	15,583.96	15,467.37	116.59	133.660	
17,200.00	7,107.82	3,351.00	3,350.60	51.57	67.23	5.33	-619.60	-4,772.69	15,681.07	15,564.15	116.92	134.120	
17,300.00	7,107.86	3,351.00	3,350.60	51.87	67.23	5.33	-619.60	-4,772.69	15,778.21	15,660.97	117.24	134.579	
17,400.00	7,107.90	3,351.00	3,350.60	52.17	67.23	5.33	-619.60	-4,772.69	15,875.39	15,757.82	117.56	135.035	
17,500.00	7,107.94	3,351.00	3,350.60	52.47	67.23	5.33	-619.60	-4,772.69	15,972.60	15,854.71	117.89	135.491	
17,600.00	7,107.98	3,351.00	3,350.60	52.77	67.23	5.33	-619.60	-4,772.69	16,069.84	15,951.64	118.21	135.944	
17,700.00	7,108.02	3,351.00	3,350.60	53.07	67.23	5.33	-619.60	-4,772.69	16,167.12	16,048.59	118.53	136.395	
17,800.00	7,108.06	3,351.00	3,350.60	53.37	67.23	5.33	-619.60	-4,772.69	16,264.44	16,145.58	118.85	136.845	
17,900.00	7,108.10	3,351.00	3,350.60	53.67	67.23	5.33	-619.60	-4,772.69	16,361.78	16,242.61	119.17	137.293	
18,000.00	7,108.14	3,351.00	3,350.60	53.97	67.23	5.33	-619.60	-4,772.69	16,459.16	16,339.67	119.49	137.740	
18,100.00	7,108.17	3,351.00	3,350.60	54.27	67.23	5.33	-619.60	-4,772.69	16,556.57	16,436.75	119.81	138.185	
18,200.00	7,108.21	3,351.00	3,350.60	54.57	67.23	5.33	-619.60	-4,772.69	16,654.01	16,533.87	120.13	138.628	
18,300.00	7,108.25	3,351.00	3,350.60	54.87	67.23	5.33	-619.60	-4,772.69	16,751.48	16,631.02	120.45	139.069	
18,400.00	7,108.29	3,351.00	3,350.60	55.17	67.23	5.33	-619.60	-4,772.69	16,848.98	16,728.20	120.77	139.509	
18,500.00	7,108.33	3,351.00	3,350.60	55.47	67.23	5.33	-619.60	-4,772.69	16,946.50	16,825.41	121.09	139.947	
18,600.00	7,108.37	3,351.00	3,350.60	55.77	67.23	5.33	-619.60	-4,772.69	17,044.06	16,922.65	121.41	140.383	
18,700.00	7,108.41	3,351.00	3,350.60	56.07	67.23	5.33	-619.60	-4,772.69	17,141.64	17,019.92	121.73	140.817	
18,800.00	7,108.45	3,351.00	3,350.60	56.37	67.23	5.33	-619.60	-4,772.69	17,239.26	17,117.21	122.05	141.250	
18,900.00	7,108.49	3,351.00	3,350.60	56.67	67.23	5.33	-619.60	-4,772.69	17,336.90	17,214.53	122.37	141.681	
19,000.00	7,108.53	3,351.00	3,350.60	56.97	67.23	5.33	-619.60	-4,772.69	17,434.56	17,311.88	122.68	142.111	
19,100.00	7,108.57	3,351.00	3,350.60	57.28	67.23	5.33	-619.60	-4,772.69	17,532.26	17,409.26	123.00	142.539	
19,200.00	7,108.61	3,351.00	3,350.60	57.58	67.23	5.33	-619.60	-4,772.69	17,629.97	17,506.66	123.32	142.965	
19,300.00	7,108.64	3,351.00	3,350.60	57.88	67.23	5.33	-619.60	-4,772.69	17,727.72	17,604.09	123.63	143.390	
19,400.00	7,108.68	3,351.00	3,350.60	58.18	67.23	5.33	-619.60	-4,772.69	17,825.49	17,701.54	123.95	143.812	
19,500.00	7,108.72	3,351.00	3,350.60	58.48	67.23	5.33	-619.60	-4,772.69	17,923.28	17,799.02	124.27	144.234	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design Rosa Unit 32 - RU #337 (Offset) - OH - OH

