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
750H

2. Name of Operator
LOGOS OPERATING LLC

9. API Well No.
30-039-31461

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 NWSW / 2627 FSL / 951 FWL / LAT 36.856086 / LONG -107.373408
At proposed prod. zone LOT 3 / 2243 FSL / 158 FWL / LAT 36.855015 / LONG -107.407248

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)
158 feet

16. No of acres in lease

17. Spacing Unit dedicated to this well
872.99

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

19. Proposed Depth
7069 feet / 16591 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	Name *(Printed/Typed)*	Date
(Electronic Submission)	ETTA TRUJILLO / Ph: (505) 324-4145	01/12/2023

Title
Regulatory Specialist

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	DAVE J MANKIEWICZ / Ph: (505) 564-7761	03/28/2024

Title	Office
AFM-Minerals	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: NWSW / 2627 FSL / 951 FWL / TWSP: 31N / RANGE: 5W / SECTION: 33 / LAT: 36.856086 / LONG: -107.373408 (TVD: 0 feet, MD: 0 feet)

PPP: NESE / 0 FSL / 0 FWL / TWSP: 31N / RANGE: 5W / SECTION: 32 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

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

PPP: NWSW / 2200 FSL / 197 FWL / TWSP: 31N / RANGE: 5W / SECTION: 33 / LAT: 36.854912 / LONG: -107.375983 (TVD: 7099 feet, MD: 7445 feet)

BHL: LOT 3 / 2243 FSL / 158 FWL / TWSP: 31N / RANGE: 5W / SECTION: 31 / LAT: 36.855015 / LONG: -107.407248 (TVD: 7069 feet, MD: 16591 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.

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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
30-039-31461	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	750H

[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
L	33	31N	5W		2627	SOUTH	951	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
K	31	31N	5W	3	2243	SOUTH	158	WEST	RIO ARRIBA

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
872.99	S/2 - Sections 31, 32, 33			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 — 12/7/2022
Signature — Date

Etta Trujillo
Printed Name

etrujillo@logosresourcesllc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

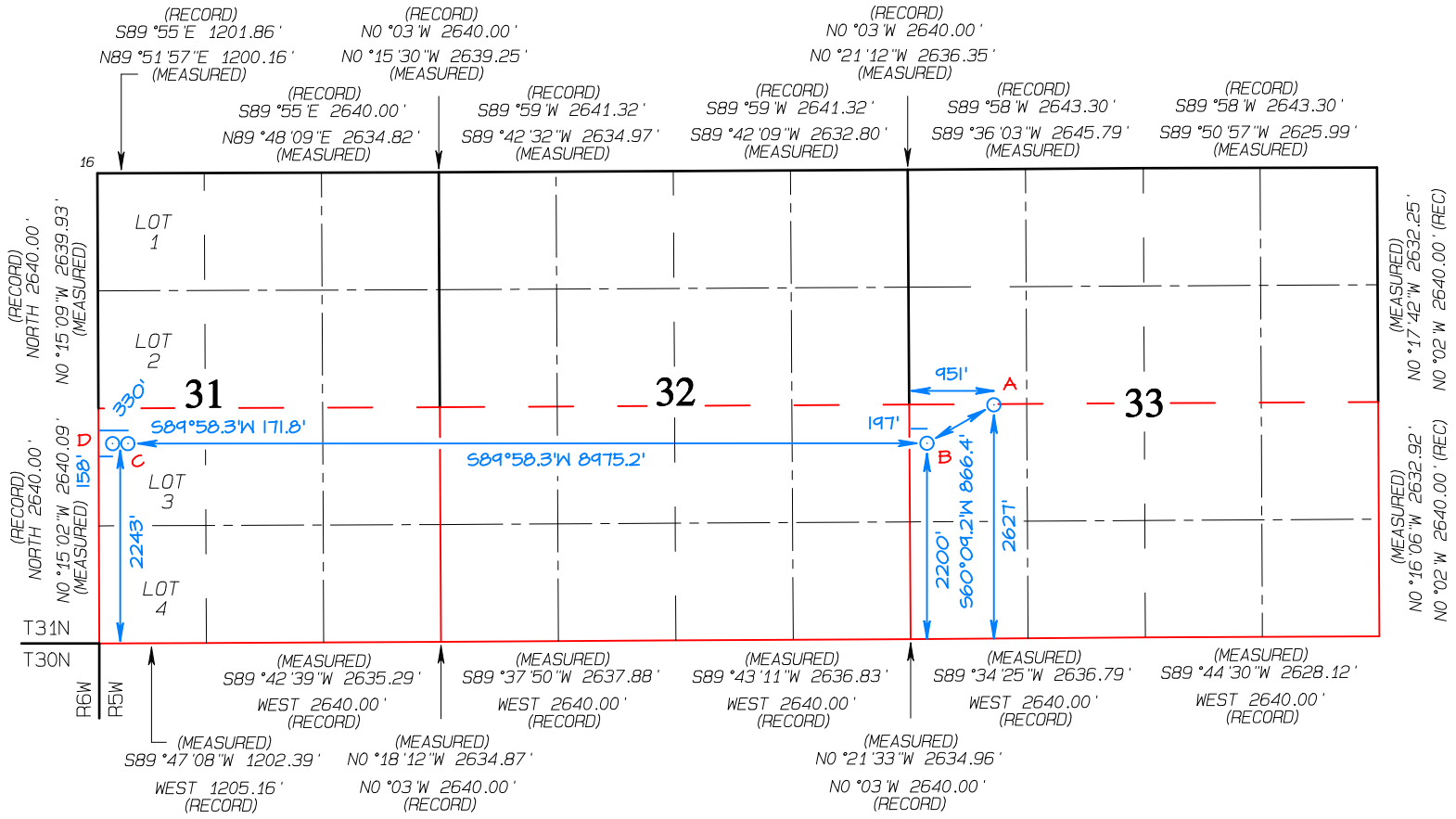
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: DECEMBER 7, 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



LAST TAKE POINT (D)
2243' FSL 158' FWL
SECTION 31, T31N, R5W
LAT: 36.855009 °N
LONG: 107.406645 °W
DATUM: NAD1927

LAT: 36.855015 °N
LONG: 107.407248 °W
DATUM: NAD1983

FIRST PERFORATION (C)
2243' FSL 330' FWL
SECTION 31, T31N, R5W
LAT: 36.855007 °N
LONG: 107.406057 °W
DATUM: NAD1927

LAT: 36.855014 °N
LONG: 107.406660 °W
DATUM: NAD1983

FIRST TAKE POINT (B)
2200' FSL 197' FWL
SECTION 33, T31N, R5W
LAT: 36.854905 °N
LONG: 107.375381 °W
DATUM: NAD1927

LAT: 36.854912 °N
LONG: 107.375983 °W
DATUM: NAD1983

SURFACE LOCATION (A)
2627' FSL 951' FWL
SECTION 33, T31N, R5W
LAT: 36.856080 °N
LONG: 107.372805 °W
DATUM: NAD1927

LAT: 36.856086 °N
LONG: 107.373408 °W
DATUM: NAD1983

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

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

NATURAL GAS MANAGEMENT PLAN

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

Section 1 – Plan Description
Effective May 25, 2021

I. Operator: LOGOS Operating, LLC **OGRID:** 289408 **Date:** 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	N/A	15,080	481
ROSA UNIT 752H	30-039-	L-33-T31N-R5W	2612 FSL 952 FWL	N/A	15,080	485
ROSA UNIT 754H	30-039-	E-33-T31N-R5W	2616 FNL 950 FWL	N/A	11,245	357
ROSA UNIT 756H	30-039-	E-33-T31N-R5W	2631 FNL 951 FWL	N/A	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 750H**	GL Elevation:	6,534’
Surface Location:	Sec 33, T31N, R5W 2627 FSL, 951 FWL (36.856080º N, 107.373408º W – NAD83)	Measured Depth:	16,591’ (KB)
Bottom Hole Location:	Sec 31, T31N, R5W 2243 FSL, 158 FWL (36.855015º N, 107.407248º W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078764 CA Serial #NMNM78407E

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,702'	2,697'	*POINT LOOKOUT	5,828'	5,814'
KIRTLAND	2,848'	2,842'	*MANCOS	6,299'	6,285'
*FRUITLAND	3,249'	3,242'	KICKOFF POINT	6,560'	6,544'
*PICTURED CLIFFS	3,572'	3,564'	LANDING POINT	7,445'	7,099'
LEWIS	3,681'	3,673'			
CHACRA	4,752'	4,741'			
*CLIFF HOUSE	5,586'	5,573'			
MENEFEE	5,614'	5,601'	TD	16,592'	7,069'

* 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:** 7099' TVD x 0.43 = 3053 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"	6,305'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	16,592'	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	5,278	1,027	0.3132	1.3	436	78	1.15	379	15.8
Stage 1 Lead	4,802	476	0.31318	1.3	194	35	2.30	84	12.3
					630	**112**		**463**	
Stage 2 Tail	3,627	1,175	0.31318	1.3	478	85	1.50	319	13.5
Stage 2 Lead	3,279	348	0.31318	1.3	142	25	2.30	62	12.3
					620	**110**		**381**	
Stage 3 Tail	2,629	650	0.31318	1.3	265	47	1.99	133	12.8
Stage 3 Lead	320	2,309	0.31318	1.3	940	167	2.53	372	12
Stage 3 Lead	-	320	0.36268	1	116	21	2.53	46	12
					1,321	**235**		**550**	
All Stage Totals					**2,570**	**458**		**1,394**	

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	**5,305**	**100**	**0.2531**	**1**	**25**	**5**	**1.56**	**16**	13
Open Hole Lead	**6,305**	**10,287**	**0.2291**	**1.15**	**2,721**	**485**	**1.56**	**1,744**	13
					2,746	**489**		**1,760**	

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 * 7.069TVD=1555 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.

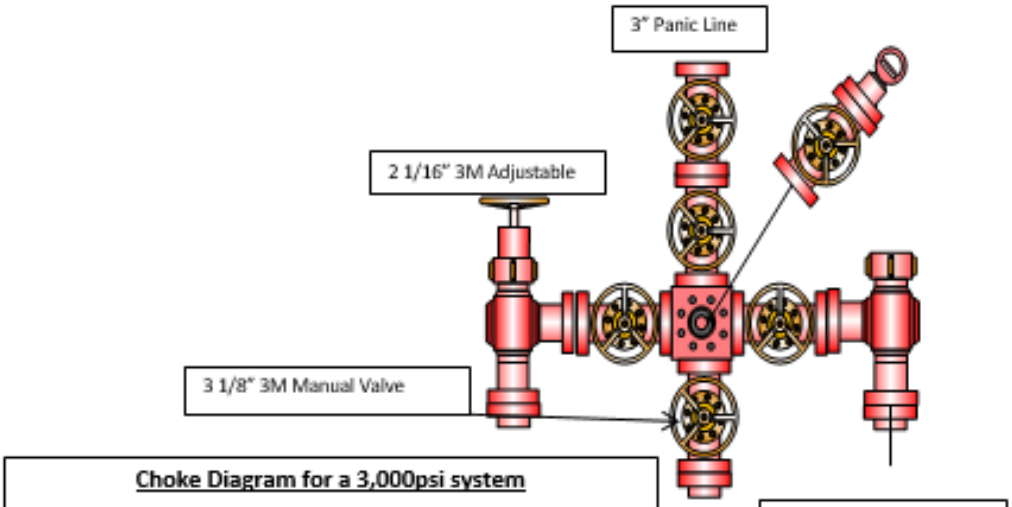
E. PRODUCTION TUBING

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.

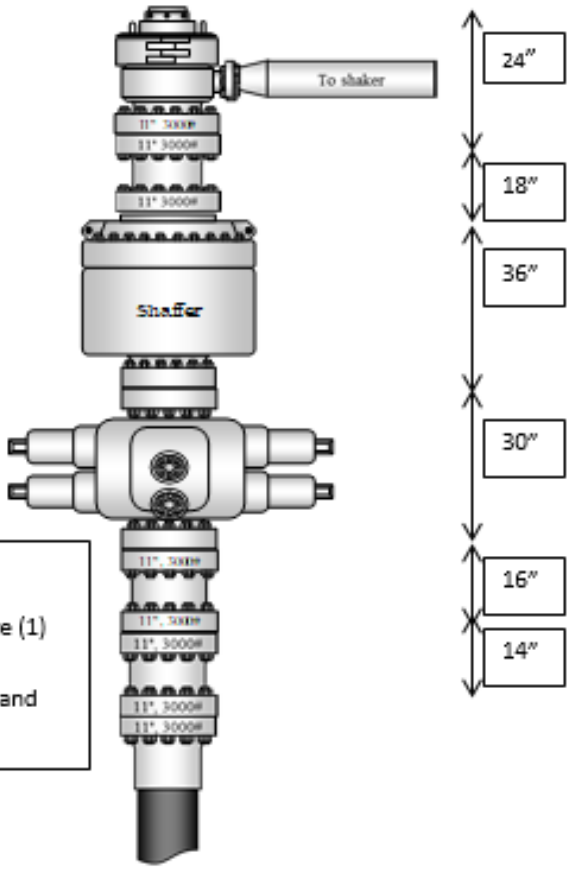
LOGOS RESOURCES II, LLC

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 750H

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 32
Rosa Unit 750H - Slot B05

OH

Plan: Plan #3

Standard Planning Report

08 December, 2022

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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 750H - Slot B05

Well Position	**+N/-S**	-56.61 usft	**Northing:**	2,131,262.88 usft	**Latitude:**	36.856086
	+E/-W	-148.68 usft	**Easting:**	2,857,646.84 usft	**Longitude:**	-107.373408
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	49,565.12237125

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	270.25

Plan Survey Tool Program **Date** 12/8/2022

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,591.83	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	
707.91	4.16	204.46	707.73	-6.86	-3.12	2.00	2.00	0.00	204.46	
6,559.90	4.16	204.46	6,544.31	-393.13	-178.80	0.00	0.00	0.00	0.00	
7,444.73	90.19	270.25	7,099.00	-427.54	-753.53	10.00	9.72	7.44	65.84	Rosa Unit 750H POE
16,419.92	90.19	270.25	7,069.56	-388.62	-9,728.59	0.00	0.00	0.00	0.00	Rosa Unit 750H FPP
16,591.83	90.19	270.25	7,069.00	-387.88	-9,900.49	0.00	0.00	0.00	0.00	Rosa Unit 750H PBHl

Planning Report

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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 750H	**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	204.46	599.98	-1.59	-0.72	0.72	2.00	2.00	0.00
707.91	4.16	204.46	707.73	-6.86	-3.12	3.09	2.00	2.00	0.00
800.00	4.16	204.46	799.58	-12.94	-5.89	5.83	0.00	0.00	0.00
900.00	4.16	204.46	899.31	-19.54	-8.89	8.80	0.00	0.00	0.00
1,000.00	4.16	204.46	999.05	-26.14	-11.89	11.78	0.00	0.00	0.00
1,100.00	4.16	204.46	1,098.79	-32.74	-14.89	14.75	0.00	0.00	0.00
1,200.00	4.16	204.46	1,198.52	-39.35	-17.89	17.72	0.00	0.00	0.00
1,300.00	4.16	204.46	1,298.26	-45.95	-20.90	20.70	0.00	0.00	0.00
1,400.00	4.16	204.46	1,398.00	-52.55	-23.90	23.67	0.00	0.00	0.00
1,500.00	4.16	204.46	1,497.73	-59.15	-26.90	26.64	0.00	0.00	0.00
1,600.00	4.16	204.46	1,597.47	-65.75	-29.90	29.62	0.00	0.00	0.00
1,700.00	4.16	204.46	1,697.21	-72.35	-32.90	32.59	0.00	0.00	0.00
1,800.00	4.16	204.46	1,796.94	-78.95	-35.91	35.56	0.00	0.00	0.00
1,900.00	4.16	204.46	1,896.68	-85.55	-38.91	38.53	0.00	0.00	0.00
2,000.00	4.16	204.46	1,996.42	-92.15	-41.91	41.51	0.00	0.00	0.00
2,100.00	4.16	204.46	2,096.15	-98.75	-44.91	44.48	0.00	0.00	0.00
2,200.00	4.16	204.46	2,195.89	-105.35	-47.91	47.45	0.00	0.00	0.00
2,300.00	4.16	204.46	2,295.63	-111.95	-50.92	50.43	0.00	0.00	0.00
2,400.00	4.16	204.46	2,395.36	-118.55	-53.92	53.40	0.00	0.00	0.00
2,500.00	4.16	204.46	2,495.10	-125.15	-56.92	56.37	0.00	0.00	0.00
2,600.00	4.16	204.46	2,594.84	-131.75	-59.92	59.35	0.00	0.00	0.00
2,700.00	4.16	204.46	2,694.57	-138.35	-62.92	62.32	0.00	0.00	0.00
2,800.00	4.16	204.46	2,794.31	-144.95	-65.93	65.29	0.00	0.00	0.00
2,900.00	4.16	204.46	2,894.05	-151.55	-68.93	68.27	0.00	0.00	0.00
3,000.00	4.16	204.46	2,993.78	-158.16	-71.93	71.24	0.00	0.00	0.00
3,100.00	4.16	204.46	3,093.52	-164.76	-74.93	74.21	0.00	0.00	0.00
3,200.00	4.16	204.46	3,193.26	-171.36	-77.93	77.19	0.00	0.00	0.00
3,300.00	4.16	204.46	3,292.99	-177.96	-80.94	80.16	0.00	0.00	0.00
3,400.00	4.16	204.46	3,392.73	-184.56	-83.94	83.13	0.00	0.00	0.00
3,500.00	4.16	204.46	3,492.47	-191.16	-86.94	86.11	0.00	0.00	0.00
3,600.00	4.16	204.46	3,592.20	-197.76	-89.94	89.08	0.00	0.00	0.00
3,700.00	4.16	204.46	3,691.94	-204.36	-92.94	92.05	0.00	0.00	0.00
3,800.00	4.16	204.46	3,791.68	-210.96	-95.95	95.02	0.00	0.00	0.00
3,900.00	4.16	204.46	3,891.41	-217.56	-98.95	98.00	0.00	0.00	0.00
4,000.00	4.16	204.46	3,991.15	-224.16	-101.95	100.97	0.00	0.00	0.00
4,100.00	4.16	204.46	4,090.89	-230.76	-104.95	103.94	0.00	0.00	0.00
4,200.00	4.16	204.46	4,190.62	-237.36	-107.95	106.92	0.00	0.00	0.00
4,300.00	4.16	204.46	4,290.36	-243.96	-110.96	109.89	0.00	0.00	0.00
4,400.00	4.16	204.46	4,390.10	-250.56	-113.96	112.86	0.00	0.00	0.00
4,500.00	4.16	204.46	4,489.84	-257.16	-116.96	115.84	0.00	0.00	0.00
4,600.00	4.16	204.46	4,589.57	-263.76	-119.96	118.81	0.00	0.00	0.00
4,700.00	4.16	204.46	4,689.31	-270.37	-122.96	121.78	0.00	0.00	0.00
4,800.00	4.16	204.46	4,789.05	-276.97	-125.97	124.76	0.00	0.00	0.00
4,900.00	4.16	204.46	4,888.78	-283.57	-128.97	127.73	0.00	0.00	0.00
5,000.00	4.16	204.46	4,988.52	-290.17	-131.97	130.70	0.00	0.00	0.00
5,100.00	4.16	204.46	5,088.26	-296.77	-134.97	133.68	0.00	0.00	0.00
5,200.00	4.16	204.46	5,187.99	-303.37	-137.97	136.65	0.00	0.00	0.00
5,300.00	4.16	204.46	5,287.73	-309.97	-140.98	139.62	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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)
5,400.00	4.16	204.46	5,387.47	-316.57	-143.98	142.60	0.00	0.00	0.00
5,500.00	4.16	204.46	5,487.20	-323.17	-146.98	145.57	0.00	0.00	0.00
5,600.00	4.16	204.46	5,586.94	-329.77	-149.98	148.54	0.00	0.00	0.00
5,700.00	4.16	204.46	5,686.68	-336.37	-152.98	151.51	0.00	0.00	0.00
5,800.00	4.16	204.46	5,786.41	-342.97	-155.99	154.49	0.00	0.00	0.00
5,900.00	4.16	204.46	5,886.15	-349.57	-158.99	157.46	0.00	0.00	0.00
6,000.00	4.16	204.46	5,985.89	-356.17	-161.99	160.43	0.00	0.00	0.00
6,100.00	4.16	204.46	6,085.62	-362.77	-164.99	163.41	0.00	0.00	0.00
6,200.00	4.16	204.46	6,185.36	-369.37	-167.99	166.38	0.00	0.00	0.00
6,300.00	4.16	204.46	6,285.10	-375.97	-171.00	169.35	0.00	0.00	0.00
6,400.00	4.16	204.46	6,384.83	-382.57	-174.00	172.33	0.00	0.00	0.00
6,500.00	4.16	204.46	6,484.57	-389.18	-177.00	175.30	0.00	0.00	0.00
6,559.90	4.16	204.46	6,544.31	-393.13	-178.80	177.08	0.00	0.00	0.00
6,600.00	6.86	236.77	6,584.23	-395.77	-181.40	179.67	10.00	6.73	80.57
6,650.00	11.36	250.97	6,633.60	-399.01	-188.56	186.82	10.00	9.01	28.39
6,700.00	16.16	257.00	6,682.15	-402.18	-200.00	198.24	10.00	9.59	12.08
6,750.00	21.04	260.31	6,729.52	-405.26	-215.64	213.87	10.00	9.78	6.62
6,800.00	25.97	262.41	6,775.36	-408.22	-235.35	233.57	10.00	9.86	4.20
6,850.00	30.93	263.88	6,819.31	-411.03	-259.00	257.20	10.00	9.90	2.94
6,900.00	35.89	264.98	6,861.04	-413.69	-286.39	284.58	10.00	9.93	2.19
6,950.00	40.86	265.84	6,900.22	-416.16	-317.32	315.50	10.00	9.94	1.72
7,000.00	45.84	266.54	6,936.57	-418.43	-351.55	349.73	10.00	9.95	1.41
7,050.00	50.82	267.14	6,969.80	-420.48	-388.83	387.00	10.00	9.96	1.19
7,100.00	55.80	267.65	6,999.67	-422.29	-428.87	427.03	10.00	9.97	1.03
7,150.00	60.79	268.11	7,025.94	-423.86	-471.37	469.51	10.00	9.97	0.92
7,200.00	65.77	268.53	7,048.41	-425.16	-516.00	514.14	10.00	9.97	0.83
7,250.00	70.76	268.91	7,066.92	-426.20	-562.41	560.55	10.00	9.97	0.77
7,300.00	75.75	269.27	7,081.33	-426.96	-610.27	608.40	10.00	9.98	0.72
7,350.00	80.74	269.62	7,091.51	-427.43	-659.21	657.33	10.00	9.98	0.69
7,400.00	85.72	269.95	7,097.41	-427.62	-708.84	706.97	10.00	9.98	0.67
7,444.73	90.19	270.25	7,099.00	-427.54	-753.53	751.66	10.00	9.98	0.66
7,500.00	90.19	270.25	7,098.82	-427.30	-808.80	806.93	0.00	0.00	0.00
7,600.00	90.19	270.25	7,098.49	-426.87	-908.80	906.93	0.00	0.00	0.00
7,700.00	90.19	270.25	7,098.16	-426.43	-1,008.80	1,006.93	0.00	0.00	0.00
7,800.00	90.19	270.25	7,097.83	-426.00	-1,108.80	1,106.93	0.00	0.00	0.00
7,900.00	90.19	270.25	7,097.51	-425.57	-1,208.79	1,206.93	0.00	0.00	0.00
8,000.00	90.19	270.25	7,097.18	-425.13	-1,308.79	1,306.93	0.00	0.00	0.00
8,100.00	90.19	270.25	7,096.85	-424.70	-1,408.79	1,406.92	0.00	0.00	0.00
8,200.00	90.19	270.25	7,096.52	-424.27	-1,508.79	1,506.92	0.00	0.00	0.00
8,300.00	90.19	270.25	7,096.19	-423.83	-1,608.79	1,606.92	0.00	0.00	0.00
8,400.00	90.19	270.25	7,095.87	-423.40	-1,708.79	1,706.92	0.00	0.00	0.00
8,500.00	90.19	270.25	7,095.54	-422.96	-1,808.79	1,806.92	0.00	0.00	0.00
8,600.00	90.19	270.25	7,095.21	-422.53	-1,908.78	1,906.92	0.00	0.00	0.00
8,700.00	90.19	270.25	7,094.88	-422.10	-2,008.78	2,006.92	0.00	0.00	0.00
8,800.00	90.19	270.25	7,094.55	-421.66	-2,108.78	2,106.92	0.00	0.00	0.00
8,900.00	90.19	270.25	7,094.23	-421.23	-2,208.78	2,206.92	0.00	0.00	0.00
9,000.00	90.19	270.25	7,093.90	-420.80	-2,308.78	2,306.92	0.00	0.00	0.00
9,100.00	90.19	270.25	7,093.57	-420.36	-2,408.78	2,406.92	0.00	0.00	0.00
9,200.00	90.19	270.25	7,093.24	-419.93	-2,508.77	2,506.92	0.00	0.00	0.00
9,300.00	90.19	270.25	7,092.91	-419.50	-2,608.77	2,606.92	0.00	0.00	0.00
9,400.00	90.19	270.25	7,092.59	-419.06	-2,708.77	2,706.92	0.00	0.00	0.00
9,500.00	90.19	270.25	7,092.26	-418.63	-2,808.77	2,806.92	0.00	0.00	0.00
9,600.00	90.19	270.25	7,091.93	-418.19	-2,908.77	2,906.92	0.00	0.00	0.00
9,700.00	90.19	270.25	7,091.60	-417.76	-3,008.77	3,006.92	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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)
9,800.00	90.19	270.25	7,091.27	-417.33	-3,108.77	3,106.92	0.00	0.00	0.00
9,900.00	90.19	270.25	7,090.95	-416.89	-3,208.76	3,206.91	0.00	0.00	0.00
10,000.00	90.19	270.25	7,090.62	-416.46	-3,308.76	3,306.91	0.00	0.00	0.00
10,100.00	90.19	270.25	7,090.29	-416.03	-3,408.76	3,406.91	0.00	0.00	0.00
10,200.00	90.19	270.25	7,089.96	-415.59	-3,508.76	3,506.91	0.00	0.00	0.00
10,300.00	90.19	270.25	7,089.63	-415.16	-3,608.76	3,606.91	0.00	0.00	0.00
10,400.00	90.19	270.25	7,089.31	-414.73	-3,708.76	3,706.91	0.00	0.00	0.00
10,500.00	90.19	270.25	7,088.98	-414.29	-3,808.76	3,806.91	0.00	0.00	0.00
10,600.00	90.19	270.25	7,088.65	-413.86	-3,908.75	3,906.91	0.00	0.00	0.00
10,700.00	90.19	270.25	7,088.32	-413.42	-4,008.75	4,006.91	0.00	0.00	0.00
10,800.00	90.19	270.25	7,087.99	-412.99	-4,108.75	4,106.91	0.00	0.00	0.00
10,900.00	90.19	270.25	7,087.67	-412.56	-4,208.75	4,206.91	0.00	0.00	0.00
11,000.00	90.19	270.25	7,087.34	-412.12	-4,308.75	4,306.91	0.00	0.00	0.00
11,100.00	90.19	270.25	7,087.01	-411.69	-4,408.75	4,406.91	0.00	0.00	0.00
11,200.00	90.19	270.25	7,086.68	-411.26	-4,508.75	4,506.91	0.00	0.00	0.00
11,300.00	90.19	270.25	7,086.35	-410.82	-4,608.74	4,606.91	0.00	0.00	0.00
11,400.00	90.19	270.25	7,086.03	-410.39	-4,708.74	4,706.91	0.00	0.00	0.00
11,500.00	90.19	270.25	7,085.70	-409.96	-4,808.74	4,806.91	0.00	0.00	0.00
11,600.00	90.19	270.25	7,085.37	-409.52	-4,908.74	4,906.91	0.00	0.00	0.00
11,700.00	90.19	270.25	7,085.04	-409.09	-5,008.74	5,006.91	0.00	0.00	0.00
11,800.00	90.19	270.25	7,084.71	-408.66	-5,108.74	5,106.90	0.00	0.00	0.00
11,900.00	90.19	270.25	7,084.39	-408.22	-5,208.73	5,206.90	0.00	0.00	0.00
12,000.00	90.19	270.25	7,084.06	-407.79	-5,308.73	5,306.90	0.00	0.00	0.00
12,100.00	90.19	270.25	7,083.73	-407.35	-5,408.73	5,406.90	0.00	0.00	0.00
12,200.00	90.19	270.25	7,083.40	-406.92	-5,508.73	5,506.90	0.00	0.00	0.00
12,300.00	90.19	270.25	7,083.07	-406.49	-5,608.73	5,606.90	0.00	0.00	0.00
12,400.00	90.19	270.25	7,082.75	-406.05	-5,708.73	5,706.90	0.00	0.00	0.00
12,500.00	90.19	270.25	7,082.42	-405.62	-5,808.73	5,806.90	0.00	0.00	0.00
12,600.00	90.19	270.25	7,082.09	-405.19	-5,908.72	5,906.90	0.00	0.00	0.00
12,700.00	90.19	270.25	7,081.76	-404.75	-6,008.72	6,006.90	0.00	0.00	0.00
12,800.00	90.19	270.25	7,081.43	-404.32	-6,108.72	6,106.90	0.00	0.00	0.00
12,900.00	90.19	270.25	7,081.11	-403.89	-6,208.72	6,206.90	0.00	0.00	0.00
13,000.00	90.19	270.25	7,080.78	-403.45	-6,308.72	6,306.90	0.00	0.00	0.00
13,100.00	90.19	270.25	7,080.45	-403.02	-6,408.72	6,406.90	0.00	0.00	0.00
13,200.00	90.19	270.25	7,080.12	-402.58	-6,508.72	6,506.90	0.00	0.00	0.00
13,300.00	90.19	270.25	7,079.79	-402.15	-6,608.71	6,606.90	0.00	0.00	0.00
13,400.00	90.19	270.25	7,079.47	-401.72	-6,708.71	6,706.90	0.00	0.00	0.00
13,500.00	90.19	270.25	7,079.14	-401.28	-6,808.71	6,806.90	0.00	0.00	0.00
13,600.00	90.19	270.25	7,078.81	-400.85	-6,908.71	6,906.90	0.00	0.00	0.00
13,700.00	90.19	270.25	7,078.48	-400.42	-7,008.71	7,006.89	0.00	0.00	0.00
13,800.00	90.19	270.25	7,078.15	-399.98	-7,108.71	7,106.89	0.00	0.00	0.00
13,900.00	90.19	270.25	7,077.83	-399.55	-7,208.71	7,206.89	0.00	0.00	0.00
14,000.00	90.19	270.25	7,077.50	-399.12	-7,308.70	7,306.89	0.00	0.00	0.00
14,100.00	90.19	270.25	7,077.17	-398.68	-7,408.70	7,406.89	0.00	0.00	0.00
14,200.00	90.19	270.25	7,076.84	-398.25	-7,508.70	7,506.89	0.00	0.00	0.00
14,300.00	90.19	270.25	7,076.51	-397.81	-7,608.70	7,606.89	0.00	0.00	0.00
14,400.00	90.19	270.25	7,076.19	-397.38	-7,708.70	7,706.89	0.00	0.00	0.00
14,500.00	90.19	270.25	7,075.86	-396.95	-7,808.70	7,806.89	0.00	0.00	0.00
14,600.00	90.19	270.25	7,075.53	-396.51	-7,908.70	7,906.89	0.00	0.00	0.00
14,700.00	90.19	270.25	7,075.20	-396.08	-8,008.69	8,006.89	0.00	0.00	0.00
14,800.00	90.19	270.25	7,074.87	-395.65	-8,108.69	8,106.89	0.00	0.00	0.00
14,900.00	90.19	270.25	7,074.55	-395.21	-8,208.69	8,206.89	0.00	0.00	0.00
15,000.00	90.19	270.25	7,074.22	-394.78	-8,308.69	8,306.89	0.00	0.00	0.00
15,100.00	90.19	270.25	7,073.89	-394.35	-8,408.69	8,406.89	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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)
15,200.00	90.19	270.25	7,073.56	-393.91	-8,508.69	8,506.89	0.00	0.00	0.00
15,300.00	90.19	270.25	7,073.23	-393.48	-8,608.68	8,606.89	0.00	0.00	0.00
15,400.00	90.19	270.25	7,072.91	-393.05	-8,708.68	8,706.89	0.00	0.00	0.00
15,500.00	90.19	270.25	7,072.58	-392.61	-8,808.68	8,806.88	0.00	0.00	0.00
15,600.00	90.19	270.25	7,072.25	-392.18	-8,908.68	8,906.88	0.00	0.00	0.00
15,700.00	90.19	270.25	7,071.92	-391.74	-9,008.68	9,006.88	0.00	0.00	0.00
15,800.00	90.19	270.25	7,071.59	-391.31	-9,108.68	9,106.88	0.00	0.00	0.00
15,900.00	90.19	270.25	7,071.27	-390.88	-9,208.68	9,206.88	0.00	0.00	0.00
16,000.00	90.19	270.25	7,070.94	-390.44	-9,308.67	9,306.88	0.00	0.00	0.00
16,100.00	90.19	270.25	7,070.61	-390.01	-9,408.67	9,406.88	0.00	0.00	0.00
16,200.00	90.19	270.25	7,070.28	-389.58	-9,508.67	9,506.88	0.00	0.00	0.00
16,300.00	90.19	270.25	7,069.95	-389.14	-9,608.67	9,606.88	0.00	0.00	0.00
16,400.00	90.19	270.25	7,069.63	-388.71	-9,708.67	9,706.88	0.00	0.00	0.00
16,419.92	90.19	270.25	7,069.56	-388.62	-9,728.59	9,726.80	0.00	0.00	0.00
16,500.00	90.19	270.25	7,069.30	-388.28	-9,808.67	9,806.88	0.00	0.00	0.00
16,591.83	90.19	270.25	7,069.00	-387.88	-9,900.49	9,898.71	0.00	0.00	0.00

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 750H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,131,262.88	2,857,646.84	36.856086	-107.373408
Rosa Unit 750H PBHL - plan misses target center by 0.16usft at 16591.83usft MD (7069.00 TVD, -387.88 N, -9900.49 E) - Point	0.00	0.00	7,069.00	-388.04	-9,900.50	2,130,827.17	2,847,748.33	36.855016	-107.407248
Rosa Unit 750H FPP - plan hits target center - Point	0.00	0.00	7,069.56	-388.62	-9,728.59	2,130,827.41	2,847,920.24	36.855014	-107.406660
Rosa Unit 750H POE - plan hits target center - Point	0.00	0.00	7,099.00	-427.54	-753.53	2,130,831.71	2,856,895.38	36.854912	-107.375983

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,702.43	2,697.00	Ojo Alamo		0.00	270.25
2,847.82	2,842.00	Kirtland		0.00	270.25
3,248.87	3,242.00	Fruitland		0.00	270.25
3,571.72	3,564.00	Pictured Cliffs		0.00	270.25
3,681.01	3,673.00	Lewis		0.00	270.25
4,751.83	4,741.00	Chacra		0.00	270.25
5,586.02	5,573.00	Cliff House		0.00	270.25
5,614.10	5,601.00	Menefee		0.00	270.25
5,827.66	5,814.00	Point Lookout		0.00	270.25
6,299.90	6,285.00	Mancos		0.00	270.25

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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
707.91	707.73	-6.86	-3.12	Start 5851.98 hold at 707.91 MD
6,559.90	6,544.31	-393.13	-178.80	Start DLS 10.00 TFO 65.84
7,444.73	7,099.00	-427.54	-753.53	Start 8975.19 hold at 7444.73 MD
16,419.92	7,069.56	-388.62	-9,728.59	Start 171.91 hold at 16419.92 MD
16,591.83	7,069.00	-387.88	-9,900.49	TD at 16591.83

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 32
Rosa Unit 750H

OH
Plan #3

Anticollision Report

08 December, 2022

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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** 12/8/2022

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	16,591.83	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 752H - OH - Plan #3	500.00	500.00	14.98	12.12	5.250	CC
Rosa Unit 752H - OH - Plan #3	600.00	599.48	15.15	11.70	4.390	ES
Rosa Unit 752H - OH - Plan #3	707.91	706.81	15.86	11.76	3.872	SF
Rosa Unit 754H - OH - Plan #3	603.37	604.36	29.98	26.50	8.625	CC, ES
Rosa Unit 754H - OH - Plan #3	1,000.00	1,000.83	41.44	35.58	7.077	SF
Rosa Unit 756H - OH - Plan #3	902.55	903.95	12.79	7.52	2.426	CC, ES, SF
RU #024 (Offset) - OH - OH	11,923.46	5,952.00	1,655.45	1,426.18	7.221	CC, ES
RU #024 (Offset) - OH - OH	12,000.00	5,952.00	1,657.22	1,427.52	7.215	SF
RU #024B (Offset) - OH - OH	10,932.67	7,047.59	1,361.75	1,181.74	7.565	CC, ES, SF
RU #026A (Offset) - OH - OH	9,095.62	7,010.71	1,353.94	1,177.32	7.666	CC
RU #026A (Offset) - OH - OH	9,100.00	7,010.70	1,353.95	1,177.31	7.665	ES, SF
RU #026C (Offset) - OH - OH	7,759.25	7,112.34	394.49	212.78	2.171	CC, ES, SF
RU #055 (Offset) - OH - OH	0.00	30.12	8,515.27			
RU #055 (Offset) - OH - OH	500.00	525.26	8,515.43	8,513.44	4,271.490	ES
RU #055 (Offset) - OH - OH	7,200.00	7,200.00	8,988.54	8,960.80	324.013	SF
RU #077 (Offset) - OH - OH	6,740.77	6,699.06	519.73	492.03	18.759	CC
RU #077 (Offset) - OH - OH	6,750.00	6,708.04	519.75	492.01	18.738	ES
RU #077 (Offset) - OH - OH	6,850.00	6,799.84	522.91	494.88	18.658	SF
RU #077A (Offset) - OH - OH	483.46	427.99	3,336.97	3,328.42	390.551	CC
RU #077A (Offset) - OH - OH	6,559.90	6,489.48	3,408.66	3,261.39	23.146	ES
RU #077A (Offset) - OH - OH	6,850.00	6,764.52	3,483.94	3,329.98	22.629	SF
RU #077B (Offset) - OH - OH	6,409.28	6,338.09	2,210.65	2,066.58	15.344	CC, ES, SF
RU #077C (Offset) - OH - OH	3,478.33	3,633.31	4,230.70	4,217.69	325.300	CC
RU #077C (Offset) - OH - OH	3,700.00	3,845.69	4,231.02	4,217.22	306.541	ES
RU #077C (Offset) - OH - OH	6,950.00	7,051.61	4,376.36	4,350.66	170.282	SF
RU #097 (Offset) - OH - OH	15,965.81	7,058.69	390.94	192.95	1.975	CC, ES, SF
RU #137 (Offset) - OH - OH	15,935.37	6,170.00	1,282.39	1,121.75	7.983	CC, ES
RU #137 (Offset) - OH - OH	16,000.00	6,170.00	1,284.02	1,123.03	7.976	SF
RU #137A (Offset) - OH - OH	13,919.35	6,210.00	902.60	799.14	8.724	CC, ES
RU #137A (Offset) - OH - OH	14,500.00	6,210.00	1,073.23	938.78	7.982	SF
RU #137B (Offset) - OH - OH	13,175.66	6,165.00	1,768.59	1,617.93	11.739	CC, ES
RU #137B (Offset) - OH - OH	13,300.00	6,165.00	1,772.95	1,621.84	11.733	SF
RU #137C (Offset) - OH - OH	15,143.14	6,970.03	1,626.11	1,572.99	30.614	CC, ES
RU #137C (Offset) - OH - OH	15,200.00	6,970.27	1,627.10	1,573.90	30.584	SF
RU #184 (Offset) - OH - OH	500.00	520.52	8,434.13	8,425.79	1,011.244	CC
RU #184 (Offset) - OH - OH	5,700.00	5,707.95	8,548.38	8,414.40	63.801	ES
RU #184 (Offset) - OH - OH	6,400.00	6,398.83	8,565.55	8,415.35	57.027	SF

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 750H - Slot B05
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 750H	**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 #184B (Offset) - OH - OH	500.00	510.53	9,566.67	9,558.24	1,134.487	CC
RU #184B (Offset) - OH - OH	6,300.00	6,298.00	9,664.75	9,417.45	39.082	ES
RU #184B (Offset) - OH - OH	6,400.00	6,374.06	9,667.00	9,417.47	38.740	SF
RU #188 (Offset) - OH - OH	357.29	532.81	6,088.37	6,079.81	711.637	CC
RU #188 (Offset) - OH - OH	707.91	883.29	6,090.86	6,074.36	369.139	ES
RU #188 (Offset) - OH - OH	6,400.00	6,560.98	6,236.46	6,086.18	41.500	SF
RU #188C (Offset) - OH - OH	0.00	167.29	6,989.19			
RU #188C (Offset) - OH - OH	400.00	545.37	6,990.29	6,988.80	4,689.549	ES
RU #188C (Offset) - OH - OH	13,200.00	13,200.00	13,445.19	13,395.37	269.887	SF
RU #231 (Offset) - OH - OH	16,035.97	3,337.00	3,842.09	3,775.31	57.531	CC, ES
RU #231 (Offset) - OH - OH	16,591.83	3,337.00	3,882.09	3,811.68	55.135	SF
RU #231A (Offset) - OH - OH	13,089.77	3,384.00	3,839.87	3,775.39	59.551	CC
RU #231A (Offset) - OH - OH	13,100.00	3,384.00	3,839.89	3,775.37	59.522	ES
RU #231A (Offset) - OH - OH	15,600.00	3,384.00	4,587.58	4,498.38	51.433	SF
RU #259 (Offset) - OH - OH	3,521.93	3,402.00	1,146.61	1,070.23	15.013	CC, ES, SF
RU #259A (Offset) - OH - OH	420.87	372.67	3,371.14	3,363.91	466.544	CC
RU #259A (Offset) - OH - OH	3,500.00	3,414.00	3,402.70	3,325.68	44.181	ES
RU #259A (Offset) - OH - OH	3,700.00	3,414.00	3,412.99	3,335.52	44.055	SF
RU #269A (Offset) - OH - OH	419.46	441.00	8,412.53	8,410.02	3,354.433	CC
RU #269A (Offset) - OH - OH	500.00	472.00	8,412.73	8,409.88	2,959.602	ES
RU #269A (Offset) - OH - OH	7,050.00	3,512.00	9,750.57	9,718.94	308.266	SF
RU #270 (Offset) - OH - OH	339.99	508.01	5,969.83	5,961.02	677.111	CC
RU #270 (Offset) - OH - OH	707.91	876.30	5,972.39	5,955.33	349.974	ES
RU #270 (Offset) - OH - OH	4,100.00	3,597.00	6,093.22	6,011.97	74.996	SF
RU #271A (Offset) - OH - OH	562.16	828.00	13,893.68	13,889.62	3,426.339	CC, ES
RU #271A (Offset) - OH - OH	12,400.00	3,527.00	19,981.53	19,933.83	418.912	SF
RU #272 (Offset) - OH - OH	340.68	500.16	10,400.69	10,392.67	1,296.489	CC
RU #272 (Offset) - OH - OH	707.91	867.27	10,403.74	10,387.76	651.128	ES
RU #272 (Offset) - OH - OH	5,600.00	3,569.00	10,774.28	10,692.02	130.986	SF
RU #334A (Offset) - OH - OH	3,576.58	3,468.00	2,782.68	2,699.93	33.626	CC, ES
RU #334A (Offset) - OH - OH	3,700.00	3,468.00	2,785.42	2,702.45	33.572	SF
RU #337 (Offset) - OH - OH	11,476.54	3,351.00	3,706.05	3,660.80	81.894	CC
RU #337 (Offset) - OH - OH	11,500.00	3,351.00	3,706.13	3,660.79	81.738	ES
RU #337 (Offset) - OH - OH	14,400.00	3,351.00	4,720.33	4,634.53	55.017	SF

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	177.52	-14.96	0.65	14.98				
100.00	100.00	100.00	100.00	0.23	0.23	177.52	-14.96	0.65	14.98	14.52	0.45	33.062	
200.00	200.00	200.00	200.00	0.53	0.53	177.52	-14.96	0.65	14.98	13.92	1.05	14.223	
300.00	300.00	300.00	300.00	0.83	0.83	177.52	-14.96	0.65	14.98	13.32	1.65	9.061	
400.00	400.00	400.00	400.00	1.13	1.13	177.52	-14.96	0.65	14.98	12.72	2.25	6.648	
500.00	500.00	500.00	500.00	1.43	1.43	177.52	-14.96	0.65	14.98	12.12	2.85	5.250	CC
600.00	599.98	599.48	599.46	1.73	1.72	-28.99	-16.68	0.48	15.15	11.70	3.45	4.390	ES
707.91	707.73	706.81	706.63	2.05	2.05	-35.45	-22.39	-0.08	15.86	11.76	4.10	3.872	SF
800.00	799.58	798.35	797.81	2.33	2.32	-40.32	-30.41	-0.86	18.26	13.62	4.65	3.930	
900.00	899.31	897.51	896.23	2.63	2.62	-40.90	-42.37	-2.03	24.03	18.79	5.24	4.583	

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 750H - Slot B05
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 750H	**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
1,000.00	999.05	996.19	993.71	2.93	2.92	-38.99	-57.62	-3.52	33.01	27.17	5.84	5.654	
1,100.00	1,098.79	1,094.16	1,089.91	3.23	3.21	-36.49	-76.07	-5.32	45.24	38.81	6.43	7.037	
1,200.00	1,198.52	1,191.20	1,184.52	3.53	3.50	-34.17	-97.55	-7.42	60.78	53.76	7.02	8.658	
1,300.00	1,298.26	1,289.27	1,279.62	3.83	3.80	-32.39	-121.36	-9.75	78.48	70.86	7.61	10.308	
1,400.00	1,398.00	1,387.66	1,375.02	4.13	4.09	-31.25	-145.29	-12.09	96.27	88.06	8.21	11.728	
1,500.00	1,497.73	1,486.05	1,470.43	4.43	4.39	-30.47	-169.22	-14.43	114.09	105.29	8.80	12.958	
1,600.00	1,597.47	1,584.43	1,565.84	4.73	4.68	-29.90	-193.15	-16.77	131.93	122.53	9.40	14.035	
1,700.00	1,697.21	1,682.82	1,661.24	5.03	4.98	-29.46	-217.08	-19.11	149.77	139.77	10.00	14.984	
1,800.00	1,796.94	1,781.21	1,756.65	5.33	5.28	-29.12	-241.01	-21.44	167.62	157.03	10.59	15.827	
1,900.00	1,896.68	1,879.60	1,852.06	5.63	5.57	-28.84	-264.94	-23.78	185.47	174.29	11.19	16.581	
2,000.00	1,996.42	1,977.99	1,947.46	5.93	5.87	-28.61	-288.87	-26.12	203.33	191.55	11.78	17.259	
2,100.00	2,096.15	2,076.38	2,042.87	6.23	6.16	-28.42	-312.80	-28.46	221.19	208.82	12.38	17.872	
2,200.00	2,195.89	2,174.77	2,138.27	6.53	6.46	-28.26	-336.73	-30.80	239.06	226.09	12.97	18.429	
2,300.00	2,295.63	2,273.16	2,233.68	6.83	6.75	-28.12	-360.66	-33.14	256.92	243.36	13.57	18.937	
2,400.00	2,395.36	2,371.55	2,329.09	7.13	7.05	-28.00	-384.59	-35.48	274.79	260.63	14.16	19.402	
2,500.00	2,495.10	2,469.94	2,424.49	7.43	7.34	-27.89	-408.52	-37.82	292.66	277.90	14.76	19.830	
2,600.00	2,594.84	2,568.33	2,519.90	7.73	7.64	-27.80	-432.45	-40.15	310.52	295.17	15.35	20.225	
2,700.00	2,694.57	2,666.72	2,615.31	8.03	7.93	-27.71	-456.38	-42.49	328.39	312.44	15.95	20.591	
2,800.00	2,794.31	2,765.11	2,710.71	8.33	8.23	-27.64	-480.31	-44.83	346.26	329.72	16.54	20.930	
2,900.00	2,894.05	2,863.50	2,806.12	8.63	8.52	-27.57	-504.24	-47.17	364.13	346.99	17.14	21.246	
3,000.00	2,993.78	2,961.89	2,901.52	8.93	8.82	-27.51	-528.17	-49.51	382.00	364.27	17.73	21.540	
3,100.00	3,093.52	3,060.28	2,996.93	9.23	9.11	-27.45	-552.10	-51.85	399.87	381.54	18.33	21.816	
3,200.00	3,193.26	3,158.67	3,092.34	9.53	9.41	-27.40	-576.03	-54.19	417.74	398.82	18.92	22.074	
3,300.00	3,292.99	3,257.06	3,187.74	9.83	9.70	-27.35	-599.96	-56.53	435.62	416.10	19.52	22.316	
3,400.00	3,392.73	3,355.45	3,283.15	10.13	10.00	-27.31	-623.89	-58.86	453.49	433.37	20.12	22.544	
3,500.00	3,492.47	3,453.84	3,378.56	10.43	10.29	-27.27	-647.82	-61.20	471.36	450.65	20.71	22.759	
3,600.00	3,592.20	3,552.22	3,473.96	10.73	10.59	-27.23	-671.75	-63.54	489.23	467.93	21.31	22.962	
3,700.00	3,691.94	3,650.61	3,569.37	11.03	10.89	-27.20	-695.68	-65.88	507.10	485.20	21.90	23.154	
3,800.00	3,791.68	3,749.00	3,664.78	11.33	11.18	-27.17	-719.61	-68.22	524.98	502.48	22.50	23.336	
3,900.00	3,891.41	3,847.39	3,760.18	11.63	11.48	-27.13	-743.54	-70.56	542.85	519.76	23.09	23.509	
4,000.00	3,991.15	3,945.78	3,855.59	11.93	11.77	-27.11	-767.47	-72.90	560.72	537.03	23.69	23.672	
4,100.00	4,090.89	4,044.17	3,950.99	12.23	12.07	-27.08	-791.40	-75.24	578.59	554.31	24.28	23.828	
4,200.00	4,190.62	4,142.56	4,046.40	12.53	12.36	-27.06	-815.33	-77.57	596.47	571.59	24.88	23.977	
4,300.00	4,290.36	4,240.95	4,141.81	12.83	12.66	-27.03	-839.26	-79.91	614.34	588.87	25.47	24.118	
4,400.00	4,390.10	4,339.34	4,237.21	13.13	12.95	-27.01	-863.19	-82.25	632.21	606.15	26.07	24.253	
4,500.00	4,489.84	4,437.73	4,332.62	13.43	13.25	-26.99	-887.12	-84.59	650.09	623.42	26.66	24.382	
4,600.00	4,589.57	4,536.12	4,428.03	13.73	13.54	-26.97	-911.05	-86.93	667.96	640.70	27.26	24.505	
4,700.00	4,689.31	4,634.51	4,523.43	14.03	13.84	-26.95	-934.98	-89.27	685.83	657.98	27.85	24.623	
4,800.00	4,789.05	4,732.90	4,618.84	14.33	14.13	-26.93	-958.91	-91.61	703.71	675.26	28.45	24.736	
4,900.00	4,888.78	4,831.29	4,714.25	14.63	14.43	-26.92	-982.84	-93.95	721.58	692.54	29.04	24.845	
5,000.00	4,988.52	4,929.68	4,809.65	14.93	14.72	-26.90	-1,006.77	-96.28	739.45	709.82	29.64	24.949	
5,100.00	5,088.26	5,028.07	4,905.06	15.23	15.02	-26.88	-1,030.70	-98.62	757.33	727.09	30.23	25.049	
5,200.00	5,187.99	5,126.46	5,000.46	15.53	15.31	-26.87	-1,054.63	-100.96	775.20	744.37	30.83	25.145	
5,300.00	5,287.73	5,224.85	5,095.87	15.83	15.61	-26.86	-1,078.56	-103.30	793.07	761.65	31.42	25.238	
5,400.00	5,387.47	5,323.24	5,191.28	16.13	15.90	-26.84	-1,102.49	-105.64	810.95	778.93	32.02	25.327	
5,500.00	5,487.20	5,421.63	5,286.68	16.43	16.20	-26.83	-1,126.42	-107.98	828.82	796.21	32.61	25.413	
5,600.00	5,586.94	5,520.01	5,382.09	16.73	16.49	-26.82	-1,150.35	-110.32	846.70	813.49	33.21	25.495	
5,700.00	5,686.68	5,618.40	5,477.50	17.03	16.79	-26.81	-1,174.28	-112.66	864.57	830.77	33.81	25.575	
5,800.00	5,786.41	5,716.79	5,572.90	17.33	17.08	-26.79	-1,198.21	-114.99	882.44	848.04	34.40	25.652	
5,900.00	5,886.15	5,815.18	5,668.31	17.63	17.38	-26.78	-1,222.14	-117.33	900.32	865.32	35.00	25.727	
6,000.00	5,985.89	5,913.57	5,763.72	17.93	17.68	-26.77	-1,246.08	-119.67	918.19	882.60	35.59	25.799	
6,100.00	6,085.62	6,011.96	5,859.12	18.23	17.97	-26.76	-1,270.01	-122.01	936.07	899.88	36.19	25.868	

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 750H - Slot B05
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 750H	**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
6,200.00	6,185.36	6,110.35	5,954.53	18.53	18.27	-26.75	-1,293.94	-124.35	953.94	917.16	36.78	25.936	
6,300.00	6,285.10	6,208.74	6,049.93	18.83	18.56	-26.74	-1,317.87	-126.69	971.81	934.44	37.38	26.001	
6,400.00	6,384.83	6,307.13	6,145.34	19.13	18.86	-26.73	-1,341.80	-129.03	989.69	951.72	37.97	26.064	
6,500.00	6,484.57	6,405.52	6,240.75	19.43	19.15	-26.73	-1,365.73	-131.37	1,007.56	969.00	38.57	26.125	
6,559.90	6,544.31	6,464.45	6,297.89	19.61	19.33	-26.72	-1,380.06	-132.77	1,018.27	979.35	38.92	26.161	
6,600.00	6,584.23	6,503.87	6,336.11	19.73	19.45	-58.24	-1,389.65	-133.70	1,025.49	986.33	39.16	26.186	
6,650.00	6,633.60	6,552.69	6,383.46	19.88	19.59	-71.65	-1,401.52	-134.86	1,034.64	995.18	39.46	26.221	
6,700.00	6,682.15	6,600.82	6,430.12	20.03	19.74	-77.12	-1,413.23	-136.01	1,043.95	1,004.19	39.75	26.261	
6,750.00	6,729.52	6,647.88	6,475.76	20.18	19.88	-80.03	-1,424.67	-137.13	1,053.45	1,013.41	40.04	26.307	
6,800.00	6,775.36	6,693.51	6,520.01	20.33	20.01	-81.88	-1,435.77	-138.21	1,063.25	1,022.92	40.33	26.363	
6,850.00	6,819.31	6,743.45	6,568.41	20.48	20.16	-83.31	-1,447.91	-140.09	1,073.41	1,032.77	40.63	26.418	
6,900.00	6,861.04	6,801.20	6,623.98	20.63	20.34	-84.54	-1,461.82	-147.19	1,083.59	1,042.63	40.96	26.458	
6,950.00	6,900.22	6,862.55	6,681.94	20.78	20.52	-85.56	-1,476.31	-161.01	1,093.62	1,052.33	41.29	26.486	
7,000.00	6,936.57	6,927.96	6,741.78	20.93	20.72	-86.43	-1,491.24	-182.68	1,103.35	1,061.72	41.64	26.499	
7,050.00	6,969.80	6,997.84	6,802.63	21.08	20.93	-87.22	-1,506.38	-213.43	1,112.61	1,070.62	42.00	26.492	
7,100.00	6,999.67	7,072.53	6,863.14	21.23	21.15	-87.91	-1,521.40	-254.47	1,121.21	1,078.83	42.37	26.461	
7,150.00	7,025.94	7,152.19	6,921.39	21.38	21.39	-88.52	-1,535.81	-306.76	1,128.92	1,086.16	42.76	26.400	
7,200.00	7,048.41	7,236.66	6,974.85	21.53	21.65	-89.02	-1,548.97	-370.71	1,135.54	1,092.37	43.17	26.306	
7,250.00	7,066.92	7,325.38	7,020.56	21.68	21.92	-89.37	-1,560.14	-445.83	1,140.86	1,097.27	43.58	26.177	
7,300.00	7,081.33	7,417.32	7,055.49	21.83	22.19	-89.55	-1,568.56	-530.35	1,144.69	1,100.68	44.01	26.011	
7,350.00	7,091.51	7,511.03	7,077.15	21.98	22.47	-89.54	-1,573.63	-621.27	1,146.92	1,102.48	44.44	25.808	
7,400.00	7,097.41	7,604.77	7,084.17	22.13	22.75	-89.32	-1,575.02	-714.63	1,147.49	1,102.62	44.87	25.573	
7,444.73	7,099.00	7,649.17	7,084.03	22.27	22.89	-89.25	-1,574.81	-759.03	1,147.38	1,102.24	45.14	25.419	
7,500.00	7,098.82	7,704.44	7,083.85	22.44	23.05	-89.25	-1,574.54	-814.30	1,147.35	1,101.88	45.47	25.233	
7,600.00	7,098.49	7,804.44	7,083.52	22.74	23.35	-89.25	-1,574.05	-914.30	1,147.30	1,101.23	46.07	24.903	
7,700.00	7,098.16	7,904.44	7,083.19	23.04	23.66	-89.25	-1,573.57	-1,014.30	1,147.25	1,100.58	46.67	24.582	
7,800.00	7,097.83	8,004.44	7,082.86	23.34	23.96	-89.25	-1,573.09	-1,114.29	1,147.20	1,099.93	47.27	24.269	
7,900.00	7,097.51	8,104.44	7,082.53	23.64	24.26	-89.25	-1,572.60	-1,214.29	1,147.15	1,099.28	47.87	23.964	
8,000.00	7,097.18	8,204.44	7,082.20	23.94	24.56	-89.25	-1,572.12	-1,314.29	1,147.10	1,098.63	48.47	23.666	
8,100.00	7,096.85	8,304.44	7,081.87	24.24	24.86	-89.25	-1,571.64	-1,414.29	1,147.05	1,097.98	49.07	23.376	
8,200.00	7,096.52	8,404.44	7,081.54	24.54	25.16	-89.25	-1,571.15	-1,514.29	1,147.00	1,097.33	49.67	23.092	
8,300.00	7,096.19	8,504.44	7,081.21	24.84	25.46	-89.25	-1,570.67	-1,614.28	1,146.95	1,096.68	50.27	22.816	
8,400.00	7,095.87	8,604.44	7,080.89	25.14	25.76	-89.25	-1,570.19	-1,714.28	1,146.90	1,096.03	50.87	22.546	
8,500.00	7,095.54	8,704.44	7,080.56	25.44	26.06	-89.25	-1,569.70	-1,814.28	1,146.85	1,095.38	51.47	22.282	
8,600.00	7,095.21	8,804.44	7,080.23	25.74	26.36	-89.25	-1,569.22	-1,914.28	1,146.80	1,094.73	52.07	22.024	
8,700.00	7,094.88	8,904.44	7,079.90	26.04	26.66	-89.25	-1,568.74	-2,014.28	1,146.75	1,094.08	52.67	21.772	
8,800.00	7,094.55	9,004.44	7,079.57	26.35	26.96	-89.25	-1,568.25	-2,114.28	1,146.70	1,093.43	53.27	21.526	
8,900.00	7,094.23	9,104.44	7,079.24	26.65	27.26	-89.25	-1,567.77	-2,214.27	1,146.65	1,092.78	53.87	21.286	
9,000.00	7,093.90	9,204.44	7,078.91	26.95	27.56	-89.25	-1,567.28	-2,314.27	1,146.60	1,092.13	54.47	21.050	
9,100.00	7,093.57	9,304.44	7,078.58	27.25	27.86	-89.25	-1,566.80	-2,414.27	1,146.55	1,091.48	55.07	20.820	
9,200.00	7,093.24	9,404.44	7,078.26	27.55	28.16	-89.25	-1,566.32	-2,514.27	1,146.50	1,090.83	55.67	20.595	
9,300.00	7,092.91	9,504.44	7,077.93	27.85	28.46	-89.25	-1,565.83	-2,614.27	1,146.45	1,090.18	56.27	20.374	
9,400.00	7,092.59	9,604.44	7,077.60	28.15	28.76	-89.25	-1,565.35	-2,714.27	1,146.40	1,089.53	56.87	20.158	
9,500.00	7,092.26	9,704.44	7,077.27	28.45	29.06	-89.25	-1,564.87	-2,814.26	1,146.35	1,088.88	57.47	19.947	
9,600.00	7,091.93	9,804.44	7,076.94	28.75	29.37	-89.25	-1,564.38	-2,914.26	1,146.30	1,088.23	58.07	19.740	
9,700.00	7,091.60	9,904.44	7,076.61	29.05	29.67	-89.25	-1,563.90	-3,014.26	1,146.25	1,087.58	58.67	19.537	
9,800.00	7,091.27	10,004.44	7,076.28	29.35	29.97	-89.25	-1,563.42	-3,114.26	1,146.20	1,086.93	59.27	19.339	
9,900.00	7,090.95	10,104.44	7,075.95	29.65	30.27	-89.25	-1,562.93	-3,214.26	1,146.15	1,086.28	59.87	19.144	
10,000.00	7,090.62	10,204.44	7,075.62	29.95	30.57	-89.25	-1,562.45	-3,314.26	1,146.10	1,085.63	60.47	18.953	
10,100.00	7,090.29	10,304.44	7,075.30	30.25	30.87	-89.25	-1,561.97	-3,414.25	1,146.05	1,084.98	61.07	18.766	
10,200.00	7,089.96	10,404.44	7,074.97	30.55	31.17	-89.25	-1,561.48	-3,514.25	1,146.00	1,084.33	61.67	18.583	
10,300.00	7,089.63	10,504.44	7,074.64	30.85	31.47	-89.25	-1,561.00	-3,614.25	1,145.95	1,083.68	62.27	18.403	

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 750H - Slot B05
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 750H	**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
10,400.00	7,089.31	10,604.44	7,074.31	31.15	31.77	-89.25	-1,560.51	-3,714.25	1,145.90	1,083.03	62.87	18.227	
10,500.00	7,088.98	10,704.44	7,073.98	31.45	32.07	-89.25	-1,560.03	-3,814.25	1,145.85	1,082.38	63.47	18.054	
10,600.00	7,088.65	10,804.44	7,073.65	31.75	32.37	-89.25	-1,559.55	-3,914.25	1,145.80	1,081.73	64.07	17.884	
10,700.00	7,088.32	10,904.44	7,073.32	32.06	32.67	-89.25	-1,559.06	-4,014.24	1,145.75	1,081.08	64.67	17.717	
10,800.00	7,087.99	11,004.44	7,072.99	32.36	32.97	-89.25	-1,558.58	-4,114.24	1,145.70	1,080.43	65.27	17.553	
10,900.00	7,087.67	11,104.44	7,072.67	32.66	33.27	-89.25	-1,558.10	-4,214.24	1,145.65	1,079.78	65.87	17.393	
11,000.00	7,087.34	11,204.44	7,072.34	32.96	33.57	-89.25	-1,557.61	-4,314.24	1,145.60	1,079.13	66.47	17.235	
11,100.00	7,087.01	11,304.44	7,072.01	33.26	33.87	-89.25	-1,557.13	-4,414.24	1,145.55	1,078.48	67.07	17.080	
11,200.00	7,086.68	11,404.44	7,071.68	33.56	34.17	-89.25	-1,556.65	-4,514.23	1,145.50	1,077.83	67.67	16.928	
11,300.00	7,086.35	11,504.44	7,071.35	33.86	34.47	-89.25	-1,556.16	-4,614.23	1,145.45	1,077.18	68.27	16.778	
11,400.00	7,086.03	11,604.44	7,071.02	34.16	34.77	-89.25	-1,555.68	-4,714.23	1,145.40	1,076.53	68.87	16.632	
11,500.00	7,085.70	11,704.44	7,070.69	34.46	35.07	-89.25	-1,555.20	-4,814.23	1,145.35	1,075.88	69.47	16.487	
11,600.00	7,085.37	11,804.44	7,070.36	34.76	35.37	-89.25	-1,554.71	-4,914.23	1,145.30	1,075.23	70.07	16.345	
11,700.00	7,085.04	11,904.44	7,070.03	35.06	35.67	-89.25	-1,554.23	-5,014.23	1,145.25	1,074.58	70.67	16.206	
11,800.00	7,084.71	12,004.44	7,069.71	35.36	35.97	-89.25	-1,553.74	-5,114.22	1,145.20	1,073.93	71.27	16.069	
11,900.00	7,084.39	12,104.44	7,069.38	35.66	36.27	-89.25	-1,553.26	-5,214.22	1,145.15	1,073.28	71.87	15.934	
12,000.00	7,084.06	12,204.44	7,069.05	35.96	36.57	-89.25	-1,552.78	-5,314.22	1,145.10	1,072.63	72.47	15.801	
12,100.00	7,083.73	12,304.44	7,068.72	36.26	36.87	-89.25	-1,552.29	-5,414.22	1,145.05	1,071.98	73.07	15.671	
12,200.00	7,083.40	12,404.44	7,068.39	36.56	37.18	-89.25	-1,551.81	-5,514.22	1,145.00	1,071.33	73.67	15.543	
12,300.00	7,083.07	12,504.44	7,068.06	36.86	37.48	-89.25	-1,551.33	-5,614.22	1,144.95	1,070.68	74.27	15.416	
12,400.00	7,082.75	12,604.44	7,067.73	37.16	37.78	-89.25	-1,550.84	-5,714.21	1,144.90	1,070.03	74.87	15.292	
12,500.00	7,082.42	12,704.44	7,067.40	37.46	38.08	-89.25	-1,550.36	-5,814.21	1,144.85	1,069.38	75.47	15.170	
12,600.00	7,082.09	12,804.44	7,067.08	37.76	38.38	-89.25	-1,549.88	-5,914.21	1,144.80	1,068.73	76.07	15.050	
12,700.00	7,081.76	12,904.44	7,066.75	38.06	38.68	-89.25	-1,549.39	-6,014.21	1,144.75	1,068.08	76.67	14.931	
12,800.00	7,081.43	13,004.44	7,066.42	38.36	38.98	-89.25	-1,548.91	-6,114.21	1,144.70	1,067.43	77.27	14.815	
12,900.00	7,081.11	13,104.44	7,066.09	38.66	39.28	-89.25	-1,548.43	-6,214.21	1,144.65	1,066.78	77.87	14.700	
13,000.00	7,080.78	13,204.44	7,065.76	38.96	39.58	-89.25	-1,547.94	-6,314.20	1,144.60	1,066.13	78.47	14.587	
13,100.00	7,080.45	13,304.44	7,065.43	39.26	39.88	-89.25	-1,547.46	-6,414.20	1,144.55	1,065.48	79.07	14.475	
13,200.00	7,080.12	13,404.44	7,065.10	39.56	40.18	-89.25	-1,546.97	-6,514.20	1,144.50	1,064.83	79.67	14.366	
13,300.00	7,079.79	13,504.44	7,064.77	39.86	40.48	-89.25	-1,546.49	-6,614.20	1,144.45	1,064.18	80.27	14.258	
13,400.00	7,079.47	13,604.44	7,064.44	40.16	40.78	-89.25	-1,546.01	-6,714.20	1,144.40	1,063.53	80.87	14.151	
13,500.00	7,079.14	13,704.44	7,064.12	40.46	41.08	-89.25	-1,545.52	-6,814.20	1,144.35	1,062.88	81.47	14.047	
13,600.00	7,078.81	13,804.44	7,063.79	40.77	41.38	-89.25	-1,545.04	-6,914.19	1,144.30	1,062.23	82.07	13.943	
13,700.00	7,078.48	13,904.44	7,063.46	41.07	41.68	-89.25	-1,544.56	-7,014.19	1,144.25	1,061.58	82.67	13.841	
13,800.00	7,078.15	14,004.44	7,063.13	41.37	41.98	-89.25	-1,544.07	-7,114.19	1,144.20	1,060.93	83.27	13.741	
13,900.00	7,077.83	14,104.44	7,062.80	41.67	42.28	-89.25	-1,543.59	-7,214.19	1,144.15	1,060.28	83.87	13.642	
14,000.00	7,077.50	14,204.44	7,062.47	41.97	42.58	-89.25	-1,543.11	-7,314.19	1,144.10	1,059.63	84.47	13.545	
14,100.00	7,077.17	14,304.44	7,062.14	42.27	42.88	-89.25	-1,542.62	-7,414.19	1,144.05	1,058.98	85.07	13.449	
14,200.00	7,076.84	14,404.44	7,061.81	42.57	43.18	-89.25	-1,542.14	-7,514.18	1,144.00	1,058.33	85.67	13.354	
14,300.00	7,076.51	14,504.44	7,061.49	42.87	43.48	-89.25	-1,541.66	-7,614.18	1,143.95	1,057.68	86.27	13.260	
14,400.00	7,076.19	14,604.44	7,061.16	43.17	43.78	-89.25	-1,541.17	-7,714.18	1,143.90	1,057.03	86.87	13.168	
14,500.00	7,075.86	14,704.44	7,060.83	43.47	44.08	-89.25	-1,540.69	-7,814.18	1,143.85	1,056.38	87.47	13.077	
14,600.00	7,075.53	14,804.44	7,060.50	43.77	44.38	-89.25	-1,540.20	-7,914.18	1,143.80	1,055.73	88.07	12.988	
14,700.00	7,075.20	14,904.44	7,060.17	44.07	44.68	-89.25	-1,539.72	-8,014.17	1,143.75	1,055.08	88.67	12.899	
14,800.00	7,074.87	15,004.44	7,059.84	44.37	44.98	-89.25	-1,539.24	-8,114.17	1,143.70	1,054.43	89.27	12.812	
14,900.00	7,074.55	15,104.44	7,059.51	44.67	45.28	-89.25	-1,538.75	-8,214.17	1,143.65	1,053.78	89.87	12.726	
15,000.00	7,074.22	15,204.44	7,059.18	44.97	45.58	-89.25	-1,538.27	-8,314.17	1,143.60	1,053.13	90.47	12.641	
15,100.00	7,073.89	15,304.44	7,058.85	45.27	45.88	-89.25	-1,537.79	-8,414.17	1,143.55	1,052.48	91.07	12.557	
15,200.00	7,073.56	15,404.44	7,058.53	45.57	46.18	-89.25	-1,537.30	-8,514.17	1,143.50	1,051.83	91.67	12.474	
15,300.00	7,073.23	15,504.44	7,058.20	45.87	46.48	-89.25	-1,536.82	-8,614.16	1,143.45	1,051.18	92.27	12.393	
15,400.00	7,072.91	15,604.44	7,057.87	46.17	46.78	-89.25	-1,536.34	-8,714.16	1,143.40	1,050.53	92.87	12.312	
15,500.00	7,072.58	15,704.44	7,057.54	46.47	47.08	-89.25	-1,535.85	-8,814.16	1,143.35	1,049.88	93.47	12.233	