Survey Program: 158-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

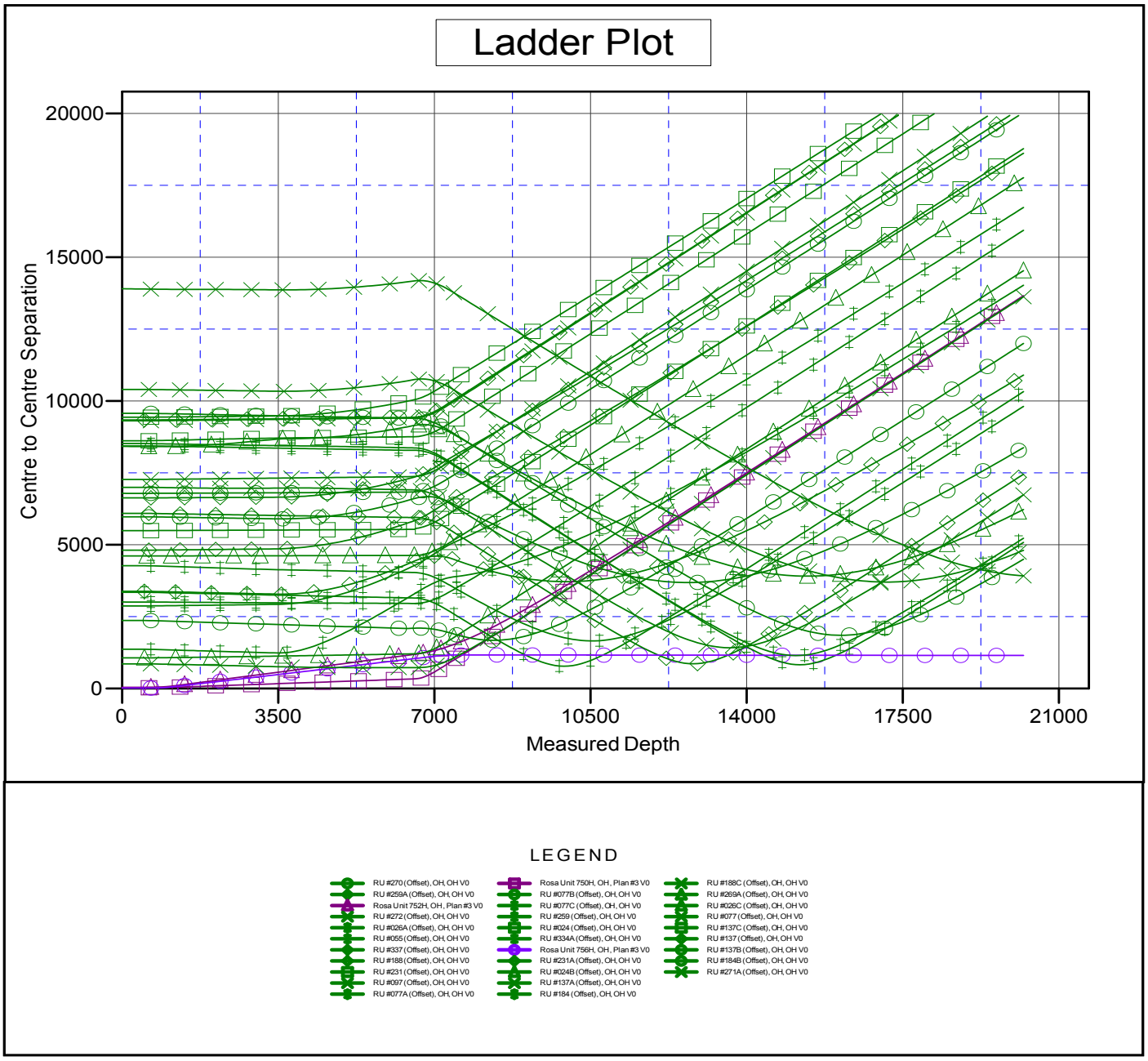
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
19,600.00	7,108.76	3,351.00	3,350.60	58.78	67.23	5.33	-619.60	-4,772.69	18,021.10	17,896.52	124.58	144.653	
19,700.00	7,108.80	3,351.00	3,350.60	59.08	67.23	5.33	-619.60	-4,772.69	18,118.94	17,994.04	124.90	145.071	
19,800.00	7,108.84	3,351.00	3,350.60	59.38	67.23	5.33	-619.60	-4,772.69	18,216.81	18,091.59	125.21	145.488	
19,900.00	7,108.88	3,351.00	3,350.60	59.68	67.23	5.33	-619.60	-4,772.69	18,314.70	18,189.17	125.53	145.902	
20,000.00	7,108.92	3,351.00	3,350.60	59.98	67.23	5.33	-619.60	-4,772.69	18,412.61	18,286.76	125.84	146.315	
20,100.00	7,108.96	3,351.00	3,350.60	60.28	67.23	5.33	-619.60	-4,772.69	18,510.54	18,384.38	126.16	146.727	
20,208.46	7,109.00	3,351.00	3,350.60	60.60	67.23	5.33	-619.60	-4,772.69	18,616.78	18,490.28	126.50	147.171	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6534+24.5 @ 6558.49usft (Ensign 22	Coordinates are relative to: Rosa Unit 754H - Slot B03
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: 0.28°



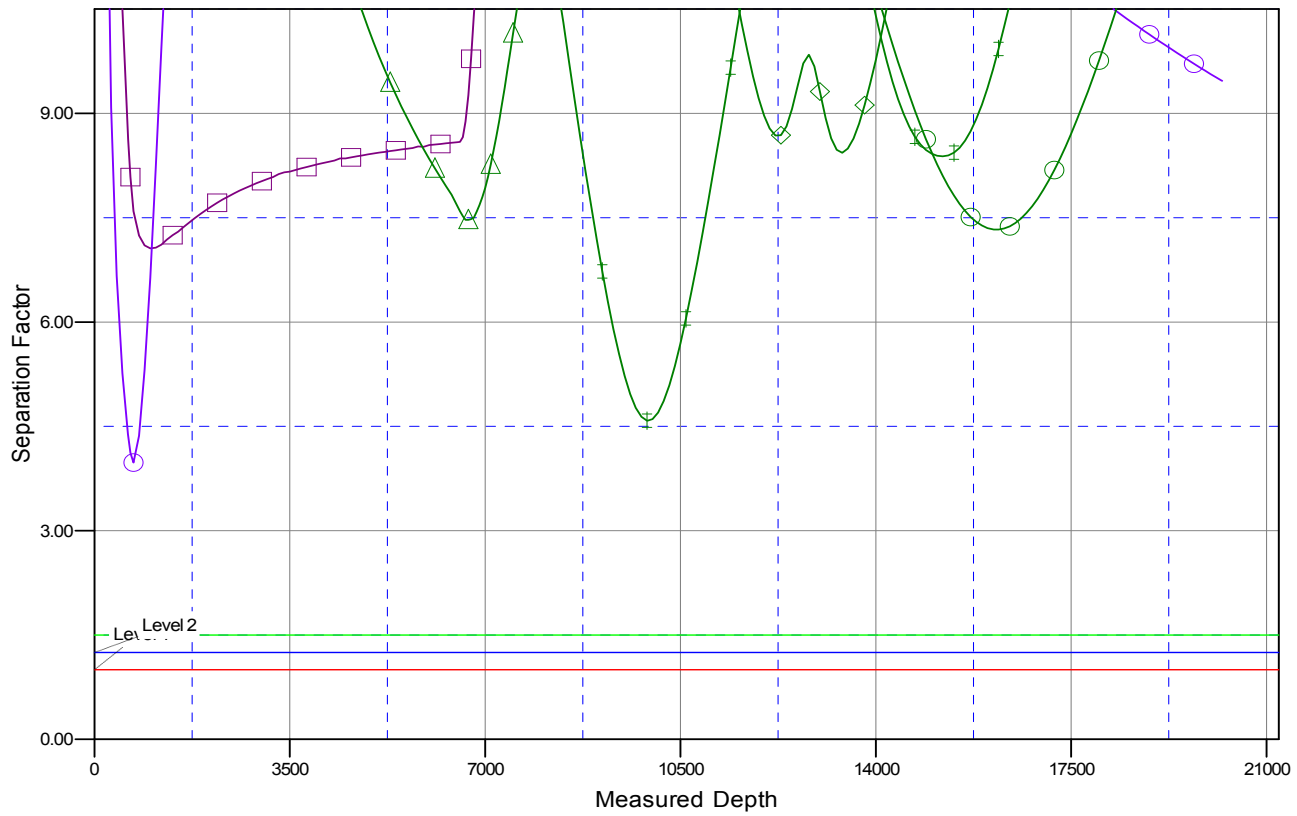
Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H - Slot B03
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6534+24.5 @ 6558.49usft (Ensign 22
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 754H - Slot B03
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°