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 750H - Slot B05
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 750H	**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
15,600.00	7,072.25	15,804.44	7,057.21	46.77	47.38	-89.25	-1,535.37	-8,914.16	1,143.30	1,049.23	94.07	12.154	
15,700.00	7,071.92	15,904.44	7,056.88	47.07	47.68	-89.25	-1,534.88	-9,014.16	1,143.25	1,048.58	94.67	12.076	
15,800.00	7,071.59	16,004.44	7,056.55	47.37	47.98	-89.25	-1,534.40	-9,114.16	1,143.20	1,047.93	95.27	12.000	
15,900.00	7,071.27	16,104.44	7,056.22	47.67	48.28	-89.25	-1,533.92	-9,214.15	1,143.15	1,047.28	95.87	11.924	
16,000.00	7,070.94	16,204.44	7,055.90	47.97	48.58	-89.25	-1,533.43	-9,314.15	1,143.10	1,046.63	96.47	11.850	
16,100.00	7,070.61	16,304.44	7,055.57	48.27	48.88	-89.25	-1,532.95	-9,414.15	1,143.05	1,045.98	97.07	11.776	
16,200.00	7,070.28	16,404.44	7,055.24	48.57	49.18	-89.25	-1,532.47	-9,514.15	1,143.00	1,045.33	97.67	11.703	
16,300.00	7,069.95	16,504.44	7,054.91	48.87	49.48	-89.25	-1,531.98	-9,614.15	1,142.95	1,044.68	98.27	11.631	
16,400.00	7,069.63	16,604.44	7,054.58	49.17	49.79	-89.25	-1,531.50	-9,714.15	1,142.90	1,044.03	98.87	11.560	
16,419.92	7,069.56	16,624.36	7,054.51	49.23	49.84	-89.25	-1,531.40	-9,734.07	1,142.89	1,043.91	98.99	11.546	
16,500.00	7,069.30	16,704.44	7,054.25	49.47	50.09	-89.25	-1,531.02	-9,814.14	1,142.85	1,043.38	99.47	11.490	
16,585.94	7,069.02	16,790.37	7,053.97	49.73	50.34	-89.25	-1,530.60	-9,900.08	1,142.81	1,042.83	99.98	11.430	
16,591.83	7,069.00	16,782.16	7,054.00	49.75	50.32	-89.25	-1,530.64	-9,891.87	1,142.89	1,042.92	99.98	11.432	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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 754H - 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	-2.34	30.00	-1.23	30.02				
100.00	100.00	100.00	100.00	0.23	0.23	-2.34	30.00	-1.23	30.02	29.57	0.45	66.272	
200.00	200.00	200.00	200.00	0.53	0.53	-2.34	30.00	-1.23	30.02	28.97	1.05	28.510	
300.00	300.00	300.00	300.00	0.83	0.83	-2.34	30.00	-1.23	30.02	28.37	1.65	18.162	
400.00	400.00	400.00	400.00	1.13	1.13	-2.34	30.00	-1.23	30.02	27.77	2.25	13.325	
500.00	500.00	500.00	500.00	1.43	1.43	-2.34	30.00	-1.23	30.02	27.17	2.85	10.523	
600.00	599.98	600.96	600.94	1.73	1.73	156.00	28.38	-0.49	29.98	26.53	3.46	8.676	
603.37	603.35	604.36	604.34	1.74	1.74	156.19	28.27	-0.44	29.98	26.50	3.48	8.625	CC, ES
707.91	707.73	709.18	709.03	2.05	2.05	164.37	23.72	1.62	30.97	26.87	4.10	7.548	
800.00	799.58	801.13	800.87	2.33	2.33	171.73	19.50	3.53	33.81	29.16	4.66	7.262	
900.00	899.31	900.98	900.59	2.63	2.63	178.35	14.93	5.61	37.42	32.16	5.26	7.120	
1,000.00	999.05	1,000.83	1,000.32	2.93	2.93	-176.26	10.36	7.68	41.44	35.58	5.86	7.077	SF
1,100.00	1,098.79	1,100.68	1,100.04	3.23	3.23	-171.85	5.79	9.75	45.76	39.30	6.46	7.088	
1,200.00	1,198.52	1,200.53	1,199.76	3.53	3.53	-168.21	1.21	11.83	50.30	43.24	7.05	7.130	
1,300.00	1,298.26	1,300.38	1,299.49	3.83	3.83	-165.19	-3.36	13.90	55.01	47.35	7.65	7.187	
1,400.00	1,398.00	1,400.23	1,399.21	4.13	4.13	-162.65	-7.93	15.97	59.85	51.59	8.25	7.251	
1,500.00	1,497.73	1,500.08	1,498.94	4.43	4.43	-160.49	-12.51	18.05	64.79	55.93	8.85	7.318	
1,600.00	1,597.47	1,600.07	1,598.66	4.73	4.73	-158.64	-17.08	20.12	69.80	60.35	9.45	7.384	
1,700.00	1,697.21	1,700.22	1,698.38	5.03	5.03	-157.04	-21.65	22.19	74.88	64.83	10.05	7.448	
1,800.00	1,796.94	1,800.37	1,798.11	5.33	5.33	-155.65	-26.22	24.27	80.01	69.36	10.65	7.510	
1,900.00	1,896.68	1,900.52	1,897.83	5.63	5.63	-154.42	-30.80	26.34	85.19	73.93	11.25	7.569	
2,000.00	1,996.42	2,000.67	1,997.56	5.93	5.93	-153.34	-35.37	28.42	90.39	78.54	11.86	7.625	
2,100.00	2,096.15	2,100.82	2,097.28	6.23	6.23	-152.37	-39.94	30.49	95.63	83.17	12.46	7.677	
2,200.00	2,195.89	2,200.97	2,197.01	6.53	6.53	-151.50	-44.52	32.56	100.89	87.83	13.06	7.727	
2,300.00	2,295.63	2,301.12	2,296.73	6.83	6.83	-150.72	-49.09	34.64	106.17	92.51	13.66	7.774	
2,400.00	2,395.36	2,401.27	2,396.45	7.13	7.13	-150.01	-53.66	36.71	111.47	97.21	14.26	7.818	
2,500.00	2,495.10	2,501.41	2,496.18	7.43	7.43	-149.37	-58.23	38.78	116.78	101.93	14.86	7.860	
2,600.00	2,594.84	2,601.56	2,595.90	7.73	7.73	-148.79	-62.81	40.86	122.11	106.65	15.46	7.899	
2,700.00	2,694.57	2,701.71	2,695.63	8.03	8.03	-148.25	-67.38	42.93	127.45	111.39	16.06	7.937	
2,800.00	2,794.31	2,801.86	2,795.35	8.33	8.33	-147.75	-71.95	45.00	132.80	116.14	16.66	7.972	
2,900.00	2,894.05	2,902.01	2,895.08	8.63	8.63	-147.30	-76.53	47.08	138.16	120.90	17.26	8.005	
3,000.00	2,993.78	3,002.16	2,994.80	8.93	8.93	-146.88	-81.10	49.15	143.53	125.67	17.86	8.036	
3,100.00	3,093.52	3,102.31	3,094.52	9.23	9.23	-146.48	-85.67	51.23	148.90	130.44	18.46	8.066	
3,200.00	3,193.26	3,202.46	3,194.25	9.53	9.53	-146.12	-90.25	53.30	154.28	135.22	19.06	8.094	
3,300.00	3,292.99	3,302.61	3,293.97	9.83	9.83	-145.78	-94.82	55.37	159.67	140.00	19.66	8.121	
3,400.00	3,392.73	3,402.76	3,393.70	10.13	10.14	-145.46	-99.39	57.45	165.06	144.80	20.26	8.146	
3,500.00	3,492.47	3,502.91	3,493.42	10.43	10.44	-145.17	-103.96	59.52	170.45	149.59	20.86	8.170	
3,600.00	3,592.20	3,603.06	3,593.14	10.73	10.74	-144.89	-108.54	61.59	175.85	154.39	21.46	8.193	
3,700.00	3,691.94	3,703.21	3,692.87	11.03	11.04	-144.62	-113.11	63.67	181.26	159.19	22.06	8.215	
3,800.00	3,791.68	3,803.36	3,792.59	11.33	11.34	-144.38	-117.68	65.74	186.67	164.00	22.66	8.236	
3,900.00	3,891.41	3,903.51	3,892.32	11.63	11.64	-144.14	-122.26	67.81	192.08	168.81	23.26	8.256	
4,000.00	3,991.15	4,003.66	3,992.04	11.93	11.94	-143.92	-126.83	69.89	197.49	173.63	23.86	8.276	
4,100.00	4,090.89	4,103.81	4,091.77	12.23	12.24	-143.71	-131.40	71.96	202.91	178.44	24.46	8.294	
4,200.00	4,190.62	4,203.96	4,191.49	12.53	12.54	-143.52	-135.97	74.04	208.33	183.26	25.07	8.311	
4,300.00	4,290.36	4,304.11	4,291.21	12.83	12.84	-143.33	-140.55	76.11	213.75	188.08	25.67	8.328	
4,400.00	4,390.10	4,404.25	4,390.94	13.13	13.14	-143.15	-145.12	78.18	219.17	192.91	26.27	8.344	
4,500.00	4,489.84	4,504.40	4,490.66	13.43	13.44	-142.98	-149.69	80.26	224.60	197.73	26.87	8.360	
4,600.00	4,589.57	4,604.55	4,590.39	13.73	13.74	-142.82	-154.27	82.33	230.03	202.56	27.47	8.375	
4,700.00	4,689.31	4,704.70	4,690.11	14.03	14.04	-142.66	-158.84	84.40	235.46	207.39	28.07	8.389	
4,800.00	4,789.05	4,804.85	4,789.84	14.33	14.34	-142.52	-163.41	86.48	240.89	212.22	28.67	8.403	
4,900.00	4,888.78	4,905.00	4,889.56	14.63	14.64	-142.38	-167.99	88.55	246.32	217.05	29.27	8.416	
5,000.00	4,988.52	4,994.85	4,989.28	14.93	14.91	-142.24	-172.56	90.62	251.76	221.92	29.84	8.437	

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 750H - Slot B05
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 750H	**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 754H - 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	5,088.26	5,105.30	5,089.01	15.23	15.24	-142.11	-177.13	92.70	257.19	226.72	30.47	8.441	
5,200.00	5,187.99	5,205.45	5,188.73	15.53	15.54	-141.99	-181.70	94.77	262.63	231.56	31.07	8.453	
5,300.00	5,287.73	5,305.60	5,288.46	15.83	15.84	-141.87	-186.28	96.84	268.07	236.40	31.67	8.464	
5,400.00	5,387.47	5,405.75	5,388.18	16.13	16.14	-141.76	-190.85	98.92	273.50	241.23	32.27	8.475	
5,500.00	5,487.20	5,505.90	5,487.90	16.43	16.44	-141.65	-195.42	100.99	278.94	246.07	32.87	8.486	
5,600.00	5,586.94	5,606.05	5,587.63	16.73	16.74	-141.54	-200.00	103.07	284.39	250.91	33.47	8.496	
5,700.00	5,686.68	5,706.20	5,687.35	17.03	17.05	-141.44	-204.57	105.14	289.83	255.76	34.07	8.506	
5,800.00	5,786.41	5,806.35	5,787.08	17.33	17.35	-141.34	-209.14	107.21	295.27	260.60	34.67	8.516	
5,900.00	5,886.15	5,906.50	5,886.80	17.63	17.65	-141.25	-213.71	109.29	300.71	265.44	35.27	8.525	
6,000.00	5,985.89	6,006.65	5,986.53	17.93	17.95	-141.16	-218.29	111.36	306.16	270.29	35.87	8.534	
6,100.00	6,085.62	6,106.80	6,086.25	18.23	18.25	-141.07	-222.86	113.43	311.60	275.13	36.47	8.543	
6,200.00	6,185.36	6,206.95	6,185.97	18.53	18.55	-140.98	-227.43	115.51	317.05	279.98	37.07	8.552	
6,300.00	6,285.10	6,307.09	6,285.70	18.83	18.85	-140.90	-232.01	117.58	322.50	284.82	37.67	8.560	
6,400.00	6,384.83	6,407.24	6,385.42	19.13	19.15	-140.82	-236.58	119.65	327.94	289.67	38.28	8.568	
6,500.00	6,484.57	6,492.61	6,485.15	19.43	19.40	-140.75	-241.15	121.73	333.39	294.56	38.83	8.586	
6,559.90	6,544.31	6,552.41	6,544.88	19.61	19.58	-140.70	-243.89	122.97	336.65	297.46	39.19	8.590	
6,600.00	6,584.23	6,578.05	6,570.46	19.73	19.66	-172.94	-245.07	124.13	340.96	301.57	39.39	8.656	
6,650.00	6,633.60	6,609.52	6,601.75	19.88	19.76	172.99	-246.51	127.12	352.02	312.39	39.63	8.882	
6,700.00	6,682.15	6,639.10	6,630.97	20.03	19.84	167.04	-247.88	131.49	369.21	329.34	39.87	9.260	
6,750.00	6,729.52	6,666.14	6,657.45	20.18	19.93	163.67	-249.12	136.80	392.16	352.05	40.11	9.778	
6,800.00	6,775.36	6,690.22	6,680.80	20.33	20.00	161.23	-250.21	142.58	420.41	380.08	40.33	10.424	
6,850.00	6,819.31	6,711.08	6,700.82	20.48	20.06	159.01	-251.16	148.38	453.38	412.84	40.54	11.183	
6,900.00	6,861.04	6,728.68	6,717.53	20.63	20.11	156.55	-251.96	153.83	490.45	449.71	40.75	12.037	
6,950.00	6,900.22	6,750.00	6,737.54	20.78	20.18	154.06	-252.91	161.13	531.06	490.10	40.96	12.965	
7,000.00	6,936.57	6,750.00	6,737.54	20.93	20.18	148.68	-252.91	161.13	574.33	533.21	41.11	13.970	
7,050.00	6,969.80	6,762.84	6,749.45	21.08	20.22	142.99	-253.48	165.88	619.79	578.49	41.30	15.007	
7,100.00	6,999.67	6,768.68	6,754.84	21.23	20.23	133.51	-253.74	168.12	666.90	625.43	41.47	16.082	
7,150.00	7,025.94	6,772.14	6,758.02	21.38	20.24	118.72	-253.89	169.48	715.10	673.47	41.63	17.178	
7,200.00	7,048.41	6,773.46	6,759.23	21.53	20.25	97.24	-253.95	170.01	763.90	722.12	41.78	18.282	
7,250.00	7,066.92	6,772.86	6,758.68	21.68	20.25	72.90	-253.92	169.77	812.89	770.96	41.93	19.386	
7,300.00	7,081.33	6,770.55	6,756.55	21.83	20.24	53.13	-253.82	168.86	861.68	819.61	42.08	20.480	
7,350.00	7,091.51	6,766.71	6,753.02	21.98	20.23	39.95	-253.65	167.36	909.94	867.72	42.21	21.556	
7,400.00	7,097.41	6,750.00	6,737.54	22.13	20.18	30.62	-252.91	161.13	957.53	915.22	42.31	22.630	
7,444.73	7,099.00	6,750.00	6,737.54	22.27	20.18	26.11	-252.91	161.13	998.88	956.43	42.45	23.532	
7,500.00	7,098.82	6,750.00	6,737.54	22.44	20.18	26.11	-252.91	161.13	1,049.62	1,007.00	42.61	24.631	
7,600.00	7,098.49	6,750.00	6,737.54	22.74	20.18	26.11	-252.91	161.13	1,142.49	1,099.58	42.91	26.622	
7,700.00	7,098.16	6,725.54	6,714.56	23.04	20.10	24.88	-251.81	152.82	1,235.72	1,192.58	43.14	28.643	
7,800.00	7,097.83	6,700.00	6,690.21	23.34	20.03	23.70	-250.66	145.21	1,330.20	1,286.83	43.37	30.673	
7,900.00	7,097.51	6,700.00	6,690.21	23.64	20.03	23.70	-250.66	145.21	1,424.71	1,381.05	43.67	32.626	
8,000.00	7,097.18	6,700.00	6,690.21	23.94	20.03	23.70	-250.66	145.21	1,519.93	1,475.96	43.97	34.568	
8,100.00	7,096.85	6,700.00	6,690.21	24.24	20.03	23.70	-250.66	145.21	1,615.72	1,571.45	44.27	36.498	
8,200.00	7,096.52	6,700.00	6,690.21	24.54	20.03	23.70	-250.66	145.21	1,712.00	1,667.43	44.57	38.412	
8,300.00	7,096.19	6,678.76	6,669.72	24.84	19.96	22.80	-249.69	139.71	1,808.16	1,763.36	44.81	40.354	
8,400.00	7,095.87	6,673.10	6,664.22	25.14	19.95	22.57	-249.43	138.37	1,904.88	1,859.79	45.09	42.245	
8,500.00	7,095.54	6,650.00	6,641.67	25.44	19.88	21.69	-248.38	133.48	2,002.22	1,956.89	45.32	44.177	
8,600.00	7,095.21	6,650.00	6,641.67	25.74	19.88	21.69	-248.38	133.48	2,099.26	2,053.63	45.62	46.013	
8,700.00	7,094.88	6,650.00	6,641.67	26.04	19.88	21.69	-248.38	133.48	2,196.56	2,150.64	45.92	47.831	
8,800.00	7,094.55	6,650.00	6,641.67	26.35	19.88	21.69	-248.38	133.48	2,294.09	2,247.87	46.22	49.630	
8,900.00	7,094.23	6,650.00	6,641.67	26.65	19.88	21.69	-248.38	133.48	2,391.83	2,345.31	46.52	51.410	
9,000.00	7,093.90	6,650.00	6,641.67	26.95	19.88	21.69	-248.38	133.48	2,489.75	2,442.93	46.82	53.172	
9,100.00	7,093.57	6,650.00	6,641.67	27.25	19.88	21.69	-248.38	133.48	2,587.83	2,540.71	47.13	54.914	
9,200.00	7,093.24	6,650.00	6,641.67	27.55	19.88	21.69	-248.38	133.48	2,686.05	2,638.62	47.43	56.637	

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 750H - Slot B05
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 750H	**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 754H - 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	7,092.91	6,650.00	6,641.67	27.85	19.88	21.69	-248.38	133.48	2,784.40	2,736.67	47.73	58.341	
9,400.00	7,092.59	6,650.00	6,641.67	28.15	19.88	21.69	-248.38	133.48	2,882.86	2,834.83	48.03	60.026	
9,500.00	7,092.26	6,650.00	6,641.67	28.45	19.88	21.69	-248.38	133.48	2,981.42	2,933.09	48.33	61.693	
9,600.00	7,091.93	6,628.80	6,620.83	28.75	19.81	20.93	-247.40	129.80	3,079.61	3,031.05	48.56	63.413	
9,700.00	7,091.60	6,626.37	6,618.43	29.05	19.81	20.84	-247.29	129.42	3,178.24	3,129.38	48.86	65.052	
9,800.00	7,091.27	6,624.07	6,616.15	29.35	19.80	20.77	-247.18	129.08	3,276.94	3,227.79	49.15	66.671	
9,900.00	7,090.95	6,621.88	6,613.98	29.65	19.79	20.69	-247.08	128.76	3,375.71	3,326.26	49.44	68.273	
10,000.00	7,090.62	6,600.00	6,592.30	29.95	19.73	19.98	-246.08	126.03	3,474.94	3,425.26	49.68	69.947	
10,100.00	7,090.29	6,600.00	6,592.30	30.25	19.73	19.98	-246.08	126.03	3,573.74	3,523.77	49.98	71.504	
10,200.00	7,089.96	6,600.00	6,592.30	30.55	19.73	19.98	-246.08	126.03	3,672.62	3,622.34	50.28	73.043	
10,300.00	7,089.63	6,600.00	6,592.30	30.85	19.73	19.98	-246.08	126.03	3,771.55	3,720.97	50.58	74.565	
10,400.00	7,089.31	6,600.00	6,592.30	31.15	19.73	19.98	-246.08	126.03	3,870.54	3,819.66	50.88	76.070	
10,500.00	7,088.98	6,600.00	6,592.30	31.45	19.73	19.98	-246.08	126.03	3,969.58	3,918.40	51.18	77.559	
10,600.00	7,088.65	6,600.00	6,592.30	31.75	19.73	19.98	-246.08	126.03	4,068.66	4,017.18	51.48	79.031	
10,700.00	7,088.32	6,600.00	6,592.30	32.06	19.73	19.98	-246.08	126.03	4,167.79	4,116.01	51.78	80.487	
10,800.00	7,087.99	6,600.00	6,592.30	32.36	19.73	19.98	-246.08	126.03	4,266.96	4,214.88	52.08	81.927	
10,900.00	7,087.67	6,600.00	6,592.30	32.66	19.73	19.98	-246.08	126.03	4,366.17	4,313.79	52.38	83.351	
11,000.00	7,087.34	6,600.00	6,592.30	32.96	19.73	19.98	-246.08	126.03	4,465.41	4,412.73	52.68	84.760	
11,100.00	7,087.01	6,600.00	6,592.30	33.26	19.73	19.98	-246.08	126.03	4,564.69	4,511.71	52.98	86.153	
11,200.00	7,086.68	6,600.00	6,592.30	33.56	19.73	19.98	-246.08	126.03	4,664.00	4,610.71	53.28	87.531	
11,300.00	7,086.35	6,600.00	6,592.30	33.86	19.73	19.98	-246.08	126.03	4,763.33	4,709.75	53.58	88.895	
11,400.00	7,086.03	6,600.00	6,592.30	34.16	19.73	19.98	-246.08	126.03	4,862.70	4,808.81	53.88	90.243	
11,500.00	7,085.70	6,600.00	6,592.30	34.46	19.73	19.98	-246.08	126.03	4,962.09	4,907.90	54.18	91.577	
11,600.00	7,085.37	6,600.00	6,592.30	34.76	19.73	19.98	-246.08	126.03	5,061.50	5,007.01	54.49	92.897	
11,700.00	7,085.04	6,600.00	6,592.30	35.06	19.73	19.98	-246.08	126.03	5,160.93	5,106.15	54.79	94.203	
11,800.00	7,084.71	6,600.00	6,592.30	35.36	19.73	19.98	-246.08	126.03	5,260.39	5,205.31	55.09	95.495	
11,900.00	7,084.39	6,600.00	6,592.30	35.66	19.73	19.98	-246.08	126.03	5,359.87	5,304.48	55.39	96.773	
12,000.00	7,084.06	6,600.00	6,592.30	35.96	19.73	19.98	-246.08	126.03	5,459.37	5,403.68	55.69	98.038	
12,100.00	7,083.73	6,600.00	6,592.30	36.26	19.73	19.98	-246.08	126.03	5,558.88	5,502.89	55.99	99.290	
12,200.00	7,083.40	6,600.00	6,592.30	36.56	19.73	19.98	-246.08	126.03	5,658.41	5,602.12	56.29	100.528	
12,300.00	7,083.07	6,600.00	6,592.30	36.86	19.73	19.98	-246.08	126.03	5,757.96	5,701.37	56.59	101.754	
12,400.00	7,082.75	6,600.00	6,592.30	37.16	19.73	19.98	-246.08	126.03	5,857.52	5,800.63	56.89	102.967	
12,500.00	7,082.42	6,600.00	6,592.30	37.46	19.73	19.98	-246.08	126.03	5,957.10	5,899.91	57.19	104.167	
12,600.00	7,082.09	6,600.00	6,592.30	37.76	19.73	19.98	-246.08	126.03	6,056.69	5,999.20	57.49	105.356	
12,700.00	7,081.76	6,600.00	6,592.30	38.06	19.73	19.98	-246.08	126.03	6,156.30	6,098.51	57.79	106.532	
12,800.00	7,081.43	6,600.00	6,592.30	38.36	19.73	19.98	-246.08	126.03	6,255.91	6,197.83	58.09	107.696	
12,900.00	7,081.11	6,600.00	6,592.30	38.66	19.73	19.98	-246.08	126.03	6,355.54	6,297.16	58.39	108.849	
13,000.00	7,080.78	6,600.00	6,592.30	38.96	19.73	19.98	-246.08	126.03	6,455.19	6,396.50	58.69	109.989	
13,100.00	7,080.45	6,600.00	6,592.30	39.26	19.73	19.98	-246.08	126.03	6,554.84	6,495.85	58.99	111.119	
13,200.00	7,080.12	6,600.00	6,592.30	39.56	19.73	19.98	-246.08	126.03	6,654.50	6,595.21	59.29	112.237	
13,300.00	7,079.79	6,600.00	6,592.30	39.86	19.73	19.98	-246.08	126.03	6,754.17	6,694.58	59.59	113.344	
13,400.00	7,079.47	6,600.00	6,592.30	40.16	19.73	19.98	-246.08	126.03	6,853.85	6,793.96	59.89	114.440	
13,500.00	7,079.14	6,600.00	6,592.30	40.46	19.73	19.98	-246.08	126.03	6,953.54	6,893.35	60.19	115.526	
13,600.00	7,078.81	6,600.00	6,592.30	40.77	19.73	19.98	-246.08	126.03	7,053.24	6,992.75	60.49	116.601	
13,700.00	7,078.48	6,600.00	6,592.30	41.07	19.73	19.98	-246.08	126.03	7,152.95	7,092.16	60.79	117.665	
13,800.00	7,078.15	6,600.00	6,592.30	41.37	19.73	19.98	-246.08	126.03	7,252.67	7,191.58	61.09	118.719	
13,900.00	7,077.83	6,600.00	6,592.30	41.67	19.73	19.98	-246.08	126.03	7,352.39	7,291.00	61.39	119.763	
14,000.00	7,077.50	6,600.00	6,592.30	41.97	19.73	19.98	-246.08	126.03	7,452.12	7,390.43	61.69	120.796	
14,100.00	7,077.17	6,600.00	6,592.30	42.27	19.73	19.98	-246.08	126.03	7,551.86	7,489.87	61.99	121.820	
14,200.00	7,076.84	6,600.00	6,592.30	42.57	19.73	19.98	-246.08	126.03	7,651.61	7,589.32	62.29	122.834	
14,300.00	7,076.51	6,577.28	6,569.69	42.87	19.66	19.29	-245.03	124.08	7,750.88	7,688.35	62.52	123.966	
14,400.00	7,076.19	6,576.81	6,569.22	43.17	19.66	19.28	-245.01	124.05	7,850.61	7,787.79	62.82	124.964	

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 750H - Slot B05
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 750H	**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 754H - 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	7,075.86	6,576.35	6,568.76	43.47	19.66	19.27	-244.99	124.02	7,950.36	7,887.24	63.12	125.952	
14,600.00	7,075.53	6,575.89	6,568.31	43.77	19.65	19.25	-244.97	123.99	8,050.11	7,986.69	63.42	126.932	
14,700.00	7,075.20	6,575.45	6,567.87	44.07	19.65	19.24	-244.95	123.96	8,149.87	8,086.15	63.72	127.902	
14,800.00	7,074.87	6,575.02	6,567.44	44.37	19.65	19.23	-244.93	123.93	8,249.63	8,185.61	64.02	128.863	
14,900.00	7,074.55	6,574.60	6,567.02	44.67	19.65	19.22	-244.91	123.91	8,349.39	8,285.08	64.32	129.815	
15,000.00	7,074.22	6,574.18	6,566.60	44.97	19.65	19.21	-244.89	123.88	8,449.17	8,384.55	64.62	130.759	
15,100.00	7,073.89	6,573.78	6,566.20	45.27	19.65	19.19	-244.87	123.86	8,548.94	8,484.03	64.92	131.693	
15,200.00	7,073.56	6,551.20	6,543.67	45.57	19.58	18.57	-243.84	122.95	8,649.18	8,584.04	65.15	132.762	
15,300.00	7,073.23	6,551.20	6,543.67	45.87	19.58	18.57	-243.84	122.95	8,748.95	8,683.51	65.45	133.677	
15,400.00	7,072.91	6,551.20	6,543.67	46.17	19.58	18.57	-243.84	122.95	8,848.73	8,782.98	65.75	134.585	
15,500.00	7,072.58	6,551.20	6,543.67	46.47	19.58	18.57	-243.84	122.95	8,948.51	8,882.46	66.05	135.484	
15,600.00	7,072.25	6,551.20	6,543.67	46.77	19.58	18.57	-243.84	122.95	9,048.30	8,981.95	66.35	136.375	
15,700.00	7,071.92	6,551.20	6,543.67	47.07	19.58	18.57	-243.84	122.95	9,148.09	9,081.44	66.65	137.258	
15,800.00	7,071.59	6,551.20	6,543.67	47.37	19.58	18.57	-243.84	122.95	9,247.88	9,180.93	66.95	138.133	
15,900.00	7,071.27	6,551.20	6,543.67	47.67	19.58	18.57	-243.84	122.95	9,347.68	9,280.43	67.25	139.000	
16,000.00	7,070.94	6,551.20	6,543.67	47.97	19.58	18.57	-243.84	122.95	9,447.48	9,379.93	67.55	139.860	
16,100.00	7,070.61	6,551.20	6,543.67	48.27	19.58	18.57	-243.84	122.95	9,547.29	9,479.44	67.85	140.712	
16,200.00	7,070.28	6,551.20	6,543.67	48.57	19.58	18.57	-243.84	122.95	9,647.10	9,578.95	68.15	141.557	
16,300.00	7,069.95	6,551.20	6,543.67	48.87	19.58	18.57	-243.84	122.95	9,746.92	9,678.47	68.45	142.394	
16,400.00	7,069.63	6,551.20	6,543.67	49.17	19.58	18.57	-243.84	122.95	9,846.74	9,777.99	68.75	143.225	
16,419.92	7,069.56	6,551.20	6,543.67	49.23	19.58	18.57	-243.84	122.95	9,866.62	9,797.81	68.81	143.389	
16,500.00	7,069.30	6,551.20	6,543.67	49.47	19.58	18.57	-243.84	122.95	9,946.56	9,877.51	69.05	144.048	
16,591.83	7,069.00	6,551.20	6,543.67	49.75	19.58	18.57	-243.84	122.95	10,038.23	9,968.90	69.33	144.797	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-2.32	14.99	-0.61	15.01				
100.00	100.00	100.00	100.00	0.23	0.23	-2.32	14.99	-0.61	15.01	14.55	0.45	33.124	
200.00	200.00	200.00	200.00	0.53	0.53	-2.32	14.99	-0.61	15.01	13.95	1.05	14.250	
300.00	300.00	300.00	300.00	0.83	0.83	-2.32	14.99	-0.61	15.01	13.35	1.65	9.078	
400.00	400.00	400.00	400.00	1.13	1.13	-2.32	14.99	-0.61	15.01	12.75	2.25	6.660	
500.00	500.00	500.00	500.00	1.43	1.43	-2.32	14.99	-0.61	15.01	12.15	2.85	5.260	
600.00	599.98	600.52	600.50	1.73	1.73	156.65	13.24	-0.44	14.84	11.38	3.45	4.296	
707.91	707.73	708.93	708.75	2.05	2.05	168.34	7.41	0.11	14.67	10.57	4.10	3.577	
742.09	741.81	743.24	742.95	2.15	2.16	173.64	4.72	0.37	14.60	10.29	4.31	3.390	
800.00	799.58	801.34	800.79	2.33	2.33	-175.37	-0.77	0.89	13.98	9.33	4.66	3.004	
900.00	899.31	901.40	900.09	2.63	2.63	-145.59	-12.96	2.05	12.79	7.53	5.26	2.433	
902.55	901.86	903.95	902.61	2.63	2.64	-144.61	-13.31	2.08	12.79	7.52	5.27	2.426	CC, ES, SF
1,000.00	999.05	1,000.93	998.38	2.93	2.93	-105.58	-28.49	3.52	15.61	9.75	5.86	2.665	
1,100.00	1,098.79	1,099.68	1,095.31	3.23	3.23	-78.21	-47.26	5.31	25.12	18.67	6.45	3.894	
1,200.00	1,198.52	1,197.90	1,191.08	3.53	3.52	-64.28	-68.94	7.37	39.61	32.57	7.04	5.625	
1,300.00	1,298.26	1,296.45	1,287.05	3.83	3.82	-57.65	-91.25	9.49	55.69	48.05	7.64	7.292	
1,400.00	1,398.00	1,395.00	1,383.02	4.13	4.11	-54.01	-113.57	11.61	72.17	63.94	8.23	8.766	
1,500.00	1,497.73	1,493.56	1,478.99	4.43	4.41	-51.73	-135.88	13.73	88.83	80.00	8.83	10.061	
1,600.00	1,597.47	1,607.89	1,574.96	4.73	4.75	-50.16	-158.20	15.85	105.58	96.11	9.47	11.146	
1,700.00	1,697.21	1,709.34	1,670.93	5.03	5.06	-49.03	-180.51	17.97	122.39	112.31	10.08	12.145	
1,800.00	1,796.94	1,789.22	1,766.90	5.33	5.30	-48.17	-202.83	20.09	139.23	128.61	10.62	13.114	
1,900.00	1,896.68	1,887.77	1,862.87	5.63	5.59	-47.50	-225.14	22.21	156.09	144.88	11.21	13.922	
2,000.00	1,996.42	1,986.32	1,958.84	5.93	5.89	-46.95	-247.46	24.33	172.97	161.17	11.81	14.649	
2,100.00	2,096.15	2,084.87	2,054.81	6.23	6.19	-46.51	-269.77	26.45	189.87	177.47	12.40	15.308	
2,200.00	2,195.89	2,183.43	2,150.78	6.53	6.48	-46.14	-292.09	28.57	206.77	193.77	13.00	15.906	
2,300.00	2,295.63	2,281.98	2,246.75	6.83	6.78	-45.82	-314.40	30.69	223.69	210.09	13.60	16.453	
2,400.00	2,395.36	2,380.53	2,342.72	7.13	7.07	-45.55	-336.72	32.81	240.60	226.41	14.19	16.955	
2,500.00	2,495.10	2,479.08	2,438.69	7.43	7.37	-45.31	-359.03	34.93	257.52	242.74	14.79	17.416	
2,600.00	2,594.84	2,577.64	2,534.66	7.73	7.66	-45.10	-381.35	37.06	274.45	259.07	15.38	17.842	
2,700.00	2,694.57	2,676.19	2,630.63	8.03	7.96	-44.92	-403.66	39.18	291.38	275.40	15.98	18.236	
2,800.00	2,794.31	2,774.74	2,726.60	8.33	8.26	-44.76	-425.98	41.30	308.31	291.73	16.57	18.602	
2,900.00	2,894.05	2,873.29	2,822.57	8.63	8.55	-44.61	-448.29	43.42	325.24	308.07	17.17	18.943	
3,000.00	2,993.78	2,971.85	2,918.54	8.93	8.85	-44.48	-470.60	45.54	342.18	324.41	17.77	19.261	
3,100.00	3,093.52	3,070.40	3,014.51	9.23	9.14	-44.36	-492.92	47.66	359.11	340.75	18.36	19.559	
3,200.00	3,193.26	3,168.95	3,110.48	9.53	9.44	-44.25	-515.23	49.78	376.05	357.10	18.96	19.837	
3,300.00	3,292.99	3,267.51	3,206.45	9.83	9.73	-44.15	-537.55	51.90	392.99	373.44	19.55	20.099	
3,400.00	3,392.73	3,366.06	3,302.42	10.13	10.03	-44.06	-559.86	54.02	409.93	389.78	20.15	20.346	
3,500.00	3,492.47	3,464.61	3,398.39	10.43	10.33	-43.98	-582.18	56.14	426.87	406.13	20.74	20.578	
3,600.00	3,592.20	3,563.16	3,494.36	10.73	10.62	-43.90	-604.49	58.26	443.81	422.48	21.34	20.798	
3,700.00	3,691.94	3,661.72	3,590.33	11.03	10.92	-43.83	-626.81	60.38	460.76	438.82	21.94	21.005	
3,800.00	3,791.68	3,760.27	3,686.30	11.33	11.21	-43.76	-649.12	62.50	477.70	455.17	22.53	21.202	
3,900.00	3,891.41	3,858.82	3,782.27	11.63	11.51	-43.70	-671.44	64.62	494.64	471.52	23.13	21.389	
4,000.00	3,991.15	3,957.37	3,878.23	11.93	11.80	-43.64	-693.75	66.74	511.59	487.87	23.72	21.566	
4,100.00	4,090.89	4,055.93	3,974.20	12.23	12.10	-43.59	-716.07	68.86	528.53	504.22	24.32	21.734	
4,200.00	4,190.62	4,154.48	4,070.17	12.53	12.40	-43.54	-738.38	70.98	545.48	520.57	24.91	21.895	
4,300.00	4,290.36	4,253.03	4,166.14	12.83	12.69	-43.49	-760.70	73.10	562.43	536.92	25.51	22.048	
4,400.00	4,390.10	4,351.59	4,262.11	13.13	12.99	-43.44	-783.01	75.22	579.37	553.27	26.11	22.194	
4,500.00	4,489.84	4,450.14	4,358.08	13.43	13.28	-43.40	-805.33	77.35	596.32	569.62	26.70	22.333	
4,600.00	4,589.57	4,548.69	4,454.05	13.73	13.58	-43.36	-827.64	79.47	613.27	585.97	27.30	22.467	
4,700.00	4,689.31	4,647.24	4,550.02	14.03	13.87	-43.32	-849.96	81.59	630.21	602.32	27.89	22.595	
4,800.00	4,789.05	4,745.80	4,645.99	14.33	14.17	-43.29	-872.27	83.71	647.16	618.67	28.49	22.717	
4,900.00	4,888.78	4,844.35	4,741.96	14.63	14.47	-43.25	-894.59	85.83	664.11	635.02	29.08	22.835	

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 750H - Slot B05
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 750H	**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
5,000.00	4,988.52	4,942.90	4,837.93	14.93	14.76	-43.22	-916.90	87.95	681.05	651.38	29.68	22.947	
5,100.00	5,088.26	5,041.45	4,933.90	15.23	15.06	-43.19	-939.22	90.07	698.00	667.73	30.27	23.056	
5,200.00	5,187.99	5,140.01	5,029.87	15.53	15.35	-43.16	-961.53	92.19	714.95	684.08	30.87	23.160	
5,300.00	5,287.73	5,238.56	5,125.84	15.83	15.65	-43.13	-983.85	94.31	731.90	700.43	31.47	23.260	
5,400.00	5,387.47	5,337.11	5,221.81	16.13	15.94	-43.11	-1,006.16	96.43	748.85	716.79	32.06	23.356	
5,500.00	5,487.20	5,435.66	5,317.78	16.43	16.24	-43.08	-1,028.47	98.55	765.80	733.14	32.66	23.449	
5,600.00	5,586.94	5,534.22	5,413.75	16.73	16.54	-43.06	-1,050.79	100.67	782.75	749.49	33.25	23.539	
5,700.00	5,686.68	5,632.77	5,509.72	17.03	16.83	-43.03	-1,073.10	102.79	799.69	765.85	33.85	23.625	
5,800.00	5,786.41	5,731.32	5,605.69	17.33	17.13	-43.01	-1,095.42	104.91	816.64	782.20	34.44	23.709	
5,900.00	5,886.15	5,829.88	5,701.66	17.63	17.42	-42.99	-1,117.73	107.03	833.59	798.55	35.04	23.790	
6,000.00	5,985.89	5,928.43	5,797.63	17.93	17.72	-42.97	-1,140.05	109.15	850.54	814.91	35.64	23.868	
6,100.00	6,085.62	6,026.98	5,893.60	18.23	18.01	-42.95	-1,162.36	111.27	867.49	831.26	36.23	23.943	
6,200.00	6,185.36	6,125.53	5,989.57	18.53	18.31	-42.93	-1,184.68	113.39	884.44	847.61	36.83	24.016	
6,300.00	6,285.10	6,224.09	6,085.54	18.83	18.61	-42.91	-1,206.99	115.51	901.39	863.97	37.42	24.087	
6,400.00	6,384.83	6,322.64	6,181.51	19.13	18.90	-42.89	-1,229.31	117.64	918.34	880.32	38.02	24.155	
6,500.00	6,484.57	6,421.19	6,277.48	19.43	19.20	-42.88	-1,251.62	119.76	935.29	896.68	38.61	24.221	
6,559.90	6,544.31	6,480.22	6,334.96	19.61	19.37	-42.87	-1,264.99	121.03	945.44	906.47	38.97	24.260	
6,600.00	6,584.23	6,519.64	6,373.35	19.73	19.49	-74.42	-1,273.91	121.87	952.68	913.47	39.21	24.297	
6,650.00	6,633.60	6,568.29	6,420.72	19.88	19.64	-87.77	-1,284.93	122.92	962.91	923.40	39.51	24.374	
6,700.00	6,682.15	6,616.04	6,467.22	20.03	19.78	-93.06	-1,295.74	123.95	974.47	934.67	39.80	24.484	
6,750.00	6,729.52	6,662.54	6,512.50	20.18	19.92	-95.67	-1,306.27	124.95	987.38	947.29	40.09	24.629	
6,800.00	6,775.36	6,700.00	6,548.98	20.33	20.03	-96.93	-1,314.75	125.78	1,001.74	961.38	40.35	24.825	
6,850.00	6,819.31	6,727.62	6,575.83	20.48	20.12	-97.30	-1,321.00	127.32	1,018.12	977.53	40.59	25.086	
6,900.00	6,861.04	6,750.00	6,597.52	20.63	20.18	-97.03	-1,326.05	129.54	1,036.74	995.94	40.80	25.409	
6,950.00	6,900.22	6,769.36	6,616.21	20.78	20.24	-96.23	-1,330.40	132.16	1,057.61	1,016.60	41.01	25.789	
7,000.00	6,936.57	6,785.57	6,631.78	20.93	20.29	-94.92	-1,334.03	134.85	1,080.66	1,039.45	41.21	26.224	
7,050.00	6,969.80	6,800.00	6,645.56	21.08	20.33	-93.16	-1,337.25	137.62	1,105.78	1,064.38	41.40	26.708	
7,100.00	6,999.67	6,800.00	6,645.56	21.23	20.33	-90.26	-1,337.25	137.62	1,132.89	1,091.34	41.55	27.264	
7,150.00	7,025.94	6,816.59	6,661.32	21.38	20.38	-87.91	-1,340.92	141.25	1,161.57	1,119.82	41.75	27.820	
7,200.00	7,048.41	6,821.69	6,666.15	21.53	20.40	-84.61	-1,342.05	142.46	1,191.79	1,149.87	41.92	28.431	
7,250.00	7,066.92	6,824.55	6,668.85	21.68	20.41	-80.89	-1,342.68	143.16	1,223.20	1,181.13	42.08	29.071	
7,300.00	7,081.33	6,825.38	6,669.64	21.83	20.41	-76.84	-1,342.86	143.36	1,255.52	1,213.29	42.23	29.731	
7,350.00	7,091.51	6,824.40	6,668.71	21.98	20.41	-72.56	-1,342.65	143.12	1,288.45	1,246.07	42.38	30.404	
7,400.00	7,097.41	6,821.80	6,666.25	22.13	20.40	-68.17	-1,342.07	142.48	1,321.69	1,279.17	42.52	31.084	
7,444.73	7,099.00	6,818.23	6,662.88	22.27	20.39	-64.24	-1,341.29	141.63	1,351.46	1,308.82	42.64	31.692	
7,500.00	7,098.82	6,800.00	6,645.56	22.44	20.33	-63.26	-1,337.25	137.62	1,388.94	1,346.18	42.76	32.486	
7,600.00	7,098.49	6,800.00	6,645.56	22.74	20.33	-63.26	-1,337.25	137.62	1,459.08	1,416.03	43.06	33.887	
7,700.00	7,098.16	6,800.00	6,645.56	23.04	20.33	-63.26	-1,337.25	137.62	1,532.55	1,489.19	43.36	35.346	
7,800.00	7,097.83	6,800.00	6,645.56	23.34	20.33	-63.26	-1,337.25	137.62	1,608.87	1,565.21	43.66	36.850	
7,900.00	7,097.51	6,800.00	6,645.56	23.64	20.33	-63.26	-1,337.25	137.62	1,687.67	1,643.71	43.96	38.390	
8,000.00	7,097.18	6,780.85	6,627.24	23.94	20.28	-62.23	-1,332.97	134.01	1,768.25	1,724.05	44.20	40.001	
8,100.00	7,096.85	6,776.14	6,622.72	24.24	20.26	-61.98	-1,331.92	133.22	1,850.85	1,806.36	44.49	41.600	
8,200.00	7,096.52	6,771.84	6,618.59	24.54	20.25	-61.75	-1,330.96	132.54	1,935.06	1,890.28	44.78	43.213	
8,300.00	7,096.19	6,767.91	6,614.81	24.84	20.24	-61.54	-1,330.08	131.94	2,020.68	1,975.61	45.07	44.835	
8,400.00	7,095.87	6,750.00	6,597.52	25.14	20.18	-60.59	-1,326.05	129.54	2,107.74	2,062.42	45.32	46.512	
8,500.00	7,095.54	6,750.00	6,597.52	25.44	20.18	-60.59	-1,326.05	129.54	2,195.60	2,149.99	45.62	48.131	
8,600.00	7,095.21	6,750.00	6,597.52	25.74	20.18	-60.59	-1,326.05	129.54	2,284.47	2,238.55	45.92	49.751	
8,700.00	7,094.88	6,750.00	6,597.52	26.04	20.18	-60.59	-1,326.05	129.54	2,374.22	2,328.00	46.22	51.369	
8,800.00	7,094.55	6,750.00	6,597.52	26.35	20.18	-60.59	-1,326.05	129.54	2,464.76	2,418.24	46.52	52.983	
8,900.00	7,094.23	6,750.00	6,597.52	26.65	20.18	-60.59	-1,326.05	129.54	2,556.00	2,509.18	46.82	54.592	
9,000.00	7,093.90	6,750.00	6,597.52	26.95	20.18	-60.59	-1,326.05	129.54	2,647.88	2,600.76	47.12	56.193	
9,100.00	7,093.57	6,750.00	6,597.52	27.25	20.18	-60.59	-1,326.05	129.54	2,740.32	2,692.90	47.42	57.787	

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 750H - Slot B05
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 750H	**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
9,200.00	7,093.24	6,750.00	6,597.52	27.55	20.18	-60.59	-1,326.05	129.54	2,833.28	2,785.56	47.72	59.371	
9,300.00	7,092.91	6,750.00	6,597.52	27.85	20.18	-60.59	-1,326.05	129.54	2,926.70	2,878.68	48.02	60.944	
9,400.00	7,092.59	6,750.00	6,597.52	28.15	20.18	-60.59	-1,326.05	129.54	3,020.55	2,972.22	48.32	62.507	
9,500.00	7,092.26	6,750.00	6,597.52	28.45	20.18	-60.59	-1,326.05	129.54	3,114.78	3,066.15	48.62	64.059	
9,600.00	7,091.93	6,750.00	6,597.52	28.75	20.18	-60.59	-1,326.05	129.54	3,209.35	3,160.43	48.92	65.598	
9,700.00	7,091.60	6,750.00	6,597.52	29.05	20.18	-60.59	-1,326.05	129.54	3,304.25	3,255.02	49.22	67.126	
9,800.00	7,091.27	6,750.00	6,597.52	29.35	20.18	-60.59	-1,326.05	129.54	3,399.44	3,349.91	49.53	68.640	
9,900.00	7,090.95	6,750.00	6,597.52	29.65	20.18	-60.59	-1,326.05	129.54	3,494.89	3,445.07	49.83	70.142	
10,000.00	7,090.62	6,750.00	6,597.52	29.95	20.18	-60.59	-1,326.05	129.54	3,590.60	3,540.47	50.13	71.631	
10,100.00	7,090.29	6,750.00	6,597.52	30.25	20.18	-60.59	-1,326.05	129.54	3,686.53	3,636.10	50.43	73.107	
10,200.00	7,089.96	6,728.29	6,576.49	30.55	20.12	-59.44	-1,321.15	127.37	3,782.22	3,731.55	50.66	74.655	
10,300.00	7,089.63	6,727.17	6,575.40	30.85	20.11	-59.38	-1,320.90	127.28	3,878.51	3,827.55	50.96	76.110	
10,400.00	7,089.31	6,726.09	6,574.35	31.15	20.11	-59.32	-1,320.66	127.20	3,974.98	3,923.72	51.26	77.550	
10,500.00	7,088.98	6,725.06	6,573.35	31.45	20.11	-59.27	-1,320.42	127.12	4,071.62	4,020.06	51.55	78.978	
10,600.00	7,088.65	6,724.08	6,572.40	31.75	20.11	-59.22	-1,320.20	127.05	4,168.41	4,116.56	51.85	80.391	
10,700.00	7,088.32	6,723.14	6,571.48	32.06	20.10	-59.17	-1,319.99	126.98	4,265.36	4,213.21	52.15	81.792	
10,800.00	7,087.99	6,722.24	6,570.61	32.36	20.10	-59.12	-1,319.78	126.92	4,362.43	4,309.99	52.45	83.178	
10,900.00	7,087.67	6,700.00	6,548.98	32.66	20.03	-57.96	-1,314.75	125.78	4,460.08	4,407.40	52.68	84.663	
11,000.00	7,087.34	6,700.00	6,548.98	32.96	20.03	-57.96	-1,314.75	125.78	4,557.37	4,504.39	52.98	86.019	
11,100.00	7,087.01	6,700.00	6,548.98	33.26	20.03	-57.96	-1,314.75	125.78	4,654.78	4,601.50	53.28	87.362	
11,200.00	7,086.68	6,700.00	6,548.98	33.56	20.03	-57.96	-1,314.75	125.78	4,752.29	4,698.71	53.58	88.692	
11,300.00	7,086.35	6,700.00	6,548.98	33.86	20.03	-57.96	-1,314.75	125.78	4,849.91	4,796.03	53.88	90.010	
11,400.00	7,086.03	6,700.00	6,548.98	34.16	20.03	-57.96	-1,314.75	125.78	4,947.62	4,893.44	54.18	91.314	
11,500.00	7,085.70	6,700.00	6,548.98	34.46	20.03	-57.96	-1,314.75	125.78	5,045.42	4,990.94	54.48	92.606	
11,600.00	7,085.37	6,700.00	6,548.98	34.76	20.03	-57.96	-1,314.75	125.78	5,143.30	5,088.52	54.78	93.885	
11,700.00	7,085.04	6,700.00	6,548.98	35.06	20.03	-57.96	-1,314.75	125.78	5,241.27	5,186.19	55.08	95.151	
11,800.00	7,084.71	6,700.00	6,548.98	35.36	20.03	-57.96	-1,314.75	125.78	5,339.31	5,283.93	55.38	96.405	
11,900.00	7,084.39	6,700.00	6,548.98	35.66	20.03	-57.96	-1,314.75	125.78	5,437.42	5,381.74	55.68	97.647	
12,000.00	7,084.06	6,700.00	6,548.98	35.96	20.03	-57.96	-1,314.75	125.78	5,535.60	5,479.62	55.98	98.877	
12,100.00	7,083.73	6,700.00	6,548.98	36.26	20.03	-57.96	-1,314.75	125.78	5,633.84	5,577.56	56.29	100.095	
12,200.00	7,083.40	6,700.00	6,548.98	36.56	20.03	-57.96	-1,314.75	125.78	5,732.15	5,675.56	56.59	101.301	
12,300.00	7,083.07	6,700.00	6,548.98	36.86	20.03	-57.96	-1,314.75	125.78	5,830.51	5,773.62	56.89	102.495	
12,400.00	7,082.75	6,700.00	6,548.98	37.16	20.03	-57.96	-1,314.75	125.78	5,928.93	5,871.74	57.19	103.678	
12,500.00	7,082.42	6,700.00	6,548.98	37.46	20.03	-57.96	-1,314.75	125.78	6,027.39	5,969.91	57.49	104.849	
12,600.00	7,082.09	6,700.00	6,548.98	37.76	20.03	-57.96	-1,314.75	125.78	6,125.91	6,068.13	57.79	106.009	
12,700.00	7,081.76	6,700.00	6,548.98	38.06	20.03	-57.96	-1,314.75	125.78	6,224.48	6,166.39	58.09	107.158	
12,800.00	7,081.43	6,700.00	6,548.98	38.36	20.03	-57.96	-1,314.75	125.78	6,323.09	6,264.70	58.39	108.296	
12,900.00	7,081.11	6,700.00	6,548.98	38.66	20.03	-57.96	-1,314.75	125.78	6,421.74	6,363.05	58.69	109.423	
13,000.00	7,080.78	6,700.00	6,548.98	38.96	20.03	-57.96	-1,314.75	125.78	6,520.44	6,461.45	58.99	110.539	
13,100.00	7,080.45	6,700.00	6,548.98	39.26	20.03	-57.96	-1,314.75	125.78	6,619.17	6,559.88	59.29	111.644	
13,200.00	7,080.12	6,700.00	6,548.98	39.56	20.03	-57.96	-1,314.75	125.78	6,717.94	6,658.35	59.59	112.739	
13,300.00	7,079.79	6,700.00	6,548.98	39.86	20.03	-57.96	-1,314.75	125.78	6,816.75	6,756.86	59.89	113.824	
13,400.00	7,079.47	6,700.00	6,548.98	40.16	20.03	-57.96	-1,314.75	125.78	6,915.59	6,855.40	60.19	114.898	
13,500.00	7,079.14	6,700.00	6,548.98	40.46	20.03	-57.96	-1,314.75	125.78	7,014.46	6,953.98	60.49	115.962	
13,600.00	7,078.81	6,700.00	6,548.98	40.77	20.03	-57.96	-1,314.75	125.78	7,113.37	7,052.58	60.79	117.016	
13,700.00	7,078.48	6,700.00	6,548.98	41.07	20.03	-57.96	-1,314.75	125.78	7,212.31	7,151.22	61.09	118.061	
13,800.00	7,078.15	6,700.00	6,548.98	41.37	20.03	-57.96	-1,314.75	125.78	7,311.27	7,249.88	61.39	119.095	
13,900.00	7,077.83	6,700.00	6,548.98	41.67	20.03	-57.96	-1,314.75	125.78	7,410.26	7,348.57	61.69	120.120	
14,000.00	7,077.50	6,700.00	6,548.98	41.97	20.03	-57.96	-1,314.75	125.78	7,509.28	7,447.29	61.99	121.136	
14,100.00	7,077.17	6,700.00	6,548.98	42.27	20.03	-57.96	-1,314.75	125.78	7,608.33	7,546.04	62.29	122.142	
14,200.00	7,076.84	6,700.00	6,548.98	42.57	20.03	-57.96	-1,314.75	125.78	7,707.40	7,644.81	62.59	123.139	
14,300.00	7,076.51	6,700.00	6,548.98	42.87	20.03	-57.96	-1,314.75	125.78	7,806.49	7,743.60	62.89	124.127	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	6,700.00	6,548.98	43.17	20.03	-57.96	-1,314.75	125.78	7,905.61	7,842.42	63.19	125.105	
14,500.00	7,075.86	6,700.00	6,548.98	43.47	20.03	-57.96	-1,314.75	125.78	8,004.74	7,941.25	63.49	126.075	
14,600.00	7,075.53	6,700.00	6,548.98	43.77	20.03	-57.96	-1,314.75	125.78	8,103.90	8,040.11	63.79	127.036	
14,700.00	7,075.20	6,700.00	6,548.98	44.07	20.03	-57.96	-1,314.75	125.78	8,203.08	8,138.99	64.09	127.989	
14,800.00	7,074.87	6,700.00	6,548.98	44.37	20.03	-57.96	-1,314.75	125.78	8,302.28	8,237.89	64.39	128.932	
14,900.00	7,074.55	6,700.00	6,548.98	44.67	20.03	-57.96	-1,314.75	125.78	8,401.50	8,336.81	64.69	129.868	
15,000.00	7,074.22	6,700.00	6,548.98	44.97	20.03	-57.96	-1,314.75	125.78	8,500.74	8,435.75	64.99	130.795	
15,100.00	7,073.89	6,700.00	6,548.98	45.27	20.03	-57.96	-1,314.75	125.78	8,599.99	8,534.70	65.29	131.713	
15,200.00	7,073.56	6,700.00	6,548.98	45.57	20.03	-57.96	-1,314.75	125.78	8,699.26	8,633.67	65.59	132.624	
15,300.00	7,073.23	6,700.00	6,548.98	45.87	20.03	-57.96	-1,314.75	125.78	8,798.55	8,732.66	65.89	133.527	
15,400.00	7,072.91	6,700.00	6,548.98	46.17	20.03	-57.96	-1,314.75	125.78	8,897.86	8,831.66	66.19	134.421	
15,500.00	7,072.58	6,700.00	6,548.98	46.47	20.03	-57.96	-1,314.75	125.78	8,997.18	8,930.68	66.49	135.308	
15,600.00	7,072.25	6,700.00	6,548.98	46.77	20.03	-57.96	-1,314.75	125.78	9,096.51	9,029.72	66.79	136.187	
15,700.00	7,071.92	6,700.00	6,548.98	47.07	20.03	-57.96	-1,314.75	125.78	9,195.86	9,128.76	67.09	137.058	
15,800.00	7,071.59	6,700.00	6,548.98	47.37	20.03	-57.96	-1,314.75	125.78	9,295.22	9,227.83	67.39	137.922	
15,900.00	7,071.27	6,700.00	6,548.98	47.67	20.03	-57.96	-1,314.75	125.78	9,394.60	9,326.90	67.69	138.779	
16,000.00	7,070.94	6,700.00	6,548.98	47.97	20.03	-57.96	-1,314.75	125.78	9,493.99	9,425.99	68.00	139.628	
16,100.00	7,070.61	6,700.00	6,548.98	48.27	20.03	-57.96	-1,314.75	125.78	9,593.39	9,525.09	68.30	140.469	
16,200.00	7,070.28	6,700.00	6,548.98	48.57	20.03	-57.96	-1,314.75	125.78	9,692.80	9,624.21	68.60	141.304	
16,300.00	7,069.95	6,700.00	6,548.98	48.87	20.03	-57.96	-1,314.75	125.78	9,792.23	9,723.33	68.90	142.131	
16,400.00	7,069.63	6,700.00	6,548.98	49.17	20.03	-57.96	-1,314.75	125.78	9,891.67	9,822.47	69.20	142.952	
16,419.92	7,069.56	6,700.00	6,548.98	49.23	20.03	-57.96	-1,314.75	125.78	9,911.48	9,842.22	69.26	143.114	
16,500.00	7,069.30	6,700.00	6,548.98	49.47	20.03	-57.96	-1,314.75	125.78	9,991.12	9,921.62	69.50	143.765	
16,591.83	7,069.00	6,700.00	6,548.98	49.75	20.03	-57.96	-1,314.75	125.78	10,082.45	10,012.68	69.77	144.506	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-107.43	-1,643.64	-5,233.94	5,485.95				
100.00	100.00	69.51	69.51	0.23	3.03	-107.43	-1,643.64	-5,233.94	5,485.95	5,482.70	3.25	1,685.659	
200.00	200.00	169.51	169.51	0.53	7.38	-107.43	-1,643.64	-5,233.94	5,485.95	5,478.04	7.91	693.505	
300.00	300.00	269.51	269.51	0.83	11.74	-107.43	-1,643.64	-5,233.94	5,485.95	5,473.39	12.57	436.555	
400.00	400.00	369.51	369.51	1.13	16.10	-107.43	-1,643.64	-5,233.94	5,485.95	5,468.73	17.22	318.535	
500.00	500.00	469.51	469.51	1.43	20.45	-107.43	-1,643.64	-5,233.94	5,485.95	5,464.08	21.88	250.747	
600.00	599.98	569.49	569.49	1.73	24.81	48.14	-1,643.64	-5,233.94	5,484.79	5,458.26	26.53	206.711	
707.91	707.73	677.24	677.24	2.05	29.50	48.24	-1,643.64	-5,233.94	5,480.92	5,449.37	31.55	173.716	
800.00	799.58	769.09	769.09	2.33	33.50	48.30	-1,643.64	-5,233.94	5,476.47	5,440.64	35.83	152.854	
900.00	899.31	868.83	868.83	2.63	37.85	48.35	-1,643.64	-5,233.94	5,471.64	5,431.17	40.47	135.194	
1,000.00	999.05	968.56	968.56	2.93	42.19	48.41	-1,643.64	-5,233.94	5,466.82	5,421.70	45.12	121.169	
1,100.00	1,098.79	1,068.30	1,068.30	3.23	46.54	48.47	-1,643.64	-5,233.94	5,462.00	5,412.24	49.76	109.763	
1,200.00	1,198.52	1,168.04	1,168.04	3.53	50.88	48.52	-1,643.64	-5,233.94	5,457.19	5,402.78	54.41	100.304	
1,300.00	1,298.26	1,267.77	1,267.77	3.83	55.22	48.58	-1,643.64	-5,233.94	5,452.38	5,393.33	59.05	92.334	
1,400.00	1,398.00	1,367.51	1,367.51	4.13	59.57	48.64	-1,643.64	-5,233.94	5,447.58	5,383.88	63.70	85.526	
1,500.00	1,497.73	1,467.25	1,467.25	4.43	63.91	48.69	-1,643.64	-5,233.94	5,442.78	5,374.44	68.34	79.643	
1,600.00	1,597.47	1,566.98	1,566.98	4.73	68.26	48.75	-1,643.64	-5,233.94	5,437.99	5,365.01	72.98	74.509	
1,700.00	1,697.21	1,666.72	1,666.72	5.03	72.60	48.81	-1,643.64	-5,233.94	5,433.21	5,355.58	77.63	69.989	
1,800.00	1,796.94	1,766.46	1,766.46	5.33	76.95	48.87	-1,643.64	-5,233.94	5,428.43	5,346.15	82.27	65.980	
1,900.00	1,896.68	1,866.19	1,866.19	5.63	81.29	48.92	-1,643.64	-5,233.94	5,423.65	5,336.74	86.92	62.400	
2,000.00	1,996.42	1,965.93	1,965.93	5.93	85.64	48.98	-1,643.64	-5,233.94	5,418.88	5,327.32	91.56	59.182	
2,100.00	2,096.15	2,065.67	2,065.67	6.23	89.98	49.04	-1,643.64	-5,233.94	5,414.12	5,317.91	96.21	56.276	
2,200.00	2,195.89	2,165.40	2,165.40	6.53	94.32	49.10	-1,643.64	-5,233.94	5,409.36	5,308.51	100.85	53.637	
2,300.00	2,295.63	2,265.14	2,265.14	6.83	98.67	49.15	-1,643.64	-5,233.94	5,404.61	5,299.11	105.50	51.230	
2,400.00	2,395.36	2,364.88	2,364.88	7.13	103.01	49.21	-1,643.64	-5,233.94	5,399.86	5,289.72	110.14	49.027	
2,500.00	2,495.10	2,464.61	2,464.61	7.43	107.36	49.27	-1,643.64	-5,233.94	5,395.12	5,280.34	114.79	47.002	
2,600.00	2,594.84	2,564.35	2,564.35	7.73	111.70	49.33	-1,643.64	-5,233.94	5,390.39	5,270.96	119.43	45.134	
2,700.00	2,694.57	2,664.09	2,664.09	8.03	116.05	49.39	-1,643.64	-5,233.94	5,385.66	5,261.58	124.07	43.407	
2,800.00	2,794.31	2,763.82	2,763.82	8.33	120.39	49.45	-1,643.64	-5,233.94	5,380.93	5,252.21	128.72	41.804	
2,900.00	2,894.05	2,863.56	2,863.56	8.63	124.74	49.51	-1,643.64	-5,233.94	5,376.21	5,242.85	133.36	40.313	
3,000.00	2,993.78	2,963.30	2,963.30	8.93	129.08	49.56	-1,643.64	-5,233.94	5,371.50	5,233.49	138.01	38.922	
3,100.00	3,093.52	3,063.03	3,063.03	9.23	133.43	49.62	-1,643.64	-5,233.94	5,366.79	5,224.14	142.65	37.622	
3,200.00	3,193.26	3,162.77	3,162.77	9.53	137.77	49.68	-1,643.64	-5,233.94	5,362.09	5,214.80	147.30	36.403	
3,300.00	3,292.99	3,262.51	3,262.51	9.83	142.11	49.74	-1,643.64	-5,233.94	5,357.40	5,205.45	151.94	35.260	
3,400.00	3,392.73	3,362.24	3,362.24	10.13	146.46	49.80	-1,643.64	-5,233.94	5,352.71	5,196.12	156.59	34.184	
3,500.00	3,492.47	3,461.98	3,461.98	10.43	150.80	49.86	-1,643.64	-5,233.94	5,348.02	5,186.79	161.23	33.170	
3,600.00	3,592.20	3,561.72	3,561.72	10.73	155.15	49.92	-1,643.64	-5,233.94	5,343.34	5,177.47	165.87	32.213	
3,700.00	3,691.94	3,661.45	3,661.45	11.03	159.49	49.98	-1,643.64	-5,233.94	5,338.67	5,168.15	170.52	31.308	
3,800.00	3,791.68	3,761.19	3,761.19	11.33	163.84	50.04	-1,643.64	-5,233.94	5,334.00	5,158.84	175.16	30.451	
3,900.00	3,891.41	3,860.93	3,860.93	11.63	168.18	50.10	-1,643.64	-5,233.94	5,329.34	5,149.53	179.81	29.639	
4,000.00	3,991.15	3,960.66	3,960.66	11.93	172.53	50.16	-1,643.64	-5,233.94	5,324.68	5,140.23	184.45	28.867	
4,100.00	4,090.89	4,060.40	4,060.40	12.23	176.87	50.22	-1,643.64	-5,233.94	5,320.03	5,130.94	189.10	28.134	
4,200.00	4,190.62	4,160.14	4,160.14	12.53	181.22	50.28	-1,643.64	-5,233.94	5,315.39	5,121.65	193.74	27.435	
4,300.00	4,290.36	4,259.87	4,259.87	12.83	185.56	50.34	-1,643.64	-5,233.94	5,310.75	5,112.36	198.39	26.770	
4,400.00	4,390.10	4,359.61	4,359.61	13.13	189.90	50.40	-1,643.64	-5,233.94	5,306.12	5,103.09	203.03	26.135	
4,500.00	4,489.84	4,459.35	4,459.35	13.43	194.25	50.46	-1,643.64	-5,233.94	5,301.49	5,093.82	207.68	25.528	
4,600.00	4,589.57	4,559.09	4,559.09	13.73	198.59	50.52	-1,643.64	-5,233.94	5,296.87	5,084.55	212.32	24.948	
4,700.00	4,689.31	4,658.82	4,658.82	14.03	202.94	50.58	-1,643.64	-5,233.94	5,292.26	5,075.29	216.96	24.392	
4,800.00	4,789.05	4,758.56	4,758.56	14.33	207.28	50.64	-1,643.64	-5,233.94	5,287.65	5,066.04	221.61	23.860	
4,900.00	4,888.78	4,858.30	4,858.30	14.63	211.63	50.70	-1,643.64	-5,233.94	5,283.04	5,056.79	226.25	23.350	
5,000.00	4,988.52	4,958.03	4,958.03	14.93	215.97	50.76	-1,643.64	-5,233.94	5,278.45	5,047.55	230.90	22.860	
5,100.00	5,088.26	5,057.77	5,057.77	15.23	220.32	50.82	-1,643.64	-5,233.94	5,273.86	5,038.31	235.54	22.390	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,157.51	5,157.51	15.53	224.66	50.88	-1,643.64	-5,233.94	5,269.27	5,029.08	240.19	21.938	
5,300.00	5,287.73	5,257.24	5,257.24	15.83	229.01	50.94	-1,643.64	-5,233.94	5,264.69	5,019.86	244.83	21.503	
5,400.00	5,387.47	5,356.98	5,356.98	16.13	233.35	51.00	-1,643.64	-5,233.94	5,260.12	5,010.64	249.48	21.085	
5,500.00	5,487.20	5,456.72	5,456.72	16.43	237.69	51.07	-1,643.64	-5,233.94	5,255.55	5,001.43	254.12	20.681	
5,600.00	5,586.94	5,556.45	5,556.45	16.73	242.04	51.13	-1,643.64	-5,233.94	5,250.99	4,992.22	258.77	20.292	
5,700.00	5,686.68	5,656.19	5,656.19	17.03	246.38	51.19	-1,643.64	-5,233.94	5,246.44	4,983.03	263.41	19.917	
5,800.00	5,786.41	5,755.93	5,755.93	17.33	250.73	51.25	-1,643.64	-5,233.94	5,241.89	4,973.83	268.05	19.555	
5,900.00	5,886.15	5,855.66	5,855.66	17.63	255.07	51.31	-1,643.64	-5,233.94	5,237.34	4,964.64	272.70	19.206	
6,000.00	5,985.89	5,955.40	5,955.40	17.93	259.42	51.37	-1,643.64	-5,233.94	5,232.81	4,955.46	277.34	18.868	
6,100.00	6,085.62	6,055.14	6,055.14	18.23	263.76	51.44	-1,643.64	-5,233.94	5,228.28	4,946.29	281.99	18.541	
6,200.00	6,185.36	6,154.87	6,154.87	18.53	268.11	51.50	-1,643.64	-5,233.94	5,223.75	4,937.12	286.63	18.225	
6,300.00	6,285.10	6,254.61	6,254.61	18.83	272.45	51.56	-1,643.64	-5,233.94	5,219.23	4,927.96	291.28	17.918	
6,400.00	6,384.83	6,354.35	6,354.35	19.13	276.79	51.62	-1,643.64	-5,233.94	5,214.72	4,918.80	295.92	17.622	
6,500.00	6,484.57	6,454.08	6,454.08	19.43	281.14	51.69	-1,643.64	-5,233.94	5,210.22	4,909.65	300.57	17.335	
6,559.90	6,544.31	6,513.82	6,513.82	19.61	283.74	51.72	-1,643.64	-5,233.94	5,207.52	4,904.17	303.35	17.167	
6,576.47	6,560.83	6,530.34	6,530.34	19.66	284.46	34.38	-1,643.64	-5,233.94	5,206.54	4,902.42	304.12	17.120	
6,600.00	6,584.23	5,952.00	5,952.00	19.73	259.27	19.22	-1,643.64	-5,233.94	5,239.03	4,961.75	277.28	18.894	
6,650.00	6,633.60	5,952.00	5,952.00	19.88	259.27	5.15	-1,643.64	-5,233.94	5,237.26	4,960.13	277.13	18.898	
6,700.00	6,682.15	5,952.00	5,952.00	20.03	259.27	-0.86	-1,643.64	-5,233.94	5,231.76	4,954.79	276.97	18.889	
6,750.00	6,729.52	5,952.00	5,952.00	20.18	259.27	-4.24	-1,643.64	-5,233.94	5,222.55	4,945.77	276.78	18.869	
6,800.00	6,775.36	5,952.00	5,952.00	20.33	259.27	-6.51	-1,643.64	-5,233.94	5,209.69	4,933.11	276.57	18.836	
6,850.00	6,819.31	5,952.00	5,952.00	20.48	259.27	-8.27	-1,643.64	-5,233.94	5,193.23	4,916.88	276.36	18.792	
6,900.00	6,861.04	5,952.00	5,952.00	20.63	259.27	-9.78	-1,643.64	-5,233.94	5,173.29	4,897.16	276.13	18.735	
6,950.00	6,900.22	5,952.00	5,952.00	20.78	259.27	-11.21	-1,643.64	-5,233.94	5,149.96	4,874.07	275.89	18.666	
7,000.00	6,936.57	5,952.00	5,952.00	20.93	259.27	-12.67	-1,643.64	-5,233.94	5,123.39	4,847.73	275.66	18.586	
7,050.00	6,969.80	5,952.00	5,952.00	21.08	259.27	-14.24	-1,643.64	-5,233.94	5,093.72	4,818.30	275.43	18.494	
7,100.00	6,999.67	5,952.00	5,952.00	21.23	259.27	-16.01	-1,643.64	-5,233.94	5,061.13	4,785.93	275.20	18.391	
7,150.00	7,025.94	5,952.00	5,952.00	21.38	259.27	-18.08	-1,643.64	-5,233.94	5,025.81	4,750.82	274.99	18.276	
7,200.00	7,048.41	5,952.00	5,952.00	21.53	259.27	-20.58	-1,643.64	-5,233.94	4,987.98	4,713.17	274.80	18.151	
7,250.00	7,066.92	5,952.00	5,952.00	21.68	259.27	-23.70	-1,643.64	-5,233.94	4,947.86	4,673.22	274.64	18.016	
7,300.00	7,081.33	5,952.00	5,952.00	21.83	259.27	-27.68	-1,643.64	-5,233.94	4,905.72	4,631.21	274.51	17.871	
7,350.00	7,091.51	5,952.00	5,952.00	21.98	259.27	-32.90	-1,643.64	-5,233.94	4,861.82	4,587.41	274.41	17.718	
7,400.00	7,097.41	5,952.00	5,952.00	22.13	259.27	-39.91	-1,643.64	-5,233.94	4,816.46	4,542.11	274.35	17.556	
7,444.73	7,099.00	5,952.00	5,952.00	22.27	259.27	-48.27	-1,643.64	-5,233.94	4,774.89	4,500.55	274.34	17.405	
7,500.00	7,098.82	5,952.00	5,952.00	22.44	259.27	-48.27	-1,643.64	-5,233.94	4,723.09	4,448.74	274.35	17.216	
7,600.00	7,098.49	5,952.00	5,952.00	22.74	259.27	-48.27	-1,643.64	-5,233.94	4,629.56	4,355.21	274.35	16.875	
7,700.00	7,098.16	5,952.00	5,952.00	23.04	259.27	-48.27	-1,643.64	-5,233.94	4,536.32	4,261.98	274.33	16.536	
7,800.00	7,097.83	5,952.00	5,952.00	23.34	259.27	-48.27	-1,643.64	-5,233.94	4,443.36	4,169.07	274.30	16.199	
7,900.00	7,097.51	5,952.00	5,952.00	23.64	259.27	-48.27	-1,643.64	-5,233.94	4,350.72	4,076.48	274.24	15.865	
8,000.00	7,097.18	5,952.00	5,952.00	23.94	259.27	-48.27	-1,643.64	-5,233.94	4,258.41	3,984.25	274.16	15.533	
8,100.00	7,096.85	5,952.00	5,952.00	24.24	259.27	-48.27	-1,643.64	-5,233.94	4,166.46	3,892.41	274.06	15.203	
8,200.00	7,096.52	5,952.00	5,952.00	24.54	259.27	-48.27	-1,643.64	-5,233.94	4,074.89	3,800.96	273.93	14.876	
8,300.00	7,096.19	5,952.00	5,952.00	24.84	259.27	-48.27	-1,643.64	-5,233.94	3,983.72	3,709.95	273.77	14.552	
8,400.00	7,095.87	5,952.00	5,952.00	25.14	259.27	-48.27	-1,643.64	-5,233.94	3,892.98	3,619.41	273.58	14.230	
8,500.00	7,095.54	5,952.00	5,952.00	25.44	259.27	-48.27	-1,643.64	-5,233.94	3,802.71	3,529.36	273.35	13.911	
8,600.00	7,095.21	5,952.00	5,952.00	25.74	259.27	-48.27	-1,643.64	-5,233.94	3,712.94	3,439.85	273.09	13.596	
8,700.00	7,094.88	5,952.00	5,952.00	26.04	259.27	-48.27	-1,643.64	-5,233.94	3,623.71	3,350.92	272.79	13.284	
8,800.00	7,094.55	5,952.00	5,952.00	26.35	259.27	-48.27	-1,643.64	-5,233.94	3,535.05	3,262.60	272.45	12.975	
8,900.00	7,094.23	5,952.00	5,952.00	26.65	259.27	-48.27	-1,643.64	-5,233.94	3,447.01	3,174.95	272.06	12.670	
9,000.00	7,093.90	5,952.00	5,952.00	26.95	259.27	-48.27	-1,643.64	-5,233.94	3,359.64	3,088.02	271.61	12.369	
9,100.00	7,093.57	5,952.00	5,952.00	27.25	259.27	-48.27	-1,643.64	-5,233.94	3,272.99	3,001.88	271.12	12.072	
9,200.00	7,093.24	5,952.00	5,952.00	27.55	259.27	-48.27	-1,643.64	-5,233.94	3,187.13	2,916.57	270.56	11.780	

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 750H - Slot B05
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 750H	**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	7,092.91	5,952.00	5,952.00	27.85	259.27	-48.27	-1,643.64	-5,233.94	3,102.11	2,832.18	269.93	11.492	
9,400.00	7,092.59	5,952.00	5,952.00	28.15	259.27	-48.27	-1,643.64	-5,233.94	3,018.01	2,748.77	269.24	11.209	
9,500.00	7,092.26	5,952.00	5,952.00	28.45	259.27	-48.27	-1,643.64	-5,233.94	2,934.91	2,666.44	268.47	10.932	
9,600.00	7,091.93	5,952.00	5,952.00	28.75	259.27	-48.27	-1,643.64	-5,233.94	2,852.89	2,585.28	267.61	10.661	
9,700.00	7,091.60	5,952.00	5,952.00	29.05	259.27	-48.27	-1,643.64	-5,233.94	2,772.06	2,505.40	266.66	10.395	
9,800.00	7,091.27	5,952.00	5,952.00	29.35	259.27	-48.27	-1,643.64	-5,233.94	2,692.51	2,426.90	265.62	10.137	
9,900.00	7,090.95	5,952.00	5,952.00	29.65	259.27	-48.27	-1,643.64	-5,233.94	2,614.37	2,349.90	264.47	9.885	
10,000.00	7,090.62	5,952.00	5,952.00	29.95	259.27	-48.27	-1,643.64	-5,233.94	2,537.76	2,274.56	263.20	9.642	
10,100.00	7,090.29	5,952.00	5,952.00	30.25	259.27	-48.27	-1,643.64	-5,233.94	2,462.83	2,201.02	261.82	9.407	
10,200.00	7,089.96	5,952.00	5,952.00	30.55	259.27	-48.27	-1,643.64	-5,233.94	2,389.74	2,129.43	260.31	9.181	
10,300.00	7,089.63	5,952.00	5,952.00	30.85	259.27	-48.27	-1,643.64	-5,233.94	2,318.65	2,059.99	258.66	8.964	
10,400.00	7,089.31	5,952.00	5,952.00	31.15	259.27	-48.27	-1,643.64	-5,233.94	2,249.77	1,992.88	256.88	8.758	
10,500.00	7,088.98	5,952.00	5,952.00	31.45	259.27	-48.27	-1,643.64	-5,233.94	2,183.29	1,928.32	254.97	8.563	
10,600.00	7,088.65	5,952.00	5,952.00	31.75	259.27	-48.27	-1,643.64	-5,233.94	2,119.45	1,866.53	252.92	8.380	
10,700.00	7,088.32	5,952.00	5,952.00	32.06	259.27	-48.27	-1,643.64	-5,233.94	2,058.49	1,807.74	250.75	8.209	
10,800.00	7,087.99	5,952.00	5,952.00	32.36	259.27	-48.27	-1,643.64	-5,233.94	2,000.67	1,752.21	248.46	8.052	
10,900.00	7,087.67	5,952.00	5,952.00	32.66	259.27	-48.27	-1,643.64	-5,233.94	1,946.28	1,700.19	246.09	7.909	
11,000.00	7,087.34	5,952.00	5,952.00	32.96	259.27	-48.27	-1,643.64	-5,233.94	1,895.60	1,651.95	243.65	7.780	
11,100.00	7,087.01	5,952.00	5,952.00	33.26	259.27	-48.27	-1,643.64	-5,233.94	1,848.95	1,607.75	241.20	7.666	
11,200.00	7,086.68	5,952.00	5,952.00	33.56	259.27	-48.27	-1,643.64	-5,233.94	1,806.63	1,567.84	238.79	7.566	
11,300.00	7,086.35	5,952.00	5,952.00	33.86	259.27	-48.27	-1,643.64	-5,233.94	1,768.96	1,532.48	236.48	7.480	
11,400.00	7,086.03	5,952.00	5,952.00	34.16	259.27	-48.27	-1,643.64	-5,233.94	1,736.24	1,501.89	234.35	7.409	
11,500.00	7,085.70	5,952.00	5,952.00	34.46	259.27	-48.27	-1,643.64	-5,233.94	1,708.75	1,476.27	232.48	7.350	
11,600.00	7,085.37	5,952.00	5,952.00	34.76	259.27	-48.27	-1,643.64	-5,233.94	1,686.76	1,455.79	230.96	7.303	
11,700.00	7,085.04	5,952.00	5,952.00	35.06	259.27	-48.27	-1,643.64	-5,233.94	1,670.47	1,440.60	229.87	7.267	
11,800.00	7,084.71	5,952.00	5,952.00	35.36	259.27	-48.27	-1,643.64	-5,233.94	1,660.05	1,430.78	229.27	7.241	
11,900.00	7,084.39	5,952.00	5,952.00	35.66	259.27	-48.27	-1,643.64	-5,233.94	1,655.62	1,426.42	229.20	7.223	
11,923.46	7,084.31	5,952.00	5,952.00	35.73	259.27	-48.27	-1,643.64	-5,233.94	1,655.45	1,426.18	229.27	7.221	CC, ES
12,000.00	7,084.06	5,952.00	5,952.00	35.96	259.27	-48.27	-1,643.64	-5,233.94	1,657.22	1,427.52	229.70	7.215	SF
12,100.00	7,083.73	5,952.00	5,952.00	36.26	259.27	-48.27	-1,643.64	-5,233.94	1,664.84	1,434.10	230.74	7.215	
12,200.00	7,083.40	5,952.00	5,952.00	36.56	259.27	-48.27	-1,643.64	-5,233.94	1,678.39	1,446.09	232.30	7.225	
12,300.00	7,083.07	5,952.00	5,952.00	36.86	259.27	-48.27	-1,643.64	-5,233.94	1,697.73	1,463.43	234.30	7.246	
12,400.00	7,082.75	5,952.00	5,952.00	37.16	259.27	-48.27	-1,643.64	-5,233.94	1,722.67	1,485.98	236.69	7.278	
12,500.00	7,082.42	5,952.00	5,952.00	37.46	259.27	-48.27	-1,643.64	-5,233.94	1,752.97	1,513.60	239.37	7.323	
12,600.00	7,082.09	5,952.00	5,952.00	37.76	259.27	-48.27	-1,643.64	-5,233.94	1,788.36	1,546.10	242.26	7.382	
12,700.00	7,081.76	5,952.00	5,952.00	38.06	259.27	-48.27	-1,643.64	-5,233.94	1,828.53	1,583.26	245.27	7.455	
12,800.00	7,081.43	5,952.00	5,952.00	38.36	259.27	-48.27	-1,643.64	-5,233.94	1,873.19	1,624.84	248.35	7.543	
12,900.00	7,081.11	5,952.00	5,952.00	38.66	259.27	-48.27	-1,643.64	-5,233.94	1,922.01	1,670.59	251.42	7.645	
13,000.00	7,080.78	5,952.00	5,952.00	38.96	259.27	-48.27	-1,643.64	-5,233.94	1,974.70	1,720.25	254.45	7.761	
13,100.00	7,080.45	5,952.00	5,952.00	39.26	259.27	-48.27	-1,643.64	-5,233.94	2,030.95	1,773.56	257.39	7.890	
13,200.00	7,080.12	5,952.00	5,952.00	39.56	259.27	-48.27	-1,643.64	-5,233.94	2,090.47	1,830.24	260.23	8.033	
13,300.00	7,079.79	5,952.00	5,952.00	39.86	259.27	-48.27	-1,643.64	-5,233.94	2,152.99	1,890.05	262.94	8.188	
13,400.00	7,079.47	5,952.00	5,952.00	40.16	259.27	-48.27	-1,643.64	-5,233.94	2,218.26	1,952.74	265.52	8.354	
13,500.00	7,079.14	5,952.00	5,952.00	40.46	259.27	-48.27	-1,643.64	-5,233.94	2,286.04	2,018.08	267.96	8.531	
13,600.00	7,078.81	5,952.00	5,952.00	40.77	259.27	-48.27	-1,643.64	-5,233.94	2,356.12	2,085.85	270.26	8.718	
13,700.00	7,078.48	5,952.00	5,952.00	41.07	259.27	-48.27	-1,643.64	-5,233.94	2,428.29	2,155.86	272.43	8.913	
13,800.00	7,078.15	5,952.00	5,952.00	41.37	259.27	-48.27	-1,643.64	-5,233.94	2,502.38	2,227.91	274.47	9.117	
13,900.00	7,077.83	5,952.00	5,952.00	41.67	259.27	-48.27	-1,643.64	-5,233.94	2,578.22	2,301.84	276.38	9.329	
14,000.00	7,077.50	5,952.00	5,952.00	41.97	259.27	-48.27	-1,643.64	-5,233.94	2,655.66	2,377.49	278.17	9.547	
14,100.00	7,077.17	5,952.00	5,952.00	42.27	259.27	-48.27	-1,643.64	-5,233.94	2,734.56	2,454.70	279.86	9.771	
14,200.00	7,076.84	5,952.00	5,952.00	42.57	259.27	-48.27	-1,643.64	-5,233.94	2,814.81	2,533.37	281.44	10.001	
14,300.00	7,076.51	5,952.00	5,952.00	42.87	259.27	-48.27	-1,643.64	-5,233.94	2,896.28	2,613.35	282.93	10.237	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	5,952.00	5,952.00	43.17	259.27	-48.27	-1,643.64	-5,233.94	2,978.88	2,694.55	284.33	10.477	
14,500.00	7,075.86	5,952.00	5,952.00	43.47	259.27	-48.27	-1,643.64	-5,233.94	3,062.52	2,776.87	285.65	10.721	
14,600.00	7,075.53	5,952.00	5,952.00	43.77	259.27	-48.27	-1,643.64	-5,233.94	3,147.12	2,860.22	286.90	10.970	
14,700.00	7,075.20	5,952.00	5,952.00	44.07	259.27	-48.27	-1,643.64	-5,233.94	3,232.59	2,944.52	288.07	11.221	
14,800.00	7,074.87	5,952.00	5,952.00	44.37	259.27	-48.27	-1,643.64	-5,233.94	3,318.88	3,029.69	289.19	11.476	
14,900.00	7,074.55	5,952.00	5,952.00	44.67	259.27	-48.27	-1,643.64	-5,233.94	3,405.92	3,115.67	290.25	11.735	
15,000.00	7,074.22	5,952.00	5,952.00	44.97	259.27	-48.27	-1,643.64	-5,233.94	3,493.65	3,202.40	291.25	11.995	
15,100.00	7,073.89	5,952.00	5,952.00	45.27	259.27	-48.27	-1,643.64	-5,233.94	3,582.02	3,289.82	292.21	12.258	
15,200.00	7,073.56	5,952.00	5,952.00	45.57	259.27	-48.27	-1,643.64	-5,233.94	3,671.00	3,377.87	293.12	12.524	
15,300.00	7,073.23	5,952.00	5,952.00	45.87	259.27	-48.27	-1,643.64	-5,233.94	3,760.52	3,466.53	293.99	12.791	
15,400.00	7,072.91	5,952.00	5,952.00	46.17	259.27	-48.27	-1,643.64	-5,233.94	3,850.56	3,555.74	294.82	13.061	
15,500.00	7,072.58	5,952.00	5,952.00	46.47	259.27	-48.27	-1,643.64	-5,233.94	3,941.08	3,645.46	295.62	13.332	
15,600.00	7,072.25	5,952.00	5,952.00	46.77	259.27	-48.27	-1,643.64	-5,233.94	4,032.05	3,735.66	296.39	13.604	
15,700.00	7,071.92	5,952.00	5,952.00	47.07	259.27	-48.27	-1,643.64	-5,233.94	4,123.44	3,826.31	297.12	13.878	
15,800.00	7,071.59	5,952.00	5,952.00	47.37	259.27	-48.27	-1,643.64	-5,233.94	4,215.22	3,917.38	297.83	14.153	
15,900.00	7,071.27	5,952.00	5,952.00	47.67	259.27	-48.27	-1,643.64	-5,233.94	4,307.36	4,008.84	298.52	14.429	
16,000.00	7,070.94	5,952.00	5,952.00	47.97	259.27	-48.27	-1,643.64	-5,233.94	4,399.85	4,100.67	299.18	14.706	
16,100.00	7,070.61	5,952.00	5,952.00	48.27	259.27	-48.27	-1,643.64	-5,233.94	4,492.66	4,192.84	299.82	14.985	
16,200.00	7,070.28	5,952.00	5,952.00	48.57	259.27	-48.27	-1,643.64	-5,233.94	4,585.77	4,285.33	300.44	15.264	
16,300.00	7,069.95	5,952.00	5,952.00	48.87	259.27	-48.27	-1,643.64	-5,233.94	4,679.16	4,378.13	301.04	15.543	
16,400.00	7,069.63	5,952.00	5,952.00	49.17	259.27	-48.27	-1,643.64	-5,233.94	4,772.83	4,471.21	301.62	15.824	
16,419.92	7,069.56	5,952.00	5,952.00	49.23	259.27	-48.27	-1,643.64	-5,233.94	4,791.52	4,489.78	301.74	15.880	
16,500.00	7,069.30	5,952.00	5,952.00	49.47	259.27	-48.27	-1,643.64	-5,233.94	4,866.74	4,564.55	302.19	16.105	
16,591.83	7,069.00	5,952.00	5,952.00	49.75	259.27	-48.27	-1,643.64	-5,233.94	4,953.20	4,650.50	302.70	16.363	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-112.67	-1,774.36	-4,247.32	4,603.23				
100.00	100.00	59.51	59.51	0.23	0.59	-112.67	-1,774.36	-4,247.32	4,603.05	4,602.24	0.81	5,663.136	
200.00	200.00	159.52	159.51	0.53	1.77	-112.67	-1,774.36	-4,247.32	4,603.05	4,600.75	2.30	2,002.091	
241.00	241.00	200.51	200.51	0.65	2.53	-112.67	-1,774.15	-4,247.32	4,602.97	4,599.80	3.18	1,448.836	
300.00	300.00	250.52	250.51	0.83	3.45	-112.67	-1,774.28	-4,247.32	4,603.03	4,598.76	4.27	1,076.793	
400.00	400.00	359.52	359.51	1.13	5.46	-112.67	-1,774.36	-4,247.32	4,603.05	4,596.47	6.59	698.699	
500.00	500.00	459.52	459.51	1.43	7.31	-112.67	-1,774.36	-4,247.32	4,603.05	4,594.32	8.74	526.918	
600.00	599.98	558.74	558.73	1.73	9.14	42.91	-1,774.10	-4,247.32	4,601.68	4,590.81	10.87	423.369	
707.91	707.73	664.83	664.82	2.05	11.10	43.01	-1,774.20	-4,247.32	4,597.47	4,584.31	13.15	349.531	
800.00	799.58	759.12	759.09	2.33	12.85	43.07	-1,774.36	-4,247.32	4,592.64	4,577.47	15.18	302.639	
900.00	899.31	858.85	858.83	2.63	14.80	43.13	-1,774.36	-4,247.32	4,587.34	4,569.91	17.43	263.179	
1,000.00	999.05	958.59	958.56	2.93	16.76	43.19	-1,774.36	-4,247.32	4,582.05	4,562.36	19.69	232.760	
1,100.00	1,098.79	1,055.89	1,055.85	3.23	18.67	43.26	-1,773.59	-4,247.32	4,576.46	4,554.57	21.89	209.037	
1,200.00	1,198.52	1,151.26	1,151.22	3.53	20.54	43.32	-1,773.84	-4,247.32	4,571.28	4,547.22	24.06	189.973	
1,300.00	1,298.26	1,257.84	1,257.77	3.83	22.63	43.38	-1,774.36	-4,247.32	4,566.19	4,539.73	26.46	172.585	
1,400.00	1,398.00	1,357.58	1,357.51	4.13	24.66	43.44	-1,774.36	-4,247.32	4,560.92	4,532.13	28.78	158.457	
1,500.00	1,497.73	1,457.32	1,457.25	4.43	26.68	43.50	-1,774.36	-4,247.32	4,555.65	4,524.54	31.11	146.442	
1,600.00	1,597.47	1,554.21	1,554.13	4.73	28.65	43.57	-1,773.62	-4,247.32	4,550.11	4,516.73	33.38	136.325	
1,700.00	1,697.21	1,649.59	1,649.51	5.03	30.59	43.63	-1,773.90	-4,247.32	4,544.96	4,509.34	35.61	127.617	
1,800.00	1,796.94	1,756.58	1,756.46	5.33	32.76	43.69	-1,774.36	-4,247.32	4,539.87	4,501.78	38.09	119.193	
1,900.00	1,896.68	1,856.32	1,856.19	5.63	34.79	43.75	-1,774.36	-4,247.32	4,534.63	4,494.21	40.42	112.186	
2,000.00	1,996.42	1,956.06	1,955.93	5.93	36.83	43.82	-1,774.36	-4,247.32	4,529.38	4,486.63	42.75	105.943	
2,100.00	2,096.15	2,051.61	2,051.47	6.23	38.77	43.89	-1,773.38	-4,247.32	4,523.79	4,478.79	45.00	100.529	
2,200.00	2,195.89	2,145.81	2,145.66	6.53	40.69	43.94	-1,773.77	-4,247.32	4,518.71	4,471.49	47.22	95.696	
2,300.00	2,295.63	2,255.33	2,255.14	6.83	42.90	44.01	-1,774.36	-4,247.32	4,513.69	4,463.96	49.73	90.761	
2,400.00	2,395.36	2,355.06	2,354.88	7.13	44.87	44.07	-1,774.36	-4,247.32	4,508.47	4,456.48	52.00	86.707	
2,500.00	2,495.10	2,454.80	2,454.61	7.43	46.83	44.14	-1,774.36	-4,247.32	4,503.26	4,449.00	54.26	82.992	
2,600.00	2,594.84	2,551.02	2,550.82	7.73	48.73	44.21	-1,773.65	-4,247.32	4,497.79	4,441.34	56.46	79.668	
2,700.00	2,694.57	2,646.59	2,646.39	8.03	50.61	44.26	-1,773.98	-4,247.32	4,492.72	4,434.08	58.64	76.616	
2,800.00	2,794.31	2,754.05	2,753.82	8.33	52.87	44.33	-1,774.36	-4,247.32	4,487.65	4,426.45	61.20	73.328	
2,900.00	2,894.05	2,853.79	2,853.56	8.63	55.21	44.39	-1,774.36	-4,247.32	4,482.46	4,418.63	63.83	70.223	
3,000.00	2,993.78	2,953.53	2,953.30	8.93	57.54	44.46	-1,774.36	-4,247.32	4,477.28	4,410.81	66.46	67.363	
3,100.00	3,093.52	3,051.00	3,050.76	9.23	59.82	44.53	-1,773.50	-4,247.32	4,471.79	4,402.75	69.04	64.768	
3,200.00	3,193.26	3,147.11	3,146.87	9.53	62.06	44.59	-1,773.74	-4,247.32	4,466.71	4,395.12	71.59	62.392	
3,300.00	3,292.99	3,243.25	3,243.01	9.83	64.31	44.65	-1,774.21	-4,247.32	4,461.71	4,387.57	74.14	60.180	
3,400.00	3,392.73	3,352.64	3,352.24	10.13	66.96	44.72	-1,774.36	-4,247.32	4,456.60	4,379.50	77.09	57.810	
3,500.00	3,492.47	3,452.38	3,451.98	10.43	69.41	44.79	-1,774.36	-4,247.32	4,451.44	4,371.61	79.83	55.760	
3,600.00	3,592.20	3,550.66	3,550.22	10.73	71.81	44.88	-1,772.02	-4,247.32	4,445.46	4,362.92	82.54	53.859	
3,700.00	3,691.94	3,641.23	3,640.78	11.03	74.03	44.93	-1,772.38	-4,247.32	4,440.46	4,355.40	85.06	52.206	
3,800.00	3,791.68	3,731.90	3,731.42	11.33	76.25	44.98	-1,773.26	-4,247.32	4,435.66	4,348.09	87.57	50.650	
3,900.00	3,891.41	3,851.52	3,850.93	11.63	79.03	45.05	-1,774.36	-4,247.32	4,430.87	4,340.22	90.66	48.876	
4,000.00	3,991.15	3,951.25	3,950.66	11.93	81.15	45.12	-1,774.36	-4,247.32	4,425.75	4,332.67	93.08	47.549	
4,100.00	4,090.89	4,050.99	4,050.40	12.23	83.27	45.18	-1,774.36	-4,247.32	4,420.63	4,325.13	95.50	46.290	
4,200.00	4,190.62	4,145.87	4,145.26	12.53	85.29	45.26	-1,773.41	-4,247.32	4,415.18	4,317.37	97.82	45.137	
4,300.00	4,290.36	4,240.59	4,239.98	12.83	87.31	45.31	-1,773.87	-4,247.32	4,410.24	4,310.11	100.13	44.044	
4,400.00	4,390.10	4,350.28	4,349.61	13.13	89.64	45.38	-1,774.36	-4,247.32	4,405.30	4,302.53	102.77	42.867	
4,500.00	4,489.84	4,450.01	4,449.35	13.43	91.76	45.45	-1,774.36	-4,247.32	4,400.20	4,295.01	105.19	41.831	
4,600.00	4,589.57	4,549.75	4,549.09	13.73	93.88	45.52	-1,774.36	-4,247.32	4,395.11	4,287.50	107.61	40.843	
4,700.00	4,689.31	4,644.79	4,644.11	14.03	95.91	45.59	-1,773.41	-4,247.32	4,389.70	4,279.77	109.93	39.931	
4,800.00	4,789.05	4,739.61	4,738.93	14.33	97.92	45.65	-1,773.86	-4,247.32	4,384.79	4,272.54	112.25	39.063	
4,900.00	4,888.78	4,849.04	4,848.30	14.63	100.25	45.72	-1,774.36	-4,247.32	4,379.88	4,265.00	114.88	38.126	
5,000.00	4,988.52	4,948.77	4,948.03	14.93	102.37	45.79	-1,774.36	-4,247.32	4,374.81	4,257.51	117.30	37.295	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	5,048.51	5,047.77	15.23	104.50	45.86	-1,774.36	-4,247.32	4,369.75	4,250.03	119.72	36.499	
5,200.00	5,187.99	5,143.71	5,142.95	15.53	106.52	45.93	-1,773.41	-4,247.32	4,364.38	4,242.33	122.05	35.759	
5,300.00	5,287.73	5,238.63	5,237.87	15.83	108.54	45.99	-1,773.86	-4,247.32	4,359.49	4,235.12	124.37	35.053	
5,400.00	5,387.47	5,347.80	5,346.98	16.13	110.98	46.06	-1,774.36	-4,247.32	4,354.61	4,227.50	127.10	34.261	
5,500.00	5,487.20	5,447.53	5,446.72	16.43	113.35	46.13	-1,774.36	-4,247.32	4,349.57	4,219.79	129.78	33.515	
5,600.00	5,586.94	5,547.27	5,546.45	16.73	115.73	46.20	-1,774.36	-4,247.32	4,344.54	4,212.08	132.46	32.799	
5,700.00	5,686.68	5,642.62	5,641.79	17.03	118.01	46.28	-1,773.40	-4,247.32	4,339.20	4,204.17	135.03	32.134	
5,800.00	5,786.41	5,737.65	5,736.81	17.33	120.28	46.34	-1,773.85	-4,247.32	4,334.34	4,196.74	137.60	31.499	
5,900.00	5,886.15	5,846.63	5,845.66	17.63	122.88	46.41	-1,774.36	-4,247.32	4,329.49	4,188.99	140.50	30.814	
6,000.00	5,985.89	5,946.37	5,945.40	17.93	125.26	46.48	-1,774.36	-4,247.32	4,324.49	4,181.30	143.19	30.201	
6,100.00	6,085.62	6,046.10	6,045.14	18.23	127.65	46.54	-1,774.36	-4,247.32	4,319.49	4,173.62	145.87	29.611	
6,200.00	6,185.36	6,138.70	6,137.69	18.53	129.86	46.63	-1,772.67	-4,247.32	4,313.95	4,165.57	148.39	29.072	
6,300.00	6,285.10	6,230.68	6,229.66	18.83	132.06	46.69	-1,773.39	-4,247.32	4,309.23	4,158.34	150.89	28.559	
6,400.00	6,384.83	6,345.46	6,344.35	19.13	134.59	46.75	-1,774.36	-4,247.32	4,304.54	4,150.82	153.72	28.003	
6,500.00	6,484.57	6,445.20	6,444.08	19.43	136.45	46.82	-1,774.36	-4,247.32	4,299.57	4,143.69	155.88	27.583	
6,559.90	6,544.31	6,504.93	6,503.82	19.61	137.57	46.87	-1,774.36	-4,247.32	4,296.59	4,139.42	157.17	27.337	
6,600.00	6,584.23	6,544.86	6,543.75	19.73	138.31	14.60	-1,774.36	-4,247.32	4,293.28	4,135.24	158.04	27.166	
6,650.00	6,633.60	6,592.43	6,591.31	19.88	139.20	0.34	-1,773.29	-4,247.32	4,285.12	4,126.04	159.08	26.938	
6,700.00	6,682.15	6,638.78	6,637.65	20.03	140.06	-5.95	-1,773.39	-4,247.32	4,273.30	4,113.21	160.09	26.693	
6,750.00	6,729.52	6,684.01	6,682.88	20.18	140.91	-9.69	-1,773.56	-4,247.32	4,257.56	4,096.47	161.08	26.431	
6,800.00	6,775.36	6,727.78	6,726.65	20.33	141.72	-12.42	-1,773.79	-4,247.32	4,238.02	4,075.96	162.05	26.152	
6,850.00	6,819.31	6,769.76	6,768.63	20.48	142.51	-14.76	-1,774.07	-4,247.32	4,214.82	4,051.84	162.98	25.860	
6,900.00	6,861.04	6,821.70	6,820.55	20.63	143.45	-17.03	-1,774.36	-4,247.32	4,188.13	4,024.06	164.08	25.525	
6,950.00	6,900.22	6,860.88	6,859.74	20.78	144.11	-19.39	-1,774.36	-4,247.32	4,158.08	3,993.19	164.89	25.217	
7,000.00	6,936.57	6,897.23	6,896.08	20.93	144.73	-22.02	-1,774.36	-4,247.32	4,124.99	3,959.33	165.66	24.900	
7,050.00	6,969.80	6,930.46	6,929.32	21.08	145.30	-25.08	-1,774.36	-4,247.32	4,089.12	3,922.75	166.38	24.578	
7,100.00	6,999.67	6,960.33	6,959.18	21.23	145.80	-28.77	-1,774.36	-4,247.32	4,050.76	3,883.72	167.03	24.251	
7,150.00	7,025.94	6,986.60	6,985.45	21.38	146.25	-33.32	-1,774.36	-4,247.32	4,010.20	3,842.57	167.63	23.923	
7,200.00	7,048.41	7,009.01	7,007.87	21.53	146.63	-39.03	-1,774.14	-4,247.32	3,967.69	3,799.53	168.16	23.594	
7,250.00	7,066.92	7,027.26	7,026.11	21.68	146.94	-46.25	-1,774.14	-4,247.32	3,923.71	3,755.09	168.62	23.269	
7,300.00	7,081.33	7,041.45	7,040.30	21.83	147.18	-55.32	-1,774.15	-4,247.32	3,878.54	3,709.52	169.01	22.948	
7,350.00	7,091.51	7,051.49	7,050.34	21.98	147.35	-66.33	-1,774.15	-4,247.32	3,832.52	3,663.19	169.34	22.633	
7,400.00	7,097.41	7,057.30	7,056.15	22.13	147.45	-78.86	-1,774.16	-4,247.32	3,786.03	3,616.45	169.58	22.325	
7,444.73	7,099.00	7,058.87	7,057.72	22.27	147.48	-90.45	-1,774.16	-4,247.32	3,744.32	3,574.58	169.75	22.058	
7,500.00	7,098.82	7,058.69	7,057.54	22.44	147.47	-90.44	-1,774.16	-4,247.32	3,692.89	3,522.98	169.91	21.735	
7,600.00	7,098.49	7,058.37	7,057.22	22.74	147.47	-90.43	-1,774.16	-4,247.32	3,600.13	3,429.93	170.20	21.152	
7,700.00	7,098.16	7,058.04	7,056.90	23.04	147.46	-90.41	-1,774.16	-4,247.32	3,507.76	3,337.26	170.50	20.573	
7,800.00	7,097.83	7,057.72	7,056.57	23.34	147.46	-90.40	-1,774.16	-4,247.32	3,415.83	3,245.03	170.79	20.000	
7,900.00	7,097.51	7,057.40	7,056.25	23.64	147.45	-90.39	-1,774.16	-4,247.32	3,324.36	3,153.27	171.09	19.430	
8,000.00	7,097.18	7,057.07	7,055.93	23.94	147.45	-90.37	-1,774.16	-4,247.32	3,233.39	3,062.01	171.39	18.866	
8,100.00	7,096.85	7,056.75	7,055.60	24.24	147.44	-90.36	-1,774.16	-4,247.32	3,142.98	2,971.30	171.68	18.307	
8,200.00	7,096.52	7,056.42	7,055.28	24.54	147.44	-90.35	-1,774.16	-4,247.32	3,053.16	2,881.18	171.98	17.753	
8,300.00	7,096.19	7,056.10	7,054.95	24.84	147.43	-90.33	-1,774.16	-4,247.32	2,963.99	2,791.72	172.27	17.205	
8,400.00	7,095.87	7,055.78	7,054.63	25.14	147.42	-90.32	-1,774.16	-4,247.32	2,875.54	2,702.97	172.57	16.663	
8,500.00	7,095.54	7,055.45	7,054.31	25.44	147.42	-90.30	-1,774.16	-4,247.32	2,787.86	2,615.00	172.86	16.128	
8,600.00	7,095.21	7,055.13	7,053.98	25.74	147.41	-90.29	-1,774.16	-4,247.32	2,701.05	2,527.89	173.15	15.599	
8,700.00	7,094.88	7,054.81	7,053.66	26.04	147.41	-90.28	-1,774.16	-4,247.32	2,615.17	2,441.72	173.45	15.077	
8,800.00	7,094.55	7,054.48	7,053.34	26.35	147.40	-90.26	-1,774.16	-4,247.32	2,530.34	2,356.59	173.74	14.564	
8,900.00	7,094.23	7,054.16	7,053.01	26.65	147.40	-90.25	-1,774.16	-4,247.32	2,446.64	2,272.61	174.04	14.058	
9,000.00	7,093.90	7,053.84	7,052.69	26.95	147.39	-90.24	-1,774.15	-4,247.32	2,364.22	2,189.89	174.33	13.561	
9,100.00	7,093.57	7,053.51	7,052.37	27.25	147.39	-90.22	-1,774.15	-4,247.32	2,283.20	2,108.57	174.63	13.075	
9,200.00	7,093.24	7,053.19	7,052.04	27.55	147.38	-90.21	-1,774.15	-4,247.32	2,203.74	2,028.82	174.92	12.598	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	7,052.87	7,051.72	27.85	147.38	-90.20	-1,774.15	-4,247.32	2,126.02	1,950.80	175.22	12.134	
9,400.00	7,092.59	7,052.54	7,051.40	28.15	147.37	-90.18	-1,774.15	-4,247.32	2,050.22	1,874.71	175.51	11.681	
9,500.00	7,092.26	7,052.22	7,051.07	28.45	147.36	-90.17	-1,774.15	-4,247.32	1,976.58	1,800.78	175.81	11.243	
9,600.00	7,091.93	7,051.90	7,050.75	28.75	147.36	-90.15	-1,774.15	-4,247.32	1,905.35	1,729.25	176.10	10.820	
9,700.00	7,091.60	7,051.57	7,050.43	29.05	147.35	-90.14	-1,774.15	-4,247.32	1,836.80	1,660.40	176.39	10.413	
9,800.00	7,091.27	7,051.25	7,050.10	29.35	147.35	-90.13	-1,774.15	-4,247.32	1,771.24	1,594.55	176.69	10.025	
9,900.00	7,090.95	7,050.93	7,049.78	29.65	147.34	-90.11	-1,774.15	-4,247.32	1,709.02	1,532.04	176.98	9.657	
10,000.00	7,090.62	7,050.60	7,049.46	29.95	147.34	-90.10	-1,774.15	-4,247.32	1,650.52	1,473.25	177.27	9.311	
10,100.00	7,090.29	7,050.28	7,049.13	30.25	147.33	-90.09	-1,774.15	-4,247.32	1,596.15	1,418.58	177.57	8.989	
10,200.00	7,089.96	7,049.96	7,048.81	30.55	147.33	-90.07	-1,774.15	-4,247.32	1,546.34	1,368.48	177.86	8.694	
10,300.00	7,089.63	7,049.63	7,048.49	30.85	147.32	-90.06	-1,774.15	-4,247.32	1,501.54	1,323.39	178.15	8.428	
10,400.00	7,089.31	7,049.31	7,048.16	31.15	147.31	-90.05	-1,774.15	-4,247.32	1,462.22	1,283.78	178.45	8.194	
10,500.00	7,088.98	7,048.99	7,047.84	31.45	147.31	-90.03	-1,774.15	-4,247.32	1,428.83	1,250.09	178.74	7.994	
10,600.00	7,088.65	7,048.66	7,047.52	31.75	147.30	-90.02	-1,774.15	-4,247.32	1,401.79	1,222.76	179.03	7.830	
10,700.00	7,088.32	7,048.34	7,047.19	32.06	147.30	-90.01	-1,774.15	-4,247.32	1,381.48	1,202.16	179.33	7.704	
10,800.00	7,087.99	7,048.02	7,046.87	32.36	147.29	-89.99	-1,774.15	-4,247.32	1,368.20	1,188.58	179.62	7.617	
10,900.00	7,087.67	7,047.69	7,046.55	32.66	147.29	-89.98	-1,774.15	-4,247.32	1,362.14	1,182.23	179.91	7.571	
10,932.67	7,087.56	7,047.59	7,046.44	32.75	147.29	-89.97	-1,774.15	-4,247.32	1,361.75	1,181.74	180.01	7.565	CC, ES, SF
11,000.00	7,087.34	7,047.37	7,046.22	32.96	147.28	-89.96	-1,774.15	-4,247.32	1,363.41	1,183.20	180.21	7.566	
11,100.00	7,087.01	7,047.05	7,045.90	33.26	147.28	-89.95	-1,774.15	-4,247.32	1,371.99	1,191.49	180.50	7.601	
11,200.00	7,086.68	7,046.72	7,045.57	33.56	147.27	-89.94	-1,774.15	-4,247.32	1,387.74	1,206.94	180.80	7.676	
11,300.00	7,086.35	7,046.40	7,045.25	33.86	147.27	-89.92	-1,774.15	-4,247.32	1,410.42	1,229.33	181.09	7.788	
11,400.00	7,086.03	7,046.07	7,044.93	34.16	147.26	-89.91	-1,774.15	-4,247.32	1,439.71	1,258.32	181.39	7.937	
11,500.00	7,085.70	7,045.75	7,044.60	34.46	147.25	-89.90	-1,774.15	-4,247.32	1,475.20	1,293.52	181.68	8.120	
11,600.00	7,085.37	7,045.43	7,044.28	34.76	147.25	-89.88	-1,774.15	-4,247.32	1,516.47	1,334.49	181.98	8.333	
11,700.00	7,085.04	7,045.10	7,043.96	35.06	147.24	-89.87	-1,774.15	-4,247.32	1,563.06	1,380.78	182.28	8.575	
11,800.00	7,084.71	7,044.78	7,043.63	35.36	147.24	-89.86	-1,774.15	-4,247.32	1,614.50	1,431.93	182.57	8.843	
11,900.00	7,084.39	7,044.46	7,043.31	35.66	147.23	-89.84	-1,774.15	-4,247.32	1,670.35	1,487.48	182.87	9.134	
12,000.00	7,084.06	7,044.13	7,042.99	35.96	147.23	-89.83	-1,774.15	-4,247.32	1,730.18	1,547.02	183.16	9.446	
12,100.00	7,083.73	7,043.81	7,042.66	36.26	147.22	-89.81	-1,774.15	-4,247.32	1,793.60	1,610.14	183.46	9.777	
12,200.00	7,083.40	7,043.49	7,042.34	36.56	147.22	-89.80	-1,774.15	-4,247.32	1,860.23	1,676.48	183.76	10.123	
12,300.00	7,083.07	7,043.16	7,042.02	36.86	147.21	-89.79	-1,774.15	-4,247.32	1,929.75	1,745.70	184.05	10.485	
12,400.00	7,082.75	7,042.84	7,041.69	37.16	147.21	-89.77	-1,774.15	-4,247.32	2,001.85	1,817.50	184.35	10.859	
12,500.00	7,082.42	7,042.52	7,041.37	37.46	147.20	-89.76	-1,774.15	-4,247.32	2,076.26	1,891.62	184.64	11.245	
12,600.00	7,082.09	7,042.19	7,041.05	37.76	147.19	-89.75	-1,774.15	-4,247.32	2,152.75	1,967.81	184.94	11.640	
12,700.00	7,081.76	7,041.87	7,040.72	38.06	147.19	-89.73	-1,774.15	-4,247.32	2,231.09	2,045.86	185.23	12.045	
12,800.00	7,081.43	7,041.55	7,040.40	38.36	147.18	-89.72	-1,774.15	-4,247.32	2,311.11	2,125.58	185.53	12.457	
12,900.00	7,081.11	7,041.22	7,040.08	38.66	147.18	-89.71	-1,774.15	-4,247.32	2,392.64	2,206.81	185.83	12.876	
13,000.00	7,080.78	7,040.90	7,039.75	38.96	147.17	-89.69	-1,774.15	-4,247.32	2,475.51	2,289.39	186.12	13.301	
13,100.00	7,080.45	7,040.58	7,039.43	39.26	147.17	-89.68	-1,774.15	-4,247.32	2,559.61	2,373.20	186.42	13.731	
13,200.00	7,080.12	7,040.25	7,039.11	39.56	147.16	-89.66	-1,774.15	-4,247.32	2,644.82	2,458.11	186.71	14.165	
13,300.00	7,079.79	7,039.93	7,038.78	39.86	147.16	-89.65	-1,774.15	-4,247.32	2,731.03	2,544.03	187.01	14.604	
13,400.00	7,079.47	7,039.61	7,038.46	40.16	147.15	-89.64	-1,774.15	-4,247.32	2,818.16	2,630.85	187.30	15.046	
13,500.00	7,079.14	7,039.28	7,038.14	40.46	147.14	-89.62	-1,774.15	-4,247.32	2,906.11	2,718.51	187.60	15.491	
13,600.00	7,078.81	7,038.96	7,037.81	40.77	147.14	-89.61	-1,774.15	-4,247.32	2,994.82	2,806.92	187.89	15.939	
13,700.00	7,078.48	7,038.64	7,037.49	41.07	147.13	-89.60	-1,774.15	-4,247.32	3,084.22	2,896.03	188.19	16.389	
13,800.00	7,078.15	7,038.31	7,037.17	41.37	147.13	-89.58	-1,774.15	-4,247.32	3,174.25	2,985.76	188.48	16.841	
13,900.00	7,077.83	7,037.99	7,036.84	41.67	147.12	-89.57	-1,774.15	-4,247.32	3,264.86	3,076.08	188.78	17.295	
14,000.00	7,077.50	7,037.67	7,036.52	41.97	147.12	-89.56	-1,774.15	-4,247.32	3,356.00	3,166.93	189.07	17.750	
14,100.00	7,077.17	7,037.34	7,036.20	42.27	147.11	-89.54	-1,774.15	-4,247.32	3,447.64	3,258.27	189.37	18.206	
14,200.00	7,076.84	7,037.02	7,035.87	42.57	147.11	-89.53	-1,774.15	-4,247.32	3,539.73	3,350.07	189.66	18.663	
14,300.00	7,076.51	7,036.70	7,035.55	42.87	147.10	-89.52	-1,774.15	-4,247.32	3,632.24	3,442.28	189.96	19.121	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	7,036.37	7,035.23	43.17	147.10	-89.50	-1,774.15	-4,247.32	3,725.13	3,534.88	190.25	19.580	
14,500.00	7,075.86	7,036.05	7,034.90	43.47	147.09	-89.49	-1,774.15	-4,247.32	3,818.38	3,627.84	190.55	20.039	
14,600.00	7,075.53	7,035.73	7,034.58	43.77	147.08	-89.47	-1,774.15	-4,247.32	3,911.97	3,721.13	190.84	20.498	
14,700.00	7,075.20	7,035.40	7,034.26	44.07	147.08	-89.46	-1,774.15	-4,247.32	4,005.87	3,814.73	191.14	20.958	
14,800.00	7,074.87	7,035.08	7,033.93	44.37	147.07	-89.45	-1,774.15	-4,247.32	4,100.05	3,908.62	191.43	21.418	
14,900.00	7,074.55	7,034.76	7,033.61	44.67	147.07	-89.43	-1,774.15	-4,247.32	4,194.51	4,002.78	191.73	21.877	
15,000.00	7,074.22	7,034.43	7,033.29	44.97	147.06	-89.42	-1,774.15	-4,247.32	4,289.21	4,097.19	192.02	22.337	
15,100.00	7,073.89	7,034.11	7,032.96	45.27	147.06	-89.41	-1,774.15	-4,247.32	4,384.15	4,191.84	192.32	22.796	
15,200.00	7,073.56	7,033.79	7,032.64	45.57	147.05	-89.39	-1,774.15	-4,247.32	4,479.32	4,286.70	192.61	23.255	
15,300.00	7,073.23	7,033.46	7,032.32	45.87	147.05	-89.38	-1,774.15	-4,247.32	4,574.68	4,381.77	192.91	23.714	
15,400.00	7,072.91	7,033.14	7,031.99	46.17	147.04	-89.37	-1,774.15	-4,247.32	4,670.24	4,477.04	193.20	24.173	
15,500.00	7,072.58	7,032.82	7,031.67	46.47	147.03	-89.35	-1,774.15	-4,247.32	4,765.99	4,572.49	193.50	24.631	
15,600.00	7,072.25	7,032.49	7,031.35	46.77	147.03	-89.34	-1,774.15	-4,247.32	4,861.90	4,668.11	193.79	25.088	
15,700.00	7,071.92	7,032.17	7,031.02	47.07	147.02	-89.32	-1,774.15	-4,247.32	4,957.98	4,763.89	194.09	25.545	
15,800.00	7,071.59	7,031.85	7,030.70	47.37	147.02	-89.31	-1,774.15	-4,247.32	5,054.21	4,859.82	194.38	26.001	
15,900.00	7,071.27	7,031.52	7,030.38	47.67	147.01	-89.30	-1,774.15	-4,247.32	5,150.58	4,955.90	194.68	26.457	
16,000.00	7,070.94	7,031.20	7,030.06	47.97	147.01	-89.28	-1,774.15	-4,247.32	5,247.09	5,052.11	194.97	26.912	
16,100.00	7,070.61	7,030.88	7,029.73	48.27	147.00	-89.27	-1,774.15	-4,247.32	5,343.72	5,148.45	195.27	27.366	
16,200.00	7,070.28	7,030.56	7,029.41	48.57	147.00	-89.26	-1,774.15	-4,247.32	5,440.48	5,244.92	195.56	27.820	
16,300.00	7,069.95	7,030.23	7,029.09	48.87	146.99	-89.24	-1,774.15	-4,247.32	5,537.35	5,341.50	195.86	28.272	
16,400.00	7,069.63	7,029.91	7,028.76	49.17	146.99	-89.23	-1,774.15	-4,247.32	5,634.34	5,438.18	196.15	28.724	
16,419.92	7,069.56	7,029.84	7,028.70	49.23	146.98	-89.23	-1,774.15	-4,247.32	5,653.67	5,457.46	196.21	28.814	
16,500.00	7,069.30	7,029.59	7,028.44	49.47	146.98	-89.22	-1,774.15	-4,247.32	5,731.42	5,534.97	196.45	29.175	
16,591.83	7,069.00	7,029.29	7,028.14	49.75	146.97	-89.20	-1,774.15	-4,247.32	5,820.66	5,623.94	196.72	29.589	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-126.36	-1,774.58	-2,410.20	2,993.70				
100.00	100.00	36.51	36.51	0.23	0.32	-126.36	-1,774.58	-2,410.20	2,993.03	2,992.48	0.55	5,440.600	
200.00	200.00	136.51	136.51	0.53	1.21	-126.36	-1,774.58	-2,410.20	2,993.03	2,991.29	1.74	1,724.181	
300.00	300.00	236.51	236.51	0.83	2.10	-126.36	-1,774.58	-2,410.20	2,993.03	2,990.10	2.92	1,024.414	
400.00	400.00	336.51	336.51	1.13	3.22	-126.36	-1,774.58	-2,410.20	2,993.03	2,988.68	4.35	687.962	
500.00	500.00	436.51	436.51	1.43	5.03	-126.36	-1,774.58	-2,410.20	2,993.03	2,986.57	6.45	463.808	
600.00	599.98	536.49	536.49	1.73	6.83	29.21	-1,774.58	-2,410.20	2,991.50	2,982.95	8.56	349.663	
707.91	707.73	642.65	642.65	2.05	8.74	29.32	-1,774.37	-2,410.20	2,986.32	2,975.53	10.79	276.694	
800.00	799.58	733.03	733.03	2.33	10.37	29.38	-1,774.49	-2,410.20	2,980.57	2,967.87	12.70	234.722	
900.00	899.31	835.84	835.83	2.63	12.25	29.45	-1,774.58	-2,410.20	2,974.30	2,959.43	14.87	199.969	
1,000.00	999.05	935.57	935.56	2.93	14.09	29.52	-1,774.58	-2,410.20	2,967.98	2,950.97	17.01	174.461	
1,100.00	1,098.79	1,034.67	1,034.66	3.23	15.91	29.59	-1,774.07	-2,410.20	2,961.37	2,942.23	19.14	154.729	
1,200.00	1,198.52	1,131.29	1,131.27	3.53	17.69	29.66	-1,774.20	-2,410.20	2,955.14	2,933.92	21.22	139.262	
1,300.00	1,298.26	1,227.93	1,227.92	3.83	19.47	29.72	-1,774.49	-2,410.20	2,949.02	2,925.71	23.30	126.560	
1,400.00	1,398.00	1,334.54	1,334.51	4.13	21.48	29.79	-1,774.58	-2,410.20	2,942.76	2,917.15	25.61	114.911	
1,500.00	1,497.73	1,434.27	1,434.25	4.43	23.37	29.86	-1,774.58	-2,410.20	2,936.47	2,908.67	27.80	105.640	
1,600.00	1,597.47	1,532.88	1,532.85	4.73	25.24	29.94	-1,774.06	-2,410.20	2,929.87	2,899.91	29.96	97.782	
1,700.00	1,697.21	1,629.71	1,629.68	5.03	27.07	30.01	-1,774.20	-2,410.20	2,923.67	2,891.58	32.10	91.091	
1,800.00	1,796.94	1,726.56	1,726.53	5.33	28.90	30.07	-1,774.52	-2,410.20	2,917.58	2,883.35	34.23	85.236	
1,900.00	1,896.68	1,833.25	1,833.19	5.63	31.02	30.15	-1,774.58	-2,410.20	2,911.33	2,874.68	36.65	79.433	
2,000.00	1,996.42	1,932.99	1,932.93	5.93	33.02	30.22	-1,774.58	-2,410.20	2,905.06	2,866.11	38.95	74.581	
2,100.00	2,096.15	2,029.94	2,029.87	6.23	34.97	30.30	-1,773.88	-2,410.20	2,898.39	2,857.19	41.20	70.357	
2,200.00	2,195.89	2,125.16	2,125.10	6.53	36.88	30.37	-1,774.17	-2,410.20	2,892.30	2,848.89	43.41	66.635	
2,300.00	2,295.63	2,232.25	2,232.14	6.83	39.05	30.44	-1,774.58	-2,410.20	2,886.27	2,840.39	45.88	62.914	
2,400.00	2,395.36	2,331.99	2,331.88	7.13	41.13	30.51	-1,774.58	-2,410.20	2,880.02	2,831.76	48.25	59.685	
2,500.00	2,495.10	2,431.13	2,431.01	7.43	43.19	30.60	-1,773.62	-2,410.20	2,873.22	2,822.60	50.62	56.763	
2,600.00	2,594.84	2,524.81	2,524.69	7.73	45.14	30.66	-1,773.83	-2,410.20	2,867.10	2,814.23	52.87	54.231	
2,700.00	2,694.57	2,618.55	2,618.41	8.03	47.09	30.72	-1,774.38	-2,410.20	2,861.20	2,806.08	55.12	51.909	
2,800.00	2,794.31	2,731.00	2,730.82	8.33	49.57	30.80	-1,774.58	-2,410.20	2,855.05	2,797.15	57.89	49.314	
2,900.00	2,894.05	2,830.74	2,830.56	8.63	51.80	30.88	-1,774.58	-2,410.20	2,848.82	2,788.40	60.42	47.148	
3,000.00	2,993.78	2,927.41	2,927.22	8.93	53.96	30.97	-1,773.61	-2,410.20	2,842.04	2,779.16	62.88	45.196	
3,100.00	3,093.52	3,021.52	3,021.32	9.23	56.06	31.03	-1,773.96	-2,410.20	2,836.03	2,770.75	65.28	43.441	
3,200.00	3,193.26	3,130.06	3,129.77	9.53	58.52	31.11	-1,774.58	-2,410.20	2,830.16	2,762.11	68.05	41.592	
3,300.00	3,292.99	3,229.80	3,229.51	9.83	60.92	31.18	-1,774.58	-2,410.20	2,823.95	2,753.20	70.75	39.916	
3,400.00	3,392.73	3,327.69	3,327.38	10.13	63.28	31.28	-1,773.28	-2,410.20	2,817.01	2,743.60	73.41	38.376	
3,500.00	3,492.47	3,418.11	3,417.79	10.43	65.46	31.34	-1,773.65	-2,410.20	2,811.04	2,735.16	75.88	37.044	
3,600.00	3,592.20	3,529.15	3,528.72	10.73	68.14	31.41	-1,774.58	-2,410.20	2,805.35	2,726.48	78.86	35.572	
3,700.00	3,691.94	3,628.88	3,628.45	11.03	70.57	31.49	-1,774.58	-2,410.20	2,799.16	2,717.56	81.59	34.307	
3,800.00	3,791.68	3,719.53	3,719.08	11.33	72.77	31.57	-1,773.82	-2,410.20	2,792.56	2,708.46	84.10	33.205	
3,900.00	3,891.41	3,828.46	3,827.93	11.63	75.41	31.64	-1,774.58	-2,410.20	2,786.79	2,699.76	87.03	32.019	
4,000.00	3,991.15	3,928.19	3,927.66	11.93	77.77	31.72	-1,774.58	-2,410.20	2,780.62	2,690.91	89.70	30.999	
4,100.00	4,090.89	4,027.93	4,027.40	12.23	80.14	31.80	-1,774.58	-2,410.20	2,774.45	2,682.08	92.37	30.037	
4,200.00	4,190.62	4,121.37	4,120.81	12.53	82.36	31.90	-1,773.14	-2,410.20	2,767.49	2,672.61	94.88	29.168	
4,300.00	4,290.36	4,213.63	4,213.05	12.83	84.54	31.96	-1,773.75	-2,410.20	2,761.69	2,664.32	97.37	28.363	
4,400.00	4,390.10	4,327.28	4,326.61	13.13	87.15	32.04	-1,774.58	-2,410.20	2,755.97	2,655.70	100.27	27.485	
4,500.00	4,489.84	4,427.02	4,426.35	13.43	89.27	32.12	-1,774.58	-2,410.20	2,749.82	2,647.12	102.69	26.777	
4,600.00	4,589.57	4,526.76	4,526.09	13.73	91.39	32.20	-1,774.58	-2,410.20	2,743.68	2,638.56	105.12	26.101	
4,700.00	4,689.31	4,620.75	4,620.06	14.03	93.39	32.30	-1,773.41	-2,410.20	2,736.90	2,629.48	107.42	25.479	
4,800.00	4,789.05	4,714.33	4,713.62	14.33	95.38	32.36	-1,773.96	-2,410.20	2,731.09	2,621.39	109.71	24.895	
4,900.00	4,888.78	4,826.04	4,825.30	14.63	97.60	32.44	-1,774.58	-2,410.20	2,725.28	2,613.05	112.23	24.283	
5,000.00	4,988.52	4,925.78	4,925.03	14.93	99.40	32.53	-1,774.58	-2,410.20	2,719.16	2,604.83	114.32	23.785	
5,100.00	5,088.26	5,025.26	5,024.51	15.23	101.18	32.62	-1,773.80	-2,410.20	2,712.62	2,596.21	116.41	23.302	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,121.15	5,120.39	15.53	102.91	32.70	-1,773.94	-2,410.20	2,706.59	2,588.16	118.43	22.853	
5,300.00	5,287.73	5,217.07	5,216.31	15.83	104.63	32.77	-1,774.34	-2,410.20	2,700.71	2,580.25	120.46	22.421	
5,400.00	5,387.47	5,324.75	5,323.98	16.13	106.73	32.86	-1,774.58	-2,410.20	2,694.73	2,571.87	122.86	21.934	
5,500.00	5,487.20	5,424.48	5,423.72	16.43	108.77	32.94	-1,774.58	-2,410.20	2,688.64	2,563.44	125.20	21.476	
5,600.00	5,586.94	5,523.57	5,522.80	16.73	110.79	33.03	-1,774.35	-2,410.20	2,682.42	2,554.90	127.52	21.035	
5,700.00	5,686.68	5,621.90	5,621.14	17.03	112.81	33.11	-1,774.44	-2,410.20	2,676.39	2,546.56	129.83	20.614	
5,800.00	5,786.41	5,723.75	5,722.93	17.33	115.02	33.19	-1,774.58	-2,410.20	2,670.39	2,538.05	132.34	20.178	
5,900.00	5,886.15	5,823.49	5,822.66	17.63	117.55	33.28	-1,774.58	-2,410.20	2,664.32	2,529.14	135.18	19.710	
6,000.00	5,985.89	5,923.23	5,922.40	17.93	120.09	33.36	-1,774.58	-2,410.20	2,658.26	2,520.24	138.01	19.261	
6,100.00	6,085.62	6,016.91	6,016.06	18.23	122.47	33.47	-1,773.18	-2,410.20	2,651.46	2,510.77	140.69	18.845	
6,200.00	6,185.36	6,109.63	6,108.76	18.53	124.83	33.54	-1,773.81	-2,410.20	2,645.77	2,502.42	143.35	18.457	
6,300.00	6,285.10	6,222.63	6,221.61	18.83	127.78	33.62	-1,774.58	-2,410.20	2,640.10	2,493.49	146.61	18.008	
6,400.00	6,384.83	6,322.37	6,321.35	19.13	130.51	33.71	-1,774.58	-2,410.20	2,634.06	2,484.42	149.64	17.603	
6,500.00	6,484.57	6,418.93	6,417.88	19.43	133.15	33.83	-1,773.02	-2,410.20	2,627.21	2,474.63	152.58	17.219	
6,559.90	6,544.31	6,473.25	6,472.19	19.61	134.64	33.87	-1,773.25	-2,410.20	2,623.73	2,469.49	154.24	17.010	
6,600.00	6,584.23	6,509.56	6,508.50	19.73	135.63	1.52	-1,773.53	-2,410.20	2,620.29	2,464.93	155.35	16.866	
6,650.00	6,633.60	6,554.49	6,553.42	19.88	136.86	-12.95	-1,774.00	-2,410.20	2,612.77	2,456.04	156.73	16.670	
6,700.00	6,682.15	6,619.91	6,618.66	20.03	138.65	-19.56	-1,774.58	-2,410.20	2,601.63	2,442.95	158.68	16.396	
6,750.00	6,729.52	6,667.28	6,666.04	20.18	139.96	-23.70	-1,774.58	-2,410.20	2,586.73	2,426.59	160.14	16.153	
6,800.00	6,775.36	6,713.12	6,711.87	20.33	141.22	-26.94	-1,774.58	-2,410.20	2,568.45	2,406.90	161.55	15.899	
6,850.00	6,819.31	6,757.07	6,755.82	20.48	142.43	-29.89	-1,774.58	-2,410.20	2,546.95	2,384.04	162.91	15.634	
6,900.00	6,861.04	6,798.79	6,797.55	20.63	143.58	-32.87	-1,774.58	-2,410.20	2,522.42	2,358.21	164.21	15.361	
6,950.00	6,900.22	6,835.94	6,834.66	20.78	144.61	-35.98	-1,772.68	-2,410.20	2,494.05	2,328.67	165.39	15.080	
7,000.00	6,936.57	6,868.78	6,867.49	20.93	145.51	-39.44	-1,772.77	-2,410.20	2,464.20	2,297.76	166.44	14.805	
7,050.00	6,969.80	6,898.82	6,897.53	21.08	146.34	-43.33	-1,772.93	-2,410.20	2,432.10	2,264.68	167.42	14.527	
7,100.00	6,999.67	6,925.83	6,924.53	21.23	147.08	-47.72	-1,773.13	-2,410.20	2,398.03	2,229.72	168.31	14.247	
7,150.00	7,025.94	6,949.59	6,948.29	21.38	147.74	-52.67	-1,773.36	-2,410.20	2,362.29	2,193.17	169.12	13.968	
7,200.00	7,048.41	6,969.93	6,968.62	21.53	148.30	-58.18	-1,773.59	-2,410.20	2,325.20	2,155.37	169.83	13.691	
7,250.00	7,066.92	6,986.68	6,985.36	21.68	148.76	-64.20	-1,773.81	-2,410.20	2,287.07	2,116.63	170.44	13.419	
7,300.00	7,081.33	6,999.71	6,998.39	21.83	149.12	-70.60	-1,773.99	-2,410.20	2,248.25	2,077.30	170.95	13.152	
7,350.00	7,091.51	7,008.93	7,007.61	21.98	149.38	-77.19	-1,774.12	-2,410.20	2,209.07	2,037.72	171.35	12.892	
7,400.00	7,097.41	7,014.27	7,012.94	22.13	149.52	-83.73	-1,774.21	-2,410.20	2,169.88	1,998.23	171.65	12.641	
7,444.73	7,099.00	7,015.71	7,014.38	22.27	149.56	-89.33	-1,774.23	-2,410.20	2,135.08	1,963.26	171.82	12.426	
7,500.00	7,098.82	7,015.54	7,014.22	22.44	149.56	-89.33	-1,774.23	-2,410.20	2,092.64	1,920.66	171.98	12.168	
7,600.00	7,098.49	7,015.24	7,013.91	22.74	149.55	-89.32	-1,774.22	-2,410.20	2,017.43	1,845.15	172.28	11.711	
7,700.00	7,098.16	7,014.94	7,013.61	23.04	149.54	-89.30	-1,774.22	-2,410.20	1,944.45	1,771.89	172.57	11.268	
7,800.00	7,097.83	7,014.63	7,013.31	23.34	149.53	-89.29	-1,774.21	-2,410.20	1,873.97	1,701.12	172.86	10.841	
7,900.00	7,097.51	7,014.33	7,013.00	23.64	149.52	-89.28	-1,774.21	-2,410.20	1,806.28	1,633.13	173.15	10.432	
8,000.00	7,097.18	7,014.03	7,012.70	23.94	149.52	-89.26	-1,774.20	-2,410.20	1,741.70	1,568.26	173.44	10.042	
8,100.00	7,096.85	7,013.72	7,012.40	24.24	149.51	-89.25	-1,774.20	-2,410.20	1,680.60	1,506.87	173.73	9.674	
8,200.00	7,096.52	7,013.42	7,012.10	24.54	149.50	-89.24	-1,774.19	-2,410.20	1,623.36	1,449.34	174.02	9.329	
8,300.00	7,096.19	7,013.12	7,011.79	24.84	149.49	-89.23	-1,774.19	-2,410.20	1,570.40	1,396.09	174.31	9.009	
8,400.00	7,095.87	7,012.82	7,011.49	25.14	149.48	-89.21	-1,774.18	-2,410.20	1,522.18	1,347.58	174.60	8.718	
8,500.00	7,095.54	7,012.51	7,011.19	25.44	149.47	-89.20	-1,774.18	-2,410.20	1,479.16	1,304.27	174.89	8.458	
8,600.00	7,095.21	7,012.21	7,010.89	25.74	149.47	-89.19	-1,774.17	-2,410.20	1,441.80	1,266.62	175.18	8.230	
8,700.00	7,094.88	7,011.91	7,010.58	26.04	149.46	-89.17	-1,774.17	-2,410.20	1,410.56	1,235.09	175.47	8.039	
8,800.00	7,094.55	7,011.61	7,010.28	26.35	149.45	-89.16	-1,774.17	-2,410.20	1,385.84	1,210.08	175.76	7.885	
8,900.00	7,094.23	7,011.30	7,009.98	26.65	149.44	-89.15	-1,774.16	-2,410.20	1,368.00	1,191.95	176.05	7.770	
9,000.00	7,093.90	7,011.00	7,009.68	26.95	149.43	-89.14	-1,774.16	-2,410.20	1,357.31	1,180.97	176.34	7.697	
9,095.62	7,093.58	7,010.71	7,009.39	27.23	149.42	-89.12	-1,774.15	-2,410.20	1,353.94	1,177.32	176.62	7.666	CC
9,100.00	7,093.57	7,010.70	7,009.38	27.25	149.42	-89.12	-1,774.15	-2,410.20	1,353.95	1,177.31	176.63	7.665	ES, SF
9,200.00	7,093.24	7,010.40	7,009.07	27.55	149.42	-89.11	-1,774.15	-2,410.20	1,357.96	1,181.03	176.93	7.675	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	7,010.09	7,008.77	27.85	149.41	-89.10	-1,774.14	-2,410.20	1,369.28	1,192.06	177.22	7.727	
9,400.00	7,092.59	7,009.79	7,008.47	28.15	149.40	-89.08	-1,774.14	-2,410.20	1,387.73	1,210.22	177.51	7.818	
9,500.00	7,092.26	7,009.49	7,008.17	28.45	149.39	-89.07	-1,774.13	-2,410.20	1,413.04	1,235.23	177.80	7.947	
9,600.00	7,091.93	7,009.19	7,007.86	28.75	149.38	-89.06	-1,774.13	-2,410.20	1,444.84	1,266.74	178.10	8.113	
9,700.00	7,091.60	7,008.88	7,007.56	29.05	149.37	-89.05	-1,774.12	-2,410.20	1,482.71	1,304.32	178.39	8.312	
9,800.00	7,091.27	7,008.58	7,007.26	29.35	149.37	-89.03	-1,774.12	-2,410.20	1,526.20	1,347.52	178.68	8.541	
9,900.00	7,090.95	7,008.28	7,006.96	29.65	149.36	-89.02	-1,774.11	-2,410.20	1,574.86	1,395.88	178.98	8.799	
10,000.00	7,090.62	7,007.98	7,006.65	29.95	149.35	-89.01	-1,774.11	-2,410.20	1,628.20	1,448.93	179.27	9.082	
10,100.00	7,090.29	7,007.68	7,006.35	30.25	149.34	-89.00	-1,774.11	-2,410.20	1,685.80	1,506.24	179.56	9.388	
10,200.00	7,089.96	7,007.37	7,006.05	30.55	149.33	-88.98	-1,774.10	-2,410.20	1,747.22	1,567.37	179.86	9.714	
10,300.00	7,089.63	7,007.07	7,005.75	30.85	149.32	-88.97	-1,774.10	-2,410.20	1,812.09	1,631.94	180.15	10.059	
10,400.00	7,089.31	7,006.77	7,005.45	31.15	149.32	-88.96	-1,774.09	-2,410.20	1,880.04	1,699.59	180.44	10.419	
10,500.00	7,088.98	7,006.47	7,005.14	31.45	149.31	-88.94	-1,774.09	-2,410.20	1,950.75	1,770.01	180.74	10.793	
10,600.00	7,088.65	7,006.16	7,004.84	31.75	149.30	-88.93	-1,774.08	-2,410.20	2,023.93	1,842.90	181.03	11.180	
10,700.00	7,088.32	7,005.86	7,004.54	32.06	149.29	-88.92	-1,774.08	-2,410.20	2,099.32	1,918.00	181.32	11.578	
10,800.00	7,087.99	7,005.56	7,004.24	32.36	149.28	-88.91	-1,774.07	-2,410.20	2,176.70	1,995.08	181.62	11.985	
10,900.00	7,087.67	7,005.26	7,003.94	32.66	149.27	-88.89	-1,774.07	-2,410.20	2,255.86	2,073.95	181.91	12.401	
11,000.00	7,087.34	7,004.96	7,003.63	32.96	149.27	-88.88	-1,774.06	-2,410.20	2,336.62	2,154.41	182.20	12.824	
11,100.00	7,087.01	7,004.65	7,003.33	33.26	149.26	-88.87	-1,774.06	-2,410.20	2,418.81	2,236.31	182.50	13.254	
11,200.00	7,086.68	7,004.35	7,003.03	33.56	149.25	-88.85	-1,774.06	-2,410.20	2,502.30	2,319.51	182.79	13.689	
11,300.00	7,086.35	7,004.05	7,002.73	33.86	149.24	-88.84	-1,774.05	-2,410.20	2,586.96	2,403.88	183.08	14.130	
11,400.00	7,086.03	7,003.75	7,002.43	34.16	149.23	-88.83	-1,774.05	-2,410.20	2,672.69	2,489.31	183.38	14.575	
11,500.00	7,085.70	7,003.45	7,002.12	34.46	149.22	-88.82	-1,774.04	-2,410.20	2,759.37	2,575.70	183.67	15.024	
11,600.00	7,085.37	7,003.14	7,001.82	34.76	149.22	-88.80	-1,774.04	-2,410.20	2,846.93	2,662.97	183.96	15.476	
11,700.00	7,085.04	7,002.84	7,001.52	35.06	149.21	-88.79	-1,774.03	-2,410.20	2,935.28	2,751.03	184.25	15.931	
11,800.00	7,084.71	7,002.54	7,001.22	35.36	149.20	-88.78	-1,774.03	-2,410.20	3,024.36	2,839.81	184.55	16.388	
11,900.00	7,084.39	7,002.24	7,000.92	35.66	149.19	-88.77	-1,774.02	-2,410.20	3,114.10	2,929.26	184.84	16.848	
12,000.00	7,084.06	7,001.94	7,000.61	35.96	149.18	-88.75	-1,774.02	-2,410.20	3,204.45	3,019.31	185.13	17.309	
12,100.00	7,083.73	7,001.63	7,000.31	36.26	149.17	-88.74	-1,774.02	-2,410.20	3,295.35	3,109.93	185.42	17.772	
12,200.00	7,083.40	7,001.33	7,000.01	36.56	149.17	-88.73	-1,774.01	-2,410.20	3,386.77	3,201.05	185.72	18.236	
12,300.00	7,083.07	7,001.03	6,999.71	36.86	149.16	-88.71	-1,774.01	-2,410.20	3,478.66	3,292.65	186.01	18.702	
12,400.00	7,082.75	7,000.73	6,999.41	37.16	149.15	-88.70	-1,774.00	-2,410.20	3,570.99	3,384.69	186.30	19.168	
12,500.00	7,082.42	7,000.43	6,999.11	37.46	149.14	-88.69	-1,774.00	-2,410.20	3,663.72	3,477.12	186.59	19.635	
12,600.00	7,082.09	7,000.12	6,998.80	37.76	149.13	-88.68	-1,773.99	-2,410.20	3,756.82	3,569.93	186.89	20.102	
12,700.00	7,081.76	6,999.82	6,998.50	38.06	149.12	-88.66	-1,773.99	-2,410.20	3,850.27	3,663.09	187.18	20.570	
12,800.00	7,081.43	6,999.52	6,998.20	38.36	149.12	-88.65	-1,773.98	-2,410.20	3,944.04	3,756.57	187.47	21.038	
12,900.00	7,081.11	6,999.22	6,997.90	38.66	149.11	-88.64	-1,773.98	-2,410.20	4,038.11	3,850.34	187.76	21.506	
13,000.00	7,080.78	6,998.92	6,997.60	38.96	149.10	-88.62	-1,773.98	-2,410.20	4,132.45	3,944.40	188.06	21.975	
13,100.00	7,080.45	6,998.62	6,997.30	39.26	149.09	-88.61	-1,773.97	-2,410.20	4,227.06	4,038.71	188.35	22.443	
13,200.00	7,080.12	6,998.31	6,996.99	39.56	149.08	-88.60	-1,773.97	-2,410.20	4,321.91	4,133.27	188.64	22.911	
13,300.00	7,079.79	6,998.01	6,996.69	39.86	149.07	-88.59	-1,773.96	-2,410.20	4,416.99	4,228.05	188.93	23.379	
13,400.00	7,079.47	6,997.71	6,996.39	40.16	149.07	-88.57	-1,773.96	-2,410.20	4,512.28	4,323.05	189.22	23.846	
13,500.00	7,079.14	6,997.41	6,996.09	40.46	149.06	-88.56	-1,773.95	-2,410.20	4,607.77	4,418.25	189.52	24.313	
13,600.00	7,078.81	6,997.11	6,995.79	40.77	149.05	-88.55	-1,773.95	-2,410.20	4,703.44	4,513.63	189.81	24.780	
13,700.00	7,078.48	6,996.81	6,995.49	41.07	149.04	-88.54	-1,773.95	-2,410.20	4,799.30	4,609.19	190.10	25.246	
13,800.00	7,078.15	6,996.50	6,995.19	41.37	149.03	-88.52	-1,773.94	-2,410.20	4,895.31	4,704.92	190.39	25.712	
13,900.00	7,077.83	6,996.20	6,994.88	41.67	149.02	-88.51	-1,773.94	-2,410.20	4,991.49	4,800.80	190.68	26.177	
14,000.00	7,077.50	6,995.90	6,994.58	41.97	149.02	-88.50	-1,773.93	-2,410.20	5,087.81	4,896.84	190.98	26.641	
14,100.00	7,077.17	6,995.60	6,994.28	42.27	149.01	-88.48	-1,773.93	-2,410.20	5,184.27	4,993.01	191.27	27.105	
14,200.00	7,076.84	6,995.30	6,993.98	42.57	149.00	-88.47	-1,773.92	-2,410.20	5,280.87	5,089.31	191.56	27.568	
14,300.00	7,076.51	6,995.00	6,993.68	42.87	148.99	-88.46	-1,773.92	-2,410.20	5,377.59	5,185.73	191.85	28.030	
14,400.00	7,076.19	6,994.70	6,993.38	43.17	148.98	-88.45	-1,773.92	-2,410.20	5,474.42	5,282.28	192.14	28.491	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	6,994.39	6,993.08	43.47	148.97	-88.43	-1,773.91	-2,410.20	5,571.37	5,378.93	192.44	28.952	
14,600.00	7,075.53	6,994.09	6,992.77	43.77	148.97	-88.42	-1,773.91	-2,410.20	5,668.42	5,475.69	192.73	29.411	
14,700.00	7,075.20	6,993.79	6,992.47	44.07	148.96	-88.41	-1,773.90	-2,410.20	5,765.58	5,572.56	193.02	29.870	
14,800.00	7,074.87	6,993.49	6,992.17	44.37	148.95	-88.39	-1,773.90	-2,410.20	5,862.83	5,669.51	193.31	30.328	
14,900.00	7,074.55	6,993.19	6,991.87	44.67	148.94	-88.38	-1,773.89	-2,410.20	5,960.17	5,766.56	193.61	30.785	
15,000.00	7,074.22	6,992.89	6,991.57	44.97	148.93	-88.37	-1,773.89	-2,410.20	6,057.60	5,863.70	193.90	31.241	
15,100.00	7,073.89	6,992.59	6,991.27	45.27	148.92	-88.36	-1,773.89	-2,410.20	6,155.11	5,960.92	194.19	31.696	
15,200.00	7,073.56	6,992.28	6,990.97	45.57	148.92	-88.34	-1,773.88	-2,410.20	6,252.70	6,058.21	194.48	32.151	
15,300.00	7,073.23	6,991.98	6,990.67	45.87	148.91	-88.33	-1,773.88	-2,410.20	6,350.36	6,155.59	194.77	32.604	
15,400.00	7,072.91	6,991.68	6,990.36	46.17	148.90	-88.32	-1,773.87	-2,410.20	6,448.09	6,253.03	195.07	33.056	
15,500.00	7,072.58	6,991.38	6,990.06	46.47	148.89	-88.31	-1,773.87	-2,410.20	6,545.90	6,350.54	195.36	33.507	
15,600.00	7,072.25	6,991.08	6,989.76	46.77	148.88	-88.29	-1,773.87	-2,410.20	6,643.77	6,448.12	195.65	33.958	
15,700.00	7,071.92	6,990.78	6,989.46	47.07	148.88	-88.28	-1,773.86	-2,410.20	6,741.70	6,545.76	195.94	34.407	
15,800.00	7,071.59	6,990.48	6,989.16	47.37	148.87	-88.27	-1,773.86	-2,410.20	6,839.69	6,643.46	196.23	34.855	
15,900.00	7,071.27	6,990.18	6,988.86	47.67	148.86	-88.25	-1,773.85	-2,410.20	6,937.74	6,741.22	196.52	35.302	
16,000.00	7,070.94	6,989.87	6,988.56	47.97	148.85	-88.24	-1,773.85	-2,410.20	7,035.84	6,839.03	196.82	35.748	
16,100.00	7,070.61	6,989.57	6,988.26	48.27	148.84	-88.23	-1,773.84	-2,410.20	7,134.00	6,936.89	197.11	36.193	
16,200.00	7,070.28	6,989.27	6,987.96	48.57	148.83	-88.22	-1,773.84	-2,410.20	7,232.21	7,034.81	197.40	36.637	
16,300.00	7,069.95	6,988.97	6,987.65	48.87	148.83	-88.20	-1,773.84	-2,410.20	7,330.46	7,132.77	197.69	37.080	
16,400.00	7,069.63	6,988.67	6,987.35	49.17	148.82	-88.19	-1,773.83	-2,410.20	7,428.76	7,230.78	197.98	37.522	
16,419.92	7,069.56	6,988.61	6,987.29	49.23	148.82	-88.19	-1,773.83	-2,410.20	7,448.35	7,250.31	198.04	37.610	
16,500.00	7,069.30	6,988.37	6,987.05	49.47	148.81	-88.18	-1,773.83	-2,410.20	7,527.11	7,328.83	198.28	37.963	
16,591.83	7,069.00	6,988.09	6,986.78	49.75	148.80	-88.17	-1,773.82	-2,410.20	7,617.46	7,418.92	198.54	38.366	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-91.70	-31.69	-1,066.33	1,066.80				
100.00	100.00	112.51	112.51	0.23	1.11	-91.70	-31.69	-1,066.33	1,066.80	1,065.47	1.33	799.674	
173.24	173.24	185.75	185.75	0.45	2.41	-91.70	-31.60	-1,066.33	1,066.80	1,063.95	2.85	374.157	
200.00	200.00	212.49	212.49	0.53	2.88	-91.70	-31.62	-1,066.33	1,066.80	1,063.40	3.41	313.276	
300.00	300.00	312.52	312.51	0.83	4.74	-91.70	-31.69	-1,066.33	1,066.80	1,061.23	5.57	191.528	
330.00	330.00	342.51	342.51	0.92	5.33	-91.70	-31.61	-1,066.33	1,066.80	1,060.55	6.25	170.692	
400.00	400.00	412.45	412.45	1.13	6.71	-91.70	-31.68	-1,066.33	1,066.80	1,058.97	7.84	136.156	
500.00	500.00	512.54	512.51	1.43	9.09	-91.70	-31.69	-1,066.33	1,066.80	1,056.29	10.52	101.444	
600.00	599.98	612.51	612.47	1.73	11.50	64.01	-30.46	-1,066.33	1,066.00	1,052.77	13.23	80.586	
707.91	707.73	720.13	720.08	2.05	14.10	64.31	-30.89	-1,066.33	1,063.48	1,047.33	16.15	65.857	
800.00	799.58	812.24	812.09	2.33	16.26	64.59	-31.69	-1,066.33	1,060.61	1,042.02	18.59	57.051	
900.00	899.31	911.98	911.83	2.63	18.30	64.94	-31.69	-1,066.33	1,057.51	1,036.59	20.93	50.534	
1,000.00	999.05	1,011.71	1,011.54	2.93	20.34	65.36	-30.65	-1,066.33	1,054.45	1,031.19	23.26	45.327	
1,100.00	1,098.79	1,166.50	1,111.30	3.23	23.39	65.66	-31.69	-1,066.33	1,051.44	1,024.82	26.62	39.501	
1,200.00	1,198.52	1,211.23	1,211.04	3.53	24.13	66.02	-31.69	-1,066.33	1,048.47	1,020.81	27.66	37.907	
1,300.00	1,298.26	1,310.97	1,310.77	3.83	25.79	66.38	-31.69	-1,066.33	1,045.53	1,015.92	29.61	35.308	
1,400.00	1,398.00	1,410.72	1,410.52	4.13	27.44	66.76	-31.44	-1,066.33	1,042.65	1,011.08	31.56	33.032	
1,500.00	1,497.73	1,510.48	1,510.28	4.43	29.09	67.12	-31.52	-1,066.33	1,039.80	1,006.28	33.52	31.022	
1,600.00	1,597.47	1,610.26	1,610.06	4.73	30.74	67.48	-31.69	-1,066.33	1,036.99	1,001.52	35.47	29.235	
1,700.00	1,697.21	1,709.92	1,709.72	5.03	32.51	67.85	-31.69	-1,066.33	1,034.23	996.69	37.53	27.555	
1,800.00	1,796.94	1,809.66	1,809.46	5.33	34.27	68.22	-31.69	-1,066.33	1,031.51	991.91	39.60	26.050	
1,900.00	1,896.68	1,909.42	1,909.22	5.63	36.03	68.61	-31.43	-1,066.33	1,028.85	987.19	41.66	24.696	
2,000.00	1,996.42	2,009.21	2,009.01	5.93	37.80	68.98	-31.52	-1,066.33	1,026.22	982.49	43.73	23.469	
2,100.00	2,096.15	2,109.12	2,108.67	6.23	39.57	69.35	-31.69	-1,066.33	1,023.62	977.83	45.79	22.353	
2,200.00	2,195.89	2,208.62	2,208.40	6.53	41.52	69.73	-31.69	-1,066.33	1,021.08	973.03	48.05	21.250	
2,300.00	2,295.63	2,308.35	2,308.14	6.83	43.49	70.11	-31.69	-1,066.33	1,018.58	968.27	50.31	20.245	
2,400.00	2,395.36	2,408.17	2,407.96	7.13	45.45	70.52	-31.18	-1,066.33	1,016.18	963.60	52.58	19.327	
2,500.00	2,495.10	2,508.09	2,507.87	7.43	47.42	70.90	-31.36	-1,066.33	1,013.76	958.92	54.84	18.484	
2,600.00	2,594.84	2,608.03	2,607.81	7.73	49.38	71.27	-31.72	-1,066.33	1,011.37	954.26	57.11	17.709	
2,700.00	2,694.57	2,707.34	2,707.09	8.03	51.55	71.66	-31.69	-1,066.33	1,009.06	949.48	59.58	16.936	
2,800.00	2,794.31	2,807.08	2,806.82	8.33	53.72	72.05	-31.69	-1,066.33	1,006.80	944.75	62.05	16.226	
2,900.00	2,894.05	2,907.17	2,906.90	8.63	55.90	72.49	-30.79	-1,066.33	1,004.69	940.17	64.52	15.571	
3,000.00	2,993.78	3,007.43	3,007.16	8.93	58.08	72.86	-31.27	-1,066.33	1,002.47	935.46	67.00	14.962	
3,100.00	3,093.52	3,107.75	3,107.47	9.23	60.26	73.21	-32.12	-1,066.33	1,000.24	930.75	69.48	14.396	
3,200.00	3,193.26	3,206.12	3,205.77	9.53	62.10	73.63	-31.69	-1,066.33	998.22	926.59	71.63	13.936	
3,300.00	3,292.99	3,305.85	3,305.51	9.83	64.07	74.03	-31.69	-1,066.33	996.19	922.30	73.89	13.482	
3,400.00	3,392.73	3,406.25	3,405.88	10.13	66.04	74.50	-30.52	-1,066.33	994.40	918.23	76.17	13.055	
3,500.00	3,492.47	3,506.75	3,506.37	10.43	68.02	74.87	-31.16	-1,066.33	992.38	913.93	78.45	12.650	
3,600.00	3,592.20	3,607.33	3,606.93	10.73	70.01	75.21	-32.23	-1,066.33	990.33	909.59	80.73	12.267	
3,700.00	3,691.94	3,704.85	3,704.45	11.03	72.03	75.64	-31.69	-1,066.33	988.59	905.53	83.05	11.903	
3,800.00	3,791.68	3,804.61	3,804.21	11.33	74.06	76.06	-31.44	-1,066.33	986.85	901.46	85.39	11.557	
3,900.00	3,891.41	3,904.53	3,904.13	11.63	76.10	76.47	-31.51	-1,066.33	985.11	897.39	87.73	11.229	
4,000.00	3,991.15	4,033.88	4,003.66	11.93	78.78	76.86	-31.69	-1,066.33	983.40	892.70	90.70	10.842	
4,100.00	4,090.89	4,103.86	4,103.40	12.23	80.36	77.27	-31.69	-1,066.33	981.78	889.19	92.59	10.604	
4,200.00	4,190.62	4,203.60	4,203.14	12.53	82.62	77.69	-31.69	-1,066.33	980.20	885.06	95.14	10.302	
4,300.00	4,290.36	4,303.89	4,303.40	12.83	84.89	78.19	-30.19	-1,066.33	979.00	881.29	97.71	10.019	
4,400.00	4,390.10	4,590.81	4,402.61	13.13	91.48	78.52	-31.69	-1,066.33	977.20	872.60	104.60	9.342	
4,500.00	4,489.84	4,506.01	4,505.50	13.43	89.46	78.94	-31.81	-1,066.33	975.76	872.87	102.89	9.484	
4,600.00	4,589.57	4,602.66	4,602.09	13.73	91.76	79.35	-31.69	-1,066.33	974.41	868.93	105.48	9.238	
4,700.00	4,689.31	4,702.40	4,701.82	14.03	94.12	79.77	-31.69	-1,066.33	973.09	864.95	108.15	8.998	
4,800.00	4,789.05	4,802.13	4,801.56	14.33	96.48	80.19	-31.69	-1,066.33	971.83	861.02	110.81	8.770	
4,900.00	4,888.78	4,901.87	4,901.30	14.63	98.84	80.61	-31.69	-1,066.33	970.62	857.15	113.47	8.554	