Separation Factor Plot



LEGEND

RU #270 (Offset), OH, OH V0
RU #259A (Offset), OH, OH V0
Rosa Unit 752H, OH, Plan #3 V0
RU #272 (Offset), OH, OH V0
RU #026A (Offset), OH, OH V0
RU #055 (Offset), OH, OH V0
RU #337 (Offset), OH, OH V0
RU #188 (Offset), OH, OH V0
RU #231 (Offset), OH, OH V0
RU #097 (Offset), OH, OH V0
RU #077A (Offset), OH, OH V0
Rosa Unit 750H, OH, Plan #3 V0
RU #077B (Offset), OH, OH V0
RU #077C (Offset), OH, OH V0
RU #259 (Offset), OH, OH V0
RU #024 (Offset), OH, OH V0
RU #334A (Offset), OH, OH V0
Rosa Unit 756H, OH, Plan #3 V0
RU #231A (Offset), OH, OH V0
RU #024B (Offset), OH, OH V0
RU #137A (Offset), OH, OH V0
RU #184 (Offset), OH, OH V0
RU #188C (Offset), OH, OH V0
RU #269A (Offset), OH, OH V0
RU #026C (Offset), OH, OH V0
RU #077 (Offset), OH, OH V0
RU #137C (Offset), OH, OH V0
RU #137 (Offset), OH, OH V0
RU #137B (Offset), OH, OH V0
RU #184B (Offset), OH, OH V0
RU #271A (Offset), OH, OH V0

Conditions of Approval

Operator:	Logos Operating, LLC
Well Names:	Rosa Unit Pad 32 (750H, 752H, 754H, & 756H + 4 futures)
Legal Location:	Sec 33, T31N, R05W, Rio Arriba County, NM
NEPA Log Number:	DOI-BLM-NM-F010-2023-0014-EA
Inspection Date:	November 17, 2022
Lease Number:	NMSF078773

The following conditions of approval will apply to Logos Operating's Rosa Unit Pad 32 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.

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, BOR, Tribes, State, or other jurisdictional entities.

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.

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-F010-2023-0014-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).

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 and at https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/the-gold-book. Farmington Field Office BMPs are integrated into the Environmental Assessment, Surface Use Plan of Operations, Bare Soil Reclamation Plan, and COAs.

Construction, Production, Facilities, Reclamation & Maintenance

Construction & Reclamation Notification: The operator or their contractor will contact the Bureau of Land Management, Farmington Field Office Surface and Environmental Protection Staff at (505) 564-7600 or by email, at least 48 hours prior to any construction or reclamation on this project.

Production Facilities: 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 at (505) 564-7600 or by email to schedule a facility layout onsite.

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.

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: **Juniper Green.**

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 application. If stakes are disturbed, they shall be replaced before proceeding with construction.

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.

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.

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

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.

Culverts: Silt Traps/Bell Holes will be built upstream of all culvert locations.

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.

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.

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.

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.

"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:

1. 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.).*
2. Maintain and clean all equipment regularly to remove flammable debris buildup and prevent fluid leaks that can lead to ignitions.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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

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 (*Centaurea repens*)	Musk Thistle (*Carduss nutans*)
Bull Thistle (*Cirsium vulgare*)	Canada Thistle (*Cirsium arvense*)
Scotch Thistle (*Onopordum acanthium)*	Hoary Cress (*Cardaria draba*)
Perennial Pepperweed (*Lepdium latiofolfium*)	Halogeton (*Halogeton glomeratus*)
Spotted Knapweed (*Centaurea maculosa*)	Dalmation Toadflax (*Linaria genistifolia*)
Yellow Toadflax (*Linaria vulgaris*)	Camelthorn (*Alhagi pseudalhagi*)
African Rue (*Penganum harmala*)	Salt Cedar (*Tamarix spp*.)
Diffuse Knapweed (*Centaurea diffusa*)	Leafy Spurge (*Euphorbia esula*)

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. 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.

d. 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.

e. 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's weed-control contractor would contact the BLM-FFO prior to using these chemicals.

f. Noxious/invasive weed treatments must be reported to the FFO Noxious Weed Coordinator. A Pesticide Use Report (PUR) 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.

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's 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.

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.

Visual Resources

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.

Wildlife Resources

Wildlife: F-4 Timing Limitation Stipulation-Important Seasonal Wildlife Habitat Rosa Mesa Wildlife SDA. No surface use is allowed during the following time period: December 1 - March 31.

Wildlife Stock Pond: the stock pond just south of the proposed well pad is to be cleaned out during construction to benefit wildlife and livestock in the area.

Hazards: Wildlife hazards associated with the proposed project would be fenced, covered, and/or contained in covered storage tanks, as necessary.

Migratory Bird: Any new disturbance over 4.0 acres within nesting season (5/15-7/31) will require a migratory bird nest survey to be conducted by BLM/FFO biologist. Once drilling and completion activities are complete, any open water that could be harmful to birds and wildlife. must be covered, screened, or netted to prevent entry.

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).