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 750H - Slot B05
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 750H	**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
5,000.00	4,988.52	5,001.61	5,001.03	14.93	101.20	81.03	-31.69	-1,066.33	969.46	853.33	116.13	8.348	
5,100.00	5,088.26	5,101.34	5,100.77	15.23	103.56	81.45	-31.69	-1,066.33	968.35	849.56	118.79	8.152	
5,200.00	5,187.99	5,201.08	5,200.51	15.53	105.93	81.88	-31.69	-1,066.33	967.29	845.84	121.45	7.964	
5,300.00	5,287.73	5,300.82	5,300.24	15.83	108.29	82.30	-31.69	-1,066.33	966.29	842.18	124.11	7.786	
5,339.61	5,327.23	5,340.32	5,339.74	15.95	109.22	82.47	-31.69	-1,066.33	965.91	840.74	125.17	7.717	
5,400.00	5,387.47	5,400.74	5,400.13	16.13	110.65	82.93	-28.03	-1,066.33	966.43	839.65	126.78	7.623	
5,500.00	5,487.20	5,500.80	5,500.19	16.43	113.02	83.35	-28.14	-1,066.33	965.53	836.08	129.45	7.459	
5,600.00	5,586.94	5,600.88	5,600.26	16.73	115.39	83.77	-28.36	-1,066.33	964.65	832.53	132.12	7.301	
5,700.00	5,686.68	5,700.97	5,700.35	17.03	117.76	84.18	-28.68	-1,066.33	963.78	829.00	134.79	7.150	
5,800.00	5,786.41	5,801.08	5,800.45	17.33	120.13	84.59	-29.11	-1,066.33	962.94	825.48	137.46	7.005	
5,900.00	5,886.15	5,901.21	5,900.57	17.63	122.50	84.99	-29.64	-1,066.33	962.10	821.97	140.13	6.866	
6,000.00	5,985.89	6,001.35	6,000.70	17.93	124.87	85.38	-30.27	-1,066.33	961.28	818.48	142.80	6.732	
6,100.00	6,085.62	6,101.50	6,100.85	18.23	127.25	85.77	-31.00	-1,066.33	960.47	814.99	145.47	6.602	
6,200.00	6,185.36	6,201.67	6,201.01	18.53	129.62	86.16	-31.84	-1,066.33	959.66	811.52	148.14	6.478	
6,300.00	6,285.10	6,301.75	6,300.66	18.83	132.01	86.62	-31.32	-1,066.33	959.39	808.56	150.83	6.361	
6,400.00	6,384.83	6,399.66	6,398.54	19.13	134.40	87.03	-31.52	-1,066.33	958.91	805.38	153.53	6.246	
6,500.00	6,484.57	6,501.32	6,500.13	19.43	137.51	87.48	-31.36	-1,066.33	958.62	801.69	156.93	6.109	
6,559.90	6,544.31	6,558.08	6,556.82	19.61	139.53	87.71	-31.69	-1,066.33	958.31	799.17	159.13	6.022	
6,600.00	6,584.23	6,600.48	6,599.20	19.73	141.07	55.84	-30.93	-1,066.33	957.19	796.39	160.80	5.953	
6,650.00	6,633.60	6,659.02	6,657.69	19.88	143.20	42.38	-32.04	-1,066.33	951.47	788.40	163.07	5.835	
6,700.00	6,682.15	6,696.10	6,694.66	20.03	144.52	37.26	-31.69	-1,066.33	942.23	777.68	164.55	5.726	
6,750.00	6,729.52	6,746.35	6,744.87	20.18	146.33	35.33	-30.66	-1,066.33	929.52	763.02	166.50	5.583	
6,800.00	6,775.36	6,818.47	6,787.87	20.33	148.88	34.76	-31.69	-1,066.33	912.30	743.10	169.20	5.392	
6,850.00	6,819.31	6,833.48	6,831.82	20.48	149.38	35.31	-31.69	-1,066.33	892.02	722.16	169.85	5.252	
6,900.00	6,861.04	6,875.21	6,873.55	20.63	150.77	36.69	-31.69	-1,066.33	868.47	697.07	171.40	5.067	
6,950.00	6,900.22	6,916.08	6,914.39	20.78	152.14	38.96	-30.59	-1,066.33	842.43	669.51	172.91	4.872	
7,000.00	6,936.57	6,956.46	6,954.75	20.93	153.49	42.04	-30.97	-1,066.33	813.06	638.65	174.41	4.662	
7,050.00	6,969.80	7,003.83	6,982.32	21.08	155.05	45.47	-31.69	-1,066.33	781.13	605.00	176.13	4.435	
7,100.00	6,999.67	7,014.04	7,012.18	21.23	155.38	50.03	-31.69	-1,066.33	747.61	571.01	176.60	4.233	
7,150.00	7,025.94	7,040.31	7,038.45	21.38	156.21	55.40	-31.69	-1,066.33	712.58	535.00	177.59	4.013	
7,200.00	7,048.41	7,062.78	7,060.93	21.53	156.93	61.46	-31.69	-1,066.33	676.53	498.08	178.45	3.791	
7,250.00	7,066.92	7,081.29	7,079.44	21.68	157.51	67.96	-31.69	-1,066.33	639.98	460.79	179.19	3.571	
7,300.00	7,081.33	7,095.70	7,093.84	21.83	157.97	74.52	-31.69	-1,066.33	603.51	423.71	179.80	3.357	
7,350.00	7,091.51	7,105.88	7,104.03	21.98	158.29	80.72	-31.69	-1,066.33	567.77	387.50	180.27	3.150	
7,400.00	7,097.41	7,111.78	7,109.92	22.13	158.48	86.16	-31.69	-1,066.33	533.44	352.83	180.61	2.954	
7,444.73	7,099.00	7,113.37	7,111.51	22.27	158.53	90.15	-31.69	-1,066.33	504.52	323.73	180.79	2.791	
7,500.00	7,098.82	7,113.19	7,111.33	22.44	158.53	90.12	-31.69	-1,066.33	472.05	291.09	180.95	2.609	
7,600.00	7,098.49	7,112.86	7,111.00	22.74	158.52	90.08	-31.69	-1,066.33	425.42	244.17	181.24	2.347	
7,700.00	7,098.16	7,112.53	7,110.68	23.04	158.51	90.03	-31.69	-1,066.33	398.91	217.38	181.53	2.197	
7,759.25	7,097.97	7,112.34	7,110.48	23.22	158.50	90.00	-31.69	-1,066.33	394.49	212.78	181.70	2.171	CC, ES, SF
7,800.00	7,097.83	7,112.20	7,110.35	23.34	158.50	89.98	-31.69	-1,066.33	396.59	214.76	181.82	2.181	
7,900.00	7,097.51	7,111.88	7,110.02	23.64	158.49	89.93	-31.69	-1,066.33	418.84	236.73	182.11	2.300	
8,000.00	7,097.18	7,111.55	7,109.69	23.94	158.47	89.89	-31.69	-1,066.33	462.15	279.74	182.41	2.534	
8,100.00	7,096.85	7,111.22	7,109.36	24.24	158.46	89.84	-31.69	-1,066.33	521.28	338.58	182.70	2.853	
8,200.00	7,096.52	7,110.89	7,109.04	24.54	158.45	89.79	-31.69	-1,066.33	591.51	408.52	182.99	3.232	
8,300.00	7,096.19	7,110.56	7,108.71	24.84	158.44	89.74	-31.69	-1,066.33	669.35	486.07	183.28	3.652	
8,400.00	7,095.87	7,110.24	7,108.38	25.14	158.43	89.69	-31.69	-1,066.33	752.45	568.88	183.57	4.099	
8,500.00	7,095.54	7,109.91	7,108.05	25.44	158.42	89.65	-31.69	-1,066.33	839.24	655.38	183.86	4.564	
8,600.00	7,095.21	7,109.58	7,107.72	25.74	158.41	89.60	-31.69	-1,066.33	928.70	744.54	184.15	5.043	
8,700.00	7,094.88	7,109.25	7,107.40	26.04	158.40	89.55	-31.69	-1,066.33	1,020.11	835.67	184.44	5.531	
8,800.00	7,094.55	7,108.92	7,107.07	26.35	158.39	89.50	-31.69	-1,066.33	1,113.00	928.27	184.73	6.025	
8,900.00	7,094.23	7,108.60	7,106.74	26.65	158.38	89.46	-31.69	-1,066.33	1,207.03	1,022.00	185.03	6.524	

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 750H - Slot B05
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 750H	**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
9,000.00	7,093.90	7,108.27	7,106.41	26.95	158.37	89.41	-31.69	-1,066.33	1,301.95	1,116.63	185.32	7.026	
9,100.00	7,093.57	7,107.94	7,106.08	27.25	158.36	89.36	-31.69	-1,066.33	1,397.58	1,211.97	185.61	7.530	
9,200.00	7,093.24	7,107.61	7,105.76	27.55	158.35	89.31	-31.69	-1,066.33	1,493.78	1,307.88	185.90	8.036	
9,300.00	7,092.91	7,107.28	7,105.43	27.85	158.34	89.27	-31.69	-1,066.33	1,590.44	1,404.26	186.19	8.542	
9,400.00	7,092.59	7,106.96	7,105.10	28.15	158.33	89.22	-31.69	-1,066.33	1,687.50	1,501.02	186.48	9.049	
9,500.00	7,092.26	7,106.63	7,104.77	28.45	158.32	89.17	-31.69	-1,066.33	1,784.88	1,598.12	186.77	9.557	
9,600.00	7,091.93	7,106.30	7,104.44	28.75	158.31	89.12	-31.69	-1,066.33	1,882.54	1,695.48	187.06	10.064	
9,700.00	7,091.60	7,105.97	7,104.12	29.05	158.30	89.08	-31.69	-1,066.33	1,980.43	1,793.08	187.35	10.571	
9,800.00	7,091.27	7,105.64	7,103.79	29.35	158.29	89.03	-31.69	-1,066.33	2,078.52	1,890.88	187.64	11.077	
9,900.00	7,090.95	7,105.32	7,103.46	29.65	158.28	88.98	-31.69	-1,066.33	2,176.78	1,988.86	187.93	11.583	
10,000.00	7,090.62	7,104.99	7,103.13	29.95	158.27	88.93	-31.69	-1,066.33	2,275.20	2,086.98	188.22	12.088	
10,100.00	7,090.29	7,104.66	7,102.80	30.25	158.26	88.88	-31.69	-1,066.33	2,373.75	2,185.24	188.51	12.592	
10,200.00	7,089.96	7,104.33	7,102.48	30.55	158.25	88.84	-31.69	-1,066.33	2,472.41	2,283.62	188.80	13.096	
10,300.00	7,089.63	7,104.00	7,102.15	30.85	158.24	88.79	-31.69	-1,066.33	2,571.18	2,382.09	189.09	13.598	
10,400.00	7,089.31	7,103.68	7,101.82	31.15	158.22	88.74	-31.69	-1,066.33	2,670.04	2,480.66	189.38	14.099	
10,500.00	7,088.98	7,103.35	7,101.49	31.45	158.21	88.69	-31.69	-1,066.33	2,768.98	2,579.31	189.67	14.599	
10,600.00	7,088.65	7,103.02	7,101.16	31.75	158.20	88.65	-31.69	-1,066.33	2,868.00	2,678.04	189.96	15.098	
10,700.00	7,088.32	7,102.69	7,100.84	32.06	158.19	88.60	-31.69	-1,066.33	2,967.08	2,776.83	190.25	15.596	
10,800.00	7,087.99	7,102.36	7,100.51	32.36	158.18	88.55	-31.69	-1,066.33	3,066.22	2,875.68	190.54	16.092	
10,900.00	7,087.67	7,102.04	7,100.18	32.66	158.17	88.50	-31.69	-1,066.33	3,165.41	2,974.58	190.83	16.588	
11,000.00	7,087.34	7,101.71	7,099.85	32.96	158.16	88.46	-31.69	-1,066.33	3,264.66	3,073.54	191.12	17.082	
11,100.00	7,087.01	7,101.38	7,099.52	33.26	158.15	88.41	-31.69	-1,066.33	3,363.94	3,172.54	191.41	17.575	
11,200.00	7,086.68	7,101.05	7,099.20	33.56	158.14	88.36	-31.69	-1,066.33	3,463.27	3,271.58	191.70	18.066	
11,300.00	7,086.35	7,100.72	7,098.87	33.86	158.13	88.31	-31.69	-1,066.33	3,562.64	3,370.65	191.99	18.557	
11,400.00	7,086.03	7,100.40	7,098.54	34.16	158.12	88.27	-31.69	-1,066.33	3,662.04	3,469.76	192.28	19.046	
11,500.00	7,085.70	7,100.07	7,098.21	34.46	158.11	88.22	-31.69	-1,066.33	3,761.48	3,568.91	192.57	19.533	
11,600.00	7,085.37	7,099.74	7,097.88	34.76	158.10	88.17	-31.69	-1,066.33	3,860.94	3,668.08	192.86	20.020	
11,700.00	7,085.04	7,099.41	7,097.56	35.06	158.09	88.12	-31.69	-1,066.33	3,960.43	3,767.28	193.15	20.505	
11,800.00	7,084.71	7,099.08	7,097.23	35.36	158.08	88.08	-31.69	-1,066.33	4,059.94	3,866.50	193.44	20.988	
11,900.00	7,084.39	7,098.76	7,096.90	35.66	158.07	88.03	-31.69	-1,066.33	4,159.48	3,965.75	193.73	21.471	
12,000.00	7,084.06	7,098.43	7,096.57	35.96	158.06	87.98	-31.69	-1,066.33	4,259.04	4,065.02	194.02	21.952	
12,100.00	7,083.73	7,098.10	7,096.24	36.26	158.05	87.93	-31.69	-1,066.33	4,358.62	4,164.31	194.31	22.432	
12,200.00	7,083.40	7,097.77	7,095.92	36.56	158.04	87.89	-31.69	-1,066.33	4,458.22	4,263.62	194.60	22.910	
12,300.00	7,083.07	7,097.44	7,095.59	36.86	158.03	87.84	-31.69	-1,066.33	4,557.83	4,362.94	194.89	23.387	
12,400.00	7,082.75	7,097.12	7,095.26	37.16	158.02	87.79	-31.69	-1,066.33	4,657.46	4,462.29	195.18	23.863	
12,500.00	7,082.42	7,096.79	7,094.93	37.46	158.01	87.74	-31.69	-1,066.33	4,757.11	4,561.64	195.47	24.337	
12,600.00	7,082.09	7,096.46	7,094.60	37.76	158.00	87.70	-31.69	-1,066.33	4,856.77	4,661.02	195.76	24.810	
12,700.00	7,081.76	7,096.13	7,094.28	38.06	157.99	87.65	-31.69	-1,066.33	4,956.45	4,760.40	196.05	25.282	
12,800.00	7,081.43	7,095.80	7,093.95	38.36	157.97	87.60	-31.69	-1,066.33	5,056.14	4,859.80	196.34	25.752	
12,900.00	7,081.11	7,095.48	7,093.62	38.66	157.96	87.55	-31.69	-1,066.33	5,155.84	4,959.21	196.63	26.221	
13,000.00	7,080.78	7,095.15	7,093.29	38.96	157.95	87.50	-31.69	-1,066.33	5,255.55	5,058.63	196.92	26.689	
13,100.00	7,080.45	7,094.82	7,092.96	39.26	157.94	87.46	-31.69	-1,066.33	5,355.27	5,158.07	197.21	27.156	
13,200.00	7,080.12	7,094.49	7,092.64	39.56	157.93	87.41	-31.69	-1,066.33	5,455.01	5,257.51	197.50	27.621	
13,300.00	7,079.79	7,094.16	7,092.31	39.86	157.92	87.36	-31.69	-1,066.33	5,554.75	5,356.96	197.79	28.085	
13,400.00	7,079.47	7,093.84	7,091.98	40.16	157.91	87.31	-31.69	-1,066.33	5,654.50	5,456.42	198.08	28.547	
13,500.00	7,079.14	7,093.51	7,091.65	40.46	157.90	87.27	-31.69	-1,066.33	5,754.26	5,555.89	198.37	29.008	
13,600.00	7,078.81	7,093.18	7,091.32	40.77	157.89	87.22	-31.69	-1,066.33	5,854.03	5,655.37	198.66	29.468	
13,700.00	7,078.48	7,092.85	7,091.00	41.07	157.88	87.17	-31.69	-1,066.33	5,953.80	5,754.86	198.95	29.927	
13,800.00	7,078.15	7,092.52	7,090.67	41.37	157.87	87.12	-31.69	-1,066.33	6,053.59	5,854.35	199.24	30.384	
13,900.00	7,077.83	7,092.20	7,090.34	41.67	157.86	87.08	-31.69	-1,066.33	6,153.38	5,953.85	199.53	30.840	
14,000.00	7,077.50	7,091.87	7,090.01	41.97	157.85	87.03	-31.69	-1,066.33	6,253.17	6,053.36	199.81	31.295	
14,100.00	7,077.17	7,091.54	7,089.68	42.27	157.84	86.98	-31.69	-1,066.33	6,352.98	6,152.87	200.10	31.748	

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 750H - Slot B05
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 750H	**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
14,200.00	7,076.84	7,091.21	7,089.35	42.57	157.83	86.93	-31.69	-1,066.33	6,452.79	6,252.39	200.39	32.200	
14,300.00	7,076.51	7,090.88	7,089.03	42.87	157.82	86.89	-31.69	-1,066.33	6,552.60	6,351.92	200.68	32.651	
14,400.00	7,076.19	7,090.56	7,088.70	43.17	157.81	86.84	-31.69	-1,066.33	6,652.42	6,451.45	200.97	33.101	
14,500.00	7,075.86	7,090.23	7,088.37	43.47	157.80	86.79	-31.69	-1,066.33	6,752.25	6,550.99	201.26	33.549	
14,600.00	7,075.53	7,089.90	7,088.04	43.77	157.79	86.74	-31.69	-1,066.33	6,852.08	6,650.53	201.55	33.996	
14,700.00	7,075.20	7,089.57	7,087.71	44.07	157.78	86.70	-31.69	-1,066.33	6,951.92	6,750.07	201.84	34.442	
14,800.00	7,074.87	7,089.24	7,087.39	44.37	157.77	86.65	-31.69	-1,066.33	7,051.76	6,849.62	202.13	34.887	
14,900.00	7,074.55	7,088.92	7,087.06	44.67	157.76	86.60	-31.69	-1,066.33	7,151.60	6,949.18	202.42	35.330	
15,000.00	7,074.22	7,088.59	7,086.73	44.97	157.75	86.55	-31.69	-1,066.33	7,251.45	7,048.74	202.71	35.772	
15,100.00	7,073.89	7,088.26	7,086.40	45.27	157.74	86.51	-31.69	-1,066.33	7,351.30	7,148.30	203.00	36.213	
15,200.00	7,073.56	7,087.93	7,086.07	45.57	157.72	86.46	-31.69	-1,066.33	7,451.16	7,247.87	203.29	36.652	
15,300.00	7,073.23	7,087.60	7,085.75	45.87	157.71	86.41	-31.69	-1,066.33	7,551.02	7,347.44	203.58	37.091	
15,400.00	7,072.91	7,087.28	7,085.42	46.17	157.70	86.36	-31.69	-1,066.33	7,650.89	7,447.02	203.87	37.528	
15,500.00	7,072.58	7,086.95	7,085.09	46.47	157.69	86.32	-31.69	-1,066.33	7,750.76	7,546.59	204.16	37.964	
15,600.00	7,072.25	7,086.62	7,084.76	46.77	157.68	86.27	-31.69	-1,066.33	7,850.63	7,646.18	204.45	38.398	
15,700.00	7,071.92	7,086.29	7,084.43	47.07	157.67	86.22	-31.69	-1,066.33	7,950.50	7,745.76	204.74	38.832	
15,800.00	7,071.59	7,085.96	7,084.11	47.37	157.66	86.17	-31.69	-1,066.33	8,050.38	7,845.35	205.03	39.264	
15,900.00	7,071.27	7,085.64	7,083.78	47.67	157.65	86.13	-31.69	-1,066.33	8,150.26	7,944.94	205.32	39.695	
16,000.00	7,070.94	7,085.31	7,083.45	47.97	157.64	86.08	-31.69	-1,066.33	8,250.14	8,044.53	205.61	40.125	
16,100.00	7,070.61	7,084.98	7,083.12	48.27	157.63	86.03	-31.69	-1,066.33	8,350.03	8,144.13	205.90	40.554	
16,200.00	7,070.28	7,084.65	7,082.79	48.57	157.62	85.99	-31.69	-1,066.33	8,449.92	8,243.73	206.19	40.981	
16,300.00	7,069.95	7,084.32	7,082.47	48.87	157.61	85.94	-31.69	-1,066.33	8,549.81	8,343.33	206.48	41.407	
16,400.00	7,069.63	7,084.00	7,082.14	49.17	157.60	85.89	-31.69	-1,066.33	8,649.71	8,442.94	206.77	41.832	
16,419.92	7,069.56	7,083.93	7,082.07	49.23	157.60	85.88	-31.69	-1,066.33	8,669.61	8,462.78	206.83	41.917	
16,500.00	7,069.30	7,083.67	7,081.81	49.47	157.59	85.84	-31.69	-1,066.33	8,749.60	8,542.54	207.06	42.256	
16,591.83	7,069.00	7,083.37	7,081.51	49.75	157.58	85.80	-31.69	-1,066.33	8,841.34	8,634.01	207.33	42.645	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	97.60	-1,126.21	8,440.46	8,515.27				
100.00	100.00	129.20	129.20	0.23	0.10	97.60	-1,126.21	8,440.48	8,515.28	8,514.97	0.31	N/A	
200.00	200.00	227.89	227.89	0.53	0.23	97.60	-1,126.20	8,440.49	8,515.30	8,514.56	0.73	N/A	
300.00	300.00	327.74	327.74	0.83	0.36	97.60	-1,126.19	8,440.53	8,515.33	8,514.17	1.15	7,374.910	
400.00	400.00	426.57	426.57	1.13	0.49	97.60	-1,126.17	8,440.57	8,515.37	8,513.80	1.57	5,409.393	
500.00	500.00	525.26	525.26	1.43	0.62	97.60	-1,126.15	8,440.63	8,515.43	8,513.44	1.99	4,271.490 ES	
600.00	599.98	626.07	623.93	1.73	0.75	-106.86	-1,126.13	8,440.70	8,516.00	8,513.58	2.42	3,525.514	
707.91	707.73	731.34	731.34	2.05	0.89	-106.86	-1,126.09	8,440.79	8,517.77	8,514.90	2.87	2,971.176	
800.00	799.58	822.20	822.20	2.33	1.01	-106.90	-1,126.06	8,440.88	8,519.79	8,516.54	3.25	2,618.875	
900.00	899.31	920.62	920.62	2.63	1.14	-106.95	-1,126.02	8,440.98	8,522.01	8,518.34	3.67	2,320.420	
1,000.00	999.05	1,019.33	1,019.33	2.93	1.27	-107.00	-1,125.98	8,441.10	8,524.24	8,520.15	4.09	2,082.931	
1,100.00	1,098.79	1,118.76	1,118.76	3.23	1.40	-107.04	-1,125.93	8,441.23	8,526.49	8,521.98	4.51	1,889.248	
1,200.00	1,198.52	1,217.17	1,217.17	3.53	1.53	-107.09	-1,125.88	8,441.37	8,528.76	8,523.83	4.93	1,729.013	
1,300.00	1,298.26	1,315.58	1,315.58	3.83	1.66	-107.14	-1,125.82	8,441.52	8,531.05	8,525.69	5.35	1,593.884	
1,400.00	1,398.00	1,414.54	1,414.54	4.13	1.79	-107.18	-1,125.76	8,441.68	8,533.35	8,527.57	5.77	1,478.220	
1,500.00	1,497.73	1,513.71	1,513.71	4.43	1.92	-107.23	-1,125.70	8,441.86	8,535.67	8,529.47	6.19	1,378.189	
1,600.00	1,597.47	1,612.12	1,612.12	4.73	2.05	-107.28	-1,125.63	8,442.05	8,538.01	8,531.39	6.61	1,291.055	
1,700.00	1,697.21	1,710.52	1,710.52	5.03	2.18	-107.32	-1,125.55	8,442.24	8,540.36	8,533.32	7.03	1,214.315	
1,800.00	1,796.94	1,809.73	1,809.73	5.33	2.31	-107.37	-1,125.48	8,442.46	8,542.73	8,535.27	7.45	1,146.064	
1,900.00	1,896.68	1,908.65	1,908.64	5.63	2.44	-107.42	-1,125.39	8,442.68	8,545.12	8,537.24	7.87	1,085.153	
2,000.00	1,996.42	2,007.04	2,007.04	5.93	2.57	-107.46	-1,125.31	8,442.91	8,547.52	8,539.22	8.29	1,030.490	
2,100.00	2,096.15	2,105.44	2,105.44	6.23	2.70	-107.51	-1,125.22	8,443.16	8,549.94	8,541.22	8.71	981.092	
2,200.00	2,195.89	2,204.90	2,204.90	6.53	2.83	-107.55	-1,125.12	8,443.42	8,552.38	8,543.24	9.14	936.101	
2,300.00	2,295.63	2,303.56	2,303.55	6.83	2.96	-107.60	-1,125.02	8,443.69	8,554.83	8,545.28	9.56	895.166	
2,400.00	2,395.36	2,401.95	2,401.94	7.13	3.09	-107.65	-1,124.91	8,443.97	8,557.31	8,547.33	9.98	857.705	
2,500.00	2,495.10	2,500.34	2,500.33	7.43	3.22	-107.69	-1,124.81	8,444.26	8,559.80	8,549.40	10.40	823.270	
2,600.00	2,594.84	2,600.06	2,600.05	7.73	3.35	-107.74	-1,124.69	8,444.57	8,562.30	8,551.48	10.82	791.390	
2,700.00	2,694.57	2,701.56	2,698.44	8.03	3.48	-107.79	-1,124.57	8,444.89	8,564.83	8,553.59	11.24	761.755	
2,800.00	2,794.31	2,796.83	2,796.82	8.33	3.61	-107.83	-1,124.45	8,445.22	8,567.37	8,555.71	11.66	734.749	
2,900.00	2,894.05	2,895.45	2,895.45	8.63	3.74	-107.88	-1,124.32	8,445.56	8,569.93	8,557.85	12.08	709.365	
3,000.00	2,993.78	2,994.93	2,994.92	8.93	3.87	-107.93	-1,124.19	8,445.92	8,572.51	8,560.00	12.50	685.631	
3,100.00	3,093.52	3,093.31	3,093.30	9.23	4.00	-107.97	-1,124.06	8,446.28	8,575.10	8,562.18	12.92	663.514	
3,200.00	3,193.26	3,191.69	3,191.68	9.53	4.13	-108.02	-1,123.92	8,446.66	8,577.71	8,564.36	13.34	642.790	
3,300.00	3,292.99	3,290.57	3,290.56	9.83	4.26	-108.07	-1,123.77	8,447.05	8,580.34	8,566.57	13.77	623.303	
3,400.00	3,392.73	3,389.78	3,389.77	10.13	4.39	-108.11	-1,123.62	8,447.45	8,582.98	8,568.80	14.19	604.957	
3,500.00	3,492.47	3,488.15	3,488.14	10.43	4.52	-108.16	-1,123.47	8,447.86	8,585.65	8,571.04	14.61	587.709	
3,600.00	3,592.20	3,586.52	3,586.51	10.73	4.65	-108.21	-1,123.31	8,448.29	8,588.32	8,573.30	15.03	571.426	
3,700.00	3,691.94	3,685.66	3,685.65	11.03	4.78	-108.26	-1,123.15	8,448.73	8,591.02	8,575.57	15.45	555.996	
3,800.00	3,791.68	3,784.60	3,784.59	11.33	4.91	-108.30	-1,122.98	8,449.18	8,593.74	8,577.87	15.87	541.393	
3,900.00	3,891.41	3,882.97	3,882.95	11.63	5.04	-108.35	-1,122.81	8,449.64	8,596.47	8,580.18	16.29	527.569	
4,000.00	3,991.15	3,981.33	3,981.32	11.93	5.17	-108.40	-1,122.64	8,450.11	8,599.22	8,582.50	16.72	514.440	
4,100.00	4,090.89	4,071.87	4,071.85	12.23	5.29	-108.44	-1,122.48	8,450.60	8,602.04	8,584.91	17.13	502.198	
4,200.00	4,190.62	4,178.54	4,178.52	12.53	5.43	-108.49	-1,122.22	8,451.17	8,604.85	8,587.29	17.56	490.141	
4,300.00	4,290.36	4,281.33	4,281.31	12.83	5.56	-108.54	-1,122.09	8,451.55	8,607.51	8,589.53	17.98	478.735	
4,400.00	4,390.10	4,400.00	4,399.98	13.13	5.70	-108.59	-1,122.02	8,451.86	8,610.06	8,591.63	18.43	467.292	
4,500.00	4,489.84	4,520.30	4,520.28	13.43	5.84	-108.65	-1,122.08	8,452.13	8,612.63	8,593.76	18.87	456.336	
4,600.00	4,589.57	4,610.51	4,610.49	13.73	5.87	-108.69	-1,122.31	8,452.24	8,615.09	8,595.85	19.25	447.612	
4,700.00	4,689.31	4,721.64	4,721.61	14.03	5.89	-108.74	-1,122.61	8,452.25	8,617.46	8,597.85	19.60	439.579	
4,800.00	4,789.05	4,814.21	4,814.19	14.33	5.90	-108.78	-1,122.89	8,452.26	8,619.84	8,599.88	19.96	431.951	
4,900.00	4,888.78	4,928.17	4,928.14	14.63	5.91	-108.83	-1,123.28	8,452.22	8,622.18	8,601.87	20.31	424.623	
5,000.00	4,988.52	5,031.84	5,031.81	14.93	5.91	-108.87	-1,123.71	8,452.08	8,624.43	8,603.80	20.63	418.044	
5,100.00	5,088.26	5,121.41	5,121.39	15.23	5.90	-108.91	-1,124.12	8,451.93	8,626.67	8,605.72	20.95	411.761	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,243.56	5,243.53	15.53	5.90	-108.96	-1,124.69	8,451.73	8,628.91	8,607.63	21.28	405.510	
5,300.00	5,287.73	5,351.17	5,351.14	15.83	5.88	-109.00	-1,125.29	8,451.32	8,630.95	8,609.37	21.58	399.888	
5,400.00	5,387.47	5,441.77	5,441.74	16.13	5.87	-109.04	-1,125.82	8,451.00	8,633.02	8,611.13	21.89	394.346	
5,500.00	5,487.20	5,559.29	5,559.26	16.43	5.85	-109.09	-1,126.46	8,450.50	8,635.02	8,612.83	22.19	389.078	
5,600.00	5,586.94	5,653.23	5,653.19	16.73	5.83	-109.13	-1,126.92	8,450.05	8,636.97	8,614.48	22.49	384.036	
5,700.00	5,686.68	5,749.12	5,749.08	17.03	5.82	-109.17	-1,127.44	8,449.60	8,638.94	8,616.15	22.79	379.069	
5,800.00	5,786.41	5,878.48	5,878.43	17.33	5.81	-109.22	-1,128.31	8,448.80	8,640.77	8,617.68	23.09	374.208	
5,900.00	5,886.15	5,959.71	5,959.66	17.63	5.80	-109.26	-1,128.86	8,448.19	8,642.50	8,619.11	23.39	369.514	
6,000.00	5,985.89	6,103.12	6,103.06	17.93	5.79	-109.31	-1,129.87	8,447.19	8,644.31	8,620.62	23.69	364.836	
6,100.00	6,085.62	6,193.60	6,193.54	18.23	5.80	-109.35	-1,130.58	8,446.56	8,646.06	8,622.06	24.01	360.168	
6,200.00	6,185.36	6,200.00	6,271.02	18.53	5.80	-109.38	-1,131.19	8,446.13	8,647.92	8,623.62	24.31	355.796	
6,300.00	6,285.10	6,344.60	6,344.53	18.83	5.82	-109.41	-1,131.95	8,445.71	8,649.85	8,625.22	24.64	351.091	
6,400.00	6,384.83	6,450.00	6,449.92	19.13	5.84	-109.45	-1,133.12	8,445.19	8,651.88	8,626.91	24.97	346.514	
6,500.00	6,484.57	6,539.11	6,539.02	19.43	5.88	-109.48	-1,134.39	8,444.79	8,653.96	8,628.66	25.30	342.027	
6,559.90	6,544.31	6,559.90	6,601.12	19.61	5.89	-109.50	-1,135.24	8,444.56	8,655.27	8,629.78	25.49	339.531	
6,600.00	6,584.23	6,625.00	6,624.90	19.73	5.91	-141.67	-1,135.55	8,444.48	8,657.55	8,631.92	25.64	337.696	
6,650.00	6,633.60	6,670.18	6,670.07	19.88	5.93	-155.66	-1,136.28	8,444.38	8,664.37	8,638.56	25.81	335.694	
6,700.00	6,682.15	6,713.19	6,713.08	20.03	5.96	-161.46	-1,136.85	8,444.29	8,675.45	8,649.47	25.98	333.902	
6,750.00	6,729.52	6,769.51	6,769.39	20.18	5.99	-164.50	-1,137.62	8,444.17	8,690.72	8,664.56	26.16	332.215	
6,800.00	6,775.36	6,790.41	6,790.29	20.33	6.00	-166.25	-1,137.85	8,444.16	8,710.13	8,683.81	26.32	330.905	
6,850.00	6,819.31	6,852.96	6,852.84	20.48	6.04	-167.35	-1,138.72	8,444.15	8,733.52	8,707.01	26.51	329.450	
6,900.00	6,861.04	6,877.64	6,877.51	20.63	6.05	-167.99	-1,139.10	8,444.15	8,760.63	8,733.95	26.67	328.432	
6,950.00	6,900.22	6,932.42	6,932.29	20.78	6.09	-168.33	-1,139.91	8,444.09	8,791.26	8,764.40	26.86	327.358	
7,000.00	6,936.57	6,956.63	6,956.50	20.93	6.10	-168.37	-1,140.26	8,444.07	8,825.20	8,798.18	27.02	326.623	
7,050.00	6,969.80	7,019.95	7,019.80	21.08	6.14	-168.22	-1,141.19	8,444.02	8,862.23	8,835.02	27.21	325.749	
7,100.00	6,999.67	7,034.56	7,034.41	21.23	6.15	-167.72	-1,141.41	8,443.97	8,901.94	8,874.58	27.36	325.316	
7,150.00	7,025.94	7,050.00	7,049.86	21.38	6.16	-166.86	-1,141.62	8,443.97	8,944.19	8,916.67	27.52	324.968	
7,200.00	7,048.41	7,200.00	7,100.74	21.53	6.25	-165.59	-1,142.25	8,443.87	8,988.54	8,960.80	27.74	324.013 SF	
7,250.00	7,066.92	7,109.48	7,109.33	21.68	6.20	-163.39	-1,142.35	8,443.84	9,034.69	9,006.84	27.85	324.358	
7,300.00	7,081.33	7,114.46	7,114.31	21.83	6.20	-159.56	-1,142.40	8,443.83	9,082.33	9,054.32	28.01	324.286	
7,350.00	7,091.51	7,125.00	7,124.85	21.98	6.21	-152.13	-1,142.52	8,443.83	9,131.08	9,102.92	28.16	324.221	
7,400.00	7,097.41	7,125.00	7,124.85	22.13	6.21	-133.23	-1,142.52	8,443.83	9,180.55	9,152.24	28.31	324.246	
7,444.73	7,099.00	7,125.00	7,124.85	22.27	6.21	-87.05	-1,142.52	8,443.83	9,225.12	9,196.67	28.45	324.279	
7,500.00	7,098.82	7,125.00	7,124.85	22.44	6.21	-87.05	-1,142.52	8,443.83	9,280.24	9,251.62	28.61	324.323	
7,600.00	7,098.49	7,125.00	7,124.85	22.74	6.21	-87.05	-1,142.52	8,443.83	9,379.97	9,351.06	28.91	324.401	
7,700.00	7,098.16	7,125.00	7,124.85	23.04	6.21	-87.05	-1,142.52	8,443.83	9,479.72	9,450.50	29.22	324.477	
7,800.00	7,097.83	7,125.00	7,124.85	23.34	6.21	-87.05	-1,142.52	8,443.83	9,579.46	9,549.95	29.52	324.552	
7,900.00	7,097.51	7,125.00	7,124.85	23.64	6.21	-87.05	-1,142.52	8,443.83	9,679.22	9,649.40	29.82	324.627	
8,000.00	7,097.18	7,125.00	7,124.85	23.94	6.21	-87.05	-1,142.52	8,443.83	9,778.98	9,748.86	30.12	324.700	
8,100.00	7,096.85	7,125.00	7,124.85	24.24	6.21	-87.05	-1,142.52	8,443.83	9,878.74	9,848.32	30.42	324.771	
8,200.00	7,096.52	7,125.00	7,124.85	24.54	6.21	-87.05	-1,142.52	8,443.83	9,978.51	9,947.79	30.72	324.842	
8,300.00	7,096.19	7,125.00	7,124.85	24.84	6.21	-87.05	-1,142.52	8,443.83	10,078.28	10,047.26	31.02	324.912	
8,400.00	7,095.87	7,125.00	7,124.85	25.14	6.21	-87.05	-1,142.52	8,443.83	10,178.06	10,146.74	31.32	324.980	
8,500.00	7,095.54	7,125.00	7,124.85	25.44	6.21	-87.05	-1,142.52	8,443.83	10,277.84	10,246.22	31.62	325.048	
8,600.00	7,095.21	7,125.00	7,124.85	25.74	6.21	-87.05	-1,142.52	8,443.83	10,377.62	10,345.70	31.92	325.115	
8,700.00	7,094.88	7,125.00	7,124.85	26.04	6.21	-87.05	-1,142.52	8,443.83	10,477.41	10,445.19	32.22	325.180	
8,800.00	7,094.55	7,125.00	7,124.85	26.35	6.21	-87.05	-1,142.52	8,443.83	10,577.21	10,544.69	32.52	325.245	
8,900.00	7,094.23	7,125.00	7,124.85	26.65	6.21	-87.05	-1,142.52	8,443.83	10,677.00	10,644.18	32.82	325.309	
9,000.00	7,093.90	7,125.00	7,124.85	26.95	6.21	-87.05	-1,142.52	8,443.83	10,776.81	10,743.68	33.12	325.371	
9,100.00	7,093.57	7,125.00	7,124.85	27.25	6.21	-87.05	-1,142.52	8,443.83	10,876.61	10,843.19	33.42	325.433	
9,200.00	7,093.24	7,125.00	7,124.85	27.55	6.21	-87.05	-1,142.52	8,443.83	10,976.42	10,942.70	33.72	325.494	
9,300.00	7,092.91	7,125.00	7,124.85	27.85	6.21	-87.05	-1,142.52	8,443.83	11,076.23	11,042.21	34.02	325.554	

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 750H - Slot B05
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 750H	**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
9,400.00	7,092.59	7,125.00	7,124.85	28.15	6.21	-87.05	-1,142.52	8,443.83	11,176.05	11,141.72	34.32	325.613	
9,500.00	7,092.26	7,125.00	7,124.85	28.45	6.21	-87.05	-1,142.52	8,443.83	11,275.86	11,241.24	34.62	325.671	
9,600.00	7,091.93	7,125.00	7,124.85	28.75	6.21	-87.05	-1,142.52	8,443.83	11,375.69	11,340.76	34.92	325.729	
9,700.00	7,091.60	7,125.00	7,124.85	29.05	6.21	-87.05	-1,142.52	8,443.83	11,475.51	11,440.29	35.22	325.786	
9,800.00	7,091.27	7,125.00	7,124.85	29.35	6.21	-87.05	-1,142.52	8,443.83	11,575.34	11,539.81	35.52	325.841	
9,900.00	7,090.95	7,125.00	7,124.85	29.65	6.21	-87.05	-1,142.52	8,443.83	11,675.17	11,639.34	35.82	325.897	
10,000.00	7,090.62	7,125.00	7,124.85	29.95	6.21	-87.05	-1,142.52	8,443.83	11,775.00	11,738.88	36.13	325.951	
10,100.00	7,090.29	7,125.00	7,124.85	30.25	6.21	-87.05	-1,142.52	8,443.83	11,874.84	11,838.41	36.43	326.004	
10,200.00	7,089.96	7,125.00	7,124.85	30.55	6.21	-87.05	-1,142.52	8,443.83	11,974.68	11,937.95	36.73	326.057	
10,300.00	7,089.63	7,125.00	7,124.85	30.85	6.21	-87.05	-1,142.52	8,443.83	12,074.52	12,037.49	37.03	326.109	
10,400.00	7,089.31	7,125.00	7,124.85	31.15	6.21	-87.05	-1,142.52	8,443.83	12,174.37	12,137.04	37.33	326.161	
10,500.00	7,088.98	7,125.00	7,124.85	31.45	6.21	-87.05	-1,142.52	8,443.83	12,274.21	12,236.59	37.63	326.211	
10,600.00	7,088.65	7,125.00	7,124.85	31.75	6.21	-87.05	-1,142.52	8,443.83	12,374.06	12,336.13	37.93	326.261	
10,700.00	7,088.32	7,125.00	7,124.85	32.06	6.21	-87.05	-1,142.52	8,443.83	12,473.91	12,435.69	38.23	326.311	
10,800.00	7,087.99	7,125.00	7,124.85	32.36	6.21	-87.05	-1,142.52	8,443.83	12,573.77	12,535.24	38.53	326.359	
10,900.00	7,087.67	7,125.00	7,124.85	32.66	6.21	-87.05	-1,142.52	8,443.83	12,673.62	12,634.80	38.83	326.407	
11,000.00	7,087.34	7,125.00	7,124.85	32.96	6.21	-87.05	-1,142.52	8,443.83	12,773.48	12,734.36	39.13	326.455	
11,100.00	7,087.01	7,125.00	7,124.85	33.26	6.21	-87.05	-1,142.52	8,443.83	12,873.34	12,833.92	39.43	326.502	
11,200.00	7,086.68	7,125.00	7,124.85	33.56	6.21	-87.05	-1,142.52	8,443.83	12,973.21	12,933.48	39.73	326.548	
11,300.00	7,086.35	7,125.00	7,124.85	33.86	6.21	-87.05	-1,142.52	8,443.83	13,073.07	13,033.04	40.03	326.593	
11,400.00	7,086.03	7,125.00	7,124.85	34.16	6.21	-87.05	-1,142.52	8,443.83	13,172.94	13,132.61	40.33	326.638	
11,500.00	7,085.70	7,125.00	7,124.85	34.46	6.21	-87.05	-1,142.52	8,443.83	13,272.81	13,232.18	40.63	326.683	
11,600.00	7,085.37	7,125.00	7,124.85	34.76	6.21	-87.05	-1,142.52	8,443.83	13,372.68	13,331.75	40.93	326.726	
11,700.00	7,085.04	7,125.00	7,124.85	35.06	6.21	-87.05	-1,142.52	8,443.83	13,472.55	13,431.32	41.23	326.770	
11,800.00	7,084.71	7,125.00	7,124.85	35.36	6.21	-87.05	-1,142.52	8,443.83	13,572.43	13,530.90	41.53	326.812	
11,900.00	7,084.39	7,125.00	7,124.85	35.66	6.21	-87.05	-1,142.52	8,443.83	13,672.30	13,630.47	41.83	326.855	
12,000.00	7,084.06	7,125.00	7,124.85	35.96	6.21	-87.05	-1,142.52	8,443.83	13,772.18	13,730.05	42.13	326.896	
12,100.00	7,083.73	7,125.00	7,124.85	36.26	6.21	-87.05	-1,142.52	8,443.83	13,872.06	13,829.63	42.43	326.937	
12,200.00	7,083.40	7,125.00	7,124.85	36.56	6.21	-87.05	-1,142.52	8,443.83	13,971.95	13,929.22	42.73	326.978	
12,300.00	7,083.07	7,125.00	7,124.85	36.86	6.21	-87.05	-1,142.52	8,443.83	14,071.83	14,028.80	43.03	327.018	
12,400.00	7,082.75	7,116.25	7,116.10	37.16	6.20	-86.30	-1,142.42	8,443.83	14,171.70	14,128.38	43.33	327.091	
12,500.00	7,082.42	7,116.18	7,116.03	37.46	6.20	-86.30	-1,142.42	8,443.83	14,271.59	14,227.96	43.63	327.130	
12,600.00	7,082.09	7,116.12	7,115.97	37.76	6.20	-86.29	-1,142.42	8,443.83	14,371.48	14,327.55	43.93	327.169	
12,700.00	7,081.76	7,116.06	7,115.91	38.06	6.20	-86.29	-1,142.42	8,443.83	14,471.37	14,427.14	44.23	327.207	
12,800.00	7,081.43	7,116.00	7,115.85	38.36	6.20	-86.28	-1,142.42	8,443.83	14,571.26	14,526.73	44.53	327.245	
12,900.00	7,081.11	7,115.94	7,115.79	38.66	6.20	-86.28	-1,142.42	8,443.83	14,671.15	14,626.33	44.83	327.282	
13,000.00	7,080.78	7,115.88	7,115.73	38.96	6.20	-86.27	-1,142.42	8,443.83	14,771.05	14,725.92	45.13	327.319	
13,100.00	7,080.45	7,115.82	7,115.67	39.26	6.20	-86.27	-1,142.42	8,443.83	14,870.94	14,825.52	45.43	327.356	
13,200.00	7,080.12	7,115.76	7,115.61	39.56	6.20	-86.26	-1,142.42	8,443.83	14,970.84	14,925.11	45.73	327.392	
13,300.00	7,079.79	7,115.70	7,115.55	39.86	6.20	-86.26	-1,142.42	8,443.83	15,070.74	15,024.71	46.03	327.427	
13,400.00	7,079.47	7,115.64	7,115.49	40.16	6.20	-86.25	-1,142.42	8,443.83	15,170.64	15,124.31	46.33	327.462	
13,500.00	7,079.14	7,115.59	7,115.44	40.46	6.20	-86.25	-1,142.42	8,443.83	15,270.54	15,223.91	46.63	327.497	
13,600.00	7,078.81	7,115.53	7,115.38	40.77	6.20	-86.24	-1,142.42	8,443.83	15,370.44	15,323.51	46.93	327.532	
13,700.00	7,078.48	7,115.47	7,115.32	41.07	6.20	-86.24	-1,142.42	8,443.83	15,470.35	15,423.12	47.23	327.565	
13,800.00	7,078.15	7,115.42	7,115.27	41.37	6.20	-86.23	-1,142.41	8,443.83	15,570.25	15,522.72	47.53	327.599	
13,900.00	7,077.83	7,115.36	7,115.21	41.67	6.20	-86.23	-1,142.41	8,443.83	15,670.16	15,622.33	47.83	327.632	
14,000.00	7,077.50	7,115.31	7,115.16	41.97	6.20	-86.23	-1,142.41	8,443.83	15,770.07	15,721.94	48.13	327.665	
14,100.00	7,077.17	7,115.26	7,115.11	42.27	6.20	-86.22	-1,142.41	8,443.83	15,869.97	15,821.55	48.43	327.697	
14,200.00	7,076.84	7,115.20	7,115.05	42.57	6.20	-86.22	-1,142.41	8,443.83	15,969.88	15,921.15	48.73	327.730	
14,300.00	7,076.51	7,115.15	7,115.00	42.87	6.20	-86.21	-1,142.41	8,443.83	16,069.79	16,020.77	49.03	327.761	
14,400.00	7,076.19	7,115.10	7,114.95	43.17	6.20	-86.21	-1,142.41	8,443.83	16,169.71	16,120.38	49.33	327.793	
14,500.00	7,075.86	7,115.05	7,114.90	43.47	6.20	-86.20	-1,142.41	8,443.83	16,269.62	16,219.99	49.63	327.824	

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 750H - Slot B05
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 750H	**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
14,600.00	7,075.53	7,114.99	7,114.85	43.77	6.20	-86.20	-1,142.41	8,443.83	16,369.53	16,319.60	49.93	327.854	
14,700.00	7,075.20	7,114.94	7,114.79	44.07	6.20	-86.19	-1,142.41	8,443.83	16,469.45	16,419.22	50.23	327.885	
14,800.00	7,074.87	7,114.89	7,114.74	44.37	6.20	-86.19	-1,142.41	8,443.83	16,569.36	16,518.84	50.53	327.915	
14,900.00	7,074.55	7,114.84	7,114.69	44.67	6.20	-86.19	-1,142.41	8,443.83	16,669.28	16,618.45	50.83	327.944	
15,000.00	7,074.22	7,114.79	7,114.65	44.97	6.20	-86.18	-1,142.41	8,443.83	16,769.20	16,718.07	51.13	327.974	
15,100.00	7,073.89	7,114.75	7,114.60	45.27	6.20	-86.18	-1,142.41	8,443.83	16,869.12	16,817.69	51.43	328.003	
15,200.00	7,073.56	7,114.70	7,114.55	45.57	6.20	-86.17	-1,142.41	8,443.83	16,969.04	16,917.31	51.73	328.032	
15,300.00	7,073.23	7,114.65	7,114.50	45.87	6.20	-86.17	-1,142.41	8,443.83	17,068.96	17,016.93	52.03	328.060	
15,400.00	7,072.91	7,114.60	7,114.45	46.17	6.20	-86.17	-1,142.41	8,443.83	17,168.88	17,116.55	52.33	328.088	
15,500.00	7,072.58	7,114.56	7,114.41	46.47	6.20	-86.16	-1,142.40	8,443.83	17,268.80	17,216.17	52.63	328.116	
15,600.00	7,072.25	7,114.51	7,114.36	46.77	6.20	-86.16	-1,142.40	8,443.83	17,368.73	17,315.80	52.93	328.144	
15,700.00	7,071.92	7,114.46	7,114.31	47.07	6.20	-86.15	-1,142.40	8,443.83	17,468.65	17,415.42	53.23	328.171	
15,800.00	7,071.59	7,114.42	7,114.27	47.37	6.20	-86.15	-1,142.40	8,443.83	17,568.58	17,515.05	53.53	328.198	
15,900.00	7,071.27	7,114.37	7,114.22	47.67	6.20	-86.15	-1,142.40	8,443.83	17,668.50	17,614.67	53.83	328.225	
16,000.00	7,070.94	7,114.33	7,114.18	47.97	6.20	-86.14	-1,142.40	8,443.83	17,768.43	17,714.30	54.13	328.251	
16,100.00	7,070.61	7,114.28	7,114.13	48.27	6.20	-86.14	-1,142.40	8,443.83	17,868.36	17,813.93	54.43	328.277	
16,200.00	7,070.28	7,114.24	7,114.09	48.57	6.20	-86.13	-1,142.40	8,443.83	17,968.29	17,913.56	54.73	328.303	
16,300.00	7,069.95	7,114.19	7,114.04	48.87	6.20	-86.13	-1,142.40	8,443.83	18,068.22	18,013.19	55.03	328.329	
16,400.00	7,069.63	7,114.15	7,114.00	49.17	6.20	-86.13	-1,142.40	8,443.83	18,168.15	18,112.82	55.33	328.354	
16,419.92	7,069.56	7,114.14	7,113.99	49.23	6.20	-86.13	-1,142.40	8,443.83	18,188.06	18,132.66	55.39	328.359	
16,500.00	7,069.30	7,114.11	7,113.96	49.47	6.20	-86.12	-1,142.40	8,443.83	18,268.08	18,212.45	55.63	328.380	
16,591.83	7,069.00	7,114.07	7,113.92	49.75	6.20	-86.12	-1,142.40	8,443.83	18,359.85	18,303.94	55.91	328.402	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-170.57	-816.39	-135.55	827.66				
100.00	100.00	86.33	86.33	0.23	0.04	-170.57	-816.45	-135.54	827.63	827.35	0.27	3,030.205	
200.00	200.00	185.01	185.01	0.53	0.17	-170.58	-816.68	-135.50	827.85	827.16	0.69	1,202.367	
300.00	300.00	283.71	283.71	0.83	0.30	-170.59	-817.07	-135.44	828.23	827.12	1.11	743.592	
400.00	400.00	382.35	382.34	1.13	0.43	-170.60	-817.63	-135.36	828.77	827.23	1.54	538.516	
500.00	500.00	480.94	480.94	1.43	0.56	-170.62	-818.35	-135.25	829.48	827.51	1.96	422.341	
600.00	599.98	578.89	578.88	1.73	0.69	-15.14	-819.34	-134.98	828.74	826.36	2.38	347.542	
707.91	707.73	685.27	685.24	2.05	0.82	-15.32	-820.64	-134.43	824.36	821.53	2.83	290.965	
800.00	799.58	777.94	777.91	2.33	0.94	-15.50	-821.87	-133.78	819.03	815.81	3.21	254.787	
900.00	899.31	877.53	877.48	2.63	1.07	-15.71	-823.17	-132.89	813.19	809.57	3.62	224.555	
1,000.00	999.05	977.79	977.74	2.93	1.19	-15.93	-824.45	-131.98	807.34	803.31	4.03	200.409	
1,100.00	1,098.79	1,080.60	1,080.53	3.23	1.32	-16.15	-825.58	-131.04	801.32	796.89	4.43	180.763	
1,200.00	1,198.52	1,179.34	1,179.26	3.53	1.44	-16.39	-826.49	-129.86	795.10	790.28	4.82	164.969	
1,300.00	1,298.26	1,277.11	1,277.02	3.83	1.56	-16.64	-827.65	-128.55	789.13	783.92	5.21	151.436	
1,400.00	1,398.00	1,379.57	1,379.47	4.13	1.69	-16.88	-828.73	-127.61	783.10	777.49	5.62	139.434	
1,500.00	1,497.73	1,476.21	1,476.09	4.43	1.81	-17.09	-829.76	-126.84	777.12	771.10	6.02	129.085	
1,600.00	1,597.47	1,577.23	1,577.11	4.73	1.94	-17.29	-830.96	-126.47	771.32	764.88	6.45	119.649	
1,700.00	1,697.21	1,676.22	1,676.09	5.03	2.07	-17.48	-832.13	-126.31	765.55	758.68	6.87	111.358	
1,800.00	1,796.94	1,780.25	1,780.12	5.33	2.19	-17.64	-832.95	-126.50	759.44	752.13	7.31	103.862	
1,900.00	1,896.68	1,880.99	1,880.86	5.63	2.31	-17.82	-833.51	-126.46	753.07	745.33	7.74	97.241	
2,000.00	1,996.42	1,978.83	1,978.70	5.93	2.44	-18.00	-834.08	-126.30	746.73	738.56	8.17	91.410	
2,100.00	2,096.15	2,079.45	2,079.32	6.23	2.56	-18.20	-834.77	-126.05	740.49	731.89	8.59	86.180	
2,200.00	2,195.89	2,180.94	2,180.80	6.53	2.67	-18.38	-835.20	-126.14	734.03	725.01	9.03	81.321	
2,300.00	2,295.63	2,282.15	2,282.01	6.83	2.73	-18.53	-835.38	-126.51	727.37	717.95	9.42	77.223	
2,400.00	2,395.36	2,382.04	2,381.89	7.13	2.75	-18.66	-835.44	-127.19	720.62	710.84	9.78	73.685	
2,500.00	2,495.10	2,481.54	2,481.39	7.43	2.79	-18.78	-835.57	-128.13	713.98	703.83	10.14	70.381	
2,600.00	2,594.84	2,583.41	2,583.26	7.73	2.82	-18.88	-835.53	-129.18	707.17	696.68	10.50	67.381	
2,700.00	2,694.57	2,683.41	2,683.25	8.03	2.83	-19.01	-835.30	-130.03	700.17	689.34	10.83	64.672	
2,800.00	2,794.31	2,781.73	2,781.57	8.33	2.86	-19.16	-835.21	-130.44	693.27	682.10	11.17	62.070	
2,900.00	2,894.05	2,881.69	2,881.53	8.63	2.91	-19.33	-835.27	-130.78	686.50	674.97	11.54	59.513	
3,000.00	2,993.78	2,980.17	2,980.01	8.93	2.97	-19.51	-835.27	-131.09	679.70	667.80	11.89	57.154	
3,100.00	3,093.52	3,078.06	3,077.90	9.23	3.07	-19.69	-835.58	-131.36	673.20	660.90	12.30	54.728	
3,200.00	3,193.26	3,177.54	3,177.38	9.53	3.20	-19.88	-836.01	-131.56	666.82	654.10	12.72	52.408	
3,300.00	3,292.99	3,274.60	3,274.43	9.83	3.32	-20.09	-836.84	-131.61	660.86	647.71	13.15	50.271	
3,400.00	3,392.73	3,373.12	3,372.95	10.13	3.44	-20.32	-837.73	-131.51	654.95	641.38	13.57	48.261	
3,500.00	3,492.47	3,473.61	3,473.43	10.43	3.57	-20.56	-838.80	-131.44	649.20	635.20	14.00	46.372	
3,600.00	3,592.20	3,573.52	3,573.33	10.73	3.70	-20.80	-839.89	-131.43	643.50	629.07	14.43	44.600	
3,700.00	3,691.94	3,672.86	3,672.67	11.03	3.83	-21.03	-841.04	-131.41	637.88	623.02	14.86	42.937	
3,800.00	3,791.68	3,771.43	3,771.23	11.33	3.96	-21.27	-842.09	-131.46	632.17	616.89	15.28	41.364	
3,900.00	3,891.41	3,873.13	3,872.93	11.63	4.09	-21.52	-843.22	-131.40	626.53	610.82	15.71	39.871	
4,000.00	3,991.15	3,973.02	3,972.81	11.93	4.22	-21.77	-844.34	-131.46	620.91	604.76	16.14	38.463	
4,100.00	4,090.89	4,072.16	4,071.95	12.23	4.35	-22.02	-845.36	-131.53	615.21	598.64	16.57	37.125	
4,200.00	4,190.62	4,169.16	4,168.94	12.53	4.47	-22.26	-846.51	-131.64	609.67	592.68	17.00	35.870	
4,300.00	4,290.36	4,267.03	4,266.80	12.83	4.60	-22.50	-848.08	-131.81	604.58	587.16	17.42	34.700	
4,400.00	4,390.10	4,364.64	4,364.39	13.13	4.72	-22.74	-850.03	-132.14	599.89	582.04	17.85	33.611	
4,500.00	4,489.84	4,462.03	4,461.75	13.43	4.85	-22.95	-852.42	-132.71	595.67	577.40	18.27	32.600	
4,600.00	4,589.57	4,561.08	4,560.76	13.73	4.98	-23.18	-855.11	-133.26	591.72	573.02	18.70	31.646	
4,700.00	4,689.31	4,661.33	4,660.97	14.03	5.11	-23.41	-857.90	-133.81	587.85	568.72	19.13	30.736	
4,800.00	4,789.05	4,760.52	4,760.12	14.33	5.23	-23.64	-860.67	-134.35	584.00	564.44	19.55	29.869	
4,900.00	4,888.78	4,860.42	4,859.98	14.63	5.36	-23.87	-863.47	-134.97	580.17	560.19	19.98	29.040	
5,000.00	4,988.52	4,960.06	4,959.58	14.93	5.49	-24.10	-866.28	-135.62	576.36	555.95	20.40	28.248	
5,100.00	5,088.26	5,059.77	5,059.24	15.23	5.62	-24.33	-869.18	-136.30	572.65	551.82	20.83	27.492	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,159.87	5,159.29	15.53	5.75	-24.56	-872.08	-137.01	568.95	547.69	21.25	26.768	
5,300.00	5,287.73	5,259.13	5,258.51	15.83	5.88	-24.79	-875.05	-137.74	565.34	543.66	21.68	26.077	
5,400.00	5,387.47	5,357.99	5,357.32	16.13	6.00	-25.02	-878.12	-138.49	561.86	539.75	22.10	25.420	
5,500.00	5,487.20	5,457.58	5,456.86	16.43	6.13	-25.25	-881.25	-139.25	558.42	535.89	22.53	24.789	
5,600.00	5,586.94	5,557.01	5,556.23	16.73	6.26	-25.49	-884.45	-139.99	555.06	532.11	22.95	24.184	
5,700.00	5,686.68	5,656.60	5,655.76	17.03	6.39	-25.72	-887.68	-140.78	551.76	528.38	23.38	23.604	
5,800.00	5,786.41	5,755.80	5,754.90	17.33	6.52	-25.96	-891.02	-141.60	548.57	524.77	23.80	23.051	
5,900.00	5,886.15	5,856.54	5,855.58	17.63	6.65	-26.20	-894.50	-142.38	545.48	521.26	24.22	22.519	
6,000.00	5,985.89	5,957.08	5,956.07	17.93	6.77	-26.44	-897.78	-143.28	542.21	517.56	24.65	22.000	
6,100.00	6,085.62	6,056.94	6,055.87	18.23	6.90	-26.68	-901.01	-144.14	538.92	513.85	25.07	21.498	
6,200.00	6,185.36	6,156.60	6,155.47	18.53	7.03	-26.91	-904.33	-145.10	535.73	510.24	25.49	21.017	
6,300.00	6,285.10	6,256.37	6,255.17	18.83	7.16	-27.14	-907.68	-146.11	532.57	506.66	25.91	20.553	
6,400.00	6,384.83	6,356.51	6,355.25	19.13	7.29	-27.36	-911.03	-147.20	529.41	503.08	26.33	20.105	
6,500.00	6,484.57	6,457.44	6,456.13	19.43	7.42	-27.59	-914.28	-148.28	526.13	499.37	26.75	19.666	
6,559.90	6,544.31	6,518.81	6,517.47	19.61	7.50	-27.75	-916.06	-148.75	523.99	496.98	27.01	19.402	
6,600.00	6,584.23	6,559.68	6,558.32	19.73	7.55	-60.35	-917.16	-148.98	522.58	495.40	27.17	19.230	
6,650.00	6,633.60	6,609.54	6,608.17	19.88	7.62	-75.30	-918.44	-149.23	521.08	493.71	27.37	19.036	
6,700.00	6,682.15	6,659.45	6,658.07	20.03	7.68	-82.53	-919.62	-149.39	520.03	492.47	27.56	18.867	
6,740.77	6,720.88	6,699.06	6,697.66	20.15	7.73	-86.56	-920.50	-149.55	519.73	492.03	27.71	18.759	CC
6,750.00	6,729.52	6,708.04	6,706.64	20.18	7.74	-87.36	-920.69	-149.58	519.75	492.01	27.74	18.738	ES
6,800.00	6,775.36	6,755.48	6,754.07	20.33	7.81	-91.27	-921.59	-149.74	520.54	492.65	27.89	18.661	
6,850.00	6,819.31	6,799.84	6,798.43	20.48	7.86	-94.62	-922.37	-149.91	522.91	494.88	28.03	18.658	SF
6,900.00	6,861.04	6,842.82	6,841.40	20.63	7.92	-97.65	-923.04	-150.04	527.33	499.20	28.13	18.743	
6,950.00	6,900.22	6,881.27	6,879.85	20.78	7.97	-100.18	-923.65	-150.19	534.36	506.15	28.21	18.941	
7,000.00	6,936.57	6,918.01	6,916.58	20.93	8.02	-102.36	-924.26	-150.31	544.45	516.18	28.27	19.262	
7,050.00	6,969.80	6,951.74	6,950.31	21.08	8.06	-104.06	-924.79	-150.43	557.87	529.58	28.29	19.718	
7,100.00	6,999.67	6,981.65	6,980.22	21.23	8.10	-105.13	-925.27	-150.57	574.88	546.59	28.30	20.316	
7,150.00	7,025.94	7,006.99	7,005.55	21.38	8.13	-105.44	-925.71	-150.66	595.62	567.34	28.29	21.057	
7,200.00	7,048.41	7,029.64	7,028.20	21.53	8.16	-105.09	-926.09	-150.71	620.02	591.75	28.27	21.932	
7,250.00	7,066.92	7,048.68	7,047.23	21.68	8.19	-103.90	-926.40	-150.74	647.86	619.61	28.25	22.932	
7,300.00	7,081.33	7,063.73	7,062.28	21.83	8.21	-101.76	-926.63	-150.77	678.87	650.63	28.24	24.042	
7,350.00	7,091.51	7,074.46	7,073.01	21.98	8.22	-98.53	-926.79	-150.79	712.66	684.43	28.23	25.245	
7,400.00	7,097.41	7,080.60	7,079.15	22.13	8.23	-94.10	-926.88	-150.81	748.80	720.56	28.23	26.522	
7,444.73	7,099.00	7,082.35	7,080.90	22.27	8.23	-89.12	-926.91	-150.82	782.73	754.49	28.25	27.712	
7,500.00	7,098.82	7,082.32	7,080.87	22.44	8.23	-89.12	-926.91	-150.82	826.19	797.91	28.28	29.218	
7,600.00	7,098.49	7,082.26	7,080.81	22.74	8.23	-89.11	-926.91	-150.82	908.08	879.70	28.38	32.002	
7,700.00	7,098.16	7,082.21	7,080.76	23.04	8.23	-89.11	-926.91	-150.82	993.29	964.77	28.52	34.829	
7,800.00	7,097.83	7,082.15	7,080.70	23.34	8.23	-89.10	-926.91	-150.82	1,081.04	1,052.34	28.70	37.668	
7,900.00	7,097.51	7,082.09	7,080.64	23.64	8.23	-89.09	-926.91	-150.81	1,170.76	1,141.86	28.91	40.503	
8,000.00	7,097.18	7,082.03	7,080.58	23.94	8.23	-89.09	-926.90	-150.81	1,262.02	1,232.89	29.13	43.320	
8,100.00	7,096.85	7,081.98	7,080.53	24.24	8.23	-89.08	-926.90	-150.81	1,354.52	1,325.15	29.38	46.110	
8,200.00	7,096.52	7,081.92	7,080.47	24.54	8.23	-89.07	-926.90	-150.81	1,448.02	1,418.39	29.63	48.868	
8,300.00	7,096.19	7,081.86	7,080.41	24.84	8.23	-89.07	-926.90	-150.81	1,542.33	1,512.43	29.90	51.590	
8,400.00	7,095.87	7,081.80	7,080.35	25.14	8.23	-89.06	-926.90	-150.81	1,637.32	1,607.15	30.17	54.274	
8,500.00	7,095.54	7,081.74	7,080.29	25.44	8.23	-89.05	-926.90	-150.81	1,732.87	1,702.42	30.45	56.918	
8,600.00	7,095.21	7,081.68	7,080.23	25.74	8.23	-89.05	-926.90	-150.81	1,828.89	1,798.17	30.73	59.521	
8,700.00	7,094.88	7,081.62	7,080.17	26.04	8.23	-89.04	-926.90	-150.81	1,925.33	1,894.31	31.01	62.082	
8,800.00	7,094.55	7,081.56	7,080.11	26.35	8.23	-89.03	-926.90	-150.81	2,022.10	1,990.80	31.30	64.602	
8,900.00	7,094.23	7,081.50	7,080.05	26.65	8.23	-89.03	-926.90	-150.81	2,119.18	2,087.59	31.59	67.080	
9,000.00	7,093.90	7,081.44	7,079.99	26.95	8.23	-89.02	-926.90	-150.81	2,216.52	2,184.63	31.88	69.517	
9,100.00	7,093.57	7,081.37	7,079.92	27.25	8.23	-89.01	-926.90	-150.81	2,314.08	2,281.90	32.18	71.914	
9,200.00	7,093.24	7,081.31	7,079.86	27.55	8.23	-89.00	-926.89	-150.81	2,411.85	2,379.37	32.47	74.270	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	7,081.25	7,079.80	27.85	8.23	-89.00	-926.89	-150.81	2,509.79	2,477.02	32.77	76.587	
9,400.00	7,092.59	7,081.19	7,079.73	28.15	8.23	-88.99	-926.89	-150.81	2,607.88	2,574.81	33.07	78.866	
9,500.00	7,092.26	7,081.12	7,079.67	28.45	8.23	-88.98	-926.89	-150.81	2,706.12	2,672.75	33.37	81.106	
9,600.00	7,091.93	7,081.06	7,079.61	28.75	8.23	-88.97	-926.89	-150.81	2,804.48	2,770.81	33.66	83.309	
9,700.00	7,091.60	7,080.99	7,079.54	29.05	8.23	-88.97	-926.89	-150.81	2,902.95	2,868.99	33.96	85.475	
9,800.00	7,091.27	7,080.93	7,079.48	29.35	8.23	-88.96	-926.89	-150.81	3,001.52	2,967.26	34.26	87.606	
9,900.00	7,090.95	7,080.86	7,079.41	29.65	8.23	-88.95	-926.89	-150.81	3,100.19	3,065.63	34.56	89.701	
10,000.00	7,090.62	7,080.80	7,079.34	29.95	8.23	-88.94	-926.89	-150.81	3,198.94	3,164.08	34.86	91.762	
10,100.00	7,090.29	7,080.73	7,079.28	30.25	8.23	-88.94	-926.89	-150.81	3,297.76	3,262.60	35.16	93.789	
10,200.00	7,089.96	7,080.66	7,079.21	30.55	8.23	-88.93	-926.88	-150.81	3,396.65	3,361.19	35.46	95.784	
10,300.00	7,089.63	7,080.59	7,079.14	30.85	8.23	-88.92	-926.88	-150.81	3,495.61	3,459.85	35.76	97.746	
10,400.00	7,089.31	7,080.53	7,079.07	31.15	8.23	-88.91	-926.88	-150.81	3,594.62	3,558.56	36.06	99.677	
10,500.00	7,088.98	7,080.46	7,079.01	31.45	8.23	-88.91	-926.88	-150.81	3,693.69	3,657.32	36.36	101.577	
10,600.00	7,088.65	7,080.39	7,078.94	31.75	8.23	-88.90	-926.88	-150.81	3,792.80	3,756.14	36.66	103.447	
10,700.00	7,088.32	7,080.32	7,078.87	32.06	8.23	-88.89	-926.88	-150.81	3,891.96	3,855.00	36.96	105.288	
10,800.00	7,087.99	7,080.25	7,078.80	32.36	8.23	-88.88	-926.88	-150.81	3,991.16	3,953.90	37.27	107.100	
10,900.00	7,087.67	7,080.18	7,078.73	32.66	8.23	-88.87	-926.88	-150.81	4,090.41	4,052.84	37.57	108.883	
11,000.00	7,087.34	7,080.11	7,078.66	32.96	8.23	-88.86	-926.88	-150.81	4,189.68	4,151.81	37.87	110.639	
11,100.00	7,087.01	7,080.04	7,078.58	33.26	8.23	-88.86	-926.88	-150.81	4,288.99	4,250.82	38.17	112.369	
11,200.00	7,086.68	7,079.96	7,078.51	33.56	8.23	-88.85	-926.87	-150.81	4,388.34	4,349.87	38.47	114.072	
11,300.00	7,086.35	7,079.89	7,078.44	33.86	8.23	-88.84	-926.87	-150.81	4,487.71	4,448.94	38.77	115.749	
11,400.00	7,086.03	7,080.16	7,078.71	34.16	8.23	-88.87	-926.88	-150.81	4,587.11	4,548.03	39.07	117.400	
11,500.00	7,085.70	7,080.09	7,078.64	34.46	8.23	-88.86	-926.88	-150.81	4,686.53	4,647.16	39.37	119.027	
11,600.00	7,085.37	7,080.02	7,078.56	34.76	8.23	-88.85	-926.87	-150.81	4,785.98	4,746.30	39.67	120.631	
11,700.00	7,085.04	7,079.94	7,078.49	35.06	8.23	-88.85	-926.87	-150.81	4,885.45	4,845.47	39.98	122.210	
11,800.00	7,084.71	7,079.87	7,078.42	35.36	8.23	-88.84	-926.87	-150.81	4,984.94	4,944.66	40.28	123.767	
11,900.00	7,084.39	7,079.79	7,078.34	35.66	8.23	-88.83	-926.87	-150.81	5,084.45	5,043.87	40.58	125.301	
12,000.00	7,084.06	7,079.71	7,078.26	35.96	8.23	-88.82	-926.87	-150.81	5,183.98	5,143.10	40.88	126.813	
12,100.00	7,083.73	7,079.64	7,078.19	36.26	8.23	-88.81	-926.87	-150.81	5,283.53	5,242.35	41.18	128.303	
12,200.00	7,083.40	7,079.56	7,078.11	36.56	8.23	-88.80	-926.87	-150.81	5,383.10	5,341.62	41.48	129.772	
12,300.00	7,083.07	7,079.48	7,078.03	36.86	8.23	-88.79	-926.87	-150.81	5,482.68	5,440.90	41.78	131.220	
12,400.00	7,082.75	7,079.40	7,077.95	37.16	8.23	-88.78	-926.87	-150.81	5,582.27	5,540.19	42.08	132.648	
12,500.00	7,082.42	7,079.32	7,077.87	37.46	8.23	-88.77	-926.86	-150.81	5,681.88	5,639.50	42.38	134.056	
12,600.00	7,082.09	7,079.24	7,077.79	37.76	8.23	-88.76	-926.86	-150.81	5,781.51	5,738.82	42.69	135.444	
12,700.00	7,081.76	7,079.16	7,077.71	38.06	8.23	-88.76	-926.86	-150.81	5,881.14	5,838.16	42.99	136.814	
12,800.00	7,081.43	7,079.07	7,077.62	38.36	8.23	-88.75	-926.86	-150.81	5,980.79	5,937.50	43.29	138.164	
12,900.00	7,081.11	7,078.99	7,077.54	38.66	8.23	-88.74	-926.86	-150.81	6,080.45	6,036.86	43.59	139.497	
13,000.00	7,080.78	7,078.90	7,077.45	38.96	8.23	-88.73	-926.86	-150.81	6,180.12	6,136.23	43.89	140.811	
13,100.00	7,080.45	7,078.82	7,077.37	39.26	8.23	-88.72	-926.86	-150.81	6,279.80	6,235.61	44.19	142.108	
13,200.00	7,080.12	7,078.73	7,077.28	39.56	8.23	-88.71	-926.86	-150.81	6,379.50	6,335.00	44.49	143.387	
13,300.00	7,079.79	7,078.64	7,077.19	39.86	8.23	-88.70	-926.86	-150.81	6,479.20	6,434.40	44.79	144.649	
13,400.00	7,079.47	7,078.56	7,077.10	40.16	8.23	-88.69	-926.85	-150.81	6,578.91	6,533.81	45.09	145.895	
13,500.00	7,079.14	7,078.47	7,077.01	40.46	8.23	-88.68	-926.85	-150.81	6,678.63	6,633.23	45.39	147.125	
13,600.00	7,078.81	7,078.38	7,076.92	40.77	8.23	-88.67	-926.85	-150.80	6,778.35	6,732.66	45.70	148.339	
13,700.00	7,078.48	7,078.28	7,076.83	41.07	8.23	-88.65	-926.85	-150.80	6,878.09	6,832.09	46.00	149.537	
13,800.00	7,078.15	7,078.19	7,076.74	41.37	8.23	-88.64	-926.85	-150.80	6,977.83	6,931.53	46.30	150.719	
13,900.00	7,077.83	7,078.10	7,076.65	41.67	8.23	-88.63	-926.85	-150.80	7,077.58	7,030.98	46.60	151.887	
14,000.00	7,077.50	7,078.00	7,076.55	41.97	8.23	-88.62	-926.85	-150.80	7,177.34	7,130.44	46.90	153.040	
14,100.00	7,077.17	7,077.91	7,076.45	42.27	8.23	-88.61	-926.84	-150.80	7,277.10	7,229.90	47.20	154.178	
14,200.00	7,076.84	7,077.81	7,076.36	42.57	8.22	-88.60	-926.84	-150.80	7,376.87	7,329.37	47.50	155.302	
14,300.00	7,076.51	7,077.71	7,076.26	42.87	8.22	-88.59	-926.84	-150.80	7,476.65	7,428.85	47.80	156.412	
14,400.00	7,076.19	7,077.61	7,076.16	43.17	8.22	-88.58	-926.84	-150.80	7,576.43	7,528.33	48.10	157.508	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	7,077.51	7,076.06	43.47	8.22	-88.57	-926.84	-150.80	7,676.22	7,627.81	48.40	158.591	
14,600.00	7,075.53	7,077.41	7,075.96	43.77	8.22	-88.55	-926.84	-150.80	7,776.01	7,727.31	48.70	159.661	
14,700.00	7,075.20	7,077.31	7,075.85	44.07	8.22	-88.54	-926.84	-150.80	7,875.81	7,826.80	49.00	160.717	
14,800.00	7,074.87	7,077.20	7,075.75	44.37	8.22	-88.53	-926.83	-150.80	7,975.61	7,926.31	49.30	161.761	
14,900.00	7,074.55	7,077.10	7,075.64	44.67	8.22	-88.52	-926.83	-150.80	8,075.42	8,025.81	49.61	162.793	
15,000.00	7,074.22	7,076.99	7,075.54	44.97	8.22	-88.51	-926.83	-150.80	8,175.23	8,125.33	49.91	163.812	
15,100.00	7,073.89	7,076.88	7,075.43	45.27	8.22	-88.49	-926.83	-150.80	8,275.05	8,224.84	50.21	164.819	
15,200.00	7,073.56	7,076.77	7,075.32	45.57	8.22	-88.48	-926.83	-150.80	8,374.87	8,324.36	50.51	165.814	
15,300.00	7,073.23	7,076.66	7,075.21	45.87	8.22	-88.47	-926.83	-150.80	8,474.70	8,423.89	50.81	166.798	
15,400.00	7,072.91	7,076.55	7,075.10	46.17	8.22	-88.45	-926.82	-150.80	8,574.53	8,523.42	51.11	167.770	
15,500.00	7,072.58	7,076.43	7,074.98	46.47	8.22	-88.44	-926.82	-150.80	8,674.36	8,622.95	51.41	168.730	
15,600.00	7,072.25	7,076.32	7,074.87	46.77	8.22	-88.43	-926.82	-150.80	8,774.20	8,722.49	51.71	169.680	
15,700.00	7,071.92	7,076.20	7,074.75	47.07	8.22	-88.41	-926.82	-150.80	8,874.04	8,822.03	52.01	170.619	
15,800.00	7,071.59	7,076.08	7,074.63	47.37	8.22	-88.40	-926.82	-150.80	8,973.88	8,921.57	52.31	171.547	
15,900.00	7,071.27	7,075.96	7,074.51	47.67	8.22	-88.39	-926.82	-150.80	9,073.73	9,021.12	52.61	172.465	
16,000.00	7,070.94	7,075.84	7,074.39	47.97	8.22	-88.37	-926.81	-150.80	9,173.58	9,120.67	52.91	173.372	
16,100.00	7,070.61	7,075.72	7,074.27	48.27	8.22	-88.36	-926.81	-150.80	9,273.44	9,220.23	53.21	174.270	
16,200.00	7,070.28	7,075.60	7,074.14	48.57	8.22	-88.34	-926.81	-150.80	9,373.30	9,319.78	53.51	175.157	
16,300.00	7,069.95	7,075.47	7,074.02	48.87	8.22	-88.33	-926.81	-150.80	9,473.16	9,419.34	53.81	176.034	
16,400.00	7,069.63	7,075.34	7,073.89	49.17	8.22	-88.32	-926.81	-150.80	9,573.02	9,518.91	54.11	176.902	
16,419.92	7,069.56	7,075.32	7,073.87	49.23	8.22	-88.31	-926.81	-150.80	9,592.92	9,538.74	54.17	177.074	
16,500.00	7,069.30	7,075.21	7,073.76	49.47	8.22	-88.30	-926.81	-150.80	9,672.89	9,618.47	54.42	177.760	
16,591.83	7,069.00	7,075.09	7,073.64	49.75	8.22	-88.29	-926.80	-150.80	9,764.60	9,709.91	54.69	178.540	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	108.56	-1,062.03	3,163.59	3,337.55				
100.00	100.00	44.51	44.51	0.23	0.44	108.56	-1,062.03	3,163.59	3,337.09	3,336.43	0.67	5,017.620	
200.00	200.00	144.52	144.51	0.53	1.67	108.56	-1,062.03	3,163.59	3,337.09	3,334.90	2.19	1,522.778	
269.68	269.68	214.18	214.18	0.74	3.04	108.55	-1,061.72	3,163.59	3,336.99	3,333.22	3.77	884.472	
300.00	300.00	242.42	242.41	0.83	3.59	108.55	-1,061.75	3,163.59	3,337.00	3,332.58	4.42	754.970	
400.00	400.00	344.53	344.51	1.13	5.58	108.56	-1,062.03	3,163.59	3,337.09	3,330.38	6.71	497.573	
483.46	483.46	427.99	427.97	1.38	7.17	108.55	-1,061.64	3,163.59	3,336.97	3,328.42	8.54	390.551	CC
500.00	500.00	443.63	443.61	1.43	7.46	108.55	-1,061.64	3,163.59	3,336.97	3,328.08	8.89	375.312	
600.00	599.98	538.15	538.13	1.73	9.26	-95.92	-1,061.97	3,163.59	3,337.26	3,326.27	10.99	303.698	
707.91	707.73	652.28	652.24	2.05	11.43	-96.01	-1,062.03	3,163.59	3,337.88	3,324.39	13.48	247.532	
800.00	799.58	744.12	744.09	2.33	13.18	-96.13	-1,062.03	3,163.59	3,338.58	3,323.07	15.51	215.265	
900.00	899.31	842.94	842.91	2.63	15.06	-96.26	-1,061.52	3,163.59	3,339.21	3,321.52	17.69	188.760	
1,000.00	999.05	940.89	940.85	2.93	16.93	-96.37	-1,061.69	3,163.59	3,340.06	3,320.21	19.85	168.226	
1,100.00	1,098.79	1,043.36	1,043.30	3.23	18.88	-96.50	-1,062.03	3,163.59	3,340.98	3,318.87	22.11	151.101	
1,200.00	1,198.52	1,143.10	1,143.04	3.53	20.91	-96.62	-1,062.03	3,163.59	3,341.81	3,317.37	24.44	136.728	
1,300.00	1,298.26	1,242.84	1,242.77	3.83	22.95	-96.74	-1,062.03	3,163.59	3,342.66	3,315.88	26.77	124.859	
1,400.00	1,398.00	1,341.12	1,341.05	4.13	24.95	-96.88	-1,061.26	3,163.59	3,343.29	3,314.21	29.07	114.999	
1,500.00	1,497.73	1,438.30	1,438.23	4.43	26.92	-96.99	-1,061.52	3,163.59	3,344.25	3,312.89	31.35	106.673	
1,600.00	1,597.47	1,542.10	1,541.98	4.73	29.04	-97.11	-1,062.03	3,163.59	3,345.29	3,311.52	33.76	99.078	
1,700.00	1,697.21	1,641.84	1,641.72	5.03	31.07	-97.23	-1,062.03	3,163.59	3,346.19	3,310.10	36.10	92.694	
1,800.00	1,796.94	1,741.58	1,741.46	5.33	33.11	-97.36	-1,062.03	3,163.59	3,347.12	3,308.68	38.43	87.086	
1,900.00	1,896.68	1,839.63	1,839.50	5.63	35.11	-97.50	-1,060.96	3,163.59	3,347.75	3,307.01	40.74	82.183	
2,000.00	1,996.42	1,936.19	1,936.06	5.93	37.08	-97.61	-1,061.29	3,163.59	3,348.80	3,305.79	43.01	77.869	
2,100.00	2,096.15	2,032.81	2,032.66	6.23	39.05	-97.72	-1,061.93	3,163.59	3,349.96	3,304.69	45.28	73.988	
2,200.00	2,195.89	2,140.58	2,140.40	6.53	41.11	-97.85	-1,062.03	3,163.59	3,350.96	3,303.33	47.64	70.340	
2,300.00	2,295.63	2,240.32	2,240.14	6.83	43.01	-97.97	-1,062.03	3,163.59	3,351.97	3,302.13	49.83	67.263	
2,400.00	2,395.36	2,338.73	2,338.54	7.13	44.88	-98.10	-1,061.27	3,163.59	3,352.77	3,300.77	52.00	64.473	
2,500.00	2,495.10	2,436.03	2,435.84	7.43	46.72	-98.22	-1,061.54	3,163.59	3,353.88	3,299.73	54.15	61.936	
2,600.00	2,594.84	2,539.56	2,539.35	7.73	48.69	-98.34	-1,062.03	3,163.59	3,355.06	3,298.64	56.42	59.469	
2,700.00	2,694.57	2,639.30	2,639.09	8.03	50.59	-98.46	-1,062.03	3,163.59	3,356.12	3,297.51	58.61	57.259	
2,800.00	2,794.31	2,739.03	2,738.82	8.33	52.48	-98.58	-1,062.03	3,163.59	3,357.20	3,296.39	60.81	55.209	
2,900.00	2,894.05	2,837.90	2,837.69	8.63	54.36	-98.71	-1,061.50	3,163.59	3,358.15	3,295.16	62.99	53.314	
3,000.00	2,993.78	2,936.12	2,935.91	8.93	56.23	-98.83	-1,061.68	3,163.59	3,359.30	3,294.15	65.15	51.559	
3,100.00	3,093.52	3,038.28	3,038.03	9.23	58.17	-98.95	-1,062.03	3,163.59	3,360.52	3,293.12	67.40	49.860	
3,200.00	3,193.26	3,138.01	3,137.77	9.53	60.21	-99.07	-1,062.03	3,163.59	3,361.66	3,291.93	69.73	48.207	
3,300.00	3,292.99	3,237.64	3,237.40	9.83	62.24	-99.20	-1,061.38	3,163.59	3,362.64	3,290.58	72.06	46.662	
3,400.00	3,392.73	3,334.58	3,334.33	10.13	64.21	-99.32	-1,061.55	3,163.59	3,363.86	3,289.52	74.34	45.249	
3,500.00	3,492.47	3,437.27	3,436.98	10.43	66.32	-99.43	-1,062.03	3,163.59	3,365.16	3,288.42	76.74	43.850	
3,600.00	3,592.20	3,537.01	3,536.72	10.73	68.49	-99.56	-1,062.03	3,163.59	3,366.36	3,287.14	79.22	42.494	
3,700.00	3,691.94	3,635.40	3,635.11	11.03	70.64	-99.69	-1,061.30	3,163.59	3,367.39	3,285.73	81.67	41.233	
3,800.00	3,791.68	3,731.06	3,730.75	11.33	72.73	-99.80	-1,061.68	3,163.59	3,368.72	3,284.67	84.06	40.077	
3,900.00	3,891.41	3,836.28	3,835.93	11.63	74.99	-99.92	-1,062.03	3,163.59	3,370.05	3,283.44	86.61	38.909	
4,000.00	3,991.15	3,936.04	3,935.66	11.93	77.01	-100.04	-1,062.03	3,163.59	3,371.31	3,282.37	88.94	37.906	
4,100.00	4,090.89	4,033.88	4,033.50	12.23	78.80	-100.16	-1,061.76	3,163.59	3,372.52	3,281.50	91.02	37.051	
4,200.00	4,190.62	4,135.52	4,135.14	12.53	80.60	-100.28	-1,062.03	3,163.59	3,373.88	3,280.75	93.12	36.230	
4,300.00	4,290.36	4,235.26	4,234.87	12.83	82.28	-100.40	-1,062.03	3,163.59	3,375.18	3,280.08	95.11	35.489	
4,400.00	4,390.10	4,333.76	4,333.37	13.13	83.94	-100.52	-1,061.95	3,163.59	3,376.48	3,279.42	97.07	34.785	
4,500.00	4,489.84	4,434.73	4,434.35	13.43	85.65	-100.64	-1,062.03	3,163.59	3,377.84	3,278.76	99.08	34.093	
4,600.00	4,589.57	4,534.01	4,533.62	13.73	87.33	-100.77	-1,061.90	3,163.59	3,379.16	3,278.10	101.06	33.437	
4,700.00	4,689.31	4,634.21	4,633.82	14.03	89.04	-100.88	-1,062.03	3,163.59	3,380.55	3,277.49	103.06	32.800	
4,800.00	4,789.05	4,733.95	4,733.56	14.33	90.80	-101.01	-1,062.03	3,163.59	3,381.93	3,276.80	105.13	32.169	
4,900.00	4,888.78	4,832.70	4,832.31	14.63	92.55	-101.13	-1,061.93	3,163.59	3,383.31	3,276.13	107.18	31.568	

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 750H - Slot B05
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 750H	**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
5,000.00	4,988.52	4,933.43	4,933.03	14.93	94.39	-101.25	-1,062.03	3,163.59	3,384.74	3,275.42	109.32	30.962	
5,100.00	5,088.26	5,032.64	5,032.24	15.23	96.28	-101.37	-1,061.76	3,163.59	3,386.10	3,274.60	111.51	30.367	
5,200.00	5,187.99	5,129.81	5,129.41	15.53	98.13	-101.48	-1,062.00	3,163.59	3,387.60	3,273.94	113.66	29.806	
5,300.00	5,287.73	5,232.65	5,232.24	15.83	100.15	-101.61	-1,062.03	3,163.59	3,389.06	3,273.08	115.97	29.222	
5,400.00	5,387.47	5,329.70	5,329.29	16.13	102.06	-101.73	-1,061.75	3,163.59	3,390.47	3,272.28	118.19	28.688	
5,500.00	5,487.20	5,432.15	5,431.72	16.43	104.14	-101.84	-1,062.03	3,163.59	3,392.01	3,271.45	120.57	28.134	
5,600.00	5,586.94	5,531.10	5,530.66	16.73	106.22	-101.97	-1,061.63	3,163.59	3,393.43	3,270.48	122.95	27.601	
5,700.00	5,686.68	5,627.22	5,626.78	17.03	108.24	-102.08	-1,061.97	3,163.59	3,395.02	3,269.75	125.27	27.102	
5,800.00	5,786.41	5,731.39	5,730.93	17.33	110.56	-102.20	-1,062.03	3,163.59	3,396.56	3,268.67	127.89	26.559	
5,900.00	5,886.15	5,826.72	5,826.24	17.63	112.70	-102.32	-1,061.58	3,163.59	3,398.01	3,267.68	130.33	26.073	
6,000.00	5,985.89	5,930.93	5,930.40	17.93	115.08	-102.44	-1,062.03	3,163.59	3,399.66	3,266.66	133.00	25.561	
6,100.00	6,085.62	6,029.20	6,028.67	18.23	117.35	-102.57	-1,061.37	3,163.59	3,401.10	3,265.52	135.58	25.085	
6,200.00	6,185.36	6,123.34	6,122.80	18.53	119.54	-102.67	-1,061.95	3,163.59	3,402.81	3,264.75	138.06	24.647	
6,300.00	6,285.10	6,230.21	6,229.61	18.83	121.95	-102.80	-1,062.03	3,163.59	3,404.42	3,263.64	140.78	24.183	
6,400.00	6,384.83	6,325.46	6,324.84	19.13	124.10	-102.92	-1,061.40	3,163.59	3,405.92	3,262.69	143.23	23.779	
6,500.00	6,484.57	6,429.75	6,429.08	19.43	126.40	-103.04	-1,062.03	3,163.59	3,407.67	3,261.85	145.82	23.368	
6,559.90	6,544.31	6,489.48	6,488.82	19.61	127.66	-103.11	-1,062.03	3,163.59	3,408.66	3,261.39	147.27	23.146 ES	
6,600.00	6,584.23	6,528.80	6,528.13	19.73	128.49	-135.31	-1,061.48	3,163.59	3,410.59	3,262.37	148.22	23.010	
6,650.00	6,633.60	6,576.01	6,575.34	19.88	129.49	-149.28	-1,061.60	3,163.59	3,417.00	3,267.64	149.37	22.876	
6,700.00	6,682.15	6,622.48	6,621.80	20.03	130.47	-155.03	-1,061.87	3,163.59	3,427.67	3,277.17	150.50	22.775	
6,750.00	6,729.52	6,674.74	6,674.04	20.18	131.58	-157.97	-1,062.03	3,163.59	3,442.45	3,290.70	151.76	22.684	
6,800.00	6,775.36	6,720.57	6,719.87	20.33	132.55	-159.61	-1,062.03	3,163.59	3,461.25	3,308.37	152.88	22.641	
6,850.00	6,819.31	6,764.52	6,763.82	20.48	133.48	-160.51	-1,062.03	3,163.59	3,483.94	3,329.98	153.96	22.629 SF	
6,900.00	6,861.04	6,804.61	6,803.90	20.63	134.33	-160.91	-1,061.53	3,163.59	3,510.27	3,355.32	154.96	22.653	
6,950.00	6,900.22	6,842.13	6,841.42	20.78	135.12	-160.90	-1,061.67	3,163.59	3,540.25	3,384.35	155.90	22.708	
7,000.00	6,936.57	6,876.95	6,876.24	20.93	135.86	-160.51	-1,061.89	3,163.59	3,573.55	3,416.76	156.79	22.792	
7,050.00	6,969.80	6,915.05	6,914.32	21.08	136.68	-159.78	-1,062.03	3,163.59	3,609.89	3,452.13	157.76	22.882	
7,100.00	6,999.67	6,944.92	6,944.18	21.23	137.34	-158.57	-1,062.03	3,163.59	3,648.98	3,490.41	158.57	23.012	
7,150.00	7,025.94	6,971.19	6,970.45	21.38	137.91	-156.74	-1,062.03	3,163.59	3,690.55	3,531.26	159.29	23.169	
7,200.00	7,048.41	6,993.67	6,992.93	21.53	138.40	-154.05	-1,062.03	3,163.59	3,734.29	3,574.35	159.93	23.349	
7,250.00	7,066.92	7,012.18	7,011.44	21.68	138.81	-150.00	-1,062.03	3,163.59	3,779.86	3,619.37	160.49	23.552	
7,300.00	7,081.33	7,026.21	7,025.47	21.83	139.12	-143.63	-1,061.49	3,163.59	3,826.83	3,665.88	160.95	23.777	
7,350.00	7,091.51	7,035.96	7,035.22	21.98	139.33	-132.94	-1,061.50	3,163.59	3,875.02	3,713.71	161.31	24.022	
7,400.00	7,097.41	7,041.61	7,040.86	22.13	139.45	-114.29	-1,061.51	3,163.59	3,923.97	3,762.38	161.59	24.284	
7,444.73	7,099.00	7,043.13	7,042.39	22.27	139.49	-88.70	-1,061.51	3,163.59	3,968.09	3,806.33	161.76	24.531	
7,500.00	7,098.82	7,042.96	7,042.21	22.44	139.48	-88.69	-1,061.51	3,163.59	4,022.69	3,860.78	161.92	24.844	
7,600.00	7,098.49	7,042.64	7,041.90	22.74	139.48	-88.66	-1,061.51	3,163.59	4,121.54	3,959.33	162.21	25.408	
7,700.00	7,098.16	7,042.33	7,041.58	23.04	139.47	-88.63	-1,061.51	3,163.59	4,220.44	4,057.93	162.51	25.971	
7,800.00	7,097.83	7,042.01	7,041.27	23.34	139.46	-88.60	-1,061.51	3,163.59	4,319.39	4,156.59	162.80	26.532	
7,900.00	7,097.51	7,041.70	7,040.95	23.64	139.46	-88.57	-1,061.51	3,163.59	4,418.39	4,255.29	163.09	27.091	
8,000.00	7,097.18	7,041.38	7,040.64	23.94	139.45	-88.54	-1,061.51	3,163.59	4,517.43	4,354.04	163.39	27.649	
8,100.00	7,096.85	7,041.07	7,040.33	24.24	139.44	-88.51	-1,061.51	3,163.59	4,616.51	4,452.83	163.68	28.204	
8,200.00	7,096.52	7,040.76	7,040.01	24.54	139.44	-88.48	-1,061.51	3,163.59	4,715.63	4,551.65	163.98	28.758	
8,300.00	7,096.19	7,040.44	7,039.70	24.84	139.43	-88.45	-1,061.51	3,163.59	4,814.79	4,650.52	164.27	29.310	
8,400.00	7,095.87	7,040.13	7,039.38	25.14	139.42	-88.42	-1,061.51	3,163.59	4,913.98	4,749.42	164.56	29.861	
8,500.00	7,095.54	7,039.81	7,039.07	25.44	139.42	-88.39	-1,061.51	3,163.59	5,013.20	4,848.35	164.86	30.409	
8,600.00	7,095.21	7,039.50	7,038.75	25.74	139.41	-88.36	-1,061.51	3,163.59	5,112.46	4,947.31	165.15	30.956	
8,700.00	7,094.88	7,039.18	7,038.44	26.04	139.40	-88.34	-1,061.50	3,163.59	5,211.74	5,046.30	165.44	31.501	
8,800.00	7,094.55	7,038.87	7,038.12	26.35	139.39	-88.31	-1,061.50	3,163.59	5,311.05	5,145.31	165.74	32.045	
8,900.00	7,094.23	7,038.55	7,037.81	26.65	139.39	-88.28	-1,061.50	3,163.59	5,410.38	5,244.35	166.03	32.586	
9,000.00	7,093.90	7,038.24	7,037.49	26.95	139.38	-88.25	-1,061.50	3,163.59	5,509.74	5,343.42	166.33	33.126	
9,100.00	7,093.57	7,037.92	7,037.18	27.25	139.37	-88.22	-1,061.50	3,163.59	5,609.12	5,442.51	166.62	33.664	

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 750H - Slot B05
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 750H	**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
9,200.00	7,093.24	7,037.61	7,036.87	27.55	139.37	-88.19	-1,061.50	3,163.59	5,708.53	5,541.61	166.91	34.201	
9,300.00	7,092.91	7,037.29	7,036.55	27.85	139.36	-88.16	-1,061.50	3,163.59	5,807.95	5,640.74	167.21	34.735	
9,400.00	7,092.59	7,036.98	7,036.24	28.15	139.35	-88.13	-1,061.50	3,163.59	5,907.39	5,739.89	167.50	35.268	
9,500.00	7,092.26	7,036.67	7,035.92	28.45	139.35	-88.10	-1,061.50	3,163.59	6,006.86	5,839.06	167.79	35.799	
9,600.00	7,091.93	7,036.35	7,035.61	28.75	139.34	-88.07	-1,061.50	3,163.59	6,106.34	5,938.25	168.09	36.328	
9,700.00	7,091.60	7,036.04	7,035.29	29.05	139.33	-88.04	-1,061.50	3,163.59	6,205.83	6,037.45	168.38	36.856	
9,800.00	7,091.27	7,035.72	7,034.98	29.35	139.33	-88.01	-1,061.50	3,163.59	6,305.34	6,136.67	168.68	37.382	
9,900.00	7,090.95	7,035.41	7,034.66	29.65	139.32	-87.99	-1,061.50	3,163.59	6,404.87	6,235.90	168.97	37.906	
10,000.00	7,090.62	7,035.09	7,034.35	29.95	139.31	-87.96	-1,061.50	3,163.59	6,504.41	6,335.15	169.26	38.428	
10,100.00	7,090.29	7,034.78	7,034.04	30.25	139.31	-87.93	-1,061.50	3,163.59	6,603.97	6,434.41	169.56	38.949	
10,200.00	7,089.96	7,034.47	7,033.72	30.55	139.30	-87.90	-1,061.50	3,163.59	6,703.54	6,533.69	169.85	39.467	
10,300.00	7,089.63	7,034.15	7,033.41	30.85	139.29	-87.87	-1,061.50	3,163.59	6,803.12	6,632.97	170.14	39.985	
10,400.00	7,089.31	7,033.84	7,033.09	31.15	139.28	-87.84	-1,061.50	3,163.59	6,902.71	6,732.27	170.44	40.500	
10,500.00	7,088.98	7,033.52	7,032.78	31.45	139.28	-87.81	-1,061.50	3,163.59	7,002.32	6,831.58	170.73	41.014	
10,600.00	7,088.65	7,033.21	7,032.46	31.75	139.27	-87.78	-1,061.50	3,163.59	7,101.93	6,930.91	171.02	41.526	
10,700.00	7,088.32	7,032.89	7,032.15	32.06	139.26	-87.75	-1,061.50	3,163.59	7,201.56	7,030.24	171.32	42.036	
10,800.00	7,087.99	7,032.58	7,031.84	32.36	139.26	-87.72	-1,061.50	3,163.59	7,301.19	7,129.58	171.61	42.545	
10,900.00	7,087.67	7,032.27	7,031.52	32.66	139.25	-87.69	-1,061.50	3,163.59	7,400.84	7,228.94	171.90	43.052	
11,000.00	7,087.34	7,031.95	7,031.21	32.96	139.24	-87.66	-1,061.50	3,163.59	7,500.50	7,328.30	172.20	43.557	
11,100.00	7,087.01	7,031.64	7,030.89	33.26	139.24	-87.64	-1,061.50	3,163.59	7,600.16	7,427.67	172.49	44.061	
11,200.00	7,086.68	7,031.32	7,030.58	33.56	139.23	-87.61	-1,061.50	3,163.59	7,699.84	7,527.05	172.79	44.563	
11,300.00	7,086.35	7,031.01	7,030.27	33.86	139.22	-87.58	-1,061.49	3,163.59	7,799.52	7,626.44	173.08	45.063	
11,400.00	7,086.03	7,030.70	7,029.95	34.16	139.22	-87.55	-1,061.49	3,163.59	7,899.21	7,725.84	173.37	45.562	
11,500.00	7,085.70	7,030.38	7,029.64	34.46	139.21	-87.52	-1,061.49	3,163.59	7,998.91	7,825.24	173.67	46.059	
11,600.00	7,085.37	7,030.07	7,029.32	34.76	139.20	-87.49	-1,061.49	3,163.59	8,098.61	7,924.65	173.96	46.555	
11,700.00	7,085.04	7,029.75	7,029.01	35.06	139.19	-87.46	-1,061.49	3,163.59	8,198.32	8,024.07	174.25	47.048	
11,800.00	7,084.71	7,029.44	7,028.70	35.36	139.19	-87.43	-1,061.49	3,163.59	8,298.04	8,123.50	174.55	47.541	
11,900.00	7,084.39	7,029.13	7,028.38	35.66	139.18	-87.40	-1,061.49	3,163.59	8,397.77	8,222.93	174.84	48.031	
12,000.00	7,084.06	7,028.81	7,028.07	35.96	139.17	-87.37	-1,061.49	3,163.59	8,497.50	8,322.37	175.13	48.520	
12,100.00	7,083.73	7,028.50	7,027.75	36.26	139.17	-87.34	-1,061.49	3,163.59	8,597.24	8,421.81	175.43	49.008	
12,200.00	7,083.40	7,028.18	7,027.44	36.56	139.16	-87.32	-1,061.49	3,163.59	8,696.98	8,521.26	175.72	49.493	
12,300.00	7,083.07	7,027.87	7,027.13	36.86	139.15	-87.29	-1,061.49	3,163.59	8,796.73	8,620.72	176.01	49.978	
12,400.00	7,082.75	7,027.56	7,026.81	37.16	139.15	-87.26	-1,061.49	3,163.59	8,896.49	8,720.18	176.31	50.460	
12,500.00	7,082.42	7,027.24	7,026.50	37.46	139.14	-87.23	-1,061.49	3,163.59	8,996.25	8,819.65	176.60	50.941	
12,600.00	7,082.09	7,026.93	7,026.19	37.76	139.13	-87.20	-1,061.49	3,163.59	9,096.02	8,919.12	176.89	51.421	
12,700.00	7,081.76	7,026.61	7,025.87	38.06	139.13	-87.17	-1,061.49	3,163.59	9,195.79	9,018.60	177.19	51.899	
12,800.00	7,081.43	7,026.30	7,025.56	38.36	139.12	-87.14	-1,061.49	3,163.59	9,295.57	9,118.09	177.48	52.375	
12,900.00	7,081.11	7,025.99	7,025.24	38.66	139.11	-87.11	-1,061.49	3,163.59	9,395.35	9,217.57	177.77	52.850	
13,000.00	7,080.78	7,025.67	7,024.93	38.96	139.11	-87.08	-1,061.49	3,163.59	9,495.13	9,317.07	178.07	53.323	
13,100.00	7,080.45	7,025.36	7,024.62	39.26	139.10	-87.05	-1,061.49	3,163.59	9,594.92	9,416.56	178.36	53.795	
13,200.00	7,080.12	7,025.05	7,024.30	39.56	139.09	-87.02	-1,061.49	3,163.59	9,694.72	9,516.06	178.65	54.265	
13,300.00	7,079.79	7,024.73	7,023.99	39.86	139.08	-87.00	-1,061.49	3,163.59	9,794.52	9,615.57	178.95	54.734	
13,400.00	7,079.47	7,024.42	7,023.68	40.16	139.08	-86.97	-1,061.49	3,163.59	9,894.32	9,715.08	179.24	55.201	
13,500.00	7,079.14	7,024.11	7,023.36	40.46	139.07	-86.94	-1,061.49	3,163.59	9,994.13	9,814.59	179.53	55.667	
13,600.00	7,078.81	7,023.79	7,023.05	40.77	139.06	-86.91	-1,061.49	3,163.59	10,093.94	9,914.11	179.83	56.131	
13,700.00	7,078.48	7,023.48	7,022.73	41.07	139.06	-86.88	-1,061.49	3,163.59	10,193.75	10,013.63	180.12	56.594	
13,800.00	7,078.15	7,023.16	7,022.42	41.37	139.05	-86.85	-1,061.49	3,163.59	10,293.57	10,113.15	180.42	57.055	
13,900.00	7,077.83	7,022.85	7,022.11	41.67	139.04	-86.82	-1,061.49	3,163.59	10,393.39	10,212.68	180.71	57.515	
14,000.00	7,077.50	7,022.54	7,021.79	41.97	139.04	-86.79	-1,061.49	3,163.59	10,493.22	10,312.21	181.00	57.973	
14,100.00	7,077.17	7,022.22	7,021.48	42.27	139.03	-86.76	-1,061.49	3,163.59	10,593.04	10,411.75	181.30	58.430	
14,200.00	7,076.84	7,021.91	7,021.17	42.57	139.02	-86.73	-1,061.49	3,163.59	10,692.88	10,511.29	181.59	58.885	
14,300.00	7,076.51	7,021.60	7,020.85	42.87	139.02	-86.71	-1,061.49	3,163.59	10,792.71	10,610.83	181.88	59.339	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	7,021.28	7,020.54	43.17	139.01	-86.68	-1,061.49	3,163.59	10,892.55	10,710.37	182.18	59.792	
14,500.00	7,075.86	7,020.97	7,020.23	43.47	139.00	-86.65	-1,061.49	3,163.59	10,992.39	10,809.92	182.47	60.243	
14,600.00	7,075.53	7,020.66	7,019.91	43.77	139.00	-86.62	-1,061.49	3,163.59	11,092.23	10,909.47	182.76	60.692	
14,700.00	7,075.20	7,020.34	7,019.60	44.07	138.99	-86.59	-1,061.49	3,163.59	11,192.08	11,009.02	183.06	61.140	
14,800.00	7,074.87	7,020.03	7,019.29	44.37	138.98	-86.56	-1,061.49	3,163.59	11,291.93	11,108.58	183.35	61.587	
14,900.00	7,074.55	7,019.72	7,018.97	44.67	138.97	-86.53	-1,061.49	3,163.59	11,391.78	11,208.13	183.64	62.032	
15,000.00	7,074.22	7,019.40	7,018.66	44.97	138.97	-86.50	-1,061.49	3,163.59	11,491.63	11,307.70	183.94	62.476	
15,100.00	7,073.89	7,019.09	7,018.35	45.27	138.96	-86.47	-1,061.49	3,163.59	11,591.49	11,407.26	184.23	62.919	
15,200.00	7,073.56	7,018.78	7,018.03	45.57	138.95	-86.44	-1,061.49	3,163.59	11,691.35	11,506.82	184.52	63.360	
15,300.00	7,073.23	7,018.46	7,017.72	45.87	138.95	-86.42	-1,061.49	3,163.59	11,791.21	11,606.39	184.82	63.800	
15,400.00	7,072.91	7,018.15	7,017.41	46.17	138.94	-86.39	-1,061.49	3,163.59	11,891.07	11,705.96	185.11	64.238	
15,500.00	7,072.58	7,017.83	7,017.09	46.47	138.93	-86.36	-1,062.03	3,163.59	11,990.97	11,805.57	185.40	64.675	
15,600.00	7,072.25	7,017.50	7,016.76	46.77	138.93	-86.33	-1,062.03	3,163.59	12,090.84	11,905.14	185.70	65.111	
15,700.00	7,071.92	7,017.17	7,016.43	47.07	138.92	-86.30	-1,062.03	3,163.59	12,190.71	12,004.72	185.99	65.546	
15,800.00	7,071.59	7,016.85	7,016.11	47.37	138.91	-86.27	-1,062.03	3,163.59	12,290.58	12,104.30	186.28	65.979	
15,900.00	7,071.27	7,016.52	7,015.78	47.67	138.90	-86.24	-1,062.03	3,163.59	12,390.45	12,203.88	186.57	66.410	
16,000.00	7,070.94	7,016.19	7,015.45	47.97	138.90	-86.21	-1,062.03	3,163.59	12,490.33	12,303.46	186.87	66.841	
16,100.00	7,070.61	7,015.86	7,015.12	48.27	138.89	-86.18	-1,062.03	3,163.59	12,590.21	12,403.05	187.16	67.270	
16,200.00	7,070.28	7,015.53	7,014.79	48.57	138.88	-86.15	-1,062.03	3,163.59	12,690.09	12,502.63	187.45	67.697	
16,300.00	7,069.95	7,015.21	7,014.47	48.87	138.88	-86.12	-1,062.03	3,163.59	12,789.97	12,602.22	187.75	68.124	
16,400.00	7,069.63	7,014.88	7,014.14	49.17	138.87	-86.09	-1,062.03	3,163.59	12,889.85	12,701.81	188.04	68.549	
16,419.92	7,069.56	7,014.81	7,014.07	49.23	138.87	-86.08	-1,062.03	3,163.59	12,909.75	12,721.65	188.10	68.633	
16,500.00	7,069.30	7,014.55	7,013.81	49.47	138.86	-86.06	-1,062.03	3,163.59	12,989.74	12,801.41	188.33	68.972	
16,591.83	7,069.00	7,014.25	7,013.51	49.75	138.86	-86.03	-1,062.03	3,163.59	13,081.46	12,892.86	188.60	69.360	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	137.79	-1,735.72	1,574.33	2,344.02				
100.00	100.00	43.51	43.51	0.23	0.39	137.79	-1,735.72	1,574.33	2,343.34	2,342.73	0.61	3,828.165	
200.00	200.00	143.51	143.51	0.53	1.27	137.79	-1,735.72	1,574.33	2,343.34	2,341.54	1.80	1,303.367	
300.00	300.00	243.51	243.51	0.83	2.16	137.79	-1,735.72	1,574.33	2,343.34	2,340.36	2.98	785.382	
400.00	400.00	343.51	343.51	1.13	3.51	137.79	-1,735.72	1,574.33	2,343.34	2,338.71	4.63	505.692	
500.00	500.00	443.51	443.51	1.43	5.35	137.79	-1,735.72	1,574.33	2,343.34	2,336.56	6.78	345.776	
600.00	599.98	543.49	543.49	1.73	7.19	-66.72	-1,735.72	1,574.33	2,342.65	2,333.73	8.92	262.635	
707.91	707.73	649.67	649.66	2.05	9.15	-66.89	-1,735.50	1,574.33	2,340.20	2,329.00	11.20	208.938	
800.00	799.58	740.16	740.16	2.33	10.82	-67.04	-1,735.62	1,574.33	2,337.67	2,324.52	13.14	177.843	
900.00	899.31	842.85	842.83	2.63	12.74	-67.20	-1,735.72	1,574.33	2,334.92	2,319.56	15.36	151.981	
1,000.00	999.05	942.58	942.56	2.93	14.63	-67.37	-1,735.72	1,574.33	2,332.11	2,314.56	17.56	132.840	
1,100.00	1,098.79	1,042.15	1,042.13	3.23	16.52	-67.54	-1,734.93	1,574.33	2,328.74	2,309.00	19.75	117.940	
1,200.00	1,198.52	1,137.55	1,137.52	3.53	18.33	-67.70	-1,735.06	1,574.33	2,326.08	2,304.22	21.86	106.431	
1,300.00	1,298.26	1,232.99	1,232.95	3.83	20.14	-67.85	-1,735.44	1,574.33	2,323.62	2,299.65	23.97	96.954	
1,400.00	1,398.00	1,341.56	1,341.51	4.13	22.20	-68.03	-1,735.72	1,574.33	2,321.08	2,294.75	26.33	88.157	
1,500.00	1,497.73	1,441.30	1,441.25	4.43	24.10	-68.19	-1,735.72	1,574.33	2,318.37	2,289.84	28.53	81.274	
1,600.00	1,597.47	1,540.76	1,540.71	4.73	25.99	-68.37	-1,735.18	1,574.33	2,315.29	2,284.57	30.72	75.375	
1,700.00	1,697.21	1,637.69	1,637.63	5.03	27.83	-68.53	-1,735.28	1,574.33	2,312.69	2,279.83	32.86	70.380	
1,800.00	1,796.94	1,734.63	1,734.58	5.33	29.68	-68.68	-1,735.54	1,574.33	2,310.23	2,275.23	35.00	66.000	
1,900.00	1,896.68	1,840.27	1,840.19	5.63	31.72	-68.86	-1,735.72	1,574.33	2,307.73	2,270.38	37.35	61.791	
2,000.00	1,996.42	1,940.01	1,939.93	5.93	33.68	-69.03	-1,735.72	1,574.33	2,305.12	2,265.51	39.60	58.207	
2,100.00	2,096.15	2,039.39	2,039.30	6.23	35.62	-69.21	-1,734.91	1,574.33	2,301.94	2,260.09	41.85	55.004	
2,200.00	2,195.89	2,135.05	2,134.96	6.53	37.50	-69.37	-1,735.05	1,574.33	2,299.48	2,255.45	44.03	52.231	
2,300.00	2,295.63	2,230.75	2,230.66	6.83	39.38	-69.52	-1,735.43	1,574.33	2,297.21	2,251.01	46.20	49.722	
2,400.00	2,395.36	2,339.00	2,338.88	7.13	41.50	-69.70	-1,735.72	1,574.33	2,294.87	2,246.24	48.63	47.195	
2,500.00	2,495.10	2,438.74	2,438.61	7.43	43.46	-69.87	-1,735.72	1,574.33	2,292.36	2,241.47	50.88	45.050	
2,600.00	2,594.84	2,538.15	2,538.02	7.73	45.41	-70.05	-1,734.91	1,574.33	2,289.30	2,236.16	53.14	43.083	
2,700.00	2,694.57	2,633.89	2,633.76	8.03	47.29	-70.22	-1,735.05	1,574.33	2,286.93	2,231.61	55.32	41.342	
2,800.00	2,794.31	2,729.66	2,729.53	8.33	49.17	-70.37	-1,735.43	1,574.33	2,284.76	2,227.26	57.50	39.736	
2,900.00	2,894.05	2,837.73	2,837.56	8.63	51.33	-70.55	-1,735.72	1,574.33	2,282.52	2,222.56	59.96	38.068	
3,000.00	2,993.78	2,937.46	2,937.30	8.93	53.36	-70.72	-1,735.72	1,574.33	2,280.11	2,217.82	62.28	36.609	
3,100.00	3,093.52	3,036.92	3,036.74	9.23	55.37	-70.91	-1,734.91	1,574.33	2,277.15	2,212.55	64.60	35.249	
3,200.00	3,193.26	3,132.74	3,132.56	9.53	57.32	-71.07	-1,735.04	1,574.33	2,274.89	2,208.04	66.85	34.032	
3,300.00	3,292.99	3,228.60	3,228.42	9.83	59.26	-71.23	-1,735.42	1,574.33	2,272.81	2,203.72	69.09	32.896	
3,400.00	3,392.73	3,336.47	3,336.24	10.13	61.50	-71.41	-1,735.72	1,574.33	2,270.67	2,199.05	71.63	31.702	
3,500.00	3,492.47	3,436.21	3,435.98	10.43	63.60	-71.59	-1,735.72	1,574.33	2,268.37	2,194.34	74.03	30.642	
3,600.00	3,592.20	3,535.94	3,535.72	10.73	65.70	-71.76	-1,735.72	1,574.33	2,266.08	2,189.65	76.43	29.649	
3,700.00	3,691.94	3,635.68	3,635.45	11.03	67.81	-71.93	-1,735.72	1,574.33	2,263.82	2,184.98	78.83	28.716	
3,800.00	3,791.68	3,735.42	3,735.19	11.33	69.91	-72.11	-1,735.72	1,574.33	2,261.57	2,180.34	81.24	27.839	
3,900.00	3,891.41	3,835.15	3,834.93	11.63	72.01	-72.28	-1,735.72	1,574.33	2,259.35	2,175.71	83.64	27.013	
4,000.00	3,991.15	3,934.89	3,934.66	11.93	74.12	-72.46	-1,735.72	1,574.33	2,257.15	2,171.11	86.04	26.233	
4,100.00	4,090.89	4,034.63	4,034.40	12.23	76.22	-72.63	-1,735.72	1,574.33	2,254.97	2,166.52	88.45	25.496	
4,200.00	4,190.62	4,134.36	4,134.14	12.53	78.32	-72.81	-1,735.72	1,574.33	2,252.81	2,161.96	90.85	24.797	
4,300.00	4,290.36	4,232.88	4,232.62	12.83	80.40	-73.05	-1,731.96	1,574.33	2,248.18	2,154.96	93.23	24.115	
4,400.00	4,390.10	4,331.18	4,330.91	13.13	82.47	-73.23	-1,732.09	1,574.33	2,246.16	2,150.56	95.60	23.496	
4,500.00	4,489.84	4,429.49	4,429.22	13.43	84.54	-73.40	-1,732.32	1,574.33	2,244.22	2,146.25	97.97	22.907	
4,600.00	4,589.57	4,527.82	4,527.54	13.73	86.62	-73.56	-1,732.64	1,574.33	2,242.37	2,142.03	100.34	22.347	
4,700.00	4,689.31	4,626.16	4,625.88	14.03	88.69	-73.73	-1,733.06	1,574.33	2,240.61	2,137.89	102.72	21.813	
4,800.00	4,789.05	4,724.52	4,724.23	14.33	90.77	-73.90	-1,733.58	1,574.33	2,238.93	2,133.83	105.09	21.305	
4,900.00	4,888.78	4,822.89	4,822.59	14.63	92.84	-74.06	-1,734.19	1,574.33	2,237.33	2,129.86	107.47	20.819	
5,000.00	4,988.52	4,921.27	4,920.97	14.93	94.91	-74.22	-1,734.91	1,574.33	2,235.81	2,125.97	109.84	20.355	
5,100.00	5,088.26	5,032.26	5,031.77	15.23	97.26	-74.40	-1,735.72	1,574.33	2,234.35	2,121.86	112.48	19.864	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,132.00	5,131.51	15.53	99.37	-74.58	-1,735.72	1,574.33	2,232.40	2,117.51	114.89	19.430	
5,300.00	5,287.73	5,231.73	5,231.24	15.83	101.48	-74.76	-1,735.72	1,574.33	2,230.48	2,113.17	117.31	19.014	
5,400.00	5,387.47	5,331.47	5,330.98	16.13	103.59	-74.94	-1,735.72	1,574.33	2,228.58	2,108.86	119.72	18.615	
5,500.00	5,487.20	5,431.21	5,430.72	16.43	105.71	-75.12	-1,735.72	1,574.33	2,226.70	2,104.57	122.13	18.232	
5,600.00	5,586.94	5,530.94	5,530.45	16.73	107.82	-75.30	-1,735.72	1,574.33	2,224.85	2,100.30	124.55	17.864	
5,700.00	5,686.68	5,630.68	5,630.19	17.03	109.93	-75.48	-1,735.72	1,574.33	2,223.01	2,096.05	126.96	17.510	
5,800.00	5,786.41	5,730.42	5,729.93	17.33	112.05	-75.66	-1,735.72	1,574.33	2,221.20	2,091.83	129.37	17.169	
5,900.00	5,886.15	5,830.15	5,829.66	17.63	114.16	-75.84	-1,735.72	1,574.33	2,219.41	2,087.63	131.79	16.841	
6,000.00	5,985.89	5,929.89	5,929.40	17.93	116.27	-76.02	-1,735.72	1,574.33	2,217.65	2,083.45	134.20	16.525	
6,100.00	6,085.62	6,029.63	6,029.14	18.23	118.39	-76.21	-1,735.72	1,574.33	2,215.90	2,079.29	136.61	16.220	
6,200.00	6,185.36	6,129.36	6,128.87	18.53	120.50	-76.39	-1,735.72	1,574.33	2,214.18	2,075.16	139.02	15.927	
6,300.00	6,285.10	6,229.10	6,228.61	18.83	122.61	-76.57	-1,735.72	1,574.33	2,212.48	2,071.04	141.44	15.643	
6,400.00	6,384.83	6,328.84	6,328.35	19.13	124.72	-76.75	-1,735.72	1,574.33	2,210.80	2,066.95	143.85	15.369	
6,409.28	6,394.08	6,338.09	6,337.60	19.16	124.92	-76.77	-1,735.72	1,574.33	2,210.65	2,066.58	144.07	15.344	CC, ES, SF
6,500.00	6,484.57	6,219.00	6,218.33	19.43	122.40	-76.55	-1,735.72	1,574.33	2,219.08	2,077.79	141.29	15.706	
6,559.90	6,544.31	6,219.00	6,218.33	19.61	122.40	-76.55	-1,735.72	1,574.33	2,224.55	2,083.42	141.13	15.763	
6,600.00	6,584.23	6,219.00	6,218.33	19.73	122.40	-108.38	-1,735.72	1,574.33	2,230.21	2,089.23	140.97	15.820	
6,650.00	6,633.60	6,219.00	6,218.33	19.88	122.40	-121.71	-1,735.72	1,574.33	2,241.27	2,100.53	140.74	15.925	
6,700.00	6,682.15	6,219.00	6,218.33	20.03	122.40	-126.55	-1,735.72	1,574.33	2,256.66	2,116.18	140.47	16.065	
6,750.00	6,729.52	6,219.00	6,218.33	20.18	122.40	-128.32	-1,735.72	1,574.33	2,276.15	2,135.97	140.18	16.237	
6,800.00	6,775.36	6,219.00	6,218.33	20.33	122.40	-128.48	-1,735.72	1,574.33	2,299.51	2,159.64	139.88	16.440	
6,850.00	6,819.31	6,219.00	6,218.33	20.48	122.40	-127.55	-1,735.72	1,574.33	2,326.45	2,186.87	139.57	16.668	
6,900.00	6,861.04	6,219.00	6,218.33	20.63	122.40	-125.72	-1,735.72	1,574.33	2,356.63	2,217.34	139.29	16.919	
6,950.00	6,900.22	6,219.00	6,218.33	20.78	122.40	-123.04	-1,735.72	1,574.33	2,389.71	2,250.68	139.03	17.188	
7,000.00	6,936.57	6,219.00	6,218.33	20.93	122.40	-119.49	-1,735.72	1,574.33	2,425.33	2,286.51	138.82	17.471	
7,050.00	6,969.80	6,219.00	6,218.33	21.08	122.40	-115.01	-1,735.72	1,574.33	2,463.11	2,324.46	138.65	17.765	
7,100.00	6,999.67	6,219.00	6,218.33	21.23	122.40	-109.55	-1,735.72	1,574.33	2,502.66	2,364.13	138.53	18.065	
7,150.00	7,025.94	6,219.00	6,218.33	21.38	122.40	-103.12	-1,735.72	1,574.33	2,543.63	2,405.15	138.48	18.368	
7,200.00	7,048.41	6,219.00	6,218.33	21.53	122.40	-95.79	-1,735.72	1,574.33	2,585.63	2,447.14	138.49	18.671	
7,250.00	7,066.92	6,219.00	6,218.33	21.68	122.40	-87.79	-1,735.72	1,574.33	2,628.30	2,489.75	138.55	18.970	
7,300.00	7,081.33	6,219.00	6,218.33	21.83	122.40	-79.49	-1,735.72	1,574.33	2,671.29	2,532.61	138.68	19.262	
7,350.00	7,091.51	6,219.00	6,218.33	21.98	122.40	-71.30	-1,735.72	1,574.33	2,714.28	2,575.40	138.87	19.545	
7,400.00	7,097.41	6,219.00	6,218.33	22.13	122.40	-63.60	-1,735.72	1,574.33	2,756.93	2,617.81	139.12	19.818	
7,444.73	7,099.00	6,219.00	6,218.33	22.27	122.40	-57.35	-1,735.72	1,574.33	2,794.56	2,655.18	139.38	20.050	
7,500.00	7,098.82	6,219.00	6,218.33	22.44	122.40	-57.35	-1,735.72	1,574.33	2,840.82	2,701.10	139.72	20.332	
7,600.00	7,098.49	6,219.00	6,218.33	22.74	122.40	-57.35	-1,735.72	1,574.33	2,925.31	2,784.99	140.32	20.847	
7,700.00	7,098.16	6,219.00	6,218.33	23.04	122.40	-57.35	-1,735.72	1,574.33	3,010.76	2,869.86	140.90	21.368	
7,800.00	7,097.83	6,219.00	6,218.33	23.34	122.40	-57.35	-1,735.72	1,574.33	3,097.08	2,955.62	141.46	21.894	
7,900.00	7,097.51	6,219.00	6,218.33	23.64	122.40	-57.35	-1,735.72	1,574.33	3,184.20	3,042.20	142.00	22.424	
8,000.00	7,097.18	6,219.00	6,218.33	23.94	122.40	-57.35	-1,735.72	1,574.33	3,272.05	3,129.53	142.52	22.959	
8,100.00	7,096.85	6,219.00	6,218.33	24.24	122.40	-57.35	-1,735.72	1,574.33	3,360.58	3,217.56	143.02	23.497	
8,200.00	7,096.52	6,219.00	6,218.33	24.54	122.40	-57.35	-1,735.72	1,574.33	3,449.74	3,306.23	143.51	24.038	
8,300.00	7,096.19	6,219.00	6,218.33	24.84	122.40	-57.35	-1,735.72	1,574.33	3,539.48	3,395.49	143.99	24.581	
8,400.00	7,095.87	6,219.00	6,218.33	25.14	122.40	-57.35	-1,735.72	1,574.33	3,629.76	3,485.30	144.46	25.127	
8,500.00	7,095.54	6,219.00	6,218.33	25.44	122.40	-57.35	-1,735.72	1,574.33	3,720.53	3,575.63	144.91	25.675	
8,600.00	7,095.21	6,219.00	6,218.33	25.74	122.40	-57.35	-1,735.72	1,574.33	3,811.77	3,666.42	145.35	26.224	
8,700.00	7,094.88	6,219.00	6,218.33	26.04	122.40	-57.35	-1,735.72	1,574.33	3,903.43	3,757.65	145.79	26.775	
8,800.00	7,094.55	6,219.00	6,218.33	26.35	122.40	-57.35	-1,735.72	1,574.33	3,995.50	3,849.29	146.21	27.327	
8,900.00	7,094.23	6,219.00	6,218.33	26.65	122.40	-57.35	-1,735.72	1,574.33	4,087.94	3,941.31	146.63	27.880	
9,000.00	7,093.90	6,219.00	6,218.33	26.95	122.40	-57.35	-1,735.72	1,574.33	4,180.72	4,033.69	147.04	28.433	
9,100.00	7,093.57	6,219.00	6,218.33	27.25	122.40	-57.35	-1,735.72	1,574.33	4,273.83	4,126.39	147.44	28.987	
9,200.00	7,093.24	6,219.00	6,218.33	27.55	122.40	-57.35	-1,735.72	1,574.33	4,367.25	4,219.41	147.84	29.541	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	6,219.00	6,218.33	27.85	122.40	-57.35	-1,735.72	1,574.33	4,460.95	4,312.72	148.23	30.096	
9,400.00	7,092.59	6,219.00	6,218.33	28.15	122.40	-57.35	-1,735.72	1,574.33	4,554.92	4,406.31	148.61	30.650	
9,500.00	7,092.26	6,219.00	6,218.33	28.45	122.40	-57.35	-1,735.72	1,574.33	4,649.14	4,500.15	148.99	31.204	
9,600.00	7,091.93	6,219.00	6,218.33	28.75	122.40	-57.35	-1,735.72	1,574.33	4,743.60	4,594.23	149.37	31.758	
9,700.00	7,091.60	6,219.00	6,218.33	29.05	122.40	-57.35	-1,735.72	1,574.33	4,838.28	4,688.54	149.74	32.312	
9,800.00	7,091.27	6,219.00	6,218.33	29.35	122.40	-57.35	-1,735.72	1,574.33	4,933.17	4,783.06	150.11	32.865	
9,900.00	7,090.95	6,219.00	6,218.33	29.65	122.40	-57.35	-1,735.72	1,574.33	5,028.25	4,877.79	150.47	33.417	
10,000.00	7,090.62	6,219.00	6,218.33	29.95	122.40	-57.35	-1,735.72	1,574.33	5,123.53	4,972.70	150.83	33.969	
10,100.00	7,090.29	6,219.00	6,218.33	30.25	122.40	-57.35	-1,735.72	1,574.33	5,218.98	5,067.80	151.19	34.520	
10,200.00	7,089.96	6,219.00	6,218.33	30.55	122.40	-57.35	-1,735.72	1,574.33	5,314.60	5,163.06	151.54	35.071	
10,300.00	7,089.63	6,219.00	6,218.33	30.85	122.40	-57.35	-1,735.72	1,574.33	5,410.38	5,258.49	151.89	35.620	
10,400.00	7,089.31	6,219.00	6,218.33	31.15	122.40	-57.35	-1,735.72	1,574.33	5,506.31	5,354.07	152.24	36.169	
10,500.00	7,088.98	6,219.00	6,218.33	31.45	122.40	-57.35	-1,735.72	1,574.33	5,602.38	5,449.79	152.59	36.716	
10,600.00	7,088.65	6,219.00	6,218.33	31.75	122.40	-57.35	-1,735.72	1,574.33	5,698.58	5,545.65	152.93	37.263	
10,700.00	7,088.32	6,219.00	6,218.33	32.06	122.40	-57.35	-1,735.72	1,574.33	5,794.92	5,641.64	153.27	37.808	
10,800.00	7,087.99	6,219.00	6,218.33	32.36	122.40	-57.35	-1,735.72	1,574.33	5,891.37	5,737.76	153.61	38.352	
10,900.00	7,087.67	6,219.00	6,218.33	32.66	122.40	-57.35	-1,735.72	1,574.33	5,987.94	5,833.99	153.95	38.896	
11,000.00	7,087.34	6,219.00	6,218.33	32.96	122.40	-57.35	-1,735.72	1,574.33	6,084.63	5,930.34	154.29	39.438	
11,100.00	7,087.01	6,219.00	6,218.33	33.26	122.40	-57.35	-1,735.72	1,574.33	6,181.42	6,026.80	154.62	39.978	
11,200.00	7,086.68	6,219.00	6,218.33	33.56	122.40	-57.35	-1,735.72	1,574.33	6,278.30	6,123.35	154.95	40.518	
11,300.00	7,086.35	6,219.00	6,218.33	33.86	122.40	-57.35	-1,735.72	1,574.33	6,375.29	6,220.01	155.28	41.056	
11,400.00	7,086.03	6,219.00	6,218.33	34.16	122.40	-57.35	-1,735.72	1,574.33	6,472.37	6,316.75	155.61	41.592	
11,500.00	7,085.70	6,219.00	6,218.33	34.46	122.40	-57.35	-1,735.72	1,574.33	6,569.53	6,413.59	155.94	42.128	
11,600.00	7,085.37	6,219.00	6,218.33	34.76	122.40	-57.35	-1,735.72	1,574.33	6,666.78	6,510.51	156.27	42.662	
11,700.00	7,085.04	6,219.00	6,218.33	35.06	122.40	-57.35	-1,735.72	1,574.33	6,764.11	6,607.51	156.60	43.194	
11,800.00	7,084.71	6,219.00	6,218.33	35.36	122.40	-57.35	-1,735.72	1,574.33	6,861.51	6,704.59	156.92	43.726	
11,900.00	7,084.39	6,219.00	6,218.33	35.66	122.40	-57.35	-1,735.72	1,574.33	6,958.99	6,801.75	157.25	44.255	
12,000.00	7,084.06	6,219.00	6,218.33	35.96	122.40	-57.35	-1,735.72	1,574.33	7,056.54	6,898.97	157.57	44.784	
12,100.00	7,083.73	6,219.00	6,218.33	36.26	122.40	-57.35	-1,735.72	1,574.33	7,154.16	6,996.27	157.89	45.311	
12,200.00	7,083.40	6,219.00	6,218.33	36.56	122.40	-57.35	-1,735.72	1,574.33	7,251.84	7,093.63	158.21	45.836	
12,300.00	7,083.07	6,219.00	6,218.33	36.86	122.40	-57.35	-1,735.72	1,574.33	7,349.59	7,191.05	158.53	46.360	
12,400.00	7,082.75	6,219.00	6,218.33	37.16	122.40	-57.35	-1,735.72	1,574.33	7,447.39	7,288.54	158.85	46.882	
12,500.00	7,082.42	6,219.00	6,218.33	37.46	122.40	-57.35	-1,735.72	1,574.33	7,545.25	7,386.08	159.17	47.403	
12,600.00	7,082.09	6,219.00	6,218.33	37.76	122.40	-57.35	-1,735.72	1,574.33	7,643.17	7,483.68	159.49	47.922	
12,700.00	7,081.76	6,219.00	6,218.33	38.06	122.40	-57.35	-1,735.72	1,574.33	7,741.14	7,581.33	159.81	48.440	
12,800.00	7,081.43	6,219.00	6,218.33	38.36	122.40	-57.35	-1,735.72	1,574.33	7,839.17	7,679.04	160.13	48.956	
12,900.00	7,081.11	6,219.00	6,218.33	38.66	122.40	-57.35	-1,735.72	1,574.33	7,937.24	7,776.79	160.44	49.471	
13,000.00	7,080.78	6,219.00	6,218.33	38.96	122.40	-57.35	-1,735.72	1,574.33	8,035.36	7,874.60	160.76	49.984	
13,100.00	7,080.45	6,219.00	6,218.33	39.26	122.40	-57.35	-1,735.72	1,574.33	8,133.52	7,972.45	161.07	50.496	
13,200.00	7,080.12	6,219.00	6,218.33	39.56	122.40	-57.35	-1,735.72	1,574.33	8,231.73	8,070.34	161.39	51.006	
13,300.00	7,079.79	6,219.00	6,218.33	39.86	122.40	-57.35	-1,735.72	1,574.33	8,329.98	8,168.28	161.70	51.515	
13,400.00	7,079.47	6,219.00	6,218.33	40.16	122.40	-57.35	-1,735.72	1,574.33	8,428.27	8,266.26	162.02	52.022	
13,500.00	7,079.14	6,219.00	6,218.33	40.46	122.40	-57.35	-1,735.72	1,574.33	8,526.61	8,364.28	162.33	52.527	
13,600.00	7,078.81	6,219.00	6,218.33	40.77	122.40	-57.35	-1,735.72	1,574.33	8,624.98	8,462.33	162.64	53.031	
13,700.00	7,078.48	6,219.00	6,218.33	41.07	122.40	-57.35	-1,735.72	1,574.33	8,723.38	8,560.43	162.95	53.533	
13,800.00	7,078.15	6,219.00	6,218.33	41.37	122.40	-57.35	-1,735.72	1,574.33	8,821.83	8,658.56	163.27	54.034	
13,900.00	7,077.83	6,219.00	6,218.33	41.67	122.40	-57.35	-1,735.72	1,574.33	8,920.31	8,756.73	163.58	54.533	
14,000.00	7,077.50	6,219.00	6,218.33	41.97	122.40	-57.35	-1,735.72	1,574.33	9,018.82	8,854.93	163.89	55.030	
14,100.00	7,077.17	6,219.00	6,218.33	42.27	122.40	-57.35	-1,735.72	1,574.33	9,117.36	8,953.16	164.20	55.526	
14,200.00	7,076.84	6,219.00	6,218.33	42.57	122.40	-57.35	-1,735.72	1,574.33	9,215.94	9,051.43	164.51	56.021	
14,300.00	7,076.51	6,219.00	6,218.33	42.87	122.40	-57.35	-1,735.72	1,574.33	9,314.54	9,149.72	164.82	56.514	
14,400.00	7,076.19	6,219.00	6,218.33	43.17	122.40	-57.35	-1,735.72	1,574.33	9,413.18	9,248.05	165.13	57.005	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	6,219.00	6,218.33	43.47	122.40	-57.35	-1,735.72	1,574.33	9,511.84	9,346.40	165.44	57.495	
14,600.00	7,075.53	6,219.00	6,218.33	43.77	122.40	-57.35	-1,735.72	1,574.33	9,610.53	9,444.78	165.75	57.983	
14,700.00	7,075.20	6,219.00	6,218.33	44.07	122.40	-57.35	-1,735.72	1,574.33	9,709.25	9,543.19	166.06	58.469	
14,800.00	7,074.87	6,219.00	6,218.33	44.37	122.40	-57.35	-1,735.72	1,574.33	9,807.99	9,641.63	166.37	58.954	
14,900.00	7,074.55	6,219.00	6,218.33	44.67	122.40	-57.35	-1,735.72	1,574.33	9,906.76	9,740.09	166.67	59.438	
15,000.00	7,074.22	6,219.00	6,218.33	44.97	122.40	-57.35	-1,735.72	1,574.33	10,005.56	9,838.58	166.98	59.920	
15,100.00	7,073.89	6,219.00	6,218.33	45.27	122.40	-57.35	-1,735.72	1,574.33	10,104.38	9,937.08	167.29	60.400	
15,200.00	7,073.56	6,219.00	6,218.33	45.57	122.40	-57.35	-1,735.72	1,574.33	10,203.22	10,035.62	167.60	60.879	
15,300.00	7,073.23	6,219.00	6,218.33	45.87	122.40	-57.35	-1,735.72	1,574.33	10,302.08	10,134.17	167.91	61.356	
15,400.00	7,072.91	6,219.00	6,218.33	46.17	122.40	-57.35	-1,735.72	1,574.33	10,400.96	10,232.75	168.21	61.832	
15,500.00	7,072.58	6,219.00	6,218.33	46.47	122.40	-57.35	-1,735.72	1,574.33	10,499.87	10,331.35	168.52	62.306	
15,600.00	7,072.25	6,219.00	6,218.33	46.77	122.40	-57.35	-1,735.72	1,574.33	10,598.80	10,429.97	168.83	62.779	
15,700.00	7,071.92	6,219.00	6,218.33	47.07	122.40	-57.35	-1,735.72	1,574.33	10,697.74	10,528.61	169.13	63.250	
15,800.00	7,071.59	6,219.00	6,218.33	47.37	122.40	-57.35	-1,735.72	1,574.33	10,796.71	10,627.27	169.44	63.720	
15,900.00	7,071.27	6,219.00	6,218.33	47.67	122.40	-57.35	-1,735.72	1,574.33	10,895.69	10,725.95	169.75	64.188	
16,000.00	7,070.94	6,219.00	6,218.33	47.97	122.40	-57.35	-1,735.72	1,574.33	10,994.69	10,824.64	170.05	64.655	
16,100.00	7,070.61	6,219.00	6,218.33	48.27	122.40	-57.35	-1,735.72	1,574.33	11,093.72	10,923.36	170.36	65.120	
16,200.00	7,070.28	6,219.00	6,218.33	48.57	122.40	-57.35	-1,735.72	1,574.33	11,192.75	11,022.09	170.66	65.584	
16,300.00	7,069.95	6,219.00	6,218.33	48.87	122.40	-57.35	-1,735.72	1,574.33	11,291.81	11,120.84	170.97	66.046	
16,400.00	7,069.63	6,219.00	6,218.33	49.17	122.40	-57.35	-1,735.72	1,574.33	11,390.88	11,219.61	171.28	66.506	
16,419.92	7,069.56	6,219.00	6,218.33	49.23	122.40	-57.35	-1,735.72	1,574.33	11,410.62	11,239.28	171.34	66.598	
16,500.00	7,069.30	6,219.00	6,218.33	49.47	122.40	-57.35	-1,735.72	1,574.33	11,489.97	11,318.39	171.58	66.965	
16,591.83	7,069.00	6,219.00	6,218.33	49.75	122.40	-57.35	-1,735.72	1,574.33	11,580.97	11,409.11	171.86	67.386	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	153.79	153.79	0.00	0.13	117.46	-1,962.36	3,775.94	4,255.42				
100.00	100.00	250.49	250.49	0.23	0.25	117.47	-1,962.76	3,775.92	4,255.59	4,255.20	0.39	N/A	
200.00	200.00	346.90	346.90	0.53	0.38	117.47	-1,963.35	3,775.89	4,255.85	4,255.08	0.77	5,527.838	
300.00	300.00	443.30	443.30	0.83	0.51	117.48	-1,964.13	3,775.85	4,256.19	4,255.03	1.15	3,698.387	
400.00	400.00	545.77	545.76	1.13	0.62	117.49	-1,964.76	3,775.95	4,256.55	4,255.01	1.55	2,752.962	
500.00	500.00	651.51	651.50	1.43	0.62	117.48	-1,964.39	3,776.46	4,256.82	4,254.88	1.94	2,194.947	
600.00	599.98	794.37	794.35	1.73	0.61	-87.04	-1,962.56	3,776.75	4,256.28	4,253.98	2.30	1,848.361	
707.91	707.73	909.08	909.03	2.05	0.63	-87.18	-1,960.24	3,776.70	4,254.94	4,252.26	2.68	1,589.226	
800.00	799.58	991.73	991.67	2.33	0.67	-87.28	-1,958.64	3,776.72	4,253.81	4,250.82	3.00	1,418.906	
900.00	899.31	1,093.53	1,093.44	2.63	0.74	-87.40	-1,956.57	3,776.95	4,252.74	4,249.38	3.36	1,265.717	
1,000.00	999.05	1,195.93	1,195.82	2.93	0.82	-87.53	-1,954.35	3,777.01	4,251.49	4,247.76	3.73	1,141.335	
1,100.00	1,098.79	1,295.39	1,295.27	3.23	0.92	-87.65	-1,952.35	3,777.17	4,250.41	4,246.32	4.09	1,038.711	
1,200.00	1,198.52	1,392.67	1,392.52	3.53	1.01	-87.77	-1,950.38	3,777.16	4,249.20	4,244.74	4.46	952.773	
1,300.00	1,298.26	1,502.87	1,502.70	3.83	1.13	-87.90	-1,948.23	3,777.12	4,248.01	4,243.18	4.84	877.771	
1,400.00	1,398.00	1,595.11	1,594.92	4.13	1.23	-88.01	-1,946.59	3,776.98	4,246.82	4,241.61	5.21	815.325	
1,500.00	1,497.73	1,700.35	1,700.14	4.43	1.35	-88.14	-1,944.57	3,776.73	4,245.50	4,239.91	5.59	759.402	
1,600.00	1,597.47	1,808.14	1,807.91	4.73	1.48	-88.27	-1,942.40	3,776.57	4,244.25	4,238.27	5.98	710.271	
1,700.00	1,697.21	1,898.65	1,898.41	5.03	1.58	-88.38	-1,940.53	3,776.42	4,242.97	4,236.62	6.35	668.414	
1,800.00	1,796.94	2,007.24	2,006.97	5.33	1.71	-88.51	-1,938.20	3,776.10	4,241.55	4,234.82	6.74	629.564	
1,900.00	1,896.68	2,121.93	2,121.63	5.63	1.85	-88.65	-1,935.81	3,775.41	4,239.90	4,232.77	7.14	594.058	
2,000.00	1,996.42	2,212.83	2,212.51	5.93	1.96	-88.76	-1,933.94	3,774.82	4,238.25	4,230.73	7.52	563.738	
2,100.00	2,096.15	2,284.27	2,283.94	6.23	2.05	-88.84	-1,932.50	3,774.81	4,237.19	4,229.31	7.88	538.012	
2,200.00	2,195.89	2,377.76	2,377.41	6.53	2.16	-88.96	-1,930.70	3,774.97	4,236.37	4,228.12	8.25	513.596	
2,300.00	2,295.63	2,482.62	2,482.25	6.83	2.30	-89.08	-1,928.86	3,775.08	4,235.58	4,226.95	8.63	490.716	
2,400.00	2,395.36	2,596.58	2,596.20	7.13	2.44	-89.22	-1,926.99	3,774.93	4,234.64	4,225.62	9.03	469.111	
2,500.00	2,495.10	2,694.14	2,693.74	7.43	2.56	-89.33	-1,925.31	3,774.74	4,233.64	4,224.23	9.41	449.922	
2,600.00	2,594.84	2,776.95	2,776.54	7.73	2.67	-89.43	-1,923.68	3,774.90	4,232.89	4,223.11	9.77	433.086	
2,700.00	2,694.57	2,870.18	2,869.74	8.03	2.79	-89.55	-1,921.82	3,775.27	4,232.35	4,222.20	10.14	417.314	
2,800.00	2,794.31	2,964.55	2,964.09	8.33	2.90	-89.67	-1,920.03	3,775.73	4,231.95	4,221.44	10.51	402.709	
2,900.00	2,894.05	3,063.25	3,062.78	8.63	3.03	-89.79	-1,918.34	3,776.18	4,231.60	4,220.72	10.88	388.993	
3,000.00	2,993.78	3,163.52	3,163.04	8.93	3.16	-89.91	-1,916.74	3,776.59	4,231.29	4,220.04	11.25	376.134	
3,100.00	3,093.52	3,260.93	3,260.43	9.23	3.28	-90.02	-1,915.37	3,777.01	4,231.09	4,219.48	11.62	364.227	
3,200.00	3,193.26	3,357.82	3,357.32	9.53	3.40	-90.14	-1,914.06	3,777.44	4,230.95	4,218.97	11.98	353.097	
3,300.00	3,292.99	3,450.00	3,449.49	9.83	3.52	-90.24	-1,913.03	3,777.78	4,230.86	4,218.51	12.35	342.696	
3,336.39	3,329.29	3,501.39	3,500.88	9.94	3.58	-90.30	-1,912.43	3,777.98	4,230.82	4,218.33	12.49	338.732	
3,400.00	3,392.73	3,558.41	3,557.89	10.13	3.66	-90.37	-1,911.66	3,778.23	4,230.75	4,218.03	12.72	332.609	
3,478.33	3,470.85	3,633.31	3,632.79	10.36	3.75	-90.45	-1,910.84	3,778.50	4,230.70	4,217.69	13.01	325.300	CC
3,500.00	3,492.47	3,650.17	3,649.65	10.43	3.77	-90.47	-1,910.67	3,778.57	4,230.71	4,217.63	13.08	323.412	
3,600.00	3,592.20	3,745.19	3,744.66	10.73	3.89	-90.58	-1,909.79	3,779.06	4,230.87	4,217.43	13.44	314.793	
3,700.00	3,691.94	3,845.69	3,845.16	11.03	4.01	-90.69	-1,908.89	3,779.53	4,231.02	4,217.22	13.80	306.541	ES
3,800.00	3,791.68	3,925.00	3,924.46	11.33	4.08	-90.77	-1,908.73	3,779.98	4,231.54	4,217.40	14.14	299.321	
3,900.00	3,891.41	4,000.00	3,999.46	11.63	4.08	-90.84	-1,909.29	3,780.52	4,232.59	4,218.12	14.47	292.571	
4,000.00	3,991.15	4,074.59	4,074.04	11.93	4.07	-90.91	-1,910.51	3,781.34	4,234.33	4,219.53	14.80	286.078	
4,100.00	4,090.89	4,167.63	4,167.05	12.23	4.06	-90.98	-1,912.29	3,782.47	4,236.34	4,221.19	15.15	279.672	
4,200.00	4,190.62	4,265.03	4,264.43	12.53	4.06	-91.06	-1,914.19	3,783.71	4,238.41	4,222.91	15.50	273.457	
4,300.00	4,290.36	4,406.12	4,405.48	12.83	4.06	-91.18	-1,916.60	3,785.18	4,240.23	4,224.35	15.88	267.017	
4,400.00	4,390.10	4,529.37	4,528.72	13.13	4.05	-91.28	-1,917.93	3,785.60	4,241.12	4,224.86	16.26	260.870	
4,500.00	4,489.84	4,642.06	4,641.41	13.43	4.04	-91.38	-1,919.01	3,785.55	4,241.63	4,224.99	16.63	255.009	
4,600.00	4,589.57	4,742.03	4,741.38	13.73	4.03	-91.47	-1,919.78	3,785.44	4,242.00	4,225.00	17.00	249.508	
4,700.00	4,689.31	4,843.52	4,842.87	14.03	4.03	-91.55	-1,920.59	3,785.28	4,242.36	4,224.99	17.37	244.219	
4,800.00	4,789.05	4,938.10	4,937.45	14.33	4.03	-91.64	-1,921.42	3,785.19	4,242.82	4,225.08	17.74	239.217	
4,900.00	4,888.78	5,036.81	5,036.14	14.63	4.03	-91.72	-1,922.41	3,785.06	4,243.30	4,225.19	18.10	234.377	