Noise: This well is located within a designated Noise Sensitive Area (NSA). Once proposed project activities are complete, noise from pumpjack, compressor or other facilities cannot exceed 48.6 db at edge of Bald eagle ACEC core area. Any compressor that emits noise > 48.6db may require a 'noise wall' to deflect sound away from ACEC.

Nesting: If a bird nest containing eggs or young is encountered in the path of construction the operator will cease construction and consult with BLM to determine appropriate actions.

Grazing Permittee Notification and Concerns: The operator will notify the grazing lease operator(s) 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.

Soil, Air, Water

Land Farming: No excavation, remediation or closure activities will be authorized without prior approval, on any federal or Indian mineral estate, federal surface, or federal ROW. A Sundry Notice (DOI, BLM Form 3160-5) must be submitted with an explanation of the remediation or closure plan for on-lease actions.

Emission Control Standard: Compressor engines 300 horsepower or less used during well production must be rated by the manufacturer as emitting NOx at 2 grams per horsepower hour or less to comply with the New Mexico Environmental Department, Air Quality Bureau's guidance.

Waste Disposal: All fluids (i.e., scrubber cleaners) used during washing of production equipment, including compressors, will be properly disposed of to avoid ground contamination, or hazard to livestock or wildlife.

Cultural Resources

Non-Permitted Disturbance: Construction, construction maintenance or any other activity outside the areas permitted by the APD will require additional approval and may require a new cultural survey and clearance.

Employee Education: All employees of the project, including the Project Sponsor and its contractors and sub-contractors will be informed that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment. They will also be notified that it is illegal to collect, damage, or disturb cultural resources, and that such activities are punishable by criminal and or administrative penalties under the provisions of the Archaeological Resources Protection Act (16 U.S.C. 470aa-mm) when on federal land and the New Mexico Cultural Properties Act NMSA 1978 when on state land.

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**.

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.**

Damage to Sites: If, in its operations, operator/holder damages, or is found to have damaged any previously documented or undocumented historic or prehistoric cultural resources, excluding "discoveries" as noted above, the operator/holder agrees at his/her expense to have a permitted cultural resources consultant prepare a BLM approved damage assessment and/or data recovery plan. The operator/holder agrees at his/her expense to implement a **mitigation** that the agency finds appropriate given the significance of the site, which the agency determines 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. **This mitigation may entail execution of the data recovery plan by a permitted cultural resources consultant and/or alternative mitigations.** Damage to cultural resources 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.**

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

#754H ROSA UNIT

Lease: NMSF78773 Unit: NMNM78407E
SH: SW¼NW¼ Section 33, T.31 N., R.5 W.
Rio Arriba County, New Mexico
BH: NW¼SE¼ Section 35, T.31 N., R.6 W.
Rio Arriba County, New Mexico
***Above Data Required on Well Sign**

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

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

A. ☒ Note all surface/drilling conditions of approval attached.

B. ☒ The required wait on cement (WOC) time will be a minimum of 500 psi compressive strength at 60 degrees. Blowout preventor (BOP) nipple-up operations may then be initiated

C. ☐ Test the surface casing to a minimum of _____ psi for 30 minutes.

D. ☐ Test all casing strings below the surface 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.

E. ☐ 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.

F. ☐ 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.

I. GENERAL

A. Full compliance with all applicable laws, regulations, and Onshore Orders, 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 (Form 3160-4) 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. 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 (on a Sundry Notice, Form 3160-5) within three business days (original and three copies of Federal leases and an original and four copies on Indian leases). **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 at Virgil Lucero at 505-793-1836.**

G. 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.

H. Unless drilling operations are commenced within two years, approval of the Application for Permit to Drill will expire. A written request for a two years extension may be granted if submitted prior to expiration.

I. 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 time, unless the well is secured with blowout preventers or cement plugs.

J. 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.

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 within 30 days after the work is completed.

1 .Original and three copies on Federal and an Original and five copies on Indian leases of Sundry Notice (Form 3150-5), giving 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 any and 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 manner in which 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 (Form 3160-4) 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.

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 or 50 MMCF following its (completion)(recompletion), whichever first occurs, without the prior, written approval of the authorized officer. 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 first gas to surface.

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 in order to mitigate unanticipated conditions encountered during drilling operations, will require approval as set forth in Section 1.F.

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.F. 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.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 327983

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 327983
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Notify OCD 24 hours prior to casing & cement	4/16/2024
ward.rikala	Will require a File As Drilled C-102 and a Directional Survey with the C-104	4/16/2024
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	4/16/2024
ward.rikala	Cement is required to circulate on both surface and intermediate1 strings of casing	4/16/2024
ward.rikala	If cement does not circulate on any string, a CBL is required for that string of casing	4/16/2024
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	4/16/2024