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 750H - Slot B05
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 750H	**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
5,000.00	4,988.52	5,133.62	5,132.95	14.93	4.04	-91.80	-1,923.44	3,784.95	4,243.83	4,225.36	18.47	229.745	
5,100.00	5,088.26	5,229.74	5,229.07	15.23	4.05	-91.88	-1,924.47	3,784.89	4,244.42	4,225.58	18.84	225.299	
5,200.00	5,187.99	5,324.61	5,323.93	15.53	4.07	-91.96	-1,925.48	3,784.89	4,245.08	4,225.87	19.21	221.029	
5,300.00	5,287.73	5,419.68	5,418.99	15.83	4.09	-92.04	-1,926.49	3,785.14	4,245.98	4,226.40	19.57	216.917	
5,400.00	5,387.47	5,512.44	5,511.74	16.13	4.13	-92.12	-1,927.52	3,785.50	4,247.02	4,227.08	19.94	212.966	
5,500.00	5,487.20	5,612.43	5,611.73	16.43	4.17	-92.21	-1,928.67	3,785.94	4,248.15	4,227.83	20.32	209.093	
5,600.00	5,586.94	5,710.15	5,709.43	16.73	4.21	-92.29	-1,930.06	3,786.32	4,249.33	4,228.64	20.69	205.375	
5,700.00	5,686.68	5,835.27	5,834.55	17.03	4.25	-92.39	-1,932.03	3,786.27	4,250.17	4,229.09	21.08	201.605	
5,800.00	5,786.41	5,939.58	5,938.84	17.33	4.29	-92.47	-1,933.46	3,785.89	4,250.66	4,229.21	21.46	198.113	
5,900.00	5,886.15	6,044.92	6,044.18	17.63	4.33	-92.56	-1,934.48	3,785.56	4,251.05	4,229.22	21.83	194.736	
6,000.00	5,985.89	6,146.84	6,146.09	17.93	4.37	-92.64	-1,935.43	3,785.19	4,251.39	4,229.18	22.20	191.497	
6,100.00	6,085.62	6,240.76	6,240.01	18.23	4.42	-92.72	-1,936.39	3,784.84	4,251.76	4,229.19	22.57	188.411	
6,200.00	6,185.36	6,334.03	6,333.27	18.53	4.47	-92.80	-1,937.48	3,784.61	4,252.32	4,229.38	22.93	185.422	
6,300.00	6,285.10	6,429.74	6,428.98	18.83	4.52	-92.88	-1,938.57	3,784.50	4,252.99	4,229.69	23.30	182.510	
6,400.00	6,384.83	6,529.98	6,529.20	19.13	4.58	-92.96	-1,939.73	3,784.50	4,253.78	4,230.10	23.68	179.659	
6,500.00	6,484.57	6,632.91	6,632.13	19.43	4.64	-93.05	-1,940.77	3,784.48	4,254.52	4,230.46	24.05	176.881	
6,559.90	6,544.31	6,698.20	6,697.41	19.61	4.69	-93.10	-1,941.32	3,784.38	4,254.85	4,230.57	24.28	175.243	
6,600.00	6,584.23	6,742.81	6,742.03	19.73	4.71	-125.28	-1,941.72	3,784.26	4,256.35	4,231.92	24.43	174.216	
6,650.00	6,633.60	6,792.06	6,791.28	19.88	4.75	-139.17	-1,942.11	3,784.17	4,261.89	4,237.28	24.62	173.132	
6,700.00	6,682.15	6,838.84	6,838.05	20.03	4.78	-144.78	-1,942.48	3,784.04	4,271.43	4,246.63	24.80	172.241	
6,750.00	6,729.52	6,888.43	6,887.65	20.18	4.81	-147.51	-1,942.94	3,783.90	4,284.94	4,259.96	24.98	171.507	
6,800.00	6,775.36	6,933.45	6,932.65	20.33	4.84	-148.87	-1,943.35	3,783.75	4,302.31	4,277.14	25.17	170.959	
6,850.00	6,819.31	6,976.04	6,975.24	20.48	4.87	-149.41	-1,943.75	3,783.65	4,323.45	4,298.10	25.35	170.577	
6,900.00	6,861.04	7,014.47	7,013.67	20.63	4.90	-149.34	-1,944.10	3,783.57	4,348.19	4,322.67	25.52	170.360	
6,950.00	6,900.22	7,051.61	7,050.82	20.78	4.92	-148.76	-1,944.41	3,783.53	4,376.36	4,350.66	25.70	170.282 SF	
7,000.00	6,936.57	7,086.97	7,086.17	20.93	4.95	-147.70	-1,944.72	3,783.50	4,407.75	4,381.88	25.88	170.336	
7,050.00	6,969.80	7,119.10	7,118.30	21.08	4.97	-146.10	-1,944.98	3,783.48	4,442.12	4,416.07	26.05	170.518	
7,100.00	6,999.67	7,148.23	7,147.43	21.23	5.00	-143.87	-1,945.22	3,783.47	4,479.21	4,452.98	26.22	170.815	
7,150.00	7,025.94	7,169.69	7,168.89	21.38	5.01	-140.80	-1,945.41	3,783.47	4,518.75	4,492.36	26.39	171.236	
7,200.00	7,048.41	7,192.63	7,191.83	21.53	5.03	-136.75	-1,945.61	3,783.49	4,560.44	4,533.88	26.56	171.725	
7,250.00	7,066.92	7,209.57	7,208.76	21.68	5.04	-131.27	-1,945.77	3,783.50	4,603.95	4,577.23	26.72	172.304	
7,300.00	7,081.33	7,221.09	7,220.29	21.83	5.05	-123.87	-1,945.88	3,783.51	4,648.97	4,622.09	26.88	172.959	
7,350.00	7,091.51	7,229.66	7,228.86	21.98	5.06	-114.07	-1,945.95	3,783.53	4,695.13	4,668.10	27.04	173.662	
7,400.00	7,097.41	7,234.84	7,234.04	22.13	5.07	-101.58	-1,946.00	3,783.54	4,742.10	4,714.91	27.19	174.403	
7,444.73	7,099.00	7,236.18	7,235.38	22.27	5.07	-88.55	-1,946.01	3,783.54	4,784.49	4,757.16	27.33	175.089	
7,500.00	7,098.82	7,235.91	7,235.11	22.44	5.07	-88.54	-1,946.00	3,783.54	4,837.00	4,809.51	27.49	175.943	
7,600.00	7,098.49	7,235.43	7,234.63	22.74	5.07	-88.52	-1,946.00	3,783.54	4,932.18	4,904.38	27.79	177.467	
7,700.00	7,098.16	7,234.95	7,234.15	23.04	5.07	-88.50	-1,946.00	3,783.54	5,027.54	4,999.44	28.09	178.965	
7,800.00	7,097.83	7,234.47	7,233.67	23.34	5.07	-88.48	-1,945.99	3,783.54	5,123.07	5,094.68	28.39	180.437	
7,900.00	7,097.51	7,234.00	7,233.19	23.64	5.06	-88.46	-1,945.99	3,783.54	5,218.78	5,190.08	28.69	181.885	
8,000.00	7,097.18	7,233.52	7,232.72	23.94	5.06	-88.44	-1,945.98	3,783.54	5,314.64	5,285.65	28.99	183.308	
8,100.00	7,096.85	7,233.04	7,232.24	24.24	5.06	-88.43	-1,945.98	3,783.54	5,410.65	5,381.36	29.29	184.707	
8,200.00	7,096.52	7,232.57	7,231.77	24.54	5.06	-88.41	-1,945.97	3,783.54	5,506.80	5,477.21	29.59	186.082	
8,300.00	7,096.19	7,232.09	7,231.29	24.84	5.06	-88.39	-1,945.97	3,783.53	5,603.09	5,573.20	29.89	187.435	
8,400.00	7,095.87	7,231.62	7,230.82	25.14	5.06	-88.37	-1,945.97	3,783.53	5,699.51	5,669.31	30.19	188.765	
8,500.00	7,095.54	7,231.15	7,230.35	25.44	5.06	-88.35	-1,945.96	3,783.53	5,796.05	5,765.55	30.49	190.073	
8,600.00	7,095.21	7,230.68	7,229.87	25.74	5.06	-88.34	-1,945.96	3,783.53	5,892.70	5,861.91	30.79	191.359	
8,700.00	7,094.88	7,230.21	7,229.40	26.04	5.06	-88.32	-1,945.95	3,783.53	5,989.46	5,958.37	31.09	192.624	
8,800.00	7,094.55	7,229.74	7,228.93	26.35	5.06	-88.30	-1,945.95	3,783.53	6,086.33	6,054.93	31.39	193.868	
8,900.00	7,094.23	7,229.27	7,228.47	26.65	5.06	-88.28	-1,945.95	3,783.53	6,183.30	6,151.60	31.69	195.091	
9,000.00	7,093.90	7,228.80	7,228.00	26.95	5.06	-88.26	-1,945.94	3,783.53	6,280.36	6,248.36	31.99	196.295	
9,100.00	7,093.57	7,228.33	7,227.53	27.25	5.06	-88.25	-1,945.94	3,783.53	6,377.51	6,345.22	32.29	197.479	

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 750H - Slot B05
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 750H	**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
9,200.00	7,093.24	7,227.87	7,227.07	27.55	5.06	-88.23	-1,945.93	3,783.53	6,474.75	6,442.16	32.59	198.644	
9,300.00	7,092.91	7,227.40	7,226.60	27.85	5.06	-88.21	-1,945.93	3,783.53	6,572.07	6,539.18	32.89	199.791	
9,400.00	7,092.59	7,226.94	7,226.14	28.15	5.06	-88.19	-1,945.93	3,783.52	6,669.47	6,636.28	33.19	200.919	
9,500.00	7,092.26	7,226.48	7,225.67	28.45	5.06	-88.18	-1,945.92	3,783.52	6,766.95	6,733.46	33.49	202.029	
9,600.00	7,091.93	7,226.01	7,225.21	28.75	5.06	-88.16	-1,945.92	3,783.52	6,864.50	6,830.71	33.80	203.121	
9,700.00	7,091.60	7,225.55	7,224.75	29.05	5.06	-88.14	-1,945.91	3,783.52	6,962.12	6,928.03	34.10	204.197	
9,800.00	7,091.27	7,225.09	7,224.29	29.35	5.06	-88.12	-1,945.91	3,783.52	7,059.81	7,025.41	34.40	205.256	
9,900.00	7,090.95	7,225.00	7,224.20	29.65	5.06	-88.12	-1,945.91	3,783.52	7,157.56	7,122.86	34.70	206.296	
10,000.00	7,090.62	7,225.00	7,224.20	29.95	5.06	-88.12	-1,945.91	3,783.52	7,255.37	7,220.37	35.00	207.320	
10,100.00	7,090.29	7,225.00	7,224.20	30.25	5.06	-88.12	-1,945.91	3,783.52	7,353.24	7,317.94	35.30	208.329	
10,200.00	7,089.96	7,225.00	7,224.20	30.55	5.06	-88.12	-1,945.91	3,783.52	7,451.16	7,415.57	35.60	209.322	
10,300.00	7,089.63	7,225.00	7,224.20	30.85	5.06	-88.12	-1,945.91	3,783.52	7,549.15	7,513.25	35.90	210.300	
10,400.00	7,089.31	7,225.00	7,224.20	31.15	5.06	-88.12	-1,945.91	3,783.52	7,647.18	7,610.98	36.20	211.263	
10,500.00	7,088.98	7,222.58	7,221.78	31.45	5.06	-88.03	-1,945.89	3,783.52	7,745.26	7,708.77	36.50	212.222	
10,600.00	7,088.65	7,222.24	7,221.43	31.75	5.06	-88.01	-1,945.89	3,783.52	7,843.39	7,806.60	36.80	213.158	
10,700.00	7,088.32	7,221.90	7,221.10	32.06	5.05	-88.00	-1,945.88	3,783.51	7,941.57	7,904.48	37.10	214.080	
10,800.00	7,087.99	7,221.56	7,220.76	32.36	5.05	-87.99	-1,945.88	3,783.51	8,039.80	8,002.40	37.40	214.989	
10,900.00	7,087.67	7,221.23	7,220.43	32.66	5.05	-87.97	-1,945.88	3,783.51	8,138.06	8,100.37	37.70	215.884	
11,000.00	7,087.34	7,220.90	7,220.10	32.96	5.05	-87.96	-1,945.87	3,783.51	8,236.37	8,198.37	38.00	216.766	
11,100.00	7,087.01	7,220.58	7,219.77	33.26	5.05	-87.95	-1,945.87	3,783.51	8,334.72	8,296.42	38.30	217.636	
11,200.00	7,086.68	7,220.25	7,219.45	33.56	5.05	-87.94	-1,945.87	3,783.51	8,433.11	8,394.51	38.60	218.493	
11,300.00	7,086.35	7,219.93	7,219.13	33.86	5.05	-87.93	-1,945.87	3,783.51	8,531.53	8,492.63	38.90	219.338	
11,400.00	7,086.03	7,219.62	7,218.81	34.16	5.05	-87.91	-1,945.86	3,783.51	8,629.99	8,590.79	39.20	220.170	
11,500.00	7,085.70	7,219.30	7,218.50	34.46	5.05	-87.90	-1,945.86	3,783.51	8,728.49	8,688.99	39.50	220.991	
11,600.00	7,085.37	7,218.99	7,218.19	34.76	5.05	-87.89	-1,945.86	3,783.51	8,827.02	8,787.22	39.80	221.801	
11,700.00	7,085.04	7,218.68	7,217.88	35.06	5.05	-87.88	-1,945.85	3,783.51	8,925.58	8,885.48	40.10	222.599	
11,800.00	7,084.71	7,218.38	7,217.58	35.36	5.05	-87.87	-1,945.85	3,783.51	9,024.17	8,983.78	40.40	223.386	
11,900.00	7,084.39	7,218.08	7,217.27	35.66	5.05	-87.85	-1,945.85	3,783.51	9,122.80	9,082.10	40.70	224.163	
12,000.00	7,084.06	7,217.78	7,216.98	35.96	5.05	-87.84	-1,945.85	3,783.51	9,221.45	9,180.46	41.00	224.928	
12,100.00	7,083.73	7,217.48	7,216.68	36.26	5.05	-87.83	-1,945.84	3,783.51	9,320.14	9,278.84	41.30	225.684	
12,200.00	7,083.40	7,217.19	7,216.39	36.56	5.05	-87.82	-1,945.84	3,783.51	9,418.85	9,377.25	41.60	226.429	
12,300.00	7,083.07	7,216.90	7,216.09	36.86	5.05	-87.81	-1,945.84	3,783.51	9,517.58	9,475.69	41.90	227.164	
12,400.00	7,082.75	7,216.61	7,215.81	37.16	5.05	-87.80	-1,945.84	3,783.51	9,616.35	9,574.15	42.20	227.889	
12,500.00	7,082.42	7,216.32	7,215.52	37.46	5.05	-87.79	-1,945.83	3,783.51	9,715.14	9,672.64	42.50	228.604	
12,600.00	7,082.09	7,216.04	7,215.24	37.76	5.05	-87.78	-1,945.83	3,783.51	9,813.95	9,771.15	42.80	229.310	
12,700.00	7,081.76	7,215.76	7,214.96	38.06	5.05	-87.77	-1,945.83	3,783.51	9,912.79	9,869.69	43.10	230.007	
12,800.00	7,081.43	7,215.48	7,214.68	38.36	5.05	-87.76	-1,945.83	3,783.51	10,011.65	9,968.25	43.40	230.695	
12,900.00	7,081.11	7,215.20	7,214.40	38.66	5.05	-87.74	-1,945.82	3,783.50	10,110.53	10,066.83	43.70	231.374	
13,000.00	7,080.78	7,214.93	7,214.13	38.96	5.05	-87.73	-1,945.82	3,783.50	10,209.43	10,165.44	44.00	232.044	
13,100.00	7,080.45	7,214.66	7,213.86	39.26	5.05	-87.72	-1,945.82	3,783.50	10,308.36	10,264.06	44.30	232.705	
13,200.00	7,080.12	7,214.39	7,213.59	39.56	5.05	-87.71	-1,945.82	3,783.50	10,407.31	10,362.71	44.60	233.358	
13,300.00	7,079.79	7,214.12	7,213.32	39.86	5.05	-87.70	-1,945.81	3,783.50	10,506.27	10,461.37	44.90	234.003	
13,400.00	7,079.47	7,213.86	7,213.06	40.16	5.05	-87.69	-1,945.81	3,783.50	10,605.26	10,560.06	45.20	234.640	
13,500.00	7,079.14	7,213.60	7,212.80	40.46	5.05	-87.68	-1,945.81	3,783.50	10,704.26	10,658.76	45.50	235.268	
13,600.00	7,078.81	7,213.34	7,212.54	40.77	5.05	-87.67	-1,945.81	3,783.50	10,803.28	10,757.49	45.80	235.889	
13,700.00	7,078.48	7,213.08	7,212.28	41.07	5.05	-87.66	-1,945.80	3,783.50	10,902.33	10,856.23	46.10	236.502	
13,800.00	7,078.15	7,212.83	7,212.03	41.37	5.05	-87.65	-1,945.80	3,783.50	11,001.38	10,954.98	46.40	237.108	
13,900.00	7,077.83	7,212.57	7,211.77	41.67	5.05	-87.64	-1,945.80	3,783.50	11,100.46	11,053.76	46.70	237.706	
14,000.00	7,077.50	7,212.32	7,211.52	41.97	5.05	-87.63	-1,945.80	3,783.50	11,199.55	11,152.55	47.00	238.297	
14,100.00	7,077.17	7,212.08	7,211.27	42.27	5.05	-87.63	-1,945.80	3,783.50	11,298.66	11,251.36	47.30	238.881	
14,200.00	7,076.84	7,211.83	7,211.03	42.57	5.05	-87.62	-1,945.79	3,783.50	11,397.78	11,350.18	47.60	239.458	
14,300.00	7,076.51	7,211.58	7,210.78	42.87	5.05	-87.61	-1,945.79	3,783.50	11,496.92	11,449.02	47.90	240.027	

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 750H - Slot B05
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 750H	**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	7,076.19	7,211.34	7,210.54	43.17	5.05	-87.60	-1,945.79	3,783.50	11,596.07	11,547.87	48.20	240.591	
14,500.00	7,075.86	7,211.10	7,210.30	43.47	5.05	-87.59	-1,945.79	3,783.50	11,695.24	11,646.74	48.50	241.147	
14,600.00	7,075.53	7,210.86	7,210.06	43.77	5.05	-87.58	-1,945.78	3,783.50	11,794.42	11,745.62	48.80	241.697	
14,700.00	7,075.20	7,210.63	7,209.82	44.07	5.05	-87.57	-1,945.78	3,783.50	11,893.61	11,844.51	49.10	242.240	
14,800.00	7,074.87	7,210.39	7,209.59	44.37	5.05	-87.56	-1,945.78	3,783.50	11,992.82	11,943.42	49.40	242.777	
14,900.00	7,074.55	7,210.16	7,209.36	44.67	5.05	-87.55	-1,945.78	3,783.50	12,092.04	12,042.34	49.70	243.308	
15,000.00	7,074.22	7,209.93	7,209.13	44.97	5.05	-87.54	-1,945.78	3,783.50	12,191.28	12,141.28	50.00	243.833	
15,100.00	7,073.89	7,209.70	7,208.90	45.27	5.05	-87.53	-1,945.77	3,783.50	12,290.52	12,240.22	50.30	244.352	
15,200.00	7,073.56	7,209.47	7,208.67	45.57	5.04	-87.53	-1,945.77	3,783.50	12,389.78	12,339.18	50.60	244.864	
15,300.00	7,073.23	7,209.25	7,208.45	45.87	5.04	-87.52	-1,945.77	3,783.50	12,489.05	12,438.15	50.90	245.371	
15,400.00	7,072.91	7,209.02	7,208.22	46.17	5.04	-87.51	-1,945.77	3,783.50	12,588.33	12,537.13	51.20	245.873	
15,500.00	7,072.58	7,208.80	7,208.00	46.47	5.04	-87.50	-1,945.76	3,783.50	12,687.63	12,636.13	51.50	246.368	
15,600.00	7,072.25	7,208.58	7,207.78	46.77	5.04	-87.49	-1,945.76	3,783.50	12,786.93	12,735.13	51.80	246.859	
15,700.00	7,071.92	7,208.36	7,207.56	47.07	5.04	-87.48	-1,945.76	3,783.50	12,886.25	12,834.15	52.10	247.343	
15,800.00	7,071.59	7,208.15	7,207.35	47.37	5.04	-87.48	-1,945.76	3,783.50	12,985.57	12,933.17	52.40	247.823	
15,900.00	7,071.27	7,207.93	7,207.13	47.67	5.04	-87.47	-1,945.76	3,783.50	13,084.91	13,032.21	52.70	248.297	
16,000.00	7,070.94	7,207.72	7,206.92	47.97	5.04	-87.46	-1,945.75	3,783.50	13,184.25	13,131.25	53.00	248.766	
16,100.00	7,070.61	7,207.51	7,206.71	48.27	5.04	-87.45	-1,945.75	3,783.50	13,283.61	13,230.31	53.30	249.230	
16,200.00	7,070.28	7,207.30	7,206.50	48.57	5.04	-87.44	-1,945.75	3,783.50	13,382.97	13,329.37	53.60	249.688	
16,300.00	7,069.95	7,207.09	7,206.29	48.87	5.04	-87.44	-1,945.75	3,783.50	13,482.35	13,428.45	53.90	250.142	
16,400.00	7,069.63	7,206.88	7,206.08	49.17	5.04	-87.43	-1,945.75	3,783.50	13,581.73	13,527.53	54.20	250.591	
16,419.92	7,069.56	7,206.84	7,206.04	49.23	5.04	-87.43	-1,945.75	3,783.50	13,601.53	13,547.27	54.26	250.680	
16,500.00	7,069.30	7,206.68	7,205.88	49.47	5.04	-87.42	-1,945.74	3,783.50	13,681.12	13,626.63	54.50	251.036	
16,591.83	7,069.00	7,206.49	7,205.69	49.75	5.04	-87.41	-1,945.74	3,783.50	13,772.40	13,717.63	54.77	251.440	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-94.82	-781.53	-9,276.18	9,309.05				
100.00	100.00	107.49	86.51	0.23	1.05	-94.82	-781.53	-9,276.18	9,309.04	9,307.77	1.27	7,302.193	
200.00	200.00	186.51	186.51	0.53	2.47	-94.82	-781.53	-9,276.18	9,309.04	9,306.04	3.00	3,103.483	
300.00	300.00	286.52	286.51	0.83	4.28	-94.82	-781.53	-9,276.18	9,309.04	9,303.94	5.11	1,823.111	
400.00	400.00	386.52	386.51	1.13	6.18	-94.82	-781.53	-9,276.18	9,309.04	9,301.74	7.30	1,274.372	
500.00	500.00	486.52	486.51	1.43	8.20	-94.82	-781.53	-9,276.18	9,309.04	9,299.42	9.62	967.213	
600.00	599.98	586.50	586.49	1.73	10.22	60.75	-781.53	-9,276.18	9,308.19	9,296.24	11.94	779.319	
707.91	707.73	692.82	692.80	2.05	12.37	60.84	-780.79	-9,276.18	9,305.29	9,290.88	14.42	645.520	
800.00	799.58	782.85	782.83	2.33	14.18	60.87	-781.06	-9,276.18	9,302.06	9,285.55	16.51	563.425	
900.00	899.31	885.89	885.83	2.63	16.30	60.91	-781.53	-9,276.18	9,298.56	9,279.63	18.93	491.202	
1,000.00	999.05	985.63	985.56	2.93	18.56	60.95	-781.53	-9,276.18	9,295.03	9,273.54	21.49	432.531	
1,100.00	1,098.79	1,085.16	1,085.08	3.23	20.82	60.99	-780.62	-9,276.18	9,291.43	9,267.39	24.04	386.423	
1,200.00	1,198.52	1,181.90	1,181.82	3.53	23.01	61.03	-780.85	-9,276.18	9,287.93	9,261.39	26.54	350.006	
1,300.00	1,298.26	1,278.70	1,278.61	3.83	25.20	61.06	-781.46	-9,276.18	9,284.46	9,255.43	29.03	319.828	
1,400.00	1,398.00	1,384.68	1,384.51	4.13	27.55	61.10	-781.53	-9,276.18	9,280.95	9,249.28	31.67	293.006	
1,500.00	1,497.73	1,484.41	1,484.25	4.43	29.75	61.14	-781.53	-9,276.18	9,277.44	9,243.27	34.18	271.448	
1,600.00	1,597.47	1,580.65	1,580.46	4.73	31.88	61.19	-780.33	-9,276.18	9,273.85	9,237.24	36.60	253.362	
1,700.00	1,697.21	1,676.30	1,676.10	5.03	33.99	61.22	-781.08	-9,276.18	9,270.41	9,231.39	39.02	237.608	
1,800.00	1,796.94	1,783.71	1,783.46	5.33	36.19	61.26	-781.53	-9,276.18	9,266.94	9,225.43	41.52	223.208	
1,900.00	1,896.68	1,883.45	1,883.19	5.63	38.15	61.30	-781.53	-9,276.18	9,263.45	9,219.68	43.78	211.613	
2,000.00	1,996.42	1,983.18	1,982.93	5.93	40.11	61.34	-781.53	-9,276.18	9,259.96	9,213.93	46.03	201.155	
2,100.00	2,096.15	2,082.92	2,082.67	6.23	42.07	61.38	-781.53	-9,276.18	9,256.48	9,208.19	48.29	191.676	
2,200.00	2,195.89	2,182.66	2,182.40	6.53	44.02	61.42	-781.53	-9,276.18	9,253.00	9,202.45	50.55	183.043	
2,300.00	2,295.63	2,281.96	2,281.70	6.83	45.97	61.47	-779.86	-9,276.18	9,249.41	9,196.61	52.80	175.175	
2,400.00	2,395.36	2,380.88	2,380.61	7.13	47.92	61.50	-779.98	-9,276.18	9,245.95	9,190.90	55.04	167.976	
2,500.00	2,495.10	2,479.82	2,479.55	7.43	49.86	61.54	-780.23	-9,276.18	9,242.50	9,185.22	57.29	161.340	
2,600.00	2,594.84	2,578.77	2,578.50	7.73	51.80	61.58	-780.61	-9,276.18	9,239.07	9,179.54	59.53	155.203	
2,700.00	2,694.57	2,677.75	2,677.47	8.03	53.75	61.61	-781.10	-9,276.18	9,235.65	9,173.87	61.77	149.510	
2,800.00	2,794.31	2,781.17	2,780.82	8.33	55.80	61.65	-781.53	-9,276.18	9,232.22	9,168.09	64.13	143.960	
2,900.00	2,894.05	2,880.90	2,880.56	8.63	57.84	61.69	-781.53	-9,276.18	9,228.78	9,162.31	66.47	138.841	
3,000.00	2,993.78	2,980.64	2,980.30	8.93	59.88	61.73	-781.53	-9,276.18	9,225.33	9,156.52	68.81	134.070	
3,100.00	3,093.52	3,080.38	3,080.03	9.23	61.92	61.77	-781.53	-9,276.18	9,221.89	9,150.74	71.15	129.613	
3,200.00	3,193.26	3,180.11	3,179.77	9.53	63.96	61.81	-781.53	-9,276.18	9,218.46	9,144.97	73.49	125.440	
3,300.00	3,292.99	3,279.85	3,279.51	9.83	66.00	61.85	-781.53	-9,276.18	9,215.03	9,139.20	75.83	121.525	
3,400.00	3,392.73	3,379.59	3,379.24	10.13	68.04	61.89	-781.53	-9,276.18	9,211.60	9,133.44	78.17	117.844	
3,500.00	3,492.47	3,479.32	3,478.98	10.43	70.08	61.93	-781.53	-9,276.18	9,208.18	9,127.67	80.51	114.376	
3,600.00	3,592.20	3,578.64	3,578.28	10.73	72.11	61.98	-779.12	-9,276.18	9,204.61	9,121.77	82.84	111.115	
3,700.00	3,691.94	3,677.89	3,677.52	11.03	74.14	62.02	-779.23	-9,276.18	9,201.21	9,116.04	85.17	108.036	
3,800.00	3,791.68	3,777.15	3,776.78	11.33	76.17	62.06	-779.44	-9,276.18	9,197.82	9,110.32	87.50	105.120	
3,900.00	3,891.41	3,876.42	3,876.05	11.63	78.20	62.10	-779.73	-9,276.18	9,194.43	9,104.60	89.83	102.356	
4,000.00	3,991.15	3,975.71	3,975.33	11.93	80.23	62.14	-780.10	-9,276.18	9,191.06	9,098.90	92.16	99.731	
4,100.00	4,090.89	4,075.01	4,074.63	12.23	82.26	62.17	-780.56	-9,276.18	9,187.69	9,093.20	94.49	97.235	
4,200.00	4,190.62	4,174.32	4,173.94	12.53	84.29	62.21	-781.11	-9,276.18	9,184.33	9,087.51	96.82	94.860	
4,300.00	4,290.36	4,277.39	4,276.87	12.83	86.40	62.25	-781.53	-9,276.18	9,180.97	9,081.74	99.23	92.524	
4,400.00	4,390.10	4,377.13	4,376.61	13.13	88.44	62.29	-781.53	-9,276.18	9,177.59	9,076.02	101.57	90.359	
4,500.00	4,489.84	4,474.33	4,473.81	13.43	90.43	62.33	-781.08	-9,276.18	9,174.19	9,070.33	103.86	88.336	
4,600.00	4,589.57	4,576.64	4,576.09	13.73	92.61	62.37	-781.53	-9,276.18	9,170.84	9,064.51	106.33	86.246	
4,700.00	4,689.31	4,676.37	4,675.82	14.03	94.89	62.41	-781.53	-9,276.18	9,167.48	9,058.56	108.91	84.172	
4,800.00	4,789.05	4,775.94	4,775.38	14.33	97.16	62.45	-780.80	-9,276.18	9,164.07	9,052.58	111.49	82.197	
4,900.00	4,888.78	4,874.25	4,873.69	14.63	99.41	62.49	-780.98	-9,276.18	9,160.72	9,046.69	114.04	80.332	
5,000.00	4,988.52	4,972.60	4,972.04	14.93	101.66	62.53	-781.43	-9,276.18	9,157.39	9,040.81	116.58	78.547	
5,100.00	5,088.26	5,075.43	5,074.77	15.23	104.08	62.57	-781.53	-9,276.18	9,154.05	9,034.74	119.31	76.724	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,169.90	5,169.21	15.53	106.33	62.61	-781.15	-9,276.18	9,150.69	9,028.83	121.85	75.097	
5,300.00	5,287.73	5,274.97	5,274.24	15.83	108.70	62.65	-781.53	-9,276.18	9,147.36	9,022.84	124.52	73.460	
5,400.00	5,387.47	5,374.71	5,373.98	16.13	110.90	62.69	-781.53	-9,276.18	9,144.03	9,017.00	127.03	71.984	
5,500.00	5,487.20	5,474.44	5,473.72	16.43	113.11	62.73	-781.53	-9,276.18	9,140.70	9,011.16	129.53	70.566	
5,600.00	5,586.94	5,574.18	5,573.45	16.73	115.31	62.77	-781.53	-9,276.18	9,137.37	9,005.33	132.04	69.202	
5,700.00	5,686.68	5,673.92	5,673.19	17.03	117.52	62.81	-781.53	-9,276.18	9,134.05	8,999.50	134.54	67.889	
5,800.00	5,786.41	5,773.65	5,772.93	17.33	119.72	62.85	-781.53	-9,276.18	9,130.73	8,993.68	137.05	66.623	
5,900.00	5,886.15	5,872.79	5,872.03	17.63	121.92	62.91	-779.07	-9,276.18	9,127.30	8,987.76	139.54	65.409	
6,000.00	5,985.89	5,971.92	5,971.16	17.93	124.11	62.95	-779.29	-9,276.18	9,124.00	8,981.97	142.03	64.238	
6,100.00	6,085.62	6,071.07	6,070.30	18.23	126.30	62.98	-779.65	-9,276.18	9,120.72	8,976.19	144.53	63.107	
6,200.00	6,185.36	6,170.24	6,169.47	18.53	128.49	63.02	-780.16	-9,276.18	9,117.44	8,970.42	147.02	62.015	
6,300.00	6,285.10	6,269.43	6,268.66	18.83	130.69	63.06	-780.82	-9,276.18	9,114.18	8,964.66	149.51	60.959	
6,400.00	6,384.83	6,372.30	6,371.35	19.13	133.00	63.09	-781.53	-9,276.18	9,110.92	8,958.79	152.13	59.891	
6,500.00	6,484.57	6,472.04	6,471.08	19.43	135.47	63.14	-781.53	-9,276.18	9,107.63	8,952.74	154.89	58.800	
6,559.90	6,544.31	6,531.77	6,530.82	19.61	136.94	63.16	-781.53	-9,276.18	9,105.67	8,949.12	156.55	58.165	
6,600.00	6,584.23	6,571.70	6,570.75	19.73	137.93	30.98	-781.53	-9,276.18	9,102.95	8,945.30	157.66	57.739	
6,650.00	6,633.60	6,620.86	6,619.90	19.88	139.15	16.95	-780.17	-9,276.18	9,095.61	8,936.59	159.02	57.197	
6,700.00	6,682.15	6,668.64	6,667.67	20.03	140.33	11.04	-780.24	-9,276.18	9,084.05	8,923.70	160.35	56.650	
6,750.00	6,729.52	6,715.27	6,714.30	20.18	141.48	7.83	-780.41	-9,276.18	9,068.30	8,906.65	161.66	56.096	
6,800.00	6,775.36	6,760.40	6,759.42	20.33	142.60	5.81	-780.66	-9,276.18	9,048.49	8,885.57	162.92	55.539	
6,850.00	6,819.31	6,803.68	6,802.70	20.48	143.67	4.39	-780.99	-9,276.18	9,024.77	8,860.63	164.14	54.981	
6,900.00	6,861.04	6,844.79	6,843.80	20.63	144.68	3.30	-781.37	-9,276.18	8,997.31	8,832.00	165.31	54.427	
6,950.00	6,900.22	6,887.86	6,886.74	20.78	145.77	2.41	-781.53	-9,276.18	8,966.31	8,799.75	166.55	53.835	
7,000.00	6,936.57	6,924.21	6,923.08	20.93	146.71	1.62	-781.53	-9,276.18	8,932.01	8,764.37	167.64	53.282	
7,050.00	6,969.80	6,957.44	6,956.32	21.08	147.56	0.85	-781.53	-9,276.18	8,894.67	8,726.03	168.64	52.743	
7,100.00	6,999.67	6,987.31	6,986.18	21.23	148.33	0.04	-781.53	-9,276.18	8,854.59	8,685.03	169.56	52.221	
7,150.00	7,025.94	7,013.58	7,012.45	21.38	149.01	-0.90	-781.53	-9,276.18	8,812.07	8,641.69	170.39	51.718	
7,200.00	7,048.41	7,036.05	7,034.93	21.53	149.58	-2.08	-781.53	-9,276.18	8,767.43	8,596.31	171.11	51.237	
7,250.00	7,066.92	7,054.56	7,053.44	21.68	150.06	-3.77	-781.53	-9,276.18	8,721.01	8,549.26	171.74	50.780	
7,300.00	7,081.33	7,068.97	7,067.84	21.83	150.43	-6.53	-781.53	-9,276.18	8,673.16	8,500.89	172.26	50.349	
7,350.00	7,091.51	7,079.15	7,078.03	21.98	150.69	-12.06	-781.53	-9,276.18	8,624.24	8,451.57	172.67	49.945	
7,400.00	7,097.41	7,085.04	7,083.92	22.13	150.84	-28.50	-781.53	-9,276.18	8,574.64	8,401.67	172.98	49.571	
7,444.73	7,099.00	7,086.64	7,085.51	22.27	150.88	-94.09	-781.53	-9,276.18	8,529.99	8,356.84	173.15	49.263	
7,500.00	7,098.82	7,086.46	7,085.33	22.44	150.88	-94.06	-781.53	-9,276.18	8,474.78	8,301.47	173.31	48.899	
7,600.00	7,098.49	7,086.13	7,085.00	22.74	150.87	-94.02	-781.53	-9,276.18	8,374.89	8,201.29	173.61	48.241	
7,700.00	7,098.16	7,085.80	7,084.68	23.04	150.86	-93.97	-781.53	-9,276.18	8,275.00	8,101.11	173.90	47.585	
7,800.00	7,097.83	7,085.47	7,084.35	23.34	150.85	-93.92	-781.53	-9,276.18	8,175.12	8,000.93	174.19	46.932	
7,900.00	7,097.51	7,085.15	7,084.02	23.64	150.85	-93.87	-781.53	-9,276.18	8,075.23	7,900.75	174.48	46.281	
8,000.00	7,097.18	7,084.82	7,083.69	23.94	150.84	-93.82	-781.53	-9,276.18	7,975.35	7,800.58	174.78	45.632	
8,100.00	7,096.85	7,084.49	7,083.36	24.24	150.83	-93.78	-781.53	-9,276.18	7,875.47	7,700.41	175.07	44.985	
8,200.00	7,096.52	7,084.16	7,083.04	24.54	150.82	-93.73	-781.53	-9,276.18	7,775.60	7,600.24	175.36	44.341	
8,300.00	7,096.19	7,083.83	7,082.71	24.84	150.81	-93.68	-781.53	-9,276.18	7,675.73	7,500.08	175.65	43.698	
8,400.00	7,095.87	7,083.51	7,082.38	25.14	150.80	-93.63	-781.53	-9,276.18	7,575.86	7,399.92	175.94	43.058	
8,500.00	7,095.54	7,083.18	7,082.05	25.44	150.79	-93.58	-781.53	-9,276.18	7,476.00	7,299.76	176.24	42.420	
8,600.00	7,095.21	7,082.85	7,081.72	25.74	150.79	-93.54	-781.53	-9,276.18	7,376.14	7,199.61	176.53	41.784	
8,700.00	7,094.88	7,082.52	7,081.40	26.04	150.78	-93.49	-781.53	-9,276.18	7,276.28	7,099.46	176.82	41.150	
8,800.00	7,094.55	7,082.19	7,081.07	26.35	150.77	-93.44	-781.53	-9,276.18	7,176.43	6,999.31	177.11	40.519	
8,900.00	7,094.23	7,081.87	7,080.74	26.65	150.76	-93.39	-781.53	-9,276.18	7,076.58	6,899.17	177.41	39.889	
9,000.00	7,093.90	7,081.54	7,080.41	26.95	150.75	-93.34	-781.53	-9,276.18	6,976.73	6,799.03	177.70	39.262	
9,100.00	7,093.57	7,081.21	7,080.08	27.25	150.74	-93.30	-781.53	-9,276.18	6,876.89	6,698.90	177.99	38.636	
9,200.00	7,093.24	7,080.88	7,079.76	27.55	150.74	-93.25	-781.53	-9,276.18	6,777.06	6,598.77	178.28	38.013	
9,300.00	7,092.91	7,080.55	7,079.43	27.85	150.73	-93.20	-781.53	-9,276.18	6,677.23	6,498.65	178.57	37.392	

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 750H - Slot B05
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 750H	**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
9,400.00	7,092.59	7,080.23	7,079.10	28.15	150.72	-93.15	-781.53	-9,276.18	6,577.40	6,398.53	178.87	36.773	
9,500.00	7,092.26	7,079.90	7,078.77	28.45	150.71	-93.11	-781.53	-9,276.18	6,477.58	6,298.42	179.16	36.156	
9,600.00	7,091.93	7,079.57	7,078.44	28.75	150.70	-93.06	-781.53	-9,276.18	6,377.77	6,198.32	179.45	35.540	
9,700.00	7,091.60	7,079.24	7,078.12	29.05	150.69	-93.01	-781.53	-9,276.18	6,277.96	6,098.22	179.74	34.927	
9,800.00	7,091.27	7,078.91	7,077.79	29.35	150.68	-92.96	-781.53	-9,276.18	6,178.16	5,998.12	180.04	34.316	
9,900.00	7,090.95	7,078.58	7,077.46	29.65	150.68	-92.91	-781.53	-9,276.18	6,078.36	5,898.03	180.33	33.707	
10,000.00	7,090.62	7,078.26	7,077.13	29.95	150.67	-92.87	-781.53	-9,276.18	5,978.57	5,797.95	180.62	33.100	
10,100.00	7,090.29	7,077.93	7,076.80	30.25	150.66	-92.82	-781.53	-9,276.18	5,878.79	5,697.88	180.91	32.495	
10,200.00	7,089.96	7,077.60	7,076.48	30.55	150.65	-92.77	-781.53	-9,276.18	5,779.02	5,597.81	181.20	31.892	
10,300.00	7,089.63	7,077.27	7,076.15	30.85	150.64	-92.72	-781.53	-9,276.18	5,679.25	5,497.75	181.50	31.291	
10,400.00	7,089.31	7,076.94	7,075.82	31.15	150.63	-92.67	-781.53	-9,276.18	5,579.49	5,397.70	181.79	30.692	
10,500.00	7,088.98	7,076.62	7,075.49	31.45	150.63	-92.63	-781.53	-9,276.18	5,479.74	5,297.66	182.08	30.095	
10,600.00	7,088.65	7,076.29	7,075.16	31.75	150.62	-92.58	-781.53	-9,276.18	5,380.00	5,197.63	182.37	29.500	
10,700.00	7,088.32	7,075.96	7,074.84	32.06	150.61	-92.53	-781.53	-9,276.18	5,280.27	5,097.61	182.66	28.907	
10,800.00	7,087.99	7,075.63	7,074.51	32.36	150.60	-92.48	-781.53	-9,276.18	5,180.55	4,997.60	182.96	28.316	
10,900.00	7,087.67	7,075.30	7,074.18	32.66	150.59	-92.43	-781.53	-9,276.18	5,080.84	4,897.60	183.25	27.727	
11,000.00	7,087.34	7,074.98	7,073.85	32.96	150.58	-92.39	-781.53	-9,276.18	4,981.15	4,797.61	183.54	27.139	
11,100.00	7,087.01	7,074.65	7,073.52	33.26	150.58	-92.34	-781.53	-9,276.18	4,881.46	4,697.63	183.83	26.554	
11,200.00	7,086.68	7,074.32	7,073.20	33.56	150.57	-92.29	-781.53	-9,276.18	4,781.79	4,597.67	184.12	25.971	
11,300.00	7,086.35	7,073.99	7,072.87	33.86	150.56	-92.24	-781.53	-9,276.18	4,682.13	4,497.72	184.42	25.389	
11,400.00	7,086.03	7,073.66	7,072.54	34.16	150.55	-92.19	-781.53	-9,276.18	4,582.49	4,397.78	184.71	24.809	
11,500.00	7,085.70	7,073.34	7,072.21	34.46	150.54	-92.15	-781.53	-9,276.18	4,482.86	4,297.86	185.00	24.232	
11,600.00	7,085.37	7,073.01	7,071.88	34.76	150.53	-92.10	-781.53	-9,276.18	4,383.25	4,197.96	185.29	23.656	
11,700.00	7,085.04	7,072.68	7,071.56	35.06	150.52	-92.05	-781.53	-9,276.18	4,283.66	4,098.08	185.58	23.082	
11,800.00	7,084.71	7,072.35	7,071.23	35.36	150.52	-92.00	-781.53	-9,276.18	4,184.09	3,998.21	185.88	22.510	
11,900.00	7,084.39	7,072.02	7,070.90	35.66	150.51	-91.95	-781.53	-9,276.18	4,084.54	3,898.37	186.17	21.940	
12,000.00	7,084.06	7,071.70	7,070.57	35.96	150.50	-91.91	-781.53	-9,276.18	3,985.01	3,798.55	186.46	21.372	
12,100.00	7,083.73	7,071.37	7,070.24	36.26	150.49	-91.86	-781.53	-9,276.18	3,885.50	3,698.75	186.75	20.806	
12,200.00	7,083.40	7,071.04	7,069.92	36.56	150.48	-91.81	-781.53	-9,276.18	3,786.03	3,598.98	187.04	20.241	
12,300.00	7,083.07	7,070.71	7,069.59	36.86	150.47	-91.76	-781.53	-9,276.18	3,686.58	3,499.24	187.33	19.679	
12,400.00	7,082.75	7,070.38	7,069.26	37.16	150.47	-91.71	-781.53	-9,276.18	3,587.16	3,399.53	187.63	19.119	
12,500.00	7,082.42	7,070.06	7,068.93	37.46	150.46	-91.67	-781.53	-9,276.18	3,487.77	3,299.85	187.92	18.560	
12,600.00	7,082.09	7,069.73	7,068.60	37.76	150.45	-91.62	-781.53	-9,276.18	3,388.42	3,200.21	188.21	18.003	
12,700.00	7,081.76	7,069.40	7,068.28	38.06	150.44	-91.57	-781.53	-9,276.18	3,289.11	3,100.60	188.50	17.449	
12,800.00	7,081.43	7,069.07	7,067.95	38.36	150.43	-91.52	-781.53	-9,276.18	3,189.84	3,001.04	188.79	16.896	
12,900.00	7,081.11	7,068.74	7,067.62	38.66	150.42	-91.47	-781.53	-9,276.18	3,090.62	2,901.53	189.09	16.345	
13,000.00	7,080.78	7,068.42	7,067.29	38.96	150.42	-91.43	-781.53	-9,276.18	2,991.45	2,802.07	189.38	15.796	
13,100.00	7,080.45	7,068.09	7,066.96	39.26	150.41	-91.38	-781.53	-9,276.18	2,892.33	2,702.67	189.67	15.249	
13,200.00	7,080.12	7,067.76	7,066.64	39.56	150.40	-91.33	-781.53	-9,276.18	2,793.29	2,603.32	189.96	14.704	
13,300.00	7,079.79	7,067.43	7,066.31	39.86	150.39	-91.28	-781.53	-9,276.18	2,694.31	2,504.05	190.25	14.162	
13,400.00	7,079.47	7,067.10	7,065.98	40.16	150.38	-91.23	-781.53	-9,276.18	2,595.41	2,404.86	190.55	13.621	
13,500.00	7,079.14	7,066.78	7,065.65	40.46	150.37	-91.19	-781.53	-9,276.18	2,496.59	2,305.76	190.84	13.082	
13,600.00	7,078.81	7,066.45	7,065.32	40.77	150.36	-91.14	-781.53	-9,276.18	2,397.88	2,206.75	191.13	12.546	
13,700.00	7,078.48	7,066.12	7,065.00	41.07	150.36	-91.09	-781.53	-9,276.18	2,299.27	2,107.85	191.42	12.012	
13,800.00	7,078.15	7,065.79	7,064.67	41.37	150.35	-91.04	-781.53	-9,276.18	2,200.80	2,009.09	191.71	11.480	
13,900.00	7,077.83	7,065.46	7,064.34	41.67	150.34	-90.99	-781.53	-9,276.18	2,102.46	1,910.46	192.00	10.950	
14,000.00	7,077.50	7,065.14	7,064.01	41.97	150.33	-90.94	-781.53	-9,276.18	2,004.29	1,812.00	192.30	10.423	
14,100.00	7,077.17	7,064.81	7,063.68	42.27	150.32	-90.90	-781.53	-9,276.18	1,906.32	1,713.73	192.59	9.898	
14,200.00	7,076.84	7,064.48	7,063.35	42.57	150.31	-90.85	-781.53	-9,276.18	1,808.56	1,615.68	192.88	9.377	
14,300.00	7,076.51	7,064.15	7,063.03	42.87	150.31	-90.80	-781.53	-9,276.18	1,711.06	1,517.89	193.17	8.858	
14,400.00	7,076.19	7,063.82	7,062.70	43.17	150.30	-90.75	-781.53	-9,276.18	1,613.87	1,420.40	193.46	8.342	
14,500.00	7,075.86	7,063.50	7,062.37	43.47	150.29	-90.70	-781.53	-9,276.18	1,517.04	1,323.28	193.75	7.830	

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 750H - Slot B05
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 750H	**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
14,600.00	7,075.53	7,063.17	7,062.04	43.77	150.28	-90.66	-781.53	-9,276.18	1,420.65	1,226.60	194.05	7.321	
14,700.00	7,075.20	7,062.84	7,061.71	44.07	150.27	-90.61	-781.53	-9,276.18	1,324.80	1,130.46	194.34	6.817	
14,800.00	7,074.87	7,062.51	7,061.39	44.37	150.26	-90.56	-781.53	-9,276.18	1,229.61	1,034.98	194.63	6.318	
14,900.00	7,074.55	7,062.18	7,061.06	44.67	150.25	-90.51	-781.53	-9,276.18	1,135.24	940.32	194.92	5.824	
15,000.00	7,074.22	7,061.86	7,060.73	44.97	150.25	-90.46	-781.53	-9,276.18	1,041.93	846.72	195.21	5.337	
15,100.00	7,073.89	7,061.53	7,060.40	45.27	150.24	-90.42	-781.53	-9,276.18	949.97	754.47	195.50	4.859	
15,200.00	7,073.56	7,061.20	7,060.07	45.57	150.23	-90.37	-781.53	-9,276.18	859.82	664.03	195.79	4.392	
15,300.00	7,073.23	7,060.87	7,059.75	45.87	150.22	-90.32	-781.53	-9,276.18	772.10	576.01	196.08	3.938	
15,400.00	7,072.91	7,060.54	7,059.42	46.17	150.21	-90.27	-781.53	-9,276.18	687.73	491.36	196.37	3.502	
15,500.00	7,072.58	7,060.22	7,059.09	46.47	150.20	-90.22	-781.53	-9,276.18	608.12	411.46	196.66	3.092	
15,600.00	7,072.25	7,059.89	7,058.76	46.77	150.20	-90.18	-781.53	-9,276.18	535.40	338.45	196.94	2.719	
15,700.00	7,071.92	7,059.56	7,058.43	47.07	150.19	-90.13	-781.53	-9,276.18	472.75	275.52	197.23	2.397	
15,800.00	7,071.59	7,059.23	7,058.11	47.37	150.18	-90.08	-781.53	-9,276.18	424.65	227.14	197.51	2.150	
15,900.00	7,071.27	7,058.90	7,057.78	47.67	150.17	-90.03	-781.53	-9,276.18	396.44	198.64	197.80	2.004	
15,965.81	7,071.05	7,058.69	7,057.56	47.87	150.17	-90.00	-781.53	-9,276.18	390.94	192.95	197.99	1.975	CC, ES, SF
16,000.00	7,070.94	7,058.58	7,057.45	47.97	150.16	-89.98	-781.53	-9,276.18	392.44	194.35	198.09	1.981	
16,100.00	7,070.61	7,058.25	7,057.12	48.27	150.15	-89.94	-781.53	-9,276.18	413.33	214.95	198.38	2.084	
16,200.00	7,070.28	7,057.92	7,056.79	48.57	150.15	-89.89	-781.53	-9,276.18	455.72	257.04	198.68	2.294	
16,300.00	7,069.95	7,057.59	7,056.47	48.87	150.14	-89.84	-781.53	-9,276.18	514.32	315.34	198.98	2.585	
16,400.00	7,069.63	7,057.26	7,056.14	49.17	150.13	-89.79	-781.53	-9,276.18	584.26	384.98	199.28	2.932	
16,419.92	7,069.56	7,057.20	7,056.07	49.23	150.13	-89.78	-781.53	-9,276.18	599.21	399.88	199.34	3.006	
16,500.00	7,069.30	7,056.94	7,055.81	49.47	150.12	-89.74	-781.53	-9,276.18	661.96	462.39	199.57	3.317	
16,591.83	7,069.00	7,056.63	7,055.51	49.75	150.11	-89.70	-781.53	-9,276.18	738.06	538.22	199.84	3.693	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-98.07	-1,310.68	-9,245.11	9,337.55				
100.00	100.00	89.51	89.51	0.23	0.95	-98.07	-1,310.68	-9,245.11	9,337.55	9,336.37	1.18	7,919.080	
192.05	192.05	181.55	181.55	0.50	2.47	-98.07	-1,310.42	-9,245.11	9,337.51	9,334.54	2.97	3,143.195	
200.00	200.00	188.22	188.22	0.53	2.60	-98.07	-1,310.42	-9,245.11	9,337.52	9,334.39	3.13	2,987.437	
300.00	300.00	289.53	289.51	0.83	4.67	-98.07	-1,310.68	-9,245.11	9,337.55	9,332.06	5.49	1,699.689	
380.00	380.00	369.35	369.33	1.07	6.36	-98.07	-1,310.40	-9,245.11	9,337.51	9,330.08	7.43	1,256.712	
400.00	400.00	388.47	388.45	1.13	6.77	-98.07	-1,310.41	-9,245.11	9,337.51	9,329.62	7.90	1,182.481	
500.00	500.00	484.08	484.06	1.43	8.80	-98.07	-1,310.65	-9,245.11	9,337.55	9,327.32	10.23	912.899	
600.00	599.98	589.55	589.49	1.73	11.13	57.50	-1,310.68	-9,245.11	9,336.61	9,323.76	12.86	726.133	
707.91	707.73	689.11	689.04	2.05	13.34	57.58	-1,310.00	-9,245.11	9,333.41	9,318.02	15.39	606.632	
800.00	799.58	789.20	789.09	2.33	15.55	57.62	-1,310.68	-9,245.11	9,329.91	9,312.04	17.88	521.851	
900.00	899.31	888.94	888.83	2.63	17.76	57.65	-1,310.68	-9,245.11	9,326.03	9,305.64	20.39	457.388	
1,000.00	999.05	988.67	988.56	2.93	19.97	57.69	-1,310.68	-9,245.11	9,322.14	9,299.24	22.90	407.062	
1,100.00	1,098.79	1,085.82	1,085.70	3.23	22.13	57.73	-1,309.94	-9,245.11	9,318.16	9,292.80	25.35	367.511	
1,200.00	1,198.52	1,182.35	1,182.23	3.53	24.27	57.77	-1,310.26	-9,245.11	9,314.33	9,286.53	27.80	335.107	
1,300.00	1,298.26	1,287.98	1,287.77	3.83	26.70	57.80	-1,310.68	-9,245.11	9,310.51	9,279.99	30.52	305.046	
1,400.00	1,398.00	1,387.72	1,387.51	4.13	29.19	57.84	-1,310.68	-9,245.11	9,306.64	9,273.33	33.31	279.355	
1,500.00	1,497.73	1,485.97	1,485.74	4.43	31.64	57.89	-1,309.32	-9,245.11	9,302.59	9,266.52	36.07	257.900	
1,600.00	1,597.47	1,578.52	1,578.28	4.73	33.96	57.92	-1,309.70	-9,245.11	9,298.79	9,260.10	38.68	240.377	
1,700.00	1,697.21	1,687.07	1,686.72	5.03	36.67	57.96	-1,310.68	-9,245.11	9,295.06	9,253.36	41.70	222.910	
1,800.00	1,796.94	1,786.81	1,786.46	5.33	39.18	57.99	-1,310.68	-9,245.11	9,291.21	9,246.70	44.50	208.778	
1,900.00	1,896.68	1,880.30	1,879.93	5.63	41.52	58.03	-1,309.86	-9,245.11	9,287.25	9,240.10	47.15	196.973	
2,000.00	1,996.42	1,986.38	1,985.93	5.93	44.14	58.07	-1,310.68	-9,245.11	9,283.51	9,233.45	50.07	185.428	
2,100.00	2,096.15	2,086.12	2,085.67	6.23	46.35	58.11	-1,310.68	-9,245.11	9,279.67	9,227.10	52.58	176.497	
2,200.00	2,195.89	2,185.86	2,185.40	6.53	48.56	58.15	-1,310.68	-9,245.11	9,275.84	9,220.75	55.09	168.380	
2,300.00	2,295.63	2,283.00	2,282.52	6.83	50.72	58.19	-1,308.97	-9,245.11	9,271.78	9,214.24	57.54	161.128	
2,400.00	2,395.36	2,377.31	2,376.81	7.13	52.81	58.23	-1,309.39	-9,245.11	9,268.01	9,208.08	59.93	154.637	
2,500.00	2,495.10	2,471.68	2,471.17	7.43	54.90	58.26	-1,310.24	-9,245.11	9,264.31	9,201.98	62.33	148.641	
2,600.00	2,594.84	2,584.91	2,584.35	7.73	57.19	58.30	-1,310.68	-9,245.11	9,260.53	9,195.62	64.91	142.657	
2,700.00	2,694.57	2,684.65	2,684.09	8.03	59.11	58.34	-1,310.68	-9,245.11	9,256.72	9,189.58	67.14	137.870	
2,800.00	2,794.31	2,783.41	2,782.84	8.33	61.02	58.38	-1,309.89	-9,245.11	9,252.81	9,183.46	69.35	133.426	
2,900.00	2,894.05	2,880.16	2,879.59	8.63	62.89	58.41	-1,310.09	-9,245.11	9,249.03	9,177.51	71.52	129.327	
3,000.00	2,993.78	2,976.95	2,976.37	8.93	64.76	58.45	-1,310.55	-9,245.11	9,245.28	9,171.60	73.69	125.469	
3,100.00	3,093.52	3,083.64	3,083.03	9.23	66.91	58.49	-1,310.68	-9,245.11	9,241.49	9,165.36	76.13	121.384	
3,200.00	3,193.26	3,183.38	3,182.77	9.53	68.94	58.53	-1,310.68	-9,245.11	9,237.70	9,159.24	78.46	117.735	
3,300.00	3,292.99	3,282.26	3,281.65	9.83	70.95	58.57	-1,309.85	-9,245.11	9,233.81	9,153.03	80.77	114.319	
3,400.00	3,392.73	3,379.22	3,378.61	10.13	72.92	58.61	-1,310.04	-9,245.11	9,230.04	9,147.00	83.04	111.148	
3,500.00	3,492.47	3,476.21	3,475.59	10.43	74.89	58.64	-1,310.48	-9,245.11	9,226.32	9,141.00	85.31	108.145	
3,600.00	3,592.20	3,582.38	3,581.72	10.73	76.98	58.68	-1,310.68	-9,245.11	9,222.56	9,134.85	87.71	105.151	
3,700.00	3,691.94	3,679.66	3,678.99	11.03	78.87	58.72	-1,310.12	-9,245.11	9,218.72	9,128.82	89.90	102.545	
3,800.00	3,791.68	3,772.84	3,772.16	11.33	80.68	58.75	-1,310.61	-9,245.11	9,215.01	9,123.00	92.01	100.151	
3,900.00	3,891.41	3,881.62	3,880.93	11.63	82.71	58.80	-1,310.68	-9,245.11	9,211.25	9,116.91	94.34	97.640	
4,000.00	3,991.15	3,979.30	3,978.61	11.93	84.53	58.83	-1,310.43	-9,245.11	9,207.46	9,111.00	96.45	95.459	
4,100.00	4,090.89	4,081.11	4,080.40	12.23	86.63	58.87	-1,310.68	-9,245.11	9,203.73	9,104.87	98.86	93.102	
4,200.00	4,190.62	4,180.84	4,180.14	12.53	89.39	58.91	-1,310.68	-9,245.11	9,199.98	9,098.06	101.92	90.269	
4,300.00	4,290.36	4,280.58	4,279.87	12.83	92.15	58.95	-1,310.68	-9,245.11	9,196.23	9,091.25	104.98	87.602	
4,400.00	4,390.10	4,378.40	4,377.68	13.13	94.86	58.99	-1,309.92	-9,245.11	9,192.39	9,084.41	107.98	85.127	
4,500.00	4,489.84	4,475.48	4,474.77	13.43	97.55	59.03	-1,310.22	-9,245.11	9,188.69	9,077.72	110.97	82.802	
4,600.00	4,589.57	4,580.09	4,579.09	13.73	100.62	59.07	-1,310.68	-9,245.11	9,185.00	9,070.66	114.34	80.329	
4,700.00	4,689.31	4,667.31	4,666.20	14.03	103.71	59.10	-1,310.36	-9,245.11	9,181.24	9,063.51	117.74	77.981	
4,800.00	4,789.05	4,770.90	4,769.71	14.33	107.32	59.14	-1,310.10	-9,245.11	9,177.48	9,055.84	121.64	75.446	
4,900.00	4,888.78	4,870.51	4,869.18	14.63	110.80	59.18	-1,310.14	-9,245.11	9,173.76	9,048.34	125.43	73.141	

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 750H - Slot B05
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 750H	**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
5,000.00	4,988.52	4,975.08	4,973.65	14.93	114.40	59.22	-1,310.03	-9,245.11	9,170.03	9,040.70	129.33	70.904	
5,100.00	5,088.26	5,079.31	5,077.77	15.23	118.03	59.26	-1,310.68	-9,245.11	9,166.38	9,033.12	133.26	68.785	
5,200.00	5,187.99	5,179.18	5,177.51	15.53	121.54	59.30	-1,310.68	-9,245.11	9,162.67	9,025.61	137.06	66.849	
5,300.00	5,287.73	5,267.16	5,265.44	15.83	124.58	59.34	-1,309.91	-9,245.11	9,158.89	9,018.48	140.40	65.233	
5,400.00	5,387.47	5,378.83	5,376.98	16.13	128.37	59.38	-1,310.68	-9,245.11	9,155.26	9,010.76	144.50	63.358	
5,500.00	5,487.20	5,478.71	5,476.72	16.43	131.77	59.42	-1,310.68	-9,245.11	9,151.56	9,003.37	148.19	61.754	
5,600.00	5,586.94	5,570.45	5,568.43	16.73	134.96	59.46	-1,309.86	-9,245.11	9,147.78	8,996.09	151.69	60.306	
5,700.00	5,686.68	5,678.36	5,676.19	17.03	138.79	59.49	-1,310.68	-9,245.11	9,144.18	8,988.36	155.81	58.687	
5,800.00	5,786.41	5,761.09	5,758.87	17.33	141.77	59.53	-1,310.24	-9,245.11	9,140.46	8,981.37	159.10	57.453	
5,900.00	5,886.15	5,877.60	5,875.22	17.63	145.88	59.58	-1,309.55	-9,245.11	9,136.69	8,973.19	163.50	55.880	
6,000.00	5,985.89	5,957.87	5,955.46	17.93	148.70	59.60	-1,310.41	-9,245.11	9,133.12	8,966.50	166.62	54.814	
6,100.00	6,085.62	6,072.75	6,070.17	18.23	152.74	59.65	-1,309.82	-9,245.11	9,129.37	8,958.41	170.96	53.399	
6,200.00	6,185.36	6,170.00	6,167.24	18.53	156.20	59.69	-1,310.68	-9,245.11	9,125.79	8,951.06	174.73	52.229	
6,300.00	6,285.10	6,170.00	6,167.24	18.83	156.20	59.69	-1,310.68	-9,245.11	9,122.76	8,947.74	175.02	52.125	
6,400.00	6,384.83	6,170.00	6,167.24	19.13	156.20	59.69	-1,310.68	-9,245.11	9,120.82	8,945.53	175.29	52.033	
6,500.00	6,484.57	6,170.00	6,167.24	19.43	156.20	59.69	-1,310.68	-9,245.11	9,119.97	8,944.43	175.54	51.954	
6,527.01	6,511.51	6,170.00	6,167.24	19.51	156.20	59.69	-1,310.68	-9,245.11	9,119.93	8,944.33	175.61	51.934	
6,559.90	6,544.31	6,170.00	6,167.24	19.61	156.20	59.69	-1,310.68	-9,245.11	9,119.99	8,944.31	175.68	51.912	
6,600.00	6,584.23	6,170.00	6,167.24	19.73	156.20	27.49	-1,310.68	-9,245.11	9,118.83	8,943.05	175.78	51.878	
6,650.00	6,633.60	6,170.00	6,167.24	19.88	156.20	13.41	-1,310.68	-9,245.11	9,113.73	8,937.84	175.89	51.816	
6,700.00	6,682.15	6,170.00	6,167.24	20.03	156.20	7.44	-1,310.68	-9,245.11	9,104.60	8,928.61	175.99	51.733	
6,750.00	6,729.52	6,170.00	6,167.24	20.18	156.20	4.15	-1,310.68	-9,245.11	9,091.51	8,915.42	176.09	51.629	
6,800.00	6,775.36	6,170.00	6,167.24	20.33	156.20	2.01	-1,310.68	-9,245.11	9,074.54	8,898.35	176.19	51.503	
6,850.00	6,819.31	6,170.00	6,167.24	20.48	156.20	0.45	-1,310.68	-9,245.11	9,053.79	8,877.50	176.29	51.357	
6,900.00	6,861.04	6,170.00	6,167.24	20.63	156.20	-0.81	-1,310.68	-9,245.11	9,029.41	8,853.02	176.39	51.191	
6,950.00	6,900.22	6,170.00	6,167.24	20.78	156.20	-1.93	-1,310.68	-9,245.11	9,001.53	8,825.05	176.48	51.006	
7,000.00	6,936.57	6,170.00	6,167.24	20.93	156.20	-3.00	-1,310.68	-9,245.11	8,970.35	8,793.78	176.58	50.802	
7,050.00	6,969.80	6,170.00	6,167.24	21.08	156.20	-4.10	-1,310.68	-9,245.11	8,936.07	8,759.40	176.67	50.580	
7,100.00	6,999.67	6,170.00	6,167.24	21.23	156.20	-5.32	-1,310.68	-9,245.11	8,898.92	8,722.15	176.77	50.342	
7,150.00	7,025.94	6,170.00	6,167.24	21.38	156.20	-6.76	-1,310.68	-9,245.11	8,859.14	8,682.27	176.87	50.088	
7,200.00	7,048.41	6,170.00	6,167.24	21.53	156.20	-8.57	-1,310.68	-9,245.11	8,817.01	8,640.03	176.98	49.820	
7,250.00	7,066.92	6,170.00	6,167.24	21.68	156.20	-10.98	-1,310.68	-9,245.11	8,772.81	8,595.72	177.09	49.540	
7,300.00	7,081.33	6,170.00	6,167.24	21.83	156.20	-14.44	-1,310.68	-9,245.11	8,726.84	8,549.64	177.20	49.248	
7,350.00	7,091.51	6,170.00	6,167.24	21.98	156.20	-19.87	-1,310.68	-9,245.11	8,679.45	8,502.13	177.32	48.947	
7,400.00	7,097.41	6,170.00	6,167.24	22.13	156.20	-29.41	-1,310.68	-9,245.11	8,630.96	8,453.51	177.45	48.638	
7,444.73	7,099.00	6,170.00	6,167.24	22.27	156.20	-45.84	-1,310.68	-9,245.11	8,586.94	8,409.36	177.58	48.356	
7,500.00	7,098.82	6,170.00	6,167.24	22.44	156.20	-45.84	-1,310.68	-9,245.11	8,532.29	8,354.56	177.73	48.007	
7,600.00	7,098.49	6,170.00	6,167.24	22.74	156.20	-45.84	-1,310.68	-9,245.11	8,433.44	8,255.43	178.01	47.376	
7,700.00	7,098.16	6,170.00	6,167.24	23.04	156.20	-45.84	-1,310.68	-9,245.11	8,334.62	8,156.33	178.29	46.747	
7,800.00	7,097.83	6,170.00	6,167.24	23.34	156.20	-45.84	-1,310.68	-9,245.11	8,235.82	8,057.26	178.57	46.121	
7,900.00	7,097.51	6,170.00	6,167.24	23.64	156.20	-45.84	-1,310.68	-9,245.11	8,137.06	7,958.21	178.85	45.497	
8,000.00	7,097.18	6,170.00	6,167.24	23.94	156.20	-45.84	-1,310.68	-9,245.11	8,038.32	7,859.20	179.13	44.875	
8,100.00	7,096.85	6,170.00	6,167.24	24.24	156.20	-45.84	-1,310.68	-9,245.11	7,939.62	7,760.22	179.40	44.256	
8,200.00	7,096.52	6,170.00	6,167.24	24.54	156.20	-45.84	-1,310.68	-9,245.11	7,840.95	7,661.27	179.68	43.639	
8,300.00	7,096.19	6,170.00	6,167.24	24.84	156.20	-45.84	-1,310.68	-9,245.11	7,742.31	7,562.36	179.95	43.025	
8,400.00	7,095.87	6,170.00	6,167.24	25.14	156.20	-45.84	-1,310.68	-9,245.11	7,643.71	7,463.49	180.22	42.412	
8,500.00	7,095.54	6,170.00	6,167.24	25.44	156.20	-45.84	-1,310.68	-9,245.11	7,545.15	7,364.65	180.50	41.802	
8,600.00	7,095.21	6,170.00	6,167.24	25.74	156.20	-45.84	-1,310.68	-9,245.11	7,446.62	7,265.86	180.77	41.194	
8,700.00	7,094.88	6,170.00	6,167.24	26.04	156.20	-45.84	-1,310.68	-9,245.11	7,348.14	7,167.10	181.04	40.589	
8,800.00	7,094.55	6,170.00	6,167.24	26.35	156.20	-45.84	-1,310.68	-9,245.11	7,249.69	7,068.39	181.31	39.986	
8,900.00	7,094.23	6,170.00	6,167.24	26.65	156.20	-45.84	-1,310.68	-9,245.11	7,151.29	6,969.72	181.57	39.385	
9,000.00	7,093.90	6,170.00	6,167.24	26.95	156.20	-45.84	-1,310.68	-9,245.11	7,052.94	6,871.10	181.84	38.787	

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 750H - Slot B05
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 750H	**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	7,093.57	6,170.00	6,167.24	27.25	156.20	-45.84	-1,310.68	-9,245.11	6,954.63	6,772.52	182.10	38.190	
9,200.00	7,093.24	6,170.00	6,167.24	27.55	156.20	-45.84	-1,310.68	-9,245.11	6,856.37	6,674.00	182.37	37.597	
9,300.00	7,092.91	6,170.00	6,167.24	27.85	156.20	-45.84	-1,310.68	-9,245.11	6,758.16	6,575.53	182.63	37.005	
9,400.00	7,092.59	6,170.00	6,167.24	28.15	156.20	-45.84	-1,310.68	-9,245.11	6,660.00	6,477.11	182.89	36.416	
9,500.00	7,092.26	6,170.00	6,167.24	28.45	156.20	-45.84	-1,310.68	-9,245.11	6,561.90	6,378.76	183.15	35.829	
9,600.00	7,091.93	6,170.00	6,167.24	28.75	156.20	-45.84	-1,310.68	-9,245.11	6,463.86	6,280.46	183.40	35.244	
9,700.00	7,091.60	6,170.00	6,167.24	29.05	156.20	-45.84	-1,310.68	-9,245.11	6,365.88	6,182.22	183.65	34.662	
9,800.00	7,091.27	6,170.00	6,167.24	29.35	156.20	-45.84	-1,310.68	-9,245.11	6,267.96	6,084.05	183.91	34.082	
9,900.00	7,090.95	6,170.00	6,167.24	29.65	156.20	-45.84	-1,310.68	-9,245.11	6,170.11	5,985.95	184.15	33.505	
10,000.00	7,090.62	6,170.00	6,167.24	29.95	156.20	-45.84	-1,310.68	-9,245.11	6,072.33	5,887.93	184.40	32.930	
10,100.00	7,090.29	6,170.00	6,167.24	30.25	156.20	-45.84	-1,310.68	-9,245.11	5,974.62	5,789.98	184.65	32.357	
10,200.00	7,089.96	6,170.00	6,167.24	30.55	156.20	-45.84	-1,310.68	-9,245.11	5,876.99	5,692.10	184.89	31.787	
10,300.00	7,089.63	6,170.00	6,167.24	30.85	156.20	-45.84	-1,310.68	-9,245.11	5,779.44	5,594.32	185.12	31.219	
10,400.00	7,089.31	6,170.00	6,167.24	31.15	156.20	-45.84	-1,310.68	-9,245.11	5,681.98	5,496.62	185.36	30.654	
10,500.00	7,088.98	6,170.00	6,167.24	31.45	156.20	-45.84	-1,310.68	-9,245.11	5,584.60	5,399.01	185.59	30.091	
10,600.00	7,088.65	6,170.00	6,167.24	31.75	156.20	-45.84	-1,310.68	-9,245.11	5,487.32	5,301.51	185.82	29.531	
10,700.00	7,088.32	6,170.00	6,167.24	32.06	156.20	-45.84	-1,310.68	-9,245.11	5,390.14	5,204.10	186.04	28.973	
10,800.00	7,087.99	6,170.00	6,167.24	32.36	156.20	-45.84	-1,310.68	-9,245.11	5,293.07	5,106.81	186.26	28.417	
10,900.00	7,087.67	6,170.00	6,167.24	32.66	156.20	-45.84	-1,310.68	-9,245.11	5,196.10	5,009.63	186.48	27.865	
11,000.00	7,087.34	6,170.00	6,167.24	32.96	156.20	-45.84	-1,310.68	-9,245.11	5,099.26	4,912.57	186.69	27.314	
11,100.00	7,087.01	6,170.00	6,167.24	33.26	156.20	-45.84	-1,310.68	-9,245.11	5,002.53	4,815.64	186.89	26.767	
11,200.00	7,086.68	6,170.00	6,167.24	33.56	156.20	-45.84	-1,310.68	-9,245.11	4,905.94	4,718.85	187.09	26.222	
11,300.00	7,086.35	6,170.00	6,167.24	33.86	156.20	-45.84	-1,310.68	-9,245.11	4,809.49	4,622.20	187.29	25.680	
11,400.00	7,086.03	6,170.00	6,167.24	34.16	156.20	-45.84	-1,310.68	-9,245.11	4,713.19	4,525.71	187.47	25.141	
11,500.00	7,085.70	6,170.00	6,167.24	34.46	156.20	-45.84	-1,310.68	-9,245.11	4,617.04	4,429.39	187.65	24.604	
11,600.00	7,085.37	6,170.00	6,167.24	34.76	156.20	-45.84	-1,310.68	-9,245.11	4,521.06	4,333.23	187.83	24.070	
11,700.00	7,085.04	6,170.00	6,167.24	35.06	156.20	-45.84	-1,310.68	-9,245.11	4,425.26	4,237.27	187.99	23.540	
11,800.00	7,084.71	6,170.00	6,167.24	35.36	156.20	-45.84	-1,310.68	-9,245.11	4,329.65	4,141.50	188.15	23.012	
11,900.00	7,084.39	6,170.00	6,167.24	35.66	156.20	-45.84	-1,310.68	-9,245.11	4,234.24	4,045.94	188.29	22.488	
12,000.00	7,084.06	6,170.00	6,167.24	35.96	156.20	-45.84	-1,310.68	-9,245.11	4,139.04	3,950.62	188.43	21.966	
12,100.00	7,083.73	6,170.00	6,167.24	36.26	156.20	-45.84	-1,310.68	-9,245.11	4,044.08	3,855.53	188.55	21.448	
12,200.00	7,083.40	6,170.00	6,167.24	36.56	156.20	-45.84	-1,310.68	-9,245.11	3,949.37	3,760.71	188.66	20.934	
12,300.00	7,083.07	6,170.00	6,167.24	36.86	156.20	-45.84	-1,310.68	-9,245.11	3,854.93	3,666.17	188.76	20.422	
12,400.00	7,082.75	6,170.00	6,167.24	37.16	156.20	-45.84	-1,310.68	-9,245.11	3,760.77	3,571.93	188.84	19.915	
12,500.00	7,082.42	6,170.00	6,167.24	37.46	156.20	-45.84	-1,310.68	-9,245.11	3,666.92	3,478.01	188.91	19.411	
12,600.00	7,082.09	6,170.00	6,167.24	37.76	156.20	-45.84	-1,310.68	-9,245.11	3,573.41	3,384.45	188.96	18.911	
12,700.00	7,081.76	6,170.00	6,167.24	38.06	156.20	-45.84	-1,310.68	-9,245.11	3,480.25	3,291.27	188.98	18.416	
12,800.00	7,081.43	6,170.00	6,167.24	38.36	156.20	-45.84	-1,310.68	-9,245.11	3,387.49	3,198.50	188.99	17.924	
12,900.00	7,081.11	6,170.00	6,167.24	38.66	156.20	-45.84	-1,310.68	-9,245.11	3,295.15	3,106.18	188.97	17.437	
13,000.00	7,080.78	6,170.00	6,167.24	38.96	156.20	-45.84	-1,310.68	-9,245.11	3,203.27	3,014.34	188.93	16.955	
13,100.00	7,080.45	6,170.00	6,167.24	39.26	156.20	-45.84	-1,310.68	-9,245.11	3,111.89	2,923.04	188.85	16.478	
13,200.00	7,080.12	6,170.00	6,167.24	39.56	156.20	-45.84	-1,310.68	-9,245.11	3,021.06	2,832.31	188.74	16.006	
13,300.00	7,079.79	6,170.00	6,167.24	39.86	156.20	-45.84	-1,310.68	-9,245.11	2,930.82	2,742.22	188.60	15.540	
13,400.00	7,079.47	6,170.00	6,167.24	40.16	156.20	-45.84	-1,310.68	-9,245.11	2,841.24	2,652.82	188.42	15.080	
13,500.00	7,079.14	6,170.00	6,167.24	40.46	156.20	-45.84	-1,310.68	-9,245.11	2,752.37	2,564.19	188.19	14.626	
13,600.00	7,078.81	6,170.00	6,167.24	40.77	156.20	-45.84	-1,310.68	-9,245.11	2,664.30	2,476.39	187.91	14.179	
13,700.00	7,078.48	6,170.00	6,167.24	41.07	156.20	-45.84	-1,310.68	-9,245.11	2,577.09	2,389.52	187.57	13.739	
13,800.00	7,078.15	6,170.00	6,167.24	41.37	156.20	-45.84	-1,310.68	-9,245.11	2,490.85	2,303.68	187.17	13.308	
13,900.00	7,077.83	6,170.00	6,167.24	41.67	156.20	-45.84	-1,310.68	-9,245.11	2,405.67	2,218.97	186.70	12.885	
14,000.00	7,077.50	6,170.00	6,167.24	41.97	156.20	-45.84	-1,310.68	-9,245.11	2,321.68	2,135.52	186.15	12.472	
14,100.00	7,077.17	6,170.00	6,167.24	42.27	156.20	-45.84	-1,310.68	-9,245.11	2,239.00	2,053.48	185.52	12.069	
14,200.00	7,076.84	6,170.00	6,167.24	42.57	156.20	-45.84	-1,310.68	-9,245.11	2,157.79	1,973.00	184.79	11.677	

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 750H - Slot B05
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 750H	**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	7,076.51	6,170.00	6,167.24	42.87	156.20	-45.84	-1,310.68	-9,245.11	2,078.21	1,894.26	183.95	11.298	
14,400.00	7,076.19	6,170.00	6,167.24	43.17	156.20	-45.84	-1,310.68	-9,245.11	2,000.47	1,817.48	183.00	10.932	
14,500.00	7,075.86	6,170.00	6,167.24	43.47	156.20	-45.84	-1,310.68	-9,245.11	1,924.79	1,742.88	181.92	10.581	
14,600.00	7,075.53	6,170.00	6,167.24	43.77	156.20	-45.84	-1,310.68	-9,245.11	1,851.42	1,670.72	180.69	10.246	
14,700.00	7,075.20	6,170.00	6,167.24	44.07	156.20	-45.84	-1,310.68	-9,245.11	1,780.64	1,601.31	179.33	9.929	
14,800.00	7,074.87	6,170.00	6,167.24	44.37	156.20	-45.84	-1,310.68	-9,245.11	1,712.77	1,534.96	177.81	9.633	
14,900.00	7,074.55	6,170.00	6,167.24	44.67	156.20	-45.84	-1,310.68	-9,245.11	1,648.19	1,472.04	176.14	9.357	
15,000.00	7,074.22	6,170.00	6,167.24	44.97	156.20	-45.84	-1,310.68	-9,245.11	1,587.28	1,412.94	174.33	9.105	
15,100.00	7,073.89	6,170.00	6,167.24	45.27	156.20	-45.84	-1,310.68	-9,245.11	1,530.48	1,358.08	172.40	8.878	
15,200.00	7,073.56	6,170.00	6,167.24	45.57	156.20	-45.84	-1,310.68	-9,245.11	1,478.27	1,307.90	170.37	8.677	
15,300.00	7,073.23	6,170.00	6,167.24	45.87	156.20	-45.84	-1,310.68	-9,245.11	1,431.16	1,262.85	168.31	8.503	
15,400.00	7,072.91	6,170.00	6,167.24	46.17	156.20	-45.84	-1,310.68	-9,245.11	1,389.66	1,223.36	166.29	8.357	
15,500.00	7,072.58	6,170.00	6,167.24	46.47	156.20	-45.84	-1,310.68	-9,245.11	1,354.28	1,189.87	164.41	8.237	
15,600.00	7,072.25	6,170.00	6,167.24	46.77	156.20	-45.84	-1,310.68	-9,245.11	1,325.52	1,162.74	162.78	8.143	
15,700.00	7,071.92	6,170.00	6,167.24	47.07	156.20	-45.84	-1,310.68	-9,245.11	1,303.81	1,142.29	161.52	8.072	
15,800.00	7,071.59	6,170.00	6,167.24	47.37	156.20	-45.84	-1,310.68	-9,245.11	1,289.52	1,128.76	160.75	8.022	
15,900.00	7,071.27	6,170.00	6,167.24	47.67	156.20	-45.84	-1,310.68	-9,245.11	1,282.88	1,122.32	160.56	7.990	
15,935.37	7,071.15	6,170.00	6,167.24	47.78	156.20	-45.84	-1,310.68	-9,245.11	1,282.39	1,121.75	160.64	7.983	CC, ES
16,000.00	7,070.94	6,170.00	6,167.24	47.97	156.20	-45.84	-1,310.68	-9,245.11	1,284.02	1,123.03	160.99	7.976	SF
16,100.00	7,070.61	6,170.00	6,167.24	48.27	156.20	-45.84	-1,310.68	-9,245.11	1,292.91	1,130.89	162.03	7.980	
16,200.00	7,070.28	6,170.00	6,167.24	48.57	156.20	-45.84	-1,310.68	-9,245.11	1,309.41	1,145.79	163.62	8.003	
16,300.00	7,069.95	6,170.00	6,167.24	48.87	156.20	-45.84	-1,310.68	-9,245.11	1,333.22	1,167.57	165.65	8.048	
16,400.00	7,069.63	6,170.00	6,167.24	49.17	156.20	-45.84	-1,310.68	-9,245.11	1,363.97	1,195.95	168.02	8.118	
16,419.92	7,069.56	6,170.00	6,167.24	49.23	156.20	-45.84	-1,310.68	-9,245.11	1,370.88	1,202.36	168.52	8.135	
16,500.00	7,069.30	6,170.00	6,167.24	49.47	156.20	-45.84	-1,310.68	-9,245.11	1,401.19	1,230.60	170.59	8.214	
16,591.83	7,069.00	6,170.00	6,167.24	49.75	156.20	-45.84	-1,310.68	-9,245.11	1,440.65	1,267.60	173.04	8.325	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-96.22	-787.67	-7,227.07	7,270.07				
100.00	100.00	45.51	45.51	0.23	0.42	-96.22	-787.67	-7,227.07	7,269.87	7,269.22	0.65	N/A	
200.00	200.00	145.51	145.51	0.53	1.35	-96.22	-787.67	-7,227.07	7,269.87	7,268.00	1.87	3,884.440	
300.00	300.00	340.48	245.51	0.83	3.61	-96.22	-787.67	-7,227.07	7,269.87	7,265.43	4.44	1,638.030	
400.00	400.00	345.52	345.51	1.13	3.71	-96.22	-787.67	-7,227.07	7,269.87	7,265.03	4.83	1,503.914	
500.00	500.00	445.52	445.51	1.43	5.61	-96.22	-787.67	-7,227.07	7,269.87	7,262.83	7.04	1,033.109	
600.00	599.98	545.43	545.42	1.73	7.51	59.35	-787.13	-7,227.07	7,268.92	7,259.68	9.24	786.840	
707.91	707.73	651.72	651.71	2.05	9.53	59.44	-787.24	-7,227.07	7,265.98	7,254.39	11.58	627.215	
800.00	799.58	742.34	742.33	2.33	11.26	59.49	-787.49	-7,227.07	7,262.60	7,249.02	13.59	534.595	
900.00	899.31	844.86	844.83	2.63	13.28	59.54	-787.67	-7,227.07	7,258.94	7,243.03	15.91	456.267	
1,000.00	999.05	944.60	944.56	2.93	15.31	59.58	-787.67	-7,227.07	7,255.26	7,237.02	18.24	397.857	
1,100.00	1,098.79	1,044.14	1,044.10	3.23	17.33	59.64	-786.87	-7,227.07	7,251.50	7,230.94	20.56	352.727	
1,200.00	1,198.52	1,141.94	1,141.90	3.53	19.32	59.69	-787.02	-7,227.07	7,247.84	7,225.00	22.85	317.254	
1,300.00	1,298.26	1,239.78	1,239.73	3.83	21.31	59.73	-787.42	-7,227.07	7,244.22	7,219.09	25.13	288.230	
1,400.00	1,398.00	1,343.60	1,343.51	4.13	23.47	59.78	-787.67	-7,227.07	7,240.59	7,212.99	27.59	262.399	
1,500.00	1,497.73	1,443.34	1,443.25	4.43	25.57	59.83	-787.67	-7,227.07	7,236.93	7,206.93	30.00	241.219	
1,600.00	1,597.47	1,542.78	1,542.68	4.73	27.68	59.89	-786.58	-7,227.07	7,233.17	7,200.77	32.40	223.227	
1,700.00	1,697.21	1,640.10	1,639.99	5.03	29.73	59.94	-786.79	-7,227.07	7,229.55	7,194.79	34.76	207.988	
1,800.00	1,796.94	1,737.47	1,737.36	5.33	31.79	59.98	-787.33	-7,227.07	7,225.97	7,188.85	37.12	194.680	
1,900.00	1,896.68	1,842.36	1,842.19	5.63	34.01	60.03	-787.67	-7,227.07	7,222.37	7,182.73	39.64	182.207	
2,000.00	1,996.42	1,942.10	1,941.93	5.93	36.13	60.08	-787.67	-7,227.07	7,218.74	7,176.69	42.05	171.657	
2,100.00	2,096.15	2,041.78	2,041.60	6.23	38.24	60.14	-786.54	-7,227.07	7,215.01	7,170.55	44.47	162.255	
2,200.00	2,195.89	2,139.28	2,139.10	6.53	40.31	60.19	-786.71	-7,227.07	7,211.42	7,164.58	46.84	153.975	
2,300.00	2,295.63	2,236.84	2,236.65	6.83	42.38	60.23	-787.20	-7,227.07	7,207.85	7,158.65	49.20	146.490	
2,400.00	2,395.36	2,341.12	2,340.88	7.13	44.59	60.28	-787.67	-7,227.07	7,204.29	7,152.58	51.72	139.303	
2,500.00	2,495.10	2,440.86	2,440.61	7.43	46.71	60.33	-787.67	-7,227.07	7,200.69	7,146.56	54.13	133.014	
2,600.00	2,594.84	2,540.60	2,540.35	7.73	48.83	60.38	-787.67	-7,227.07	7,197.10	7,140.55	56.55	127.263	
2,700.00	2,694.57	2,638.33	2,638.07	8.03	50.90	60.44	-786.72	-7,227.07	7,193.42	7,134.50	58.93	122.071	
2,800.00	2,794.31	2,735.92	2,735.66	8.33	52.97	60.48	-787.18	-7,227.07	7,189.89	7,128.58	61.30	117.288	
2,900.00	2,894.05	2,839.88	2,839.56	8.63	55.22	60.53	-787.67	-7,227.07	7,186.35	7,122.51	63.84	112.565	
3,000.00	2,993.78	2,939.62	2,939.30	8.93	57.42	60.58	-787.67	-7,227.07	7,182.78	7,116.44	66.34	108.267	
3,100.00	3,093.52	3,039.36	3,039.03	9.23	59.62	60.63	-787.67	-7,227.07	7,179.21	7,110.37	68.84	104.283	
3,200.00	3,193.26	3,137.11	3,136.78	9.53	61.77	60.69	-786.75	-7,227.07	7,175.57	7,104.27	71.30	100.638	
3,300.00	3,292.99	3,234.78	3,234.44	9.83	63.93	60.73	-787.23	-7,227.07	7,172.06	7,098.30	73.76	97.240	
3,400.00	3,392.73	3,338.66	3,338.24	10.13	66.22	60.78	-787.67	-7,227.07	7,168.55	7,092.20	76.35	93.890	
3,500.00	3,492.47	3,438.40	3,437.98	10.43	68.43	60.83	-787.67	-7,227.07	7,165.00	7,086.15	78.85	90.864	
3,600.00	3,592.20	3,538.14	3,537.72	10.73	70.63	60.88	-787.67	-7,227.07	7,161.47	7,080.11	81.36	88.023	
3,700.00	3,691.94	3,635.56	3,635.12	11.03	72.79	60.94	-786.48	-7,227.07	7,157.84	7,074.02	83.81	85.403	
3,800.00	3,791.68	3,732.92	3,732.47	11.33	74.94	60.99	-787.08	-7,227.07	7,154.36	7,068.10	86.26	82.935	
3,900.00	3,891.41	3,837.44	3,836.93	11.63	77.14	61.03	-787.67	-7,227.07	7,150.88	7,062.12	88.77	80.557	
4,000.00	3,991.15	3,937.18	3,936.66	11.93	79.10	61.09	-787.67	-7,227.07	7,147.37	7,056.34	91.02	78.522	
4,100.00	4,090.89	4,036.92	4,036.40	12.23	81.05	61.14	-787.67	-7,227.07	7,143.86	7,050.58	93.28	76.585	
4,200.00	4,190.62	4,134.87	4,134.34	12.53	82.97	61.19	-786.74	-7,227.07	7,140.28	7,044.78	95.50	74.767	
4,300.00	4,290.36	4,232.77	4,232.24	12.83	84.89	61.24	-787.23	-7,227.07	7,136.82	7,039.10	97.72	73.033	
4,400.00	4,390.10	4,336.17	4,335.61	13.13	87.00	61.29	-787.67	-7,227.07	7,133.36	7,033.24	100.12	71.245	
4,500.00	4,489.84	4,435.91	4,435.35	13.43	89.12	61.34	-787.67	-7,227.07	7,129.87	7,027.33	102.55	69.528	
4,600.00	4,589.57	4,535.64	4,535.09	13.73	91.24	61.39	-787.67	-7,227.07	7,126.39	7,021.42	104.97	67.891	
4,700.00	4,689.31	4,634.76	4,634.19	14.03	93.35	61.45	-787.13	-7,227.07	7,122.88	7,015.50	107.38	66.336	
4,800.00	4,789.05	4,733.69	4,733.12	14.33	95.45	61.50	-787.33	-7,227.07	7,119.42	7,009.64	109.78	64.852	
4,900.00	4,888.78	4,834.94	4,834.30	14.63	97.63	61.54	-787.67	-7,227.07	7,115.98	7,003.73	112.25	63.391	
5,000.00	4,988.52	4,934.68	4,934.03	14.93	100.17	61.60	-787.67	-7,227.07	7,112.52	6,997.42	115.10	61.794	
5,100.00	5,088.26	5,034.42	5,033.77	15.23	102.72	61.65	-787.67	-7,227.07	7,109.07	6,991.12	117.95	60.273	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,132.49	5,131.81	15.53	105.22	61.71	-786.22	-7,227.07	7,105.52	6,984.77	120.75	58.845	
5,300.00	5,287.73	5,229.75	5,229.06	15.83	107.71	61.75	-786.82	-7,227.07	7,102.12	6,978.59	123.53	57.491	
5,400.00	5,387.47	5,333.82	5,332.98	16.13	110.46	61.80	-787.67	-7,227.07	7,098.74	6,972.15	126.59	56.077	
5,500.00	5,487.20	5,433.56	5,432.72	16.43	113.39	61.85	-787.67	-7,227.07	7,095.31	6,965.49	129.82	54.657	
5,600.00	5,586.94	5,533.29	5,532.45	16.73	116.32	61.90	-787.67	-7,227.07	7,091.89	6,958.84	133.04	53.305	
5,700.00	5,686.68	5,630.89	5,630.01	17.03	119.18	61.97	-785.99	-7,227.07	7,088.36	6,952.15	136.21	52.041	
5,800.00	5,786.41	5,728.04	5,727.14	17.33	122.03	62.01	-786.75	-7,227.07	7,085.00	6,945.64	139.36	50.840	
5,900.00	5,886.15	5,832.85	5,831.66	17.63	125.22	62.06	-787.67	-7,227.07	7,081.65	6,938.80	142.85	49.575	
6,000.00	5,985.89	5,932.58	5,931.40	17.93	128.47	62.11	-787.67	-7,227.07	7,078.24	6,931.84	146.40	48.349	
6,100.00	6,085.62	6,032.32	6,031.14	18.23	131.73	62.16	-787.67	-7,227.07	7,074.85	6,924.90	149.95	47.181	
6,200.00	6,185.36	6,132.06	6,130.87	18.53	134.98	62.21	-787.67	-7,227.07	7,071.46	6,917.95	153.51	46.066	
6,300.00	6,285.10	6,231.79	6,230.61	18.83	138.23	62.27	-787.67	-7,227.07	7,068.07	6,911.01	157.06	45.003	
6,400.00	6,384.83	6,210.00	6,208.43	19.13	137.52	62.26	-787.67	-7,227.07	7,065.75	6,909.12	156.63	45.112	
6,500.00	6,484.57	6,210.00	6,208.43	19.43	137.52	62.26	-787.67	-7,227.07	7,064.80	6,907.92	156.88	45.033	
6,516.87	6,501.40	6,210.00	6,208.43	19.48	137.52	62.26	-787.67	-7,227.07	7,064.78	6,907.86	156.92	45.021	
6,559.90	6,544.31	6,210.00	6,208.43	19.61	137.52	62.26	-787.67	-7,227.07	7,064.91	6,907.89	157.02	44.993	
6,600.00	6,584.23	6,210.00	6,208.43	19.73	137.52	30.07	-787.67	-7,227.07	7,063.87	6,906.76	157.11	44.962	
6,650.00	6,633.60	6,210.00	6,208.43	19.88	137.52	16.01	-787.67	-7,227.07	7,058.97	6,901.76	157.21	44.901	
6,700.00	6,682.15	6,210.00	6,208.43	20.03	137.52	10.08	-787.67	-7,227.07	7,050.11	6,892.80	157.31	44.817	
6,750.00	6,729.52	6,210.00	6,208.43	20.18	137.52	6.86	-787.67	-7,227.07	7,037.34	6,879.94	157.40	44.710	
6,800.00	6,775.36	6,210.00	6,208.43	20.33	137.52	4.81	-787.67	-7,227.07	7,020.73	6,863.25	157.49	44.579	
6,850.00	6,819.31	6,210.00	6,208.43	20.48	137.52	3.36	-787.67	-7,227.07	7,000.39	6,842.82	157.57	44.427	
6,900.00	6,861.04	6,210.00	6,208.43	20.63	137.52	2.25	-787.67	-7,227.07	6,976.44	6,818.79	157.65	44.252	
6,950.00	6,900.22	6,210.00	6,208.43	20.78	137.52	1.33	-787.67	-7,227.07	6,949.02	6,791.29	157.73	44.057	
7,000.00	6,936.57	6,210.00	6,208.43	20.93	137.52	0.50	-787.67	-7,227.07	6,918.30	6,760.49	157.81	43.841	
7,050.00	6,969.80	6,210.00	6,208.43	21.08	137.52	-0.30	-787.67	-7,227.07	6,884.48	6,726.59	157.88	43.605	
7,100.00	6,999.67	6,210.00	6,208.43	21.23	137.52	-1.12	-787.67	-7,227.07	6,847.76	6,689.79	157.96	43.350	
7,150.00	7,025.94	6,210.00	6,208.43	21.38	137.52	-2.03	-787.67	-7,227.07	6,808.38	6,650.34	158.05	43.078	
7,200.00	7,048.41	6,210.00	6,208.43	21.53	137.52	-3.13	-787.67	-7,227.07	6,766.61	6,608.47	158.14	42.790	
7,250.00	7,066.92	6,210.00	6,208.43	21.68	137.52	-4.54	-787.67	-7,227.07	6,722.70	6,564.47	158.23	42.487	
7,300.00	7,081.33	6,210.00	6,208.43	21.83	137.52	-6.51	-787.67	-7,227.07	6,676.97	6,518.64	158.33	42.171	
7,350.00	7,091.51	6,210.00	6,208.43	21.98	137.52	-9.57	-787.67	-7,227.07	6,629.72	6,471.28	158.44	41.844	
7,400.00	7,097.41	6,210.00	6,208.43	22.13	137.52	-15.06	-787.67	-7,227.07	6,581.29	6,422.73	158.56	41.507	
7,444.73	7,099.00	6,210.00	6,208.43	22.27	137.52	-25.47	-787.67	-7,227.07	6,537.23	6,378.56	158.68	41.199	
7,500.00	7,098.82	6,210.00	6,208.43	22.44	137.52	-25.47	-787.67	-7,227.07	6,482.50	6,323.68	158.82	40.816	
7,600.00	7,098.49	6,210.00	6,208.43	22.74	137.52	-25.47	-787.67	-7,227.07	6,383.49	6,224.40	159.09	40.125	
7,700.00	7,098.16	6,210.00	6,208.43	23.04	137.52	-25.47	-787.67	-7,227.07	6,284.51	6,125.15	159.35	39.437	
7,800.00	7,097.83	6,210.00	6,208.43	23.34	137.52	-25.47	-787.67	-7,227.07	6,185.56	6,025.94	159.62	38.752	
7,900.00	7,097.51	6,210.00	6,208.43	23.64	137.52	-25.47	-787.67	-7,227.07	6,086.65	5,926.77	159.88	38.070	
8,000.00	7,097.18	6,210.00	6,208.43	23.94	137.52	-25.47	-787.67	-7,227.07	5,987.77	5,827.64	160.14	37.391	
8,100.00	7,096.85	6,210.00	6,208.43	24.24	137.52	-25.47	-787.67	-7,227.07	5,888.94	5,728.54	160.40	36.715	
8,200.00	7,096.52	6,210.00	6,208.43	24.54	137.52	-25.47	-787.67	-7,227.07	5,790.14	5,629.49	160.65	36.042	
8,300.00	7,096.19	6,210.00	6,208.43	24.84	137.52	-25.47	-787.67	-7,227.07	5,691.38	5,530.48	160.90	35.371	
8,400.00	7,095.87	6,210.00	6,208.43	25.14	137.52	-25.47	-787.67	-7,227.07	5,592.67	5,431.52	161.15	34.704	
8,500.00	7,095.54	6,210.00	6,208.43	25.44	137.52	-25.47	-787.67	-7,227.07	5,494.00	5,332.60	161.40	34.040	
8,600.00	7,095.21	6,210.00	6,208.43	25.74	137.52	-25.47	-787.67	-7,227.07	5,395.39	5,233.74	161.65	33.378	
8,700.00	7,094.88	6,210.00	6,208.43	26.04	137.52	-25.47	-787.67	-7,227.07	5,296.82	5,134.94	161.89	32.719	
8,800.00	7,094.55	6,210.00	6,208.43	26.35	137.52	-25.47	-787.67	-7,227.07	5,198.31	5,036.19	162.12	32.064	
8,900.00	7,094.23	6,210.00	6,208.43	26.65	137.52	-25.47	-787.67	-7,227.07	5,099.86	4,937.50	162.36	31.411	
9,000.00	7,093.90	6,210.00	6,208.43	26.95	137.52	-25.47	-787.67	-7,227.07	5,001.47	4,838.88	162.59	30.762	
9,100.00	7,093.57	6,210.00	6,208.43	27.25	137.52	-25.47	-787.67	-7,227.07	4,903.15	4,740.33	162.81	30.115	
9,200.00	7,093.24	6,210.00	6,208.43	27.55	137.52	-25.47	-787.67	-7,227.07	4,804.89	4,641.86	163.04	29.472	

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 750H - Slot B05
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 750H	**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	7,092.91	6,210.00	6,208.43	27.85	137.52	-25.47	-787.67	-7,227.07	4,706.71	4,543.46	163.25	28.831	
9,400.00	7,092.59	6,210.00	6,208.43	28.15	137.52	-25.47	-787.67	-7,227.07	4,608.61	4,445.14	163.46	28.194	
9,500.00	7,092.26	6,210.00	6,208.43	28.45	137.52	-25.47	-787.67	-7,227.07	4,510.58	4,346.92	163.67	27.560	
9,600.00	7,091.93	6,210.00	6,208.43	28.75	137.52	-25.47	-787.67	-7,227.07	4,412.65	4,248.79	163.87	26.929	
9,700.00	7,091.60	6,210.00	6,208.43	29.05	137.52	-25.47	-787.67	-7,227.07	4,314.82	4,150.76	164.06	26.301	
9,800.00	7,091.27	6,210.00	6,208.43	29.35	137.52	-25.47	-787.67	-7,227.07	4,217.08	4,052.84	164.24	25.676	
9,900.00	7,090.95	6,210.00	6,208.43	29.65	137.52	-25.47	-787.67	-7,227.07	4,119.45	3,955.04	164.42	25.055	
10,000.00	7,090.62	6,210.00	6,208.43	29.95	137.52	-25.47	-787.67	-7,227.07	4,021.94	3,857.36	164.58	24.437	
10,100.00	7,090.29	6,210.00	6,208.43	30.25	137.52	-25.47	-787.67	-7,227.07	3,924.56	3,759.82	164.74	23.823	
10,200.00	7,089.96	6,210.00	6,208.43	30.55	137.52	-25.47	-787.67	-7,227.07	3,827.31	3,662.42	164.88	23.212	
10,300.00	7,089.63	6,210.00	6,208.43	30.85	137.52	-25.47	-787.67	-7,227.07	3,730.20	3,565.18	165.02	22.605	
10,400.00	7,089.31	6,210.00	6,208.43	31.15	137.52	-25.47	-787.67	-7,227.07	3,633.25	3,468.12	165.14	22.001	
10,500.00	7,088.98	6,210.00	6,208.43	31.45	137.52	-25.47	-787.67	-7,227.07	3,536.48	3,371.23	165.24	21.402	
10,600.00	7,088.65	6,210.00	6,208.43	31.75	137.52	-25.47	-787.67	-7,227.07	3,439.88	3,274.55	165.33	20.806	
10,700.00	7,088.32	6,210.00	6,208.43	32.06	137.52	-25.47	-787.67	-7,227.07	3,343.49	3,178.09	165.40	20.214	
10,800.00	7,087.99	6,210.00	6,208.43	32.36	137.52	-25.47	-787.67	-7,227.07	3,247.31	3,081.87	165.45	19.627	
10,900.00	7,087.67	6,210.00	6,208.43	32.66	137.52	-25.47	-787.67	-7,227.07	3,151.38	2,985.90	165.48	19.044	
11,000.00	7,087.34	6,210.00	6,208.43	32.96	137.52	-25.47	-787.67	-7,227.07	3,055.70	2,890.23	165.48	18.466	
11,100.00	7,087.01	6,210.00	6,208.43	33.26	137.52	-25.47	-787.67	-7,227.07	2,960.31	2,794.86	165.45	17.893	
11,200.00	7,086.68	6,210.00	6,208.43	33.56	137.52	-25.47	-787.67	-7,227.07	2,865.23	2,699.85	165.39	17.325	
11,300.00	7,086.35	6,210.00	6,208.43	33.86	137.52	-25.47	-787.67	-7,227.07	2,770.51	2,605.22	165.29	16.762	
11,400.00	7,086.03	6,210.00	6,208.43	34.16	137.52	-25.47	-787.67	-7,227.07	2,676.16	2,511.02	165.14	16.205	
11,500.00	7,085.70	6,210.00	6,208.43	34.46	137.52	-25.47	-787.67	-7,227.07	2,582.24	2,417.29	164.95	15.654	
11,600.00	7,085.37	6,210.00	6,208.43	34.76	137.52	-25.47	-787.67	-7,227.07	2,488.79	2,324.09	164.71	15.110	
11,700.00	7,085.04	6,210.00	6,208.43	35.06	137.52	-25.47	-787.67	-7,227.07	2,395.87	2,231.48	164.40	14.574	
11,800.00	7,084.71	6,210.00	6,208.43	35.36	137.52	-25.47	-787.67	-7,227.07	2,303.55	2,139.54	164.01	14.045	
11,900.00	7,084.39	6,210.00	6,208.43	35.66	137.52	-25.47	-787.67	-7,227.07	2,211.89	2,048.35	163.54	13.525	
12,000.00	7,084.06	6,210.00	6,208.43	35.96	137.52	-25.47	-787.67	-7,227.07	2,120.99	1,958.02	162.97	13.014	
12,100.00	7,083.73	6,210.00	6,208.43	36.26	137.52	-25.47	-787.67	-7,227.07	2,030.94	1,868.65	162.29	12.514	
12,200.00	7,083.40	6,210.00	6,208.43	36.56	137.52	-25.47	-787.67	-7,227.07	1,941.87	1,780.40	161.47	12.026	
12,300.00	7,083.07	6,210.00	6,208.43	36.86	137.52	-25.47	-787.67	-7,227.07	1,853.91	1,693.43	160.49	11.552	
12,400.00	7,082.75	6,210.00	6,208.43	37.16	137.52	-25.47	-787.67	-7,227.07	1,767.24	1,607.92	159.32	11.093	
12,500.00	7,082.42	6,210.00	6,208.43	37.46	137.52	-25.47	-787.67	-7,227.07	1,682.04	1,524.11	157.92	10.651	
12,600.00	7,082.09	6,210.00	6,208.43	37.76	137.52	-25.47	-787.67	-7,227.07	1,598.56	1,442.29	156.27	10.230	
12,700.00	7,081.76	6,210.00	6,208.43	38.06	137.52	-25.47	-787.67	-7,227.07	1,517.07	1,362.77	154.30	9.832	
12,800.00	7,081.43	6,210.00	6,208.43	38.36	137.52	-25.47	-787.67	-7,227.07	1,437.93	1,285.96	151.96	9.462	
12,900.00	7,081.11	6,210.00	6,208.43	38.66	137.52	-25.47	-787.67	-7,227.07	1,361.53	1,212.33	149.20	9.126	
13,000.00	7,080.78	6,210.00	6,208.43	38.96	137.52	-25.47	-787.67	-7,227.07	1,288.37	1,142.44	145.93	8.829	
13,100.00	7,080.45	6,210.00	6,208.43	39.26	137.52	-25.47	-787.67	-7,227.07	1,219.03	1,076.93	142.10	8.579	
13,200.00	7,080.12	6,210.00	6,208.43	39.56	137.52	-25.47	-787.67	-7,227.07	1,154.19	1,016.54	137.65	8.385	
13,300.00	7,079.79	6,210.00	6,208.43	39.86	137.52	-25.47	-787.67	-7,227.07	1,094.66	962.11	132.55	8.258	
13,400.00	7,079.47	6,210.00	6,208.43	40.16	137.52	-25.47	-787.67	-7,227.07	1,041.35	914.48	126.87	8.208	
13,500.00	7,079.14	6,210.00	6,208.43	40.46	137.52	-25.47	-787.67	-7,227.07	995.26	874.49	120.77	8.241	
13,600.00	7,078.81	6,210.00	6,208.43	40.77	137.52	-25.47	-787.67	-7,227.07	957.43	842.80	114.63	8.353	
13,700.00	7,078.48	6,210.00	6,208.43	41.07	137.52	-25.47	-787.67	-7,227.07	928.87	819.78	109.09	8.515	
13,800.00	7,078.15	6,210.00	6,208.43	41.37	137.52	-25.47	-787.67	-7,227.07	910.46	805.40	105.05	8.667	
13,900.00	7,077.83	6,210.00	6,208.43	41.67	137.52	-25.47	-787.67	-7,227.07	902.81	799.37	103.44	8.728	
13,919.35	7,077.76	6,210.00	6,208.43	41.72	137.52	-25.47	-787.67	-7,227.07	902.60	799.14	103.46	8.724	CC, ES
14,000.00	7,077.50	6,210.00	6,208.43	41.97	137.52	-25.47	-787.67	-7,227.07	906.19	801.46	104.74	8.652	
14,100.00	7,077.17	6,210.00	6,208.43	42.27	137.52	-25.47	-787.67	-7,227.07	920.50	811.80	108.70	8.468	
14,200.00	7,076.84	6,210.00	6,208.43	42.57	137.52	-25.47	-787.67	-7,227.07	945.22	830.74	114.48	8.256	
14,300.00	7,076.51	6,210.00	6,208.43	42.87	137.52	-25.47	-787.67	-7,227.07	979.58	858.43	121.15	8.086	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	6,210.00	6,208.43	43.17	137.52	-25.47	-787.67	-7,227.07	1,022.60	894.64	127.96	7.991	
14,500.00	7,075.86	6,210.00	6,208.43	43.47	137.52	-25.47	-787.67	-7,227.07	1,073.23	938.78	134.45	7.982	SF
14,600.00	7,075.53	6,210.00	6,208.43	43.77	137.52	-25.47	-787.67	-7,227.07	1,130.47	990.09	140.38	8.053	
14,700.00	7,075.20	6,210.00	6,208.43	44.07	137.52	-25.47	-787.67	-7,227.07	1,193.35	1,047.68	145.67	8.192	
14,800.00	7,074.87	6,210.00	6,208.43	44.37	137.52	-25.47	-787.67	-7,227.07	1,261.04	1,110.72	150.32	8.389	
14,900.00	7,074.55	6,210.00	6,208.43	44.67	137.52	-25.47	-787.67	-7,227.07	1,332.80	1,178.42	154.38	8.633	
15,000.00	7,074.22	6,210.00	6,208.43	44.97	137.52	-25.47	-787.67	-7,227.07	1,408.01	1,250.09	157.91	8.916	
15,100.00	7,073.89	6,210.00	6,208.43	45.27	137.52	-25.47	-787.67	-7,227.07	1,486.14	1,325.15	160.99	9.231	
15,200.00	7,073.56	6,210.00	6,208.43	45.57	137.52	-25.47	-787.67	-7,227.07	1,566.76	1,403.09	163.67	9.573	
15,300.00	7,073.23	6,210.00	6,208.43	45.87	137.52	-25.47	-787.67	-7,227.07	1,649.50	1,483.48	166.02	9.935	
15,400.00	7,072.91	6,210.00	6,208.43	46.17	137.52	-25.47	-787.67	-7,227.07	1,734.07	1,565.97	168.10	10.316	
15,500.00	7,072.58	6,210.00	6,208.43	46.47	137.52	-25.47	-787.67	-7,227.07	1,820.20	1,650.27	169.93	10.711	
15,600.00	7,072.25	6,210.00	6,208.43	46.77	137.52	-25.47	-787.67	-7,227.07	1,907.68	1,736.12	171.57	11.119	
15,700.00	7,071.92	6,210.00	6,208.43	47.07	137.52	-25.47	-787.67	-7,227.07	1,996.34	1,823.31	173.03	11.537	
15,800.00	7,071.59	6,210.00	6,208.43	47.37	137.52	-25.47	-787.67	-7,227.07	2,086.03	1,911.67	174.35	11.964	
15,900.00	7,071.27	6,210.00	6,208.43	47.67	137.52	-25.47	-787.67	-7,227.07	2,176.61	2,001.06	175.55	12.399	
16,000.00	7,070.94	6,210.00	6,208.43	47.97	137.52	-25.47	-787.67	-7,227.07	2,267.99	2,091.34	176.65	12.839	
16,100.00	7,070.61	6,210.00	6,208.43	48.27	137.52	-25.47	-787.67	-7,227.07	2,360.06	2,182.41	177.65	13.285	
16,200.00	7,070.28	6,210.00	6,208.43	48.57	137.52	-25.47	-787.67	-7,227.07	2,452.76	2,274.18	178.58	13.735	
16,300.00	7,069.95	6,210.00	6,208.43	48.87	137.52	-25.47	-787.67	-7,227.07	2,546.01	2,366.57	179.44	14.189	
16,400.00	7,069.63	6,210.00	6,208.43	49.17	137.52	-25.47	-787.67	-7,227.07	2,639.75	2,459.51	180.24	14.646	
16,419.92	7,069.56	6,210.00	6,208.43	49.23	137.52	-25.47	-787.67	-7,227.07	2,658.48	2,478.09	180.40	14.737	
16,500.00	7,069.30	6,210.00	6,208.43	49.47	137.52	-25.47	-787.67	-7,227.07	2,733.94	2,552.94	180.99	15.105	
16,591.83	7,069.00	6,210.00	6,208.43	49.75	137.52	-25.47	-787.67	-7,227.07	2,820.78	2,639.14	181.64	15.529	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-106.91	-1,972.53	-6,488.52	6,782.48				
100.00	100.00	1.49	-1.49	0.23	0.01	-106.91	-1,972.53	-6,488.52	6,781.72	6,781.48	0.24	N/A	
200.00	200.00	98.51	98.51	0.53	0.91	-106.91	-1,972.53	-6,488.52	6,781.72	6,780.28	1.44	4,718.824	
300.00	300.00	198.51	198.51	0.83	1.83	-106.91	-1,972.53	-6,488.52	6,781.72	6,779.06	2.66	2,548.209	
400.00	400.00	301.48	298.51	1.13	2.80	-106.91	-1,972.53	-6,488.52	6,781.72	6,777.79	3.93	1,727.066	
500.00	500.00	398.52	398.51	1.43	4.59	-106.91	-1,972.53	-6,488.52	6,781.72	6,775.70	6.02	1,126.449	
600.00	599.98	498.50	498.49	1.73	6.44	48.66	-1,972.53	-6,488.52	6,780.56	6,772.40	8.17	830.075	
707.91	707.73	603.22	603.21	2.05	8.38	48.76	-1,972.10	-6,488.52	6,776.61	6,766.18	10.43	649.836	
800.00	799.58	691.70	691.69	2.33	10.01	48.80	-1,972.31	-6,488.52	6,772.27	6,759.93	12.34	548.804	
900.00	899.31	797.85	797.83	2.63	12.00	48.85	-1,972.53	-6,488.52	6,767.55	6,752.92	14.63	462.625	
1,000.00	999.05	897.58	897.56	2.93	13.90	48.89	-1,972.53	-6,488.52	6,762.77	6,745.95	16.82	401.953	
1,100.00	1,098.79	997.21	997.19	3.23	15.79	48.94	-1,971.99	-6,488.52	6,757.84	6,738.83	19.02	355.323	
1,200.00	1,198.52	1,093.64	1,093.62	3.53	17.63	48.99	-1,972.08	-6,488.52	6,753.10	6,731.95	21.15	319.262	
1,300.00	1,298.26	1,190.10	1,190.07	3.83	19.46	49.03	-1,972.33	-6,488.52	6,748.41	6,725.13	23.29	289.805	
1,400.00	1,398.00	1,296.56	1,296.51	4.13	21.52	49.08	-1,972.53	-6,488.52	6,743.71	6,718.06	25.64	262.970	
1,500.00	1,497.73	1,396.30	1,396.25	4.43	23.47	49.12	-1,972.53	-6,488.52	6,738.95	6,711.05	27.90	241.532	
1,600.00	1,597.47	1,495.96	1,495.90	4.73	25.43	49.18	-1,971.69	-6,488.52	6,733.97	6,703.81	30.16	223.304	
1,700.00	1,697.21	1,591.06	1,591.00	5.03	27.29	49.22	-1,971.81	-6,488.52	6,729.26	6,696.94	32.32	208.197	
1,800.00	1,796.94	1,686.19	1,686.13	5.33	29.16	49.26	-1,972.17	-6,488.52	6,724.62	6,690.13	34.49	194.986	
1,900.00	1,896.68	1,795.29	1,795.19	5.63	31.30	49.31	-1,972.53	-6,488.52	6,719.98	6,683.05	36.93	181.966	
2,000.00	1,996.42	1,895.02	1,894.93	5.93	33.26	49.36	-1,972.53	-6,488.52	6,715.25	6,676.06	39.19	171.349	
2,100.00	2,096.15	1,994.76	1,994.67	6.23	35.22	49.40	-1,972.53	-6,488.52	6,710.52	6,669.07	41.45	161.890	
2,200.00	2,195.89	2,090.05	2,089.95	6.53	37.10	49.45	-1,971.82	-6,488.52	6,705.60	6,661.97	43.62	153.713	
2,300.00	2,295.63	2,185.18	2,185.08	6.83	38.97	49.50	-1,972.16	-6,488.52	6,700.98	6,655.19	45.79	146.328	
2,400.00	2,395.36	2,294.01	2,293.88	7.13	41.14	49.55	-1,972.53	-6,488.52	6,696.36	6,648.10	48.26	138.745	
2,500.00	2,495.10	2,393.75	2,393.61	7.43	43.16	49.59	-1,972.53	-6,488.52	6,691.65	6,641.06	50.59	132.269	
2,600.00	2,594.84	2,493.49	2,493.35	7.73	45.19	49.64	-1,972.53	-6,488.52	6,686.95	6,634.03	52.92	126.362	
2,700.00	2,694.57	2,589.85	2,589.70	8.03	47.15	49.69	-1,971.72	-6,488.52	6,682.03	6,626.85	55.18	121.100	
2,800.00	2,794.31	2,685.32	2,685.17	8.33	49.09	49.73	-1,972.01	-6,488.52	6,677.41	6,619.99	57.42	116.294	
2,900.00	2,894.05	2,792.76	2,792.56	8.63	51.30	49.78	-1,972.53	-6,488.52	6,672.86	6,612.93	59.93	111.347	
3,000.00	2,993.78	2,892.50	2,892.30	8.93	53.54	49.83	-1,972.53	-6,488.52	6,668.17	6,605.70	62.47	106.740	
3,100.00	3,093.52	2,992.23	2,992.03	9.23	55.79	49.88	-1,972.53	-6,488.52	6,663.49	6,598.47	65.01	102.493	
3,200.00	3,193.26	3,087.33	3,087.12	9.53	57.93	49.93	-1,971.58	-6,488.52	6,658.56	6,591.10	67.45	98.714	
3,300.00	3,292.99	3,180.91	3,180.69	9.83	60.03	49.97	-1,971.99	-6,488.52	6,654.00	6,584.14	69.86	95.251	
3,400.00	3,392.73	3,291.56	3,291.24	10.13	62.50	50.02	-1,972.53	-6,488.52	6,649.47	6,576.84	72.62	91.559	
3,500.00	3,492.47	3,391.29	3,390.98	10.43	64.68	50.07	-1,972.53	-6,488.52	6,644.81	6,569.69	75.11	88.466	
3,600.00	3,592.20	3,490.84	3,490.51	10.73	66.87	50.13	-1,970.99	-6,488.52	6,639.73	6,562.14	77.59	85.570	
3,700.00	3,691.94	3,581.67	3,581.33	11.03	68.86	50.17	-1,971.23	-6,488.52	6,635.15	6,555.27	79.88	83.059	
3,800.00	3,791.68	3,672.57	3,672.22	11.33	70.85	50.21	-1,971.93	-6,488.52	6,630.71	6,548.53	82.18	80.687	
3,900.00	3,891.41	3,790.34	3,789.93	11.63	73.39	50.26	-1,972.53	-6,488.52	6,626.20	6,541.18	85.01	77.943	
4,000.00	3,991.15	3,890.07	3,889.66	11.93	75.50	50.31	-1,972.53	-6,488.52	6,621.56	6,534.13	87.43	75.736	
4,100.00	4,090.89	3,989.81	3,989.40	12.23	77.62	50.36	-1,972.53	-6,488.52	6,616.92	6,527.07	89.85	73.647	
4,200.00	4,190.62	4,089.55	4,089.14	12.53	79.74	50.40	-1,972.53	-6,488.52	6,612.29	6,520.02	92.26	71.667	
4,300.00	4,290.36	4,189.28	4,188.87	12.83	81.85	50.45	-1,972.53	-6,488.52	6,607.66	6,512.98	94.68	69.789	
4,400.00	4,390.10	4,289.02	4,288.61	13.13	83.97	50.50	-1,972.53	-6,488.52	6,603.04	6,505.94	97.10	68.005	
4,500.00	4,489.84	4,387.28	4,386.86	13.43	86.06	50.56	-1,970.64	-6,488.52	6,597.93	6,498.45	99.48	66.323	
4,600.00	4,589.57	4,485.16	4,484.74	13.73	88.13	50.61	-1,970.78	-6,488.52	6,593.36	6,491.50	101.86	64.730	
4,700.00	4,689.31	4,583.06	4,582.64	14.03	90.21	50.66	-1,971.03	-6,488.52	6,588.82	6,484.58	104.24	63.210	
4,800.00	4,789.05	4,680.98	4,680.55	14.33	92.29	50.70	-1,971.38	-6,488.52	6,584.31	6,477.69	106.62	61.757	
4,900.00	4,888.78	4,778.91	4,778.48	14.63	94.37	50.75	-1,971.84	-6,488.52	6,579.83	6,470.84	108.99	60.369	
5,000.00	4,988.52	4,876.86	4,876.42	14.93	96.45	50.79	-1,972.40	-6,488.52	6,575.39	6,464.01	111.37	59.039	
5,100.00	5,088.26	4,987.36	4,986.77	15.23	98.87	50.84	-1,972.53	-6,488.52	6,570.82	6,456.73	114.09	57.591	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,087.10	5,086.51	15.53	101.07	50.89	-1,972.53	-6,488.52	6,566.24	6,449.64	116.60	56.316	
5,300.00	5,287.73	5,186.83	5,186.24	15.83	103.27	50.94	-1,972.53	-6,488.52	6,561.66	6,442.56	119.10	55.095	
5,400.00	5,387.47	5,286.57	5,285.98	16.13	105.47	50.99	-1,972.53	-6,488.52	6,557.08	6,435.49	121.60	53.925	
5,500.00	5,487.20	5,386.31	5,385.72	16.43	107.67	51.04	-1,972.53	-6,488.52	6,552.51	6,428.42	124.10	52.801	
5,600.00	5,586.94	5,486.04	5,485.45	16.73	109.87	51.09	-1,972.53	-6,488.52	6,547.95	6,421.35	126.60	51.722	
5,700.00	5,686.68	5,585.78	5,585.19	17.03	112.07	51.14	-1,972.53	-6,488.52	6,543.39	6,414.29	129.10	50.685	
5,800.00	5,786.41	5,685.52	5,684.93	17.33	114.27	51.19	-1,972.53	-6,488.52	6,538.84	6,407.24	131.60	49.688	
5,900.00	5,886.15	5,785.25	5,784.66	17.63	116.47	51.24	-1,972.53	-6,488.52	6,534.29	6,400.19	134.10	48.727	
6,000.00	5,985.89	5,884.99	5,884.40	17.93	118.67	51.29	-1,972.53	-6,488.52	6,529.74	6,393.14	136.60	47.802	
6,100.00	6,085.62	5,984.73	5,984.14	18.23	120.87	51.34	-1,972.53	-6,488.52	6,525.20	6,386.10	139.10	46.910	
6,200.00	6,185.36	6,084.46	6,083.87	18.53	123.08	51.38	-1,972.53	-6,488.52	6,520.67	6,379.06	141.60	46.049	
6,300.00	6,285.10	6,184.20	6,183.61	18.83	125.28	51.43	-1,972.53	-6,488.52	6,516.14	6,372.03	144.10	45.219	
6,400.00	6,384.83	6,283.94	6,283.35	19.13	127.48	51.48	-1,972.53	-6,488.52	6,511.61	6,365.01	146.60	44.417	
6,445.78	6,430.49	6,165.00	6,164.16	19.26	124.85	51.42	-1,972.53	-6,488.52	6,511.63	6,367.55	144.08	45.195	
6,500.00	6,484.57	6,165.00	6,164.16	19.43	124.85	51.42	-1,972.53	-6,488.52	6,510.77	6,366.56	144.21	45.148	
6,559.90	6,544.31	6,165.00	6,164.16	19.61	124.85	51.42	-1,972.53	-6,488.52	6,510.35	6,366.00	144.35	45.102	
6,600.00	6,584.23	6,165.00	6,164.16	19.73	124.85	19.21	-1,972.53	-6,488.52	6,509.02	6,364.59	144.43	45.066	
6,650.00	6,633.60	6,165.00	6,164.16	19.88	124.85	5.05	-1,972.53	-6,488.52	6,503.91	6,359.37	144.53	44.999	
6,700.00	6,682.15	6,165.00	6,164.16	20.03	124.85	-1.05	-1,972.53	-6,488.52	6,494.99	6,350.36	144.63	44.908	
6,750.00	6,729.52	6,165.00	6,164.16	20.18	124.85	-4.53	-1,972.53	-6,488.52	6,482.32	6,337.61	144.72	44.793	
6,800.00	6,775.36	6,165.00	6,164.16	20.33	124.85	-6.91	-1,972.53	-6,488.52	6,465.98	6,321.18	144.80	44.655	
6,850.00	6,819.31	6,165.00	6,164.16	20.48	124.85	-8.80	-1,972.53	-6,488.52	6,446.06	6,301.18	144.88	44.493	
6,900.00	6,861.04	6,165.00	6,164.16	20.63	124.85	-10.47	-1,972.53	-6,488.52	6,422.68	6,277.73	144.95	44.309	
6,950.00	6,900.22	6,165.00	6,164.16	20.78	124.85	-12.09	-1,972.53	-6,488.52	6,395.99	6,250.96	145.03	44.102	
7,000.00	6,936.57	6,165.00	6,164.16	20.93	124.85	-13.79	-1,972.53	-6,488.52	6,366.13	6,221.03	145.10	43.874	
7,050.00	6,969.80	6,165.00	6,164.16	21.08	124.85	-15.66	-1,972.53	-6,488.52	6,333.31	6,188.14	145.17	43.626	
7,100.00	6,999.67	6,165.00	6,164.16	21.23	124.85	-17.82	-1,972.53	-6,488.52	6,297.72	6,152.47	145.25	43.359	
7,150.00	7,025.94	6,165.00	6,164.16	21.38	124.85	-20.43	-1,972.53	-6,488.52	6,259.59	6,114.27	145.33	43.073	
7,200.00	7,048.41	6,165.00	6,164.16	21.53	124.85	-23.66	-1,972.53	-6,488.52	6,219.17	6,073.76	145.41	42.770	
7,250.00	7,066.92	6,165.00	6,164.16	21.68	124.85	-27.80	-1,972.53	-6,488.52	6,176.72	6,031.22	145.50	42.452	
7,300.00	7,081.33	6,165.00	6,164.16	21.83	124.85	-33.26	-1,972.53	-6,488.52	6,132.52	5,986.93	145.60	42.120	
7,350.00	7,091.51	6,165.00	6,164.16	21.98	124.85	-40.63	-1,972.53	-6,488.52	6,086.89	5,941.19	145.70	41.776	
7,400.00	7,097.41	6,165.00	6,164.16	22.13	124.85	-50.70	-1,972.53	-6,488.52	6,040.13	5,894.31	145.82	41.422	
7,444.73	7,099.00	6,165.00	6,164.16	22.27	124.85	-62.58	-1,972.53	-6,488.52	5,997.62	5,851.69	145.93	41.099	
7,500.00	7,098.82	6,165.00	6,164.16	22.44	124.85	-62.58	-1,972.53	-6,488.52	5,944.83	5,798.76	146.08	40.697	
7,600.00	7,098.49	6,165.00	6,164.16	22.74	124.85	-62.58	-1,972.53	-6,488.52	5,849.44	5,703.10	146.34	39.972	
7,700.00	7,098.16	6,165.00	6,164.16	23.04	124.85	-62.58	-1,972.53	-6,488.52	5,754.20	5,607.60	146.60	39.251	
7,800.00	7,097.83	6,165.00	6,164.16	23.34	124.85	-62.58	-1,972.53	-6,488.52	5,659.12	5,512.26	146.86	38.535	
7,900.00	7,097.51	6,165.00	6,164.16	23.64	124.85	-62.58	-1,972.53	-6,488.52	5,564.22	5,417.10	147.11	37.823	
8,000.00	7,097.18	6,165.00	6,164.16	23.94	124.85	-62.58	-1,972.53	-6,488.52	5,469.50	5,322.13	147.37	37.115	
8,100.00	7,096.85	6,165.00	6,164.16	24.24	124.85	-62.58	-1,972.53	-6,488.52	5,374.97	5,227.35	147.62	36.411	
8,200.00	7,096.52	6,165.00	6,164.16	24.54	124.85	-62.58	-1,972.53	-6,488.52	5,280.64	5,132.77	147.87	35.712	
8,300.00	7,096.19	6,165.00	6,164.16	24.84	124.85	-62.58	-1,972.53	-6,488.52	5,186.52	5,038.41	148.11	35.017	
8,400.00	7,095.87	6,165.00	6,164.16	25.14	124.85	-62.58	-1,972.53	-6,488.52	5,092.63	4,944.27	148.36	34.327	
8,500.00	7,095.54	6,165.00	6,164.16	25.44	124.85	-62.58	-1,972.53	-6,488.52	4,998.97	4,850.38	148.60	33.641	
8,600.00	7,095.21	6,165.00	6,164.16	25.74	124.85	-62.58	-1,972.53	-6,488.52	4,905.57	4,756.73	148.83	32.960	
8,700.00	7,094.88	6,165.00	6,164.16	26.04	124.85	-62.58	-1,972.53	-6,488.52	4,812.43	4,663.36	149.07	32.284	
8,800.00	7,094.55	6,165.00	6,164.16	26.35	124.85	-62.58	-1,972.53	-6,488.52	4,719.57	4,570.27	149.30	31.612	
8,900.00	7,094.23	6,165.00	6,164.16	26.65	124.85	-62.58	-1,972.53	-6,488.52	4,627.01	4,477.49	149.52	30.945	
9,000.00	7,093.90	6,165.00	6,164.16	26.95	124.85	-62.58	-1,972.53	-6,488.52	4,534.76	4,385.02	149.74	30.284	
9,100.00	7,093.57	6,165.00	6,164.16	27.25	124.85	-62.58	-1,972.53	-6,488.52	4,442.85	4,292.89	149.96	29.627	
9,200.00	7,093.24	6,165.00	6,164.16	27.55	124.85	-62.58	-1,972.53	-6,488.52	4,351.30	4,201.13	150.17	28.976	

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 750H - Slot B05
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 750H	**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	7,092.91	6,165.00	6,164.16	27.85	124.85	-62.58	-1,972.53	-6,488.52	4,260.13	4,109.75	150.37	28.330	
9,400.00	7,092.59	6,165.00	6,164.16	28.15	124.85	-62.58	-1,972.53	-6,488.52	4,169.36	4,018.78	150.57	27.690	
9,500.00	7,092.26	6,165.00	6,164.16	28.45	124.85	-62.58	-1,972.53	-6,488.52	4,079.02	3,928.25	150.77	27.055	
9,600.00	7,091.93	6,165.00	6,164.16	28.75	124.85	-62.58	-1,972.53	-6,488.52	3,989.14	3,838.19	150.95	26.426	
9,700.00	7,091.60	6,165.00	6,164.16	29.05	124.85	-62.58	-1,972.53	-6,488.52	3,899.76	3,748.63	151.13	25.804	
9,800.00	7,091.27	6,165.00	6,164.16	29.35	124.85	-62.58	-1,972.53	-6,488.52	3,810.91	3,659.60	151.30	25.187	
9,900.00	7,090.95	6,165.00	6,164.16	29.65	124.85	-62.58	-1,972.53	-6,488.52	3,722.62	3,571.15	151.47	24.577	
10,000.00	7,090.62	6,165.00	6,164.16	29.95	124.85	-62.58	-1,972.53	-6,488.52	3,634.93	3,483.31	151.62	23.974	
10,100.00	7,090.29	6,165.00	6,164.16	30.25	124.85	-62.58	-1,972.53	-6,488.52	3,547.90	3,396.14	151.76	23.378	
10,200.00	7,089.96	6,165.00	6,164.16	30.55	124.85	-62.58	-1,972.53	-6,488.52	3,461.57	3,309.68	151.89	22.789	
10,300.00	7,089.63	6,165.00	6,164.16	30.85	124.85	-62.58	-1,972.53	-6,488.52	3,375.99	3,223.98	152.01	22.208	
10,400.00	7,089.31	6,165.00	6,164.16	31.15	124.85	-62.58	-1,972.53	-6,488.52	3,291.23	3,139.11	152.12	21.635	
10,500.00	7,088.98	6,165.00	6,164.16	31.45	124.85	-62.58	-1,972.53	-6,488.52	3,207.35	3,055.13	152.22	21.071	
10,600.00	7,088.65	6,165.00	6,164.16	31.75	124.85	-62.58	-1,972.53	-6,488.52	3,124.41	2,972.11	152.30	20.515	
10,700.00	7,088.32	6,165.00	6,164.16	32.06	124.85	-62.58	-1,972.53	-6,488.52	3,042.50	2,890.14	152.36	19.969	
10,800.00	7,087.99	6,165.00	6,164.16	32.36	124.85	-62.58	-1,972.53	-6,488.52	2,961.70	2,809.29	152.41	19.432	
10,900.00	7,087.67	6,165.00	6,164.16	32.66	124.85	-62.58	-1,972.53	-6,488.52	2,882.11	2,729.67	152.44	18.906	
11,000.00	7,087.34	6,165.00	6,164.16	32.96	124.85	-62.58	-1,972.53	-6,488.52	2,803.82	2,651.37	152.45	18.391	
11,100.00	7,087.01	6,165.00	6,164.16	33.26	124.85	-62.58	-1,972.53	-6,488.52	2,726.95	2,574.51	152.45	17.888	
11,200.00	7,086.68	6,165.00	6,164.16	33.56	124.85	-62.58	-1,972.53	-6,488.52	2,651.63	2,499.21	152.42	17.397	
11,300.00	7,086.35	6,165.00	6,164.16	33.86	124.85	-62.58	-1,972.53	-6,488.52	2,577.99	2,425.62	152.37	16.920	
11,400.00	7,086.03	6,165.00	6,164.16	34.16	124.85	-62.58	-1,972.53	-6,488.52	2,506.17	2,353.88	152.29	16.456	
11,500.00	7,085.70	6,165.00	6,164.16	34.46	124.85	-62.58	-1,972.53	-6,488.52	2,436.34	2,284.14	152.20	16.008	
11,600.00	7,085.37	6,165.00	6,164.16	34.76	124.85	-62.58	-1,972.53	-6,488.52	2,368.67	2,216.60	152.08	15.575	
11,700.00	7,085.04	6,165.00	6,164.16	35.06	124.85	-62.58	-1,972.53	-6,488.52	2,303.36	2,151.43	151.94	15.160	
11,800.00	7,084.71	6,165.00	6,164.16	35.36	124.85	-62.58	-1,972.53	-6,488.52	2,240.61	2,088.84	151.78	14.763	
11,900.00	7,084.39	6,165.00	6,164.16	35.66	124.85	-62.58	-1,972.53	-6,488.52	2,180.64	2,029.05	151.59	14.385	
12,000.00	7,084.06	6,165.00	6,164.16	35.96	124.85	-62.58	-1,972.53	-6,488.52	2,123.69	1,972.30	151.40	14.027	
12,100.00	7,083.73	6,165.00	6,164.16	36.26	124.85	-62.58	-1,972.53	-6,488.52	2,070.01	1,918.82	151.19	13.691	
12,200.00	7,083.40	6,165.00	6,164.16	36.56	124.85	-62.58	-1,972.53	-6,488.52	2,019.85	1,868.88	150.98	13.378	
12,300.00	7,083.07	6,165.00	6,164.16	36.86	124.85	-62.58	-1,972.53	-6,488.52	1,973.49	1,822.73	150.77	13.090	
12,400.00	7,082.75	6,165.00	6,164.16	37.16	124.85	-62.58	-1,972.53	-6,488.52	1,931.20	1,780.63	150.57	12.826	
12,500.00	7,082.42	6,165.00	6,164.16	37.46	124.85	-62.58	-1,972.53	-6,488.52	1,893.26	1,742.86	150.39	12.589	
12,600.00	7,082.09	6,165.00	6,164.16	37.76	124.85	-62.58	-1,972.53	-6,488.52	1,859.91	1,709.67	150.25	12.379	
12,700.00	7,081.76	6,165.00	6,164.16	38.06	124.85	-62.58	-1,972.53	-6,488.52	1,831.43	1,681.28	150.15	12.197	
12,800.00	7,081.43	6,165.00	6,164.16	38.36	124.85	-62.58	-1,972.53	-6,488.52	1,808.04	1,657.93	150.11	12.045	
12,900.00	7,081.11	6,165.00	6,164.16	38.66	124.85	-62.58	-1,972.53	-6,488.52	1,789.94	1,639.80	150.14	11.922	
13,000.00	7,080.78	6,165.00	6,164.16	38.96	124.85	-62.58	-1,972.53	-6,488.52	1,777.29	1,627.04	150.25	11.829	
13,100.00	7,080.45	6,165.00	6,164.16	39.26	124.85	-62.58	-1,972.53	-6,488.52	1,770.20	1,619.76	150.44	11.767	
13,175.66	7,080.20	6,165.00	6,164.16	39.49	124.85	-62.58	-1,972.53	-6,488.52	1,768.59	1,617.93	150.65	11.739	CC, ES
13,200.00	7,080.12	6,165.00	6,164.16	39.56	124.85	-62.58	-1,972.53	-6,488.52	1,768.75	1,618.02	150.73	11.734	
13,300.00	7,079.79	6,165.00	6,164.16	39.86	124.85	-62.58	-1,972.53	-6,488.52	1,772.95	1,621.84	151.11	11.733	SF
13,400.00	7,079.47	6,165.00	6,164.16	40.16	124.85	-62.58	-1,972.53	-6,488.52	1,782.76	1,631.18	151.58	11.761	
13,500.00	7,079.14	6,165.00	6,164.16	40.46	124.85	-62.58	-1,972.53	-6,488.52	1,798.08	1,645.95	152.13	11.819	
13,600.00	7,078.81	6,165.00	6,164.16	40.77	124.85	-62.58	-1,972.53	-6,488.52	1,818.78	1,666.02	152.76	11.906	
13,700.00	7,078.48	6,165.00	6,164.16	41.07	124.85	-62.58	-1,972.53	-6,488.52	1,844.67	1,691.23	153.45	12.021	
13,800.00	7,078.15	6,165.00	6,164.16	41.37	124.85	-62.58	-1,972.53	-6,488.52	1,875.55	1,721.36	154.19	12.164	
13,900.00	7,077.83	6,165.00	6,164.16	41.67	124.85	-62.58	-1,972.53	-6,488.52	1,911.17	1,756.20	154.96	12.333	
14,000.00	7,077.50	6,165.00	6,164.16	41.97	124.85	-62.58	-1,972.53	-6,488.52	1,951.26	1,795.50	155.77	12.527	
14,100.00	7,077.17	6,165.00	6,164.16	42.27	124.85	-62.58	-1,972.53	-6,488.52	1,995.57	1,838.99	156.58	12.745	
14,200.00	7,076.84	6,165.00	6,164.16	42.57	124.85	-62.58	-1,972.53	-6,488.52	2,043.81	1,886.41	157.40	12.985	
14,300.00	7,076.51	6,165.00	6,164.16	42.87	124.85	-62.58	-1,972.53	-6,488.52	2,095.72	1,937.50	158.22	13.246	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	6,165.00	6,164.16	43.17	124.85	-62.58	-1,972.53	-6,488.52	2,151.02	1,991.99	159.03	13.526	
14,500.00	7,075.86	6,165.00	6,164.16	43.47	124.85	-62.58	-1,972.53	-6,488.52	2,209.47	2,049.65	159.82	13.825	
14,600.00	7,075.53	6,165.00	6,164.16	43.77	124.85	-62.58	-1,972.53	-6,488.52	2,270.82	2,110.22	160.60	14.140	
14,700.00	7,075.20	6,165.00	6,164.16	44.07	124.85	-62.58	-1,972.53	-6,488.52	2,334.84	2,173.49	161.35	14.471	
14,800.00	7,074.87	6,165.00	6,164.16	44.37	124.85	-62.58	-1,972.53	-6,488.52	2,401.32	2,239.24	162.08	14.815	
14,900.00	7,074.55	6,165.00	6,164.16	44.67	124.85	-62.58	-1,972.53	-6,488.52	2,470.07	2,307.28	162.79	15.173	
15,000.00	7,074.22	6,165.00	6,164.16	44.97	124.85	-62.58	-1,972.53	-6,488.52	2,540.88	2,377.41	163.48	15.543	
15,100.00	7,073.89	6,165.00	6,164.16	45.27	124.85	-62.58	-1,972.53	-6,488.52	2,613.61	2,449.47	164.14	15.923	
15,200.00	7,073.56	6,165.00	6,164.16	45.57	124.85	-62.58	-1,972.53	-6,488.52	2,688.09	2,523.31	164.78	16.314	
15,300.00	7,073.23	6,165.00	6,164.16	45.87	124.85	-62.58	-1,972.53	-6,488.52	2,764.18	2,598.79	165.39	16.713	
15,400.00	7,072.91	6,165.00	6,164.16	46.17	124.85	-62.58	-1,972.53	-6,488.52	2,841.75	2,675.76	165.99	17.120	
15,500.00	7,072.58	6,165.00	6,164.16	46.47	124.85	-62.58	-1,972.53	-6,488.52	2,920.69	2,754.12	166.57	17.535	
15,600.00	7,072.25	6,165.00	6,164.16	46.77	124.85	-62.58	-1,972.53	-6,488.52	3,000.88	2,833.76	167.13	17.956	
15,700.00	7,071.92	6,165.00	6,164.16	47.07	124.85	-62.58	-1,972.53	-6,488.52	3,082.23	2,914.57	167.67	18.383	
15,800.00	7,071.59	6,165.00	6,164.16	47.37	124.85	-62.58	-1,972.53	-6,488.52	3,164.65	2,996.46	168.19	18.816	
15,900.00	7,071.27	6,165.00	6,164.16	47.67	124.85	-62.58	-1,972.53	-6,488.52	3,248.06	3,079.36	168.70	19.253	
16,000.00	7,070.94	6,165.00	6,164.16	47.97	124.85	-62.58	-1,972.53	-6,488.52	3,332.38	3,163.18	169.20	19.695	
16,100.00	7,070.61	6,165.00	6,164.16	48.27	124.85	-62.58	-1,972.53	-6,488.52	3,417.55	3,247.86	169.68	20.141	
16,200.00	7,070.28	6,165.00	6,164.16	48.57	124.85	-62.58	-1,972.53	-6,488.52	3,503.50	3,333.34	170.16	20.590	
16,300.00	7,069.95	6,165.00	6,164.16	48.87	124.85	-62.58	-1,972.53	-6,488.52	3,590.18	3,419.56	170.62	21.042	
16,400.00	7,069.63	6,165.00	6,164.16	49.17	124.85	-62.58	-1,972.53	-6,488.52	3,677.53	3,506.47	171.07	21.498	
16,419.92	7,069.56	6,165.00	6,164.16	49.23	124.85	-62.58	-1,972.53	-6,488.52	3,695.01	3,523.86	171.15	21.589	
16,500.00	7,069.30	6,165.00	6,164.16	49.47	124.85	-62.58	-1,972.53	-6,488.52	3,765.51	3,594.01	171.51	21.956	
16,591.83	7,069.00	6,165.00	6,164.16	49.75	124.85	-62.58	-1,972.53	-6,488.52	3,846.83	3,674.92	171.90	22.378	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-102.78	-1,905.03	-8,397.87	8,611.77				
100.00	100.00	4.27	4.27	0.23	0.00	-102.78	-1,905.03	-8,397.87	8,611.23	8,611.00	0.23	N/A	
200.00	200.00	125.16	125.16	0.53	0.09	-102.78	-1,905.17	-8,397.67	8,611.10	8,610.50	0.60	N/A	
296.49	296.49	200.00	200.00	0.82	0.19	-102.78	-1,905.40	-8,397.42	8,610.87	8,609.92	0.95	9,027.559	
300.00	300.00	200.00	200.00	0.83	0.19	-102.78	-1,905.40	-8,397.42	8,610.88	8,609.91	0.96	8,928.873	
400.00	400.00	400.00	237.53	1.13	0.33	-102.78	-1,905.57	-8,397.59	8,611.34	8,610.05	1.29	6,682.739	
500.00	500.00	300.00	299.99	1.43	0.23	-102.79	-1,905.81	-8,398.14	8,612.29	8,610.70	1.60	5,395.509	
600.00	599.98	350.00	349.99	1.73	0.27	52.75	-1,906.09	-8,398.83	8,612.72	8,610.78	1.94	4,444.225	
707.91	707.73	442.71	442.68	2.05	0.37	52.80	-1,907.09	-8,400.45	8,611.30	8,608.94	2.36	3,650.845	
800.00	799.58	540.54	540.49	2.33	0.49	52.83	-1,908.19	-8,402.11	8,609.00	8,606.26	2.75	3,133.680	
900.00	899.31	628.63	628.56	2.63	0.60	52.86	-1,909.37	-8,403.64	8,606.60	8,603.45	3.15	2,731.967	
1,000.00	999.05	707.24	707.15	2.93	0.69	52.89	-1,910.50	-8,405.14	8,604.39	8,600.85	3.54	2,428.118	
1,100.00	1,098.79	780.34	780.22	3.23	0.79	52.91	-1,911.65	-8,406.67	8,602.41	8,598.48	3.93	2,188.303	
1,200.00	1,198.52	873.04	872.88	3.53	0.91	52.94	-1,913.49	-8,408.80	8,600.71	8,596.37	4.34	1,981.626	
1,300.00	1,298.26	975.42	975.21	3.83	1.04	52.97	-1,915.66	-8,411.06	8,598.95	8,594.19	4.76	1,806.855	
1,400.00	1,398.00	1,071.18	1,070.92	4.13	1.16	52.99	-1,917.78	-8,413.25	8,597.30	8,592.13	5.17	1,662.878	
1,500.00	1,497.73	1,156.45	1,156.15	4.43	1.27	53.02	-1,919.73	-8,415.17	8,595.63	8,590.07	5.57	1,543.700	
1,600.00	1,597.47	1,251.96	1,251.60	4.73	1.40	53.04	-1,921.97	-8,417.49	8,594.14	8,588.16	5.98	1,437.354	
1,700.00	1,697.21	1,367.65	1,367.24	5.03	1.55	53.07	-1,924.59	-8,420.12	8,592.48	8,586.06	6.41	1,339.880	
1,800.00	1,796.94	1,458.01	1,457.55	5.33	1.67	53.10	-1,926.63	-8,422.20	8,590.86	8,584.05	6.82	1,260.098	
1,900.00	1,896.68	1,609.93	1,609.39	5.63	1.86	53.14	-1,930.08	-8,425.30	8,588.96	8,581.67	7.29	1,178.430	
2,000.00	1,996.42	1,700.00	1,699.43	5.93	1.98	53.16	-1,931.93	-8,427.01	8,586.91	8,579.21	7.69	1,116.525	
2,100.00	2,096.15	1,767.45	1,766.84	6.23	2.07	53.18	-1,933.37	-8,428.49	8,585.13	8,577.06	8.07	1,063.983	
2,200.00	2,195.89	1,887.75	1,887.09	6.53	2.22	53.22	-1,935.82	-8,431.21	8,583.43	8,574.92	8.51	1,008.579	
2,300.00	2,295.63	2,035.81	2,035.10	6.83	2.42	53.26	-1,938.33	-8,434.03	8,581.32	8,572.34	8.99	955.047	
2,400.00	2,395.36	2,138.89	2,138.15	7.13	2.55	53.29	-1,940.01	-8,435.58	8,578.80	8,569.40	9.40	912.403	
2,500.00	2,495.10	2,236.54	2,235.78	7.43	2.68	53.32	-1,941.62	-8,437.16	8,576.39	8,566.58	9.81	873.843	
2,600.00	2,594.84	2,336.60	2,335.82	7.73	2.81	53.35	-1,943.23	-8,438.76	8,573.96	8,563.73	10.23	838.109	
2,700.00	2,694.57	2,429.95	2,429.15	8.03	2.93	53.38	-1,944.61	-8,440.27	8,571.52	8,560.88	10.64	805.608	
2,800.00	2,794.31	2,525.61	2,524.78	8.33	3.05	53.41	-1,945.96	-8,441.92	8,569.18	8,558.13	11.05	775.196	
2,900.00	2,894.05	2,644.44	2,643.58	8.63	3.21	53.45	-1,947.35	-8,443.92	8,566.74	8,555.24	11.50	744.949	
3,000.00	2,993.78	2,795.49	2,794.62	8.93	3.40	53.50	-1,948.94	-8,445.76	8,563.79	8,551.81	11.98	714.889	
3,100.00	3,093.52	2,901.96	2,901.07	9.23	3.54	53.54	-1,949.91	-8,446.82	8,560.64	8,548.24	12.40	690.133	
3,200.00	3,193.26	3,000.00	2,999.11	9.53	3.67	53.57	-1,950.81	-8,447.73	8,557.42	8,544.61	12.82	667.613	
3,300.00	3,292.99	3,100.66	3,099.76	9.83	3.80	53.61	-1,951.84	-8,448.67	8,554.24	8,541.01	13.23	646.494	
3,400.00	3,392.73	3,173.39	3,172.48	10.13	3.90	53.63	-1,952.80	-8,449.42	8,551.22	8,537.61	13.61	628.269	
3,500.00	3,492.47	3,254.99	3,254.06	10.43	4.00	53.66	-1,953.96	-8,450.48	8,548.48	8,534.47	14.00	610.487	
3,600.00	3,592.20	3,346.99	3,346.04	10.73	4.12	53.69	-1,955.36	-8,451.82	8,545.90	8,531.50	14.41	593.153	
3,700.00	3,691.94	3,700.00	3,466.63	11.03	4.58	53.72	-1,957.32	-8,453.49	8,543.31	8,528.21	15.10	565.782	
3,800.00	3,791.68	3,563.06	3,562.07	11.33	4.41	53.75	-1,958.60	-8,454.61	8,540.45	8,525.20	15.25	560.089	
3,900.00	3,891.41	3,686.76	3,685.75	11.63	4.57	53.79	-1,960.25	-8,456.01	8,537.53	8,521.84	15.69	544.294	
4,000.00	3,991.15	3,883.69	3,882.65	11.93	4.80	53.86	-1,962.89	-8,456.98	8,534.04	8,517.89	16.16	528.189	
4,100.00	4,090.89	4,001.33	4,000.28	12.23	4.92	53.89	-1,964.97	-8,456.63	8,529.83	8,513.32	16.51	516.543	
4,200.00	4,190.62	4,110.28	4,109.19	12.53	5.02	53.91	-1,967.55	-8,456.03	8,525.50	8,508.64	16.86	505.666	
4,300.00	4,290.36	4,203.36	4,202.24	12.83	5.10	53.93	-1,969.93	-8,455.47	8,521.14	8,503.94	17.20	495.425	
4,400.00	4,390.10	4,297.18	4,296.04	13.13	5.20	53.95	-1,972.31	-8,454.94	8,516.83	8,499.29	17.54	485.524	
4,500.00	4,489.84	4,375.00	4,373.83	13.43	5.28	53.97	-1,974.00	-8,454.70	8,512.68	8,494.80	17.88	476.069	
4,600.00	4,589.57	4,469.85	4,468.67	13.73	5.38	54.00	-1,975.88	-8,454.59	8,508.70	8,490.47	18.24	466.563	
4,700.00	4,689.31	4,564.71	4,563.51	14.03	5.48	54.02	-1,977.76	-8,454.53	8,504.76	8,486.17	18.59	457.393	
4,800.00	4,789.05	4,654.19	4,652.97	14.33	5.59	54.05	-1,979.52	-8,454.58	8,500.95	8,482.00	18.95	448.535	
4,900.00	4,888.78	4,760.56	4,759.32	14.63	5.71	54.08	-1,981.55	-8,454.66	8,497.14	8,477.81	19.32	439.726	
5,000.00	4,988.52	4,851.21	4,849.96	14.93	5.82	54.10	-1,983.30	-8,454.73	8,493.34	8,473.66	19.68	431.485	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	4,964.74	4,963.46	15.23	5.95	54.13	-1,985.55	-8,454.78	8,489.53	8,469.47	20.06	423.232	
5,200.00	5,187.99	5,062.73	5,061.43	15.53	6.06	54.16	-1,987.52	-8,454.72	8,485.61	8,465.19	20.42	415.570	
5,300.00	5,287.73	5,154.67	5,153.35	15.83	6.17	54.18	-1,989.33	-8,454.76	8,481.78	8,461.00	20.78	408.183	
5,400.00	5,387.47	5,283.31	5,281.97	16.13	6.32	54.21	-1,991.82	-8,454.64	8,477.83	8,456.67	21.16	400.687	
5,500.00	5,487.20	5,378.27	5,376.91	16.43	6.43	54.24	-1,993.62	-8,454.43	8,473.74	8,452.23	21.51	393.922	
5,600.00	5,586.94	5,479.64	5,478.26	16.73	6.54	54.27	-1,995.65	-8,454.14	8,469.62	8,447.75	21.87	387.335	
5,700.00	5,686.68	5,604.19	5,602.77	17.03	6.68	54.30	-1,998.52	-8,453.58	8,465.39	8,443.16	22.23	380.796	
5,800.00	5,786.41	5,699.68	5,698.23	17.33	6.78	54.32	-2,001.20	-8,452.98	8,461.09	8,438.51	22.58	374.746	
5,900.00	5,886.15	5,782.06	5,780.57	17.63	6.87	54.33	-2,003.50	-8,452.52	8,456.85	8,433.93	22.92	368.966	
6,000.00	5,985.89	5,850.00	5,848.49	17.93	6.95	54.35	-2,005.17	-8,452.33	8,452.85	8,429.59	23.26	363.421	
6,100.00	6,085.62	5,944.51	5,942.98	18.23	7.06	54.37	-2,007.33	-8,452.46	8,449.19	8,425.57	23.63	357.632	
6,200.00	6,185.36	6,025.00	6,023.45	18.53	7.17	54.39	-2,008.97	-8,452.68	8,445.62	8,421.64	23.99	352.117	
6,300.00	6,285.10	6,120.19	6,118.62	18.83	7.29	54.42	-2,010.95	-8,453.03	8,442.16	8,417.80	24.36	346.567	
6,400.00	6,384.83	6,211.43	6,209.84	19.13	7.40	54.44	-2,012.88	-8,453.41	8,438.77	8,414.03	24.73	341.212	
6,500.00	6,484.57	6,310.09	6,308.48	19.43	7.53	54.47	-2,014.70	-8,454.03	8,435.51	8,410.39	25.12	335.841	
6,559.90	6,544.31	6,375.00	6,373.38	19.61	7.62	54.49	-2,015.68	-8,454.37	8,433.46	8,408.11	25.35	332.632	
6,600.00	6,584.23	6,436.57	6,434.94	19.73	7.70	22.27	-2,016.49	-8,454.67	8,430.69	8,405.16	25.53	330.235	
6,650.00	6,633.60	6,466.51	6,464.89	19.88	7.73	8.10	-2,016.84	-8,454.83	8,423.41	8,397.70	25.71	327.668	
6,700.00	6,682.15	6,519.72	6,518.09	20.03	7.80	2.00	-2,017.43	-8,455.17	8,411.98	8,386.07	25.91	324.658	
6,750.00	6,729.52	6,551.61	6,549.98	20.18	7.84	-1.48	-2,017.71	-8,455.40	8,396.47	8,370.37	26.10	321.763	
6,800.00	6,775.36	6,600.00	6,598.36	20.33	7.90	-3.87	-2,018.06	-8,455.79	8,376.97	8,350.67	26.30	318.499	
6,850.00	6,819.31	6,643.57	6,641.93	20.48	7.96	-5.76	-2,018.34	-8,456.16	8,353.65	8,327.14	26.50	315.186	
6,900.00	6,861.04	6,681.79	6,680.15	20.63	8.00	-7.45	-2,018.58	-8,456.49	8,326.67	8,299.97	26.70	311.852	
6,950.00	6,900.22	6,720.60	6,718.96	20.78	8.05	-9.11	-2,018.81	-8,456.86	8,296.25	8,269.35	26.90	308.421	
7,000.00	6,936.57	6,762.74	6,761.09	20.93	8.10	-10.90	-2,019.07	-8,457.21	8,262.56	8,235.46	27.10	304.875	
7,050.00	6,969.80	6,798.40	6,796.75	21.08	8.14	-12.93	-2,019.29	-8,457.53	8,225.93	8,198.63	27.30	301.352	
7,100.00	6,999.67	6,829.42	6,827.77	21.23	8.18	-15.37	-2,019.46	-8,457.78	8,186.58	8,159.09	27.49	297.836	
7,150.00	7,025.94	6,853.71	6,852.06	21.38	8.21	-18.46	-2,019.59	-8,457.99	8,144.85	8,117.18	27.67	294.361	
7,200.00	7,048.41	6,884.62	6,882.97	21.53	8.25	-22.61	-2,019.78	-8,458.24	8,101.04	8,073.18	27.86	290.774	
7,250.00	7,066.92	6,911.20	6,909.55	21.68	8.28	-28.40	-2,019.91	-8,458.43	8,055.48	8,027.43	28.05	287.226	
7,300.00	7,081.33	6,927.79	6,926.14	21.83	8.30	-36.83	-2,020.01	-8,458.53	8,008.53	7,980.31	28.22	283.793	
7,350.00	7,091.51	6,934.88	6,933.23	21.98	8.31	-49.44	-2,020.05	-8,458.58	7,960.56	7,932.18	28.38	280.474	
7,400.00	7,097.41	6,939.10	6,937.45	22.13	8.31	-67.99	-2,020.07	-8,458.61	7,911.94	7,883.40	28.54	277.200	
7,444.73	7,099.00	6,940.40	6,938.75	22.27	8.31	-88.64	-2,020.08	-8,458.62	7,868.20	7,839.52	28.68	274.321	
7,500.00	7,098.82	6,940.55	6,938.89	22.44	8.31	-88.65	-2,020.08	-8,458.62	7,814.14	7,785.28	28.85	270.816	
7,600.00	7,098.49	6,940.81	6,939.16	22.74	8.31	-88.66	-2,020.08	-8,458.62	7,716.35	7,687.19	29.16	264.579	
7,700.00	7,098.16	6,941.08	6,939.43	23.04	8.31	-88.67	-2,020.08	-8,458.62	7,618.63	7,589.15	29.48	258.474	
7,800.00	7,097.83	6,941.35	6,939.70	23.34	8.31	-88.68	-2,020.08	-8,458.63	7,520.97	7,491.18	29.79	252.496	
7,900.00	7,097.51	6,941.63	6,939.97	23.64	8.32	-88.69	-2,020.08	-8,458.63	7,423.36	7,393.27	30.10	246.641	
8,000.00	7,097.18	6,941.90	6,940.25	23.94	8.32	-88.70	-2,020.09	-8,458.63	7,325.83	7,295.42	30.41	240.907	
8,100.00	7,096.85	6,942.18	6,940.53	24.24	8.32	-88.71	-2,020.09	-8,458.63	7,228.35	7,197.63	30.72	235.290	
8,200.00	7,096.52	6,942.46	6,940.81	24.54	8.32	-88.72	-2,020.09	-8,458.63	7,130.95	7,099.92	31.03	229.785	
8,300.00	7,096.19	6,942.75	6,941.09	24.84	8.32	-88.73	-2,020.09	-8,458.64	7,033.63	7,002.28	31.35	224.390	
8,400.00	7,095.87	6,943.04	6,941.38	25.14	8.32	-88.74	-2,020.09	-8,458.64	6,936.38	6,904.72	31.66	219.103	
8,500.00	7,095.54	6,943.33	6,941.67	25.44	8.32	-88.75	-2,020.09	-8,458.64	6,839.20	6,807.23	31.97	213.919	
8,600.00	7,095.21	6,943.62	6,941.96	25.74	8.32	-88.76	-2,020.09	-8,458.64	6,742.11	6,709.83	32.28	208.836	
8,700.00	7,094.88	6,943.92	6,942.26	26.04	8.32	-88.77	-2,020.10	-8,458.65	6,645.11	6,612.51	32.60	203.851	
8,800.00	7,094.55	6,944.21	6,942.56	26.35	8.32	-88.78	-2,020.10	-8,458.65	6,548.20	6,515.29	32.91	198.962	
8,900.00	7,094.23	6,944.52	6,942.86	26.65	8.32	-88.79	-2,020.10	-8,458.65	6,451.38	6,418.15	33.23	194.166	
9,000.00	7,093.90	6,944.82	6,943.17	26.95	8.32	-88.80	-2,020.10	-8,458.65	6,354.66	6,321.12	33.54	189.460	
9,100.00	7,093.57	6,945.13	6,943.48	27.25	8.32	-88.81	-2,020.10	-8,458.65	6,258.04	6,224.18	33.86	184.843	
9,200.00	7,093.24	6,945.44	6,943.79	27.55	8.32	-88.82	-2,020.10	-8,458.66	6,161.53	6,127.36	34.17	180.312	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	6,945.76	6,944.10	27.85	8.32	-88.83	-2,020.11	-8,458.66	6,065.13	6,030.65	34.49	175.866	
9,400.00	7,092.59	6,946.08	6,944.42	28.15	8.32	-88.84	-2,020.11	-8,458.66	5,968.86	5,934.05	34.80	171.501	
9,500.00	7,092.26	6,946.40	6,944.74	28.45	8.32	-88.85	-2,020.11	-8,458.66	5,872.70	5,837.58	35.12	167.216	
9,600.00	7,091.93	6,946.73	6,945.07	28.75	8.32	-88.87	-2,020.11	-8,458.67	5,776.68	5,741.24	35.44	163.009	
9,700.00	7,091.60	6,947.05	6,945.40	29.05	8.32	-88.88	-2,020.11	-8,458.67	5,680.79	5,645.04	35.76	158.878	
9,800.00	7,091.27	6,947.39	6,945.73	29.35	8.32	-88.89	-2,020.11	-8,458.67	5,585.05	5,548.98	36.07	154.821	
9,900.00	7,090.95	6,947.72	6,946.07	29.65	8.32	-88.90	-2,020.12	-8,458.67	5,489.46	5,453.07	36.39	150.838	
10,000.00	7,090.62	6,948.06	6,946.41	29.95	8.32	-88.91	-2,020.12	-8,458.68	5,394.03	5,357.32	36.71	146.926	
10,100.00	7,090.29	6,948.41	6,946.75	30.25	8.32	-88.93	-2,020.12	-8,458.68	5,298.77	5,261.74	37.03	143.083	
10,200.00	7,089.96	6,948.76	6,947.10	30.55	8.32	-88.94	-2,020.12	-8,458.68	5,203.69	5,166.34	37.35	139.309	
10,300.00	7,089.63	6,949.11	6,947.45	30.85	8.32	-88.95	-2,020.12	-8,458.68	5,108.79	5,071.12	37.68	135.602	
10,400.00	7,089.31	6,950.00	6,948.34	31.15	8.33	-88.98	-2,020.13	-8,458.69	5,014.10	4,976.10	38.00	131.957	
10,500.00	7,088.98	6,950.00	6,948.34	31.45	8.33	-88.98	-2,020.13	-8,458.69	4,919.61	4,881.29	38.32	128.381	
10,600.00	7,088.65	6,950.22	6,948.57	31.75	8.33	-88.99	-2,020.13	-8,458.69	4,825.34	4,786.70	38.64	124.867	
10,700.00	7,088.32	6,950.66	6,949.01	32.06	8.33	-89.00	-2,020.13	-8,458.70	4,731.31	4,692.35	38.97	121.414	
10,800.00	7,087.99	6,951.10	6,949.44	32.36	8.33	-89.02	-2,020.13	-8,458.70	4,637.53	4,598.24	39.29	118.022	
10,900.00	7,087.67	6,951.54	6,949.88	32.66	8.33	-89.04	-2,020.13	-8,458.70	4,544.02	4,504.40	39.62	114.690	
11,000.00	7,087.34	6,951.98	6,950.32	32.96	8.33	-89.05	-2,020.14	-8,458.71	4,450.79	4,410.84	39.95	111.416	
11,100.00	7,087.01	6,952.42	6,950.76	33.26	8.33	-89.07	-2,020.14	-8,458.71	4,357.85	4,317.58	40.28	108.201	
11,200.00	7,086.68	6,952.85	6,951.20	33.56	8.33	-89.08	-2,020.14	-8,458.71	4,265.24	4,224.64	40.60	105.043	
11,300.00	7,086.35	6,953.29	6,951.64	33.86	8.33	-89.10	-2,020.14	-8,458.72	4,172.97	4,132.03	40.93	101.942	
11,400.00	7,086.03	6,953.73	6,952.07	34.16	8.33	-89.11	-2,020.15	-8,458.72	4,081.06	4,039.79	41.27	98.896	
11,500.00	7,085.70	6,954.17	6,952.51	34.46	8.33	-89.13	-2,020.15	-8,458.72	3,989.54	3,947.94	41.60	95.906	
11,600.00	7,085.37	6,954.61	6,952.95	34.76	8.33	-89.14	-2,020.15	-8,458.73	3,898.44	3,856.51	41.93	92.971	
11,700.00	7,085.04	6,955.04	6,953.39	35.06	8.33	-89.16	-2,020.15	-8,458.73	3,807.78	3,765.52	42.27	90.089	
11,800.00	7,084.71	6,955.48	6,953.82	35.36	8.33	-89.17	-2,020.15	-8,458.73	3,717.61	3,675.00	42.60	87.262	
11,900.00	7,084.39	6,955.92	6,954.26	35.66	8.33	-89.19	-2,020.16	-8,458.74	3,627.95	3,585.01	42.94	84.489	
12,000.00	7,084.06	6,956.36	6,954.70	35.96	8.33	-89.21	-2,020.16	-8,458.74	3,538.84	3,495.56	43.28	81.769	
12,100.00	7,083.73	6,956.79	6,955.14	36.26	8.33	-89.22	-2,020.16	-8,458.75	3,450.33	3,406.71	43.62	79.102	
12,200.00	7,083.40	6,957.23	6,955.57	36.56	8.33	-89.24	-2,020.16	-8,458.75	3,362.46	3,318.50	43.96	76.489	
12,300.00	7,083.07	6,957.67	6,956.01	36.86	8.33	-89.25	-2,020.16	-8,458.75	3,275.29	3,230.99	44.30	73.929	
12,400.00	7,082.75	6,958.10	6,956.45	37.16	8.34	-89.27	-2,020.17	-8,458.76	3,188.87	3,144.22	44.65	71.424	
12,500.00	7,082.42	6,958.54	6,956.88	37.46	8.34	-89.28	-2,020.17	-8,458.76	3,103.27	3,058.28	44.99	68.972	
12,600.00	7,082.09	6,958.98	6,957.32	37.76	8.34	-89.30	-2,020.17	-8,458.76	3,018.55	2,973.21	45.34	66.576	
12,700.00	7,081.76	6,959.41	6,957.76	38.06	8.34	-89.31	-2,020.17	-8,458.77	2,934.80	2,889.11	45.69	64.235	
12,800.00	7,081.43	6,959.85	6,958.19	38.36	8.34	-89.33	-2,020.18	-8,458.77	2,852.09	2,806.05	46.04	61.950	
12,900.00	7,081.11	6,960.28	6,958.63	38.66	8.34	-89.34	-2,020.18	-8,458.77	2,770.53	2,724.14	46.39	59.723	
13,000.00	7,080.78	6,960.72	6,959.06	38.96	8.34	-89.36	-2,020.18	-8,458.78	2,690.20	2,643.46	46.74	57.555	
13,100.00	7,080.45	6,961.16	6,959.50	39.26	8.34	-89.37	-2,020.18	-8,458.78	2,611.24	2,564.15	47.09	55.447	
13,200.00	7,080.12	6,961.59	6,959.93	39.56	8.34	-89.39	-2,020.19	-8,458.78	2,533.76	2,486.32	47.45	53.401	
13,300.00	7,079.79	6,962.03	6,960.37	39.86	8.34	-89.40	-2,020.19	-8,458.79	2,457.91	2,410.11	47.80	51.420	
13,400.00	7,079.47	6,962.46	6,960.80	40.16	8.34	-89.42	-2,020.19	-8,458.79	2,383.84	2,335.69	48.15	49.504	
13,500.00	7,079.14	6,962.90	6,961.24	40.46	8.34	-89.44	-2,020.19	-8,458.79	2,311.73	2,263.22	48.51	47.658	
13,600.00	7,078.81	6,963.33	6,961.67	40.77	8.34	-89.45	-2,020.19	-8,458.80	2,241.76	2,192.90	48.86	45.883	
13,700.00	7,078.48	6,963.77	6,962.11	41.07	8.34	-89.47	-2,020.20	-8,458.80	2,174.13	2,124.92	49.21	44.184	
13,800.00	7,078.15	6,964.20	6,962.54	41.37	8.34	-89.48	-2,020.20	-8,458.80	2,109.08	2,059.53	49.55	42.563	
13,900.00	7,077.83	6,964.64	6,962.98	41.67	8.34	-89.50	-2,020.20	-8,458.81	2,046.85	1,996.96	49.89	41.025	
14,000.00	7,077.50	6,965.07	6,963.41	41.97	8.34	-89.51	-2,020.20	-8,458.81	1,987.71	1,937.48	50.23	39.574	
14,100.00	7,077.17	6,965.50	6,963.85	42.27	8.34	-89.53	-2,020.21	-8,458.81	1,931.93	1,881.37	50.56	38.214	
14,200.00	7,076.84	6,965.94	6,964.28	42.57	8.34	-89.54	-2,020.21	-8,458.82	1,879.82	1,828.95	50.87	36.950	
14,300.00	7,076.51	6,966.37	6,964.72	42.87	8.34	-89.56	-2,020.21	-8,458.82	1,831.69	1,780.51	51.18	35.788	
14,400.00	7,076.19	6,966.81	6,965.15	43.17	8.35	-89.57	-2,020.21	-8,458.82	1,787.87	1,736.39	51.48	34.732	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	6,967.24	6,965.58	43.47	8.35	-89.59	-2,020.21	-8,458.83	1,748.67	1,696.92	51.76	33.787	
14,600.00	7,075.53	6,967.67	6,966.02	43.77	8.35	-89.60	-2,020.22	-8,458.83	1,714.42	1,662.40	52.02	32.958	
14,700.00	7,075.20	6,968.11	6,966.45	44.07	8.35	-89.62	-2,020.22	-8,458.83	1,685.41	1,633.15	52.26	32.248	
14,800.00	7,074.87	6,968.54	6,966.88	44.37	8.35	-89.63	-2,020.22	-8,458.84	1,661.92	1,609.43	52.49	31.662	
14,900.00	7,074.55	6,968.97	6,967.32	44.67	8.35	-89.65	-2,020.22	-8,458.84	1,644.19	1,591.49	52.70	31.202	
15,000.00	7,074.22	6,969.41	6,967.75	44.97	8.35	-89.66	-2,020.23	-8,458.84	1,632.40	1,579.52	52.88	30.869	
15,100.00	7,073.89	6,969.84	6,968.18	45.27	8.35	-89.68	-2,020.23	-8,458.85	1,626.68	1,573.63	53.05	30.663	
15,143.14	7,073.75	6,970.03	6,968.37	45.40	8.35	-89.69	-2,020.23	-8,458.85	1,626.11	1,572.99	53.12	30.614	CC, ES
15,200.00	7,073.56	6,970.27	6,968.62	45.57	8.35	-89.70	-2,020.23	-8,458.85	1,627.10	1,573.90	53.20	30.584	SF
15,300.00	7,073.23	6,970.71	6,969.05	45.87	8.35	-89.71	-2,020.23	-8,458.85	1,633.66	1,580.32	53.34	30.629	
15,400.00	7,072.91	6,971.14	6,969.48	46.17	8.35	-89.73	-2,020.24	-8,458.86	1,646.27	1,592.81	53.46	30.793	
15,500.00	7,072.58	6,971.57	6,969.91	46.47	8.35	-89.74	-2,020.24	-8,458.86	1,664.81	1,611.23	53.58	31.071	
15,600.00	7,072.25	6,972.00	6,970.35	46.77	8.35	-89.76	-2,020.24	-8,458.86	1,689.07	1,635.37	53.69	31.458	
15,700.00	7,071.92	6,972.44	6,970.78	47.07	8.35	-89.77	-2,020.24	-8,458.87	1,718.81	1,665.01	53.81	31.944	
15,800.00	7,071.59	6,972.87	6,971.21	47.37	8.35	-89.79	-2,020.25	-8,458.87	1,753.76	1,699.84	53.92	32.524	
15,900.00	7,071.27	6,973.30	6,971.64	47.67	8.35	-89.80	-2,020.25	-8,458.87	1,793.62	1,739.57	54.04	33.189	
16,000.00	7,070.94	6,973.73	6,972.07	47.97	8.35	-89.82	-2,020.25	-8,458.88	1,838.05	1,783.88	54.17	33.931	
16,100.00	7,070.61	6,974.16	6,972.50	48.27	8.35	-89.83	-2,020.25	-8,458.88	1,886.74	1,832.43	54.31	34.741	
16,200.00	7,070.28	6,974.59	6,972.94	48.57	8.35	-89.85	-2,020.26	-8,458.88	1,939.37	1,884.91	54.46	35.612	
16,300.00	7,069.95	6,975.03	6,973.37	48.87	8.36	-89.86	-2,020.26	-8,458.89	1,995.63	1,941.01	54.62	36.537	
16,400.00	7,069.63	6,975.48	6,973.82	49.17	8.36	-89.88	-2,020.26	-8,458.89	2,055.21	2,000.42	54.79	37.509	
16,419.92	7,069.56	6,975.57	6,973.91	49.23	8.36	-89.88	-2,020.26	-8,458.89	2,067.46	2,012.63	54.83	37.707	
16,500.00	7,069.30	6,975.93	6,974.27	49.47	8.36	-89.89	-2,020.26	-8,458.90	2,117.85	2,062.87	54.98	38.521	
16,591.83	7,069.00	6,976.34	6,974.68	49.75	8.36	-89.91	-2,020.26	-8,458.90	2,177.82	2,122.66	55.16	39.482	

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 750H - Slot B05
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 750H	**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	97.60	-1,115.14	8,360.09	8,434.13				
100.00	100.00	120.51	120.51	0.23	1.11	97.60	-1,115.14	8,360.09	8,434.13	8,432.79	1.34	6,291.853	
200.00	200.00	220.51	220.51	0.53	2.04	97.60	-1,115.14	8,360.09	8,434.13	8,431.57	2.56	3,288.563	
300.00	300.00	320.52	320.51	0.83	3.22	97.60	-1,115.14	8,360.09	8,434.13	8,430.09	4.04	2,085.968	
400.00	400.00	420.52	420.51	1.13	5.07	97.60	-1,115.14	8,360.09	8,434.13	8,427.94	6.19	1,362.143	
500.00	500.00	520.52	520.51	1.43	6.91	97.60	-1,115.14	8,360.09	8,434.13	8,425.79	8.34	1,011.244	CC
600.00	599.98	619.02	619.01	1.73	8.73	-106.86	-1,114.64	8,360.09	8,434.57	8,424.11	10.46	806.271	
707.91	707.73	724.73	724.73	2.05	10.69	-106.87	-1,114.88	8,360.09	8,436.29	8,423.55	12.74	662.233	
800.00	799.58	820.11	820.09	2.33	12.48	-106.91	-1,115.14	8,360.09	8,438.27	8,423.46	14.81	569.834	
900.00	899.31	919.85	919.83	2.63	14.44	-106.96	-1,115.14	8,360.09	8,440.39	8,423.32	17.06	494.700	
1,000.00	999.05	1,019.58	1,019.56	2.93	16.39	-107.00	-1,115.14	8,360.09	8,442.51	8,423.19	19.31	437.097	
1,100.00	1,098.79	1,118.05	1,118.02	3.23	18.32	-107.05	-1,114.62	8,360.09	8,444.57	8,423.03	21.54	391.981	
1,200.00	1,198.52	1,216.00	1,215.97	3.53	20.24	-107.10	-1,114.81	8,360.09	8,446.73	8,422.97	23.76	355.477	
1,300.00	1,298.26	1,318.84	1,318.77	3.83	22.28	-107.14	-1,115.14	8,360.09	8,448.91	8,422.81	26.11	323.649	
1,400.00	1,398.00	1,418.58	1,418.51	4.13	24.44	-107.19	-1,115.14	8,360.09	8,451.06	8,422.49	28.57	295.801	
1,500.00	1,497.73	1,518.31	1,518.25	4.43	26.61	-107.24	-1,115.14	8,360.09	8,453.21	8,422.17	31.03	272.378	
1,600.00	1,597.47	1,617.30	1,617.22	4.73	28.76	-107.29	-1,113.89	8,360.09	8,455.21	8,421.72	33.48	252.520	
1,700.00	1,697.21	1,714.00	1,713.91	5.03	30.86	-107.34	-1,114.10	8,360.09	8,457.40	8,421.52	35.88	235.698	
1,800.00	1,796.94	1,810.75	1,810.66	5.33	32.96	-107.38	-1,114.59	8,360.09	8,459.63	8,421.35	38.28	220.980	
1,900.00	1,896.68	1,917.37	1,917.19	5.63	35.23	-107.42	-1,115.14	8,360.09	8,461.87	8,421.02	40.85	207.136	
2,000.00	1,996.42	2,017.11	2,016.93	5.93	37.26	-107.47	-1,115.14	8,360.09	8,464.05	8,420.86	43.19	195.975	
2,100.00	2,096.15	2,116.85	2,116.67	6.23	39.30	-107.52	-1,115.14	8,360.09	8,466.23	8,420.71	45.53	185.961	
2,200.00	2,195.89	2,212.69	2,212.48	6.53	41.26	-107.57	-1,113.97	8,360.09	8,468.29	8,420.50	47.79	177.216	
2,300.00	2,295.63	2,308.19	2,307.98	6.83	43.21	-107.61	-1,114.55	8,360.09	8,470.55	8,420.52	50.04	169.288	
2,400.00	2,395.36	2,416.12	2,415.88	7.13	45.45	-107.66	-1,115.14	8,360.09	8,472.82	8,420.24	52.58	161.150	
2,500.00	2,495.10	2,515.85	2,515.61	7.43	47.57	-107.70	-1,115.14	8,360.09	8,475.03	8,420.04	54.99	154.113	
2,600.00	2,594.84	2,615.59	2,615.35	7.73	49.68	-107.75	-1,115.14	8,360.09	8,477.24	8,419.83	57.41	147.669	
2,700.00	2,694.57	2,715.33	2,715.09	8.03	51.80	-107.80	-1,115.14	8,360.09	8,479.46	8,419.64	59.82	141.744	
2,800.00	2,794.31	2,814.46	2,814.22	8.33	53.90	-107.85	-1,114.30	8,360.09	8,481.59	8,419.37	62.22	136.306	
2,900.00	2,894.05	2,913.14	2,912.89	8.63	55.99	-107.89	-1,114.42	8,360.09	8,483.83	8,419.22	64.62	131.294	
3,000.00	2,993.78	3,011.83	3,011.58	8.93	58.08	-107.94	-1,114.65	8,360.09	8,486.10	8,419.09	67.01	126.639	
3,100.00	3,093.52	3,110.54	3,110.29	9.23	60.18	-107.98	-1,114.98	8,360.09	8,488.38	8,418.97	69.40	122.305	
3,200.00	3,193.26	3,214.14	3,213.77	9.53	62.59	-108.03	-1,115.14	8,360.09	8,490.64	8,418.52	72.12	117.733	
3,300.00	3,292.99	3,313.88	3,313.51	9.83	65.03	-108.08	-1,115.14	8,360.09	8,492.89	8,418.03	74.86	113.449	
3,400.00	3,392.73	3,412.69	3,412.30	10.13	67.46	-108.13	-1,113.54	8,360.09	8,494.97	8,417.39	77.58	109.497	
3,500.00	3,492.47	3,507.79	3,507.39	10.43	69.79	-108.18	-1,113.87	8,360.09	8,497.28	8,417.07	80.21	105.936	
3,600.00	3,592.20	3,602.97	3,602.55	10.73	72.12	-108.21	-1,114.69	8,360.09	8,499.64	8,416.80	82.84	102.599	
3,700.00	3,691.94	3,712.99	3,712.45	11.03	74.70	-108.26	-1,115.14	8,360.09	8,501.96	8,416.23	85.73	99.175	
3,800.00	3,791.68	3,809.06	3,808.50	11.33	76.91	-108.31	-1,114.37	8,360.09	8,504.16	8,415.92	88.23	96.383	
3,900.00	3,891.41	3,912.53	3,911.93	11.63	79.26	-108.35	-1,115.14	8,360.09	8,506.52	8,415.64	90.88	93.597	
4,000.00	3,991.15	4,012.26	4,011.66	11.93	81.38	-108.40	-1,115.14	8,360.09	8,508.82	8,415.51	93.31	91.191	
4,100.00	4,090.89	4,112.00	4,111.40	12.23	83.50	-108.45	-1,115.14	8,360.09	8,511.11	8,415.38	95.73	88.908	
4,200.00	4,190.62	4,211.74	4,211.14	12.53	85.63	-108.49	-1,115.14	8,360.09	8,513.42	8,415.26	98.15	86.737	
4,300.00	4,290.36	4,311.47	4,310.87	12.83	87.75	-108.54	-1,115.14	8,360.09	8,515.72	8,415.15	100.57	84.671	
4,400.00	4,390.10	4,411.21	4,410.61	13.13	89.87	-108.59	-1,115.14	8,360.09	8,518.04	8,415.04	103.00	82.702	
4,500.00	4,489.84	4,510.87	4,510.25	13.43	91.99	-108.65	-1,112.49	8,360.09	8,520.09	8,414.67	105.42	80.822	
4,600.00	4,589.57	4,609.41	4,608.79	13.73	94.09	-108.69	-1,112.57	8,360.09	8,522.42	8,414.61	107.82	79.047	
4,700.00	4,689.31	4,707.98	4,707.35	14.03	96.19	-108.74	-1,112.79	8,360.09	8,524.78	8,414.57	110.21	77.348	
4,800.00	4,789.05	4,806.57	4,805.93	14.33	98.28	-108.78	-1,113.15	8,360.09	8,527.15	8,414.54	112.61	75.722	
4,900.00	4,888.78	4,905.18	4,904.53	14.63	100.38	-108.82	-1,113.64	8,360.09	8,529.55	8,414.54	115.01	74.164	
5,000.00	4,988.52	5,003.81	5,003.15	14.93	102.48	-108.86	-1,114.28	8,360.09	8,531.96	8,414.55	117.41	72.669	
5,100.00	5,088.26	5,102.46	5,101.80	15.23	104.58	-108.90	-1,115.06	8,360.09	8,534.38	8,414.58	119.81	71.234	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,209.29	5,208.51	15.53	106.77	-108.95	-1,115.14	8,360.09	8,536.75	8,414.45	122.30	69.803	
5,300.00	5,287.73	5,309.03	5,308.24	15.83	108.81	-109.00	-1,115.14	8,360.09	8,539.11	8,414.47	124.64	68.513	
5,400.00	5,387.47	5,408.76	5,407.98	16.13	110.85	-109.05	-1,115.14	8,360.09	8,541.48	8,414.51	126.97	67.270	
5,500.00	5,487.20	5,508.50	5,507.72	16.43	112.88	-109.09	-1,115.14	8,360.09	8,543.85	8,414.54	129.31	66.072	
5,600.00	5,586.94	5,608.24	5,607.45	16.73	114.92	-109.14	-1,115.14	8,360.09	8,546.23	8,414.59	131.65	64.917	
5,700.00	5,686.68	5,707.95	5,707.14	17.03	116.96	-109.20	-1,112.54	8,360.09	8,548.38	8,414.40	133.99	63.801	ES
5,800.00	5,786.41	5,806.58	5,805.77	17.33	118.97	-109.24	-1,112.62	8,360.09	8,550.78	8,414.48	136.30	62.735	
5,900.00	5,886.15	5,905.23	5,904.42	17.63	120.99	-109.29	-1,112.83	8,360.09	8,553.20	8,414.58	138.62	61.704	
6,000.00	5,985.89	6,003.91	6,003.09	17.93	123.01	-109.33	-1,113.20	8,360.09	8,555.64	8,414.70	140.93	60.708	
6,100.00	6,085.62	6,102.61	6,101.78	18.23	125.02	-109.37	-1,113.70	8,360.09	8,558.09	8,414.84	143.25	59.743	
6,200.00	6,185.36	6,201.33	6,200.49	18.53	127.04	-109.41	-1,114.35	8,360.09	8,560.56	8,415.00	145.57	58.809	
6,300.00	6,285.10	6,306.53	6,305.61	18.83	129.18	-109.46	-1,115.14	8,360.09	8,563.05	8,415.04	148.01	57.855	
6,400.00	6,384.83	6,398.83	6,397.98	19.13	131.07	-109.49	-1,116.07	8,360.09	8,565.55	8,415.35	150.20	57.027	SF
6,500.00	6,484.57	6,308.00	6,307.08	19.43	129.21	-109.46	-1,115.14	8,360.09	8,570.19	8,421.58	148.60	57.671	
6,559.90	6,544.31	6,308.00	6,307.08	19.61	129.21	-109.46	-1,115.14	8,360.09	8,573.23	8,424.47	148.76	57.631	
6,600.00	6,584.23	6,308.00	6,307.08	19.73	129.21	-141.61	-1,115.14	8,360.09	8,576.90	8,428.04	148.86	57.616	
6,650.00	6,633.60	6,308.00	6,307.08	19.88	129.21	-155.56	-1,115.14	8,360.09	8,585.61	8,436.62	148.99	57.627	
6,700.00	6,682.15	6,308.00	6,307.08	20.03	129.21	-161.32	-1,115.14	8,360.09	8,598.83	8,449.73	149.11	57.669	
6,750.00	6,729.52	6,308.00	6,307.08	20.18	129.21	-164.29	-1,115.14	8,360.09	8,616.45	8,467.23	149.22	57.742	
6,800.00	6,775.36	6,308.00	6,307.08	20.33	129.21	-166.00	-1,115.14	8,360.09	8,638.30	8,488.96	149.34	57.844	
6,850.00	6,819.31	6,308.00	6,307.08	20.48	129.21	-167.00	-1,115.14	8,360.09	8,664.19	8,514.74	149.45	57.973	
6,900.00	6,861.04	6,308.00	6,307.08	20.63	129.21	-167.55	-1,115.14	8,360.09	8,693.88	8,544.32	149.57	58.127	
6,950.00	6,900.22	6,308.00	6,307.08	20.78	129.21	-167.74	-1,115.14	8,360.09	8,727.12	8,577.43	149.68	58.305	
7,000.00	6,936.57	6,308.00	6,307.08	20.93	129.21	-167.62	-1,115.14	8,360.09	8,763.60	8,613.80	149.80	58.503	
7,050.00	6,969.80	6,308.00	6,307.08	21.08	129.21	-167.18	-1,115.14	8,360.09	8,803.01	8,653.10	149.91	58.720	
7,100.00	6,999.67	6,308.00	6,307.08	21.23	129.21	-166.34	-1,115.14	8,360.09	8,845.02	8,694.99	150.04	58.953	
7,150.00	7,025.94	6,308.00	6,307.08	21.38	129.21	-164.95	-1,115.14	8,360.09	8,889.27	8,739.11	150.16	59.199	
7,200.00	7,048.41	6,308.00	6,307.08	21.53	129.21	-162.65	-1,115.14	8,360.09	8,935.40	8,785.11	150.29	59.455	
7,250.00	7,066.92	6,308.00	6,307.08	21.68	129.21	-158.67	-1,115.14	8,360.09	8,983.02	8,832.60	150.42	59.719	
7,300.00	7,081.33	6,308.00	6,307.08	21.83	129.21	-150.81	-1,115.14	8,360.09	9,031.76	8,881.20	150.56	59.988	
7,350.00	7,091.51	6,308.00	6,307.08	21.98	129.21	-131.28	-1,115.14	8,360.09	9,081.22	8,930.52	150.70	60.259	
7,400.00	7,097.41	6,308.00	6,307.08	22.13	129.21	-79.21	-1,115.14	8,360.09	9,131.03	8,980.17	150.85	60.530	
7,444.73	7,099.00	6,308.00	6,307.08	22.27	129.21	-37.57	-1,115.14	8,360.09	9,175.56	9,024.57	150.99	60.770	
7,500.00	7,098.82	6,308.00	6,307.08	22.44	129.21	-37.57	-1,115.14	8,360.09	9,230.46	9,079.30	151.16	61.063	
7,600.00	7,098.49	6,308.00	6,307.08	22.74	129.21	-37.57	-1,115.14	8,360.09	9,329.80	9,178.33	151.47	61.594	
7,700.00	7,098.16	6,308.00	6,307.08	23.04	129.21	-37.57	-1,115.14	8,360.09	9,429.16	9,277.37	151.78	62.122	
7,800.00	7,097.83	6,308.00	6,307.08	23.34	129.21	-37.57	-1,115.14	8,360.09	9,528.53	9,376.43	152.10	62.649	
7,900.00	7,097.51	6,308.00	6,307.08	23.64	129.21	-37.57	-1,115.14	8,360.09	9,627.91	9,475.51	152.41	63.173	
8,000.00	7,097.18	6,308.00	6,307.08	23.94	129.21	-37.57	-1,115.14	8,360.09	9,727.31	9,574.59	152.72	63.696	
8,100.00	7,096.85	6,308.00	6,307.08	24.24	129.21	-37.57	-1,115.14	8,360.09	9,826.71	9,673.69	153.03	64.216	
8,200.00	7,096.52	6,308.00	6,307.08	24.54	129.21	-37.57	-1,115.14	8,360.09	9,926.13	9,772.80	153.33	64.735	
8,300.00	7,096.19	6,308.00	6,307.08	24.84	129.21	-37.57	-1,115.14	8,360.09	10,025.56	9,871.92	153.64	65.252	
8,400.00	7,095.87	6,308.00	6,307.08	25.14	129.21	-37.57	-1,115.14	8,360.09	10,125.01	9,971.05	153.95	65.767	
8,500.00	7,095.54	6,308.00	6,307.08	25.44	129.21	-37.57	-1,115.14	8,360.09	10,224.46	10,070.20	154.26	66.280	
8,600.00	7,095.21	6,308.00	6,307.08	25.74	129.21	-37.57	-1,115.14	8,360.09	10,323.92	10,169.35	154.57	66.791	
8,700.00	7,094.88	6,308.00	6,307.08	26.04	129.21	-37.57	-1,115.14	8,360.09	10,423.40	10,268.52	154.88	67.300	
8,800.00	7,094.55	6,308.00	6,307.08	26.35	129.21	-37.57	-1,115.14	8,360.09	10,522.88	10,367.69	155.19	67.808	
8,900.00	7,094.23	6,308.00	6,307.08	26.65	129.21	-37.57	-1,115.14	8,360.09	10,622.37	10,466.88	155.49	68.314	
9,000.00	7,093.90	6,308.00	6,307.08	26.95	129.21	-37.57	-1,115.14	8,360.09	10,721.88	10,566.07	155.80	68.817	
9,100.00	7,093.57	6,308.00	6,307.08	27.25	129.21	-37.57	-1,115.14	8,360.09	10,821.39	10,665.28	156.11	69.319	
9,200.00	7,093.24	6,308.00	6,307.08	27.55	129.21	-37.57	-1,115.14	8,360.09	10,920.91	10,764.49	156.42	69.820	
9,300.00	7,092.91	6,308.00	6,307.08	27.85	129.21	-37.57	-1,115.14	8,360.09	11,020.44	10,863.72	156.72	70.318	

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 750H - Slot B05
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 750H	**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
9,400.00	7,092.59	6,308.00	6,307.08	28.15	129.21	-37.57	-1,115.14	8,360.09	11,119.98	10,962.95	157.03	70.814	
9,500.00	7,092.26	6,308.00	6,307.08	28.45	129.21	-37.57	-1,115.14	8,360.09	11,219.52	11,062.19	157.34	71.309	
9,600.00	7,091.93	6,308.00	6,307.08	28.75	129.21	-37.57	-1,115.14	8,360.09	11,319.08	11,161.43	157.64	71.802	
9,700.00	7,091.60	6,308.00	6,307.08	29.05	129.21	-37.57	-1,115.14	8,360.09	11,418.64	11,260.69	157.95	72.293	
9,800.00	7,091.27	6,308.00	6,307.08	29.35	129.21	-37.57	-1,115.14	8,360.09	11,518.21	11,359.95	158.26	72.782	
9,900.00	7,090.95	6,308.00	6,307.08	29.65	129.21	-37.57	-1,115.14	8,360.09	11,617.79	11,459.22	158.56	73.270	
10,000.00	7,090.62	6,308.00	6,307.08	29.95	129.21	-37.57	-1,115.14	8,360.09	11,717.37	11,558.50	158.87	73.756	
10,100.00	7,090.29	6,308.00	6,307.08	30.25	129.21	-37.57	-1,115.14	8,360.09	11,816.96	11,657.79	159.17	74.240	
10,200.00	7,089.96	6,308.00	6,307.08	30.55	129.21	-37.57	-1,115.14	8,360.09	11,916.56	11,757.08	159.48	74.722	
10,300.00	7,089.63	6,308.00	6,307.08	30.85	129.21	-37.57	-1,115.14	8,360.09	12,016.16	11,856.38	159.78	75.203	
10,400.00	7,089.31	6,308.00	6,307.08	31.15	129.21	-37.57	-1,115.14	8,360.09	12,115.78	11,955.69	160.09	75.682	
10,500.00	7,088.98	6,308.00	6,307.08	31.45	129.21	-37.57	-1,115.14	8,360.09	12,215.39	12,055.00	160.39	76.159	
10,600.00	7,088.65	6,308.00	6,307.08	31.75	129.21	-37.57	-1,115.14	8,360.09	12,315.02	12,154.32	160.70	76.634	
10,700.00	7,088.32	6,308.00	6,307.08	32.06	129.21	-37.57	-1,115.14	8,360.09	12,414.65	12,253.64	161.00	77.108	
10,800.00	7,087.99	6,308.00	6,307.08	32.36	129.21	-37.57	-1,115.14	8,360.09	12,514.28	12,352.97	161.31	77.580	
10,900.00	7,087.67	6,308.00	6,307.08	32.66	129.21	-37.57	-1,115.14	8,360.09	12,613.92	12,452.31	161.61	78.050	
11,000.00	7,087.34	6,308.00	6,307.08	32.96	129.21	-37.57	-1,115.14	8,360.09	12,713.57	12,551.65	161.92	78.519	
11,100.00	7,087.01	6,308.00	6,307.08	33.26	129.21	-37.57	-1,115.14	8,360.09	12,813.22	12,651.00	162.22	78.986	
11,200.00	7,086.68	6,308.00	6,307.08	33.56	129.21	-37.57	-1,115.14	8,360.09	12,912.88	12,750.36	162.53	79.451	
11,300.00	7,086.35	6,308.00	6,307.08	33.86	129.21	-37.57	-1,115.14	8,360.09	13,012.55	12,849.72	162.83	79.914	
11,400.00	7,086.03	6,308.00	6,307.08	34.16	129.21	-37.57	-1,115.14	8,360.09	13,112.21	12,949.08	163.13	80.376	
11,500.00	7,085.70	6,308.00	6,307.08	34.46	129.21	-37.57	-1,115.14	8,360.09	13,211.89	13,048.45	163.44	80.837	
11,600.00	7,085.37	6,308.00	6,307.08	34.76	129.21	-37.57	-1,115.14	8,360.09	13,311.57	13,147.82	163.74	81.295	
11,700.00	7,085.04	6,308.00	6,307.08	35.06	129.21	-37.57	-1,115.14	8,360.09	13,411.25	13,247.20	164.05	81.753	
11,800.00	7,084.71	6,308.00	6,307.08	35.36	129.21	-37.57	-1,115.14	8,360.09	13,510.94	13,346.59	164.35	82.208	
11,900.00	7,084.39	6,308.00	6,307.08	35.66	129.21	-37.57	-1,115.14	8,360.09	13,610.63	13,445.98	164.65	82.662	
12,000.00	7,084.06	6,308.00	6,307.08	35.96	129.21	-37.57	-1,115.14	8,360.09	13,710.33	13,545.37	164.96	83.114	
12,100.00	7,083.73	6,308.00	6,307.08	36.26	129.21	-37.57	-1,115.14	8,360.09	13,810.03	13,644.77	165.26	83.565	
12,200.00	7,083.40	6,308.00	6,307.08	36.56	129.21	-37.57	-1,115.14	8,360.09	13,909.73	13,744.17	165.57	84.014	
12,300.00	7,083.07	6,308.00	6,307.08	36.86	129.21	-37.57	-1,115.14	8,360.09	14,009.44	13,843.57	165.87	84.461	
12,400.00	7,082.75	6,308.00	6,307.08	37.16	129.21	-37.57	-1,115.14	8,360.09	14,109.16	13,942.99	166.17	84.907	
12,500.00	7,082.42	6,308.00	6,307.08	37.46	129.21	-37.57	-1,115.14	8,360.09	14,208.87	14,042.40	166.48	85.351	
12,600.00	7,082.09	6,308.00	6,307.08	37.76	129.21	-37.57	-1,115.14	8,360.09	14,308.60	14,141.82	166.78	85.794	
12,700.00	7,081.76	6,308.00	6,307.08	38.06	129.21	-37.57	-1,115.14	8,360.09	14,408.32	14,241.24	167.08	86.235	
12,800.00	7,081.43	6,308.00	6,307.08	38.36	129.21	-37.57	-1,115.14	8,360.09	14,508.05	14,340.67	167.38	86.675	
12,900.00	7,081.11	6,308.00	6,307.08	38.66	129.21	-37.57	-1,115.14	8,360.09	14,607.78	14,440.10	167.69	87.113	
13,000.00	7,080.78	6,308.00	6,307.08	38.96	129.21	-37.57	-1,115.14	8,360.09	14,707.52	14,539.53	167.99	87.550	
13,100.00	7,080.45	6,308.00	6,307.08	39.26	129.21	-37.57	-1,115.14	8,360.09	14,807.26	14,638.97	168.29	87.985	
13,200.00	7,080.12	6,308.00	6,307.08	39.56	129.21	-37.57	-1,115.14	8,360.09	14,907.01	14,738.41	168.60	88.418	
13,300.00	7,079.79	6,308.00	6,307.08	39.86	129.21	-37.57	-1,115.14	8,360.09	15,006.75	14,837.85	168.90	88.851	
13,400.00	7,079.47	6,308.00	6,307.08	40.16	129.21	-37.57	-1,115.14	8,360.09	15,106.50	14,937.30	169.20	89.281	
13,500.00	7,079.14	6,308.00	6,307.08	40.46	129.21	-37.57	-1,115.14	8,360.09	15,206.26	15,036.75	169.50	89.710	
13,600.00	7,078.81	6,308.00	6,307.08	40.77	129.21	-37.57	-1,115.14	8,360.09	15,306.01	15,136.21	169.81	90.138	
13,700.00	7,078.48	6,308.00	6,307.08	41.07	129.21	-37.57	-1,115.14	8,360.09	15,405.77	15,235.67	170.11	90.564	
13,800.00	7,078.15	6,308.00	6,307.08	41.37	129.21	-37.57	-1,115.14	8,360.09	15,505.54	15,335.13	170.41	90.989	
13,900.00	7,077.83	6,308.00	6,307.08	41.67	129.21	-37.57	-1,115.14	8,360.09	15,605.30	15,434.59	170.71	91.412	
14,000.00	7,077.50	6,308.00	6,307.08	41.97	129.21	-37.57	-1,115.14	8,360.09	15,705.07	15,534.06	171.02	91.833	
14,100.00	7,077.17	6,308.00	6,307.08	42.27	129.21	-37.57	-1,115.14	8,360.09	15,804.85	15,633.53	171.32	92.254	
14,200.00	7,076.84	6,308.00	6,307.08	42.57	129.21	-37.57	-1,115.14	8,360.09	15,904.62	15,733.00	171.62	92.673	
14,300.00	7,076.51	6,308.00	6,307.08	42.87	129.21	-37.57	-1,115.14	8,360.09	16,004.40	15,832.48	171.92	93.090	
14,400.00	7,076.19	6,308.00	6,307.08	43.17	129.21	-37.57	-1,115.14	8,360.09	16,104.18	15,931.95	172.23	93.506	
14,500.00	7,075.86	6,308.00	6,307.08	43.47	129.21	-37.57	-1,115.14	8,360.09	16,203.96	16,031.43	172.53	93.921	

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 750H - Slot B05
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 750H	**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
14,600.00	7,075.53	6,308.00	6,307.08	43.77	129.21	-37.57	-1,115.14	8,360.09	16,303.75	16,130.92	172.83	94.334	
14,700.00	7,075.20	6,308.00	6,307.08	44.07	129.21	-37.57	-1,115.14	8,360.09	16,403.54	16,230.40	173.13	94.745	
14,800.00	7,074.87	6,308.00	6,307.08	44.37	129.21	-37.57	-1,115.14	8,360.09	16,503.33	16,329.89	173.43	95.156	
14,900.00	7,074.55	6,308.00	6,307.08	44.67	129.21	-37.57	-1,115.14	8,360.09	16,603.12	16,429.39	173.74	95.565	
15,000.00	7,074.22	6,308.00	6,307.08	44.97	129.21	-37.57	-1,115.14	8,360.09	16,702.92	16,528.88	174.04	95.972	
15,100.00	7,073.89	6,308.00	6,307.08	45.27	129.21	-37.57	-1,115.14	8,360.09	16,802.72	16,628.38	174.34	96.379	
15,200.00	7,073.56	6,308.00	6,307.08	45.57	129.21	-37.57	-1,115.14	8,360.09	16,902.52	16,727.88	174.64	96.783	
15,300.00	7,073.23	6,308.00	6,307.08	45.87	129.21	-37.57	-1,115.14	8,360.09	17,002.32	16,827.38	174.94	97.187	
15,400.00	7,072.91	6,308.00	6,307.08	46.17	129.21	-37.57	-1,115.14	8,360.09	17,102.13	16,926.88	175.25	97.589	
15,500.00	7,072.58	6,308.00	6,307.08	46.47	129.21	-37.57	-1,115.14	8,360.09	17,201.93	17,026.39	175.55	97.990	
15,600.00	7,072.25	6,308.00	6,307.08	46.77	129.21	-37.57	-1,115.14	8,360.09	17,301.74	17,125.89	175.85	98.389	
15,700.00	7,071.92	6,308.00	6,307.08	47.07	129.21	-37.57	-1,115.14	8,360.09	17,401.56	17,225.41	176.15	98.787	
15,800.00	7,071.59	6,308.00	6,307.08	47.37	129.21	-37.57	-1,115.14	8,360.09	17,501.37	17,324.92	176.45	99.184	
15,900.00	7,071.27	6,308.00	6,307.08	47.67	129.21	-37.57	-1,115.14	8,360.09	17,601.19	17,424.43	176.76	99.579	
16,000.00	7,070.94	6,308.00	6,307.08	47.97	129.21	-37.57	-1,115.14	8,360.09	17,701.01	17,523.95	177.06	99.973	
16,100.00	7,070.61	6,308.00	6,307.08	48.27	129.21	-37.57	-1,115.14	8,360.09	17,800.83	17,623.47	177.36	100.366	
16,200.00	7,070.28	6,308.00	6,307.08	48.57	129.21	-37.57	-1,115.14	8,360.09	17,900.65	17,722.99	177.66	100.758	
16,300.00	7,069.95	6,308.00	6,307.08	48.87	129.21	-37.57	-1,115.14	8,360.09	18,000.47	17,822.51	177.96	101.148	
16,400.00	7,069.63	6,308.00	6,307.08	49.17	129.21	-37.57	-1,115.14	8,360.09	18,100.30	17,922.04	178.26	101.537	
16,419.92	7,069.56	6,308.00	6,307.08	49.23	129.21	-37.57	-1,115.14	8,360.09	18,120.19	17,941.86	178.32	101.614	
16,500.00	7,069.30	6,308.00	6,307.08	49.47	129.21	-37.57	-1,115.14	8,360.09	18,200.13	18,021.56	178.57	101.924	
16,591.83	7,069.00	6,308.00	6,307.08	49.75	129.21	-37.57	-1,115.14	8,360.09	18,291.80	18,112.96	178.84	102.279	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	101.92	-1,975.88	9,360.40	9,566.67				
100.00	100.00	110.51	110.51	0.23	1.18	101.92	-1,975.88	9,360.40	9,566.67	9,565.27	1.40	6,820.296	
200.00	200.00	210.51	210.51	0.53	2.24	101.92	-1,975.88	9,360.40	9,566.67	9,563.91	2.77	3,457.688	
300.00	300.00	389.47	310.51	0.83	4.53	101.92	-1,975.88	9,360.40	9,566.67	9,561.31	5.36	1,785.531	
400.00	400.00	410.53	410.51	1.13	4.96	101.92	-1,975.88	9,360.40	9,566.67	9,560.58	6.09	1,571.288	
500.00	500.00	510.53	510.51	1.43	7.01	101.92	-1,975.88	9,360.40	9,566.67	9,558.24	8.43	1,134.487	CC
600.00	599.98	610.51	610.49	1.73	9.05	-102.54	-1,975.88	9,360.40	9,567.05	9,556.27	10.78	887.782	
707.91	707.73	716.09	716.06	2.05	11.21	-102.56	-1,974.48	9,360.40	9,568.02	9,554.77	13.26	721.661	
800.00	799.58	803.35	803.32	2.33	12.99	-102.59	-1,974.68	9,360.40	9,569.53	9,554.21	15.32	624.707	
900.00	899.31	898.15	898.11	2.63	14.93	-102.63	-1,975.13	9,360.40	9,571.21	9,553.65	17.56	545.174	
1,000.00	999.05	1,009.66	1,009.56	2.93	17.30	-102.67	-1,975.88	9,360.40	9,572.95	9,552.72	20.23	473.300	
1,100.00	1,098.79	1,109.39	1,109.30	3.23	20.27	-102.71	-1,975.88	9,360.40	9,574.54	9,551.05	23.50	407.459	
1,200.00	1,198.52	1,209.13	1,209.04	3.53	23.24	-102.76	-1,975.88	9,360.40	9,576.15	9,549.38	26.77	357.713	
1,300.00	1,298.26	1,306.02	1,305.92	3.83	26.13	-102.80	-1,975.10	9,360.40	9,577.60	9,547.64	29.96	319.701	
1,400.00	1,398.00	1,400.99	1,400.89	4.13	28.96	-102.84	-1,975.36	9,360.40	9,579.27	9,546.18	33.09	289.508	
1,500.00	1,497.73	1,508.73	1,508.25	4.43	32.38	-102.88	-1,975.88	9,360.40	9,580.99	9,544.18	36.81	260.316	
1,600.00	1,597.47	1,608.75	1,607.98	4.73	38.31	-102.93	-1,975.88	9,360.40	9,582.61	9,539.57	43.04	222.642	
1,700.00	1,697.21	1,708.49	1,707.72	5.03	45.69	-102.97	-1,975.88	9,360.40	9,584.24	9,533.52	50.72	188.964	
1,800.00	1,796.94	1,770.52	1,769.48	5.33	50.28	-103.01	-1,972.81	9,360.40	9,585.34	9,529.73	55.61	172.368	
1,900.00	1,896.68	1,909.74	1,907.19	5.63	61.11	-103.05	-1,975.88	9,360.40	9,587.51	9,520.78	66.73	143.667	
2,000.00	1,996.42	2,009.48	2,006.93	5.93	69.48	-103.09	-1,975.88	9,360.40	9,589.16	9,513.75	75.40	127.173	
2,100.00	2,096.15	2,105.22	2,102.20	6.23	77.51	-103.18	-1,968.58	9,360.40	9,589.38	9,505.64	83.74	114.520	
2,200.00	2,195.89	2,173.31	2,170.15	6.53	83.22	-103.20	-1,969.31	9,360.40	9,591.25	9,501.50	89.75	106.868	
2,300.00	2,295.63	2,241.75	2,238.40	6.83	88.97	-103.22	-1,971.22	9,360.40	9,593.45	9,497.66	95.79	100.152	
2,400.00	2,395.36	2,412.03	2,405.88	7.13	101.74	-103.26	-1,975.88	9,360.40	9,595.78	9,486.92	108.87	88.143	
2,500.00	2,495.10	2,511.76	2,505.61	7.43	108.02	-103.30	-1,975.88	9,360.40	9,597.45	9,482.01	115.44	83.137	
2,600.00	2,594.84	2,611.50	2,605.35	7.73	114.29	-103.35	-1,975.88	9,360.40	9,599.13	9,477.11	122.02	78.671	
2,619.89	2,614.68	2,629.81	2,623.12	7.79	115.44	-103.40	-1,967.16	9,360.40	9,597.79	9,474.56	123.23	77.886	
2,700.00	2,694.57	2,687.62	2,680.81	8.03	119.08	-103.43	-1,967.56	9,360.40	9,599.25	9,472.15	127.10	75.522	
2,800.00	2,794.31	2,760.08	2,753.09	8.33	123.64	-103.45	-1,969.07	9,360.40	9,601.34	9,469.38	131.96	72.758	
2,900.00	2,894.05	2,832.86	2,825.63	8.63	128.22	-103.46	-1,971.69	9,360.40	9,603.72	9,466.88	136.84	70.183	
3,000.00	2,993.78	3,012.75	3,004.30	8.93	137.03	-103.51	-1,975.88	9,360.40	9,605.88	9,459.93	145.95	65.814	
3,100.00	3,093.52	3,112.49	3,104.03	9.23	140.77	-103.56	-1,975.88	9,360.40	9,607.59	9,457.59	150.00	64.051	
3,200.00	3,193.26	3,207.09	3,198.54	9.53	144.33	-103.62	-1,972.46	9,360.40	9,608.65	9,454.80	153.85	62.454	
3,300.00	3,292.99	3,291.90	3,283.31	9.83	147.51	-103.65	-1,973.06	9,360.40	9,610.50	9,453.16	157.34	61.083	
3,400.00	3,392.73	3,376.84	3,368.20	10.13	150.70	-103.68	-1,974.37	9,360.40	9,612.50	9,451.68	160.82	59.770	
3,500.00	3,492.47	3,512.04	3,502.98	10.43	155.39	-103.72	-1,975.88	9,360.40	9,614.44	9,448.63	165.82	57.982	
3,600.00	3,592.20	3,611.78	3,602.72	10.73	158.58	-103.77	-1,975.88	9,360.40	9,616.17	9,446.86	169.31	56.798	
3,700.00	3,691.94	3,708.45	3,699.32	11.03	161.67	-103.82	-1,973.21	9,360.40	9,617.41	9,444.71	172.70	55.690	
3,800.00	3,791.68	3,794.77	3,785.62	11.33	164.43	-103.86	-1,973.69	9,360.40	9,619.25	9,443.49	175.76	54.730	
3,900.00	3,891.41	3,881.22	3,872.04	11.63	167.20	-103.88	-1,974.84	9,360.40	9,621.24	9,442.42	178.82	53.804	
4,000.00	3,991.15	4,011.11	4,001.66	11.93	171.15	-103.93	-1,975.88	9,360.40	9,623.13	9,440.06	183.07	52.564	
4,100.00	4,090.89	4,110.84	4,101.40	12.23	174.07	-103.97	-1,975.88	9,360.40	9,624.88	9,438.58	186.30	51.664	
4,200.00	4,190.62	4,210.58	4,201.14	12.53	177.00	-104.02	-1,975.88	9,360.40	9,626.64	9,437.12	189.52	50.794	
4,300.00	4,290.36	4,310.32	4,300.87	12.83	179.92	-104.06	-1,975.88	9,360.40	9,628.40	9,435.66	192.75	49.954	
4,400.00	4,390.10	4,409.02	4,399.51	13.13	182.82	-104.12	-1,971.88	9,360.40	9,629.46	9,433.51	195.94	49.145	
4,500.00	4,489.84	4,502.69	4,493.16	13.43	185.56	-104.16	-1,972.11	9,360.40	9,631.27	9,432.29	198.99	48.401	
4,600.00	4,589.57	4,596.43	4,586.87	13.73	188.31	-104.20	-1,972.66	9,360.40	9,633.16	9,431.12	202.04	47.680	
4,700.00	4,689.31	4,690.21	4,680.64	14.03	191.06	-104.23	-1,973.56	9,360.40	9,635.12	9,430.03	205.09	46.981	
4,800.00	4,789.05	4,784.06	4,774.46	14.33	193.81	-104.26	-1,974.79	9,360.40	9,637.14	9,429.00	208.14	46.302	
4,900.00	4,888.78	4,909.30	4,899.30	14.63	197.11	-104.31	-1,975.88	9,360.40	9,639.09	9,427.36	211.73	45.525	
5,000.00	4,988.52	5,009.03	4,999.03	14.93	199.38	-104.35	-1,975.88	9,360.40	9,640.89	9,426.59	214.30	44.988	

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 750H - Slot B05
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 750H	**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	5,088.26	5,108.77	5,098.77	15.23	201.64	-104.39	-1,975.88	9,360.40	9,642.69	9,425.82	216.87	44.463	
5,200.00	5,187.99	5,208.51	5,198.51	15.53	203.91	-104.43	-1,975.88	9,360.40	9,644.50	9,425.07	219.44	43.951	
5,300.00	5,287.73	5,308.24	5,298.24	15.83	206.18	-104.48	-1,975.88	9,360.40	9,646.32	9,424.31	222.00	43.451	
5,400.00	5,387.47	5,407.98	5,397.98	16.13	208.45	-104.52	-1,975.88	9,360.40	9,648.14	9,423.56	224.57	42.962	
5,500.00	5,487.20	5,507.72	5,497.72	16.43	210.71	-104.56	-1,975.88	9,360.40	9,649.96	9,422.82	227.14	42.485	
5,600.00	5,586.94	5,605.56	5,595.44	16.73	212.94	-104.63	-1,969.74	9,360.40	9,650.74	9,421.08	229.66	42.021	
5,700.00	5,686.68	5,701.48	5,691.35	17.03	215.12	-104.67	-1,969.97	9,360.40	9,652.62	9,420.48	232.14	41.580	
5,800.00	5,786.41	5,797.45	5,787.30	17.33	217.30	-104.71	-1,970.42	9,360.40	9,654.55	9,419.92	234.63	41.149	
5,900.00	5,886.15	5,893.45	5,883.28	17.63	219.48	-104.75	-1,971.10	9,360.40	9,656.52	9,419.41	237.11	40.726	
6,000.00	5,985.89	5,989.50	5,979.30	17.93	221.67	-104.78	-1,972.01	9,360.40	9,658.53	9,418.93	239.59	40.312	
6,100.00	6,085.62	6,085.58	6,075.36	18.23	223.85	-104.81	-1,973.15	9,360.40	9,660.58	9,418.50	242.08	39.907	
6,200.00	6,185.36	6,181.70	6,171.45	18.53	226.04	-104.85	-1,974.51	9,360.40	9,662.68	9,418.12	244.56	39.510	
6,300.00	6,285.10	6,298.00	6,287.56	18.83	228.47	-104.89	-1,975.88	9,360.40	9,664.75	9,417.45	247.29	39.082	ES
6,400.00	6,384.83	6,374.06	6,363.72	19.13	230.41	-104.91	-1,977.93	9,360.40	9,667.00	9,417.47	249.54	38.740	SF
6,500.00	6,484.57	6,298.00	6,287.56	19.43	228.47	-104.89	-1,975.88	9,360.40	9,670.71	9,422.87	247.84	39.020	
6,559.90	6,544.31	6,298.00	6,287.56	19.61	228.47	-104.89	-1,975.88	9,360.40	9,673.31	9,425.32	247.99	39.007	
6,600.00	6,584.23	6,298.00	6,287.56	19.73	228.47	-137.01	-1,975.88	9,360.40	9,676.63	9,428.55	248.08	39.006	
6,650.00	6,633.60	6,298.00	6,287.56	19.88	228.47	-150.91	-1,975.88	9,360.40	9,684.85	9,436.66	248.19	39.022	
6,700.00	6,682.15	6,298.00	6,287.56	20.03	228.47	-156.56	-1,975.88	9,360.40	9,697.52	9,449.22	248.30	39.056	
6,750.00	6,729.52	6,298.00	6,287.56	20.18	228.47	-159.39	-1,975.88	9,360.40	9,714.53	9,466.13	248.40	39.109	
6,800.00	6,775.36	6,298.00	6,287.56	20.33	228.47	-160.90	-1,975.88	9,360.40	9,735.73	9,487.23	248.50	39.178	
6,850.00	6,819.31	6,298.00	6,287.56	20.48	228.47	-161.65	-1,975.88	9,360.40	9,760.92	9,512.33	248.60	39.264	
6,900.00	6,861.04	6,298.00	6,287.56	20.63	228.47	-161.87	-1,975.88	9,360.40	9,789.89	9,541.20	248.69	39.365	
6,950.00	6,900.22	6,298.00	6,287.56	20.78	228.47	-161.65	-1,975.88	9,360.40	9,822.39	9,573.60	248.79	39.480	
7,000.00	6,936.57	6,298.00	6,287.56	20.93	228.47	-161.00	-1,975.88	9,360.40	9,858.13	9,609.24	248.89	39.608	
7,050.00	6,969.80	6,298.00	6,287.56	21.08	228.47	-159.87	-1,975.88	9,360.40	9,896.81	9,647.81	248.99	39.747	
7,100.00	6,999.67	6,298.00	6,287.56	21.23	228.47	-158.12	-1,975.88	9,360.40	9,938.09	9,688.99	249.10	39.896	
7,150.00	7,025.94	6,298.00	6,287.56	21.38	228.47	-155.51	-1,975.88	9,360.40	9,981.65	9,732.44	249.21	40.053	
7,200.00	7,048.41	6,298.00	6,287.56	21.53	228.47	-151.56	-1,975.88	9,360.40	10,027.11	9,777.78	249.33	40.216	
7,250.00	7,066.92	6,298.00	6,287.56	21.68	228.47	-145.34	-1,975.88	9,360.40	10,074.11	9,824.65	249.45	40.384	
7,300.00	7,081.33	6,298.00	6,287.56	21.83	228.47	-134.91	-1,975.88	9,360.40	10,122.27	9,872.68	249.59	40.556	
7,350.00	7,091.51	6,298.00	6,287.56	21.98	228.47	-116.56	-1,975.88	9,360.40	10,171.21	9,921.49	249.73	40.729	
7,400.00	7,097.41	6,298.00	6,287.56	22.13	228.47	-87.52	-1,975.88	9,360.40	10,220.55	9,970.68	249.87	40.903	
7,444.73	7,099.00	6,298.00	6,287.56	22.27	228.47	-60.39	-1,975.88	9,360.40	10,264.73	10,014.72	250.01	41.057	
7,500.00	7,098.82	6,298.00	6,287.56	22.44	228.47	-60.39	-1,975.88	9,360.40	10,319.21	10,069.02	250.19	41.246	
7,600.00	7,098.49	6,298.00	6,287.56	22.74	228.47	-60.39	-1,975.88	9,360.40	10,417.81	10,167.31	250.50	41.588	
7,700.00	7,098.16	6,298.00	6,287.56	23.04	228.47	-60.39	-1,975.88	9,360.40	10,516.43	10,265.62	250.81	41.929	
7,800.00	7,097.83	6,298.00	6,287.56	23.34	228.47	-60.39	-1,975.88	9,360.40	10,615.08	10,363.95	251.13	42.270	
7,900.00	7,097.51	6,298.00	6,287.56	23.64	228.47	-60.39	-1,975.88	9,360.40	10,713.75	10,462.31	251.44	42.609	
8,000.00	7,097.18	6,298.00	6,287.56	23.94	228.47	-60.39	-1,975.88	9,360.40	10,812.45	10,560.70	251.76	42.948	
8,100.00	7,096.85	6,298.00	6,287.56	24.24	228.47	-60.39	-1,975.88	9,360.40	10,911.18	10,659.11	252.07	43.287	
8,200.00	7,096.52	6,298.00	6,287.56	24.54	228.47	-60.39	-1,975.88	9,360.40	11,009.92	10,757.54	252.38	43.624	
8,300.00	7,096.19	6,298.00	6,287.56	24.84	228.47	-60.39	-1,975.88	9,360.40	11,108.69	10,856.00	252.69	43.961	
8,400.00	7,095.87	6,298.00	6,287.56	25.14	228.47	-60.39	-1,975.88	9,360.40	11,207.48	10,954.47	253.00	44.297	
8,500.00	7,095.54	6,298.00	6,287.56	25.44	228.47	-60.39	-1,975.88	9,360.40	11,306.29	11,052.97	253.32	44.633	
8,600.00	7,095.21	6,298.00	6,287.56	25.74	228.47	-60.39	-1,975.88	9,360.40	11,405.12	11,151.49	253.63	44.968	
8,700.00	7,094.88	6,298.00	6,287.56	26.04	228.47	-60.39	-1,975.88	9,360.40	11,503.97	11,250.04	253.94	45.302	
8,800.00	7,094.55	6,298.00	6,287.56	26.35	228.47	-60.39	-1,975.88	9,360.40	11,602.85	11,348.60	254.25	45.636	
8,900.00	7,094.23	6,298.00	6,287.56	26.65	228.47	-60.39	-1,975.88	9,360.40	11,701.74	11,447.18	254.56	45.968	
9,000.00	7,093.90	6,298.00	6,287.56	26.95	228.47	-60.39	-1,975.88	9,360.40	11,800.65	11,545.78	254.87	46.301	
9,100.00	7,093.57	6,298.00	6,287.56	27.25	228.47	-60.39	-1,975.88	9,360.40	11,899.58	11,644.40	255.18	46.632	
9,200.00	7,093.24	6,298.00	6,287.56	27.55	228.47	-60.39	-1,975.88	9,360.40	11,998.52	11,743.03	255.49	46.963	

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 750H - Slot B05
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 750H	**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	7,092.91	6,298.00	6,287.56	27.85	228.47	-60.39	-1,975.88	9,360.40	12,097.48	11,841.68	255.80	47.293	
9,400.00	7,092.59	6,298.00	6,287.56	28.15	228.47	-60.39	-1,975.88	9,360.40	12,196.46	11,940.36	256.11	47.622	
9,500.00	7,092.26	6,298.00	6,287.56	28.45	228.47	-60.39	-1,975.88	9,360.40	12,295.46	12,039.04	256.42	47.951	
9,600.00	7,091.93	6,298.00	6,287.56	28.75	228.47	-60.39	-1,975.88	9,360.40	12,394.47	12,137.75	256.73	48.279	
9,700.00	7,091.60	6,298.00	6,287.56	29.05	228.47	-60.39	-1,975.88	9,360.40	12,493.50	12,236.47	257.03	48.606	
9,800.00	7,091.27	6,298.00	6,287.56	29.35	228.47	-60.39	-1,975.88	9,360.40	12,592.55	12,335.20	257.34	48.933	
9,900.00	7,090.95	6,298.00	6,287.56	29.65	228.47	-60.39	-1,975.88	9,360.40	12,691.60	12,433.95	257.65	49.259	
10,000.00	7,090.62	6,298.00	6,287.56	29.95	228.47	-60.39	-1,975.88	9,360.40	12,790.68	12,532.72	257.96	49.584	
10,100.00	7,090.29	6,298.00	6,287.56	30.25	228.47	-60.39	-1,975.88	9,360.40	12,889.76	12,631.50	258.27	49.909	
10,200.00	7,089.96	6,298.00	6,287.56	30.55	228.47	-60.39	-1,975.88	9,360.40	12,988.87	12,730.29	258.58	50.232	
10,300.00	7,089.63	6,298.00	6,287.56	30.85	228.47	-60.39	-1,975.88	9,360.40	13,087.98	12,829.10	258.88	50.556	
10,400.00	7,089.31	6,298.00	6,287.56	31.15	228.47	-60.39	-1,975.88	9,360.40	13,187.11	12,927.92	259.19	50.878	
10,500.00	7,088.98	6,298.00	6,287.56	31.45	228.47	-60.39	-1,975.88	9,360.40	13,286.25	13,026.75	259.50	51.200	
10,600.00	7,088.65	6,298.00	6,287.56	31.75	228.47	-60.39	-1,975.88	9,360.40	13,385.41	13,125.60	259.80	51.521	
10,700.00	7,088.32	6,298.00	6,287.56	32.06	228.47	-60.39	-1,975.88	9,360.40	13,484.57	13,224.46	260.11	51.842	
10,800.00	7,087.99	6,298.00	6,287.56	32.36	228.47	-60.39	-1,975.88	9,360.40	13,583.75	13,323.34	260.42	52.161	
10,900.00	7,087.67	6,298.00	6,287.56	32.66	228.47	-60.39	-1,975.88	9,360.40	13,682.94	13,422.22	260.72	52.481	
11,000.00	7,087.34	6,298.00	6,287.56	32.96	228.47	-60.39	-1,975.88	9,360.40	13,782.15	13,521.12	261.03	52.799	
11,100.00	7,087.01	6,298.00	6,287.56	33.26	228.47	-60.39	-1,975.88	9,360.40	13,881.36	13,620.02	261.34	53.117	
11,200.00	7,086.68	6,298.00	6,287.56	33.56	228.47	-60.39	-1,975.88	9,360.40	13,980.59	13,718.94	261.64	53.434	
11,300.00	7,086.35	6,298.00	6,287.56	33.86	228.47	-60.39	-1,975.88	9,360.40	14,079.82	13,817.87	261.95	53.750	
11,400.00	7,086.03	6,298.00	6,287.56	34.16	228.47	-60.39	-1,975.88	9,360.40	14,179.07	13,916.82	262.25	54.066	
11,500.00	7,085.70	6,298.00	6,287.56	34.46	228.47	-60.39	-1,975.88	9,360.40	14,278.33	14,015.77	262.56	54.381	
11,600.00	7,085.37	6,298.00	6,287.56	34.76	228.47	-60.39	-1,975.88	9,360.40	14,377.60	14,114.73	262.87	54.696	
11,700.00	7,085.04	6,298.00	6,287.56	35.06	228.47	-60.39	-1,975.88	9,360.40	14,476.87	14,213.70	263.17	55.009	
11,800.00	7,084.71	6,298.00	6,287.56	35.36	228.47	-60.39	-1,975.88	9,360.40	14,576.16	14,312.68	263.48	55.322	
11,900.00	7,084.39	6,298.00	6,287.56	35.66	228.47	-60.39	-1,975.88	9,360.40	14,675.46	14,411.68	263.78	55.635	
12,000.00	7,084.06	6,298.00	6,287.56	35.96	228.47	-60.39	-1,975.88	9,360.40	14,774.77	14,510.68	264.09	55.947	
12,100.00	7,083.73	6,298.00	6,287.56	36.26	228.47	-60.39	-1,975.88	9,360.40	14,874.08	14,609.69	264.39	56.258	
12,200.00	7,083.40	6,298.00	6,287.56	36.56	228.47	-60.39	-1,975.88	9,360.40	14,973.41	14,708.71	264.70	56.568	
12,300.00	7,083.07	6,298.00	6,287.56	36.86	228.47	-60.39	-1,975.88	9,360.40	15,072.74	14,807.74	265.00	56.878	
12,400.00	7,082.75	6,298.00	6,287.56	37.16	228.47	-60.39	-1,975.88	9,360.40	15,172.08	14,906.78	265.31	57.187	
12,500.00	7,082.42	6,298.00	6,287.56	37.46	228.47	-60.39	-1,975.88	9,360.40	15,271.44	15,005.82	265.61	57.495	
12,600.00	7,082.09	6,298.00	6,287.56	37.76	228.47	-60.39	-1,975.88	9,360.40	15,370.80	15,104.88	265.92	57.803	
12,700.00	7,081.76	6,298.00	6,287.56	38.06	228.47	-60.39	-1,975.88	9,360.40	15,470.16	15,203.94	266.22	58.110	
12,800.00	7,081.43	6,298.00	6,287.56	38.36	228.47	-60.39	-1,975.88	9,360.40	15,569.54	15,303.02	266.53	58.417	
12,900.00	7,081.11	6,298.00	6,287.56	38.66	228.47	-60.39	-1,975.88	9,360.40	15,668.93	15,402.10	266.83	58.723	
13,000.00	7,080.78	6,298.00	6,287.56	38.96	228.47	-60.39	-1,975.88	9,360.40	15,768.32	15,501.18	267.13	59.028	
13,100.00	7,080.45	6,298.00	6,287.56	39.26	228.47	-60.39	-1,975.88	9,360.40	15,867.72	15,600.28	267.44	59.332	
13,200.00	7,080.12	6,298.00	6,287.56	39.56	228.47	-60.39	-1,975.88	9,360.40	15,967.12	15,699.38	267.74	59.636	
13,300.00	7,079.79	6,298.00	6,287.56	39.86	228.47	-60.39	-1,975.88	9,360.40	16,066.54	15,798.49	268.05	59.939	
13,400.00	7,079.47	6,298.00	6,287.56	40.16	228.47	-60.39	-1,975.88	9,360.40	16,165.96	15,897.61	268.35	60.242	
13,500.00	7,079.14	6,298.00	6,287.56	40.46	228.47	-60.39	-1,975.88	9,360.40	16,265.39	15,996.74	268.65	60.544	
13,600.00	7,078.81	6,298.00	6,287.56	40.77	228.47	-60.39	-1,975.88	9,360.40	16,364.83	16,095.87	268.96	60.845	
13,700.00	7,078.48	6,298.00	6,287.56	41.07	228.47	-60.39	-1,975.88	9,360.40	16,464.27	16,195.01	269.26	61.146	
13,800.00	7,078.15	6,298.00	6,287.56	41.37	228.47	-60.39	-1,975.88	9,360.40	16,563.72	16,294.15	269.57	61.446	
13,900.00	7,077.83	6,298.00	6,287.56	41.67	228.47	-60.39	-1,975.88	9,360.40	16,663.17	16,393.31	269.87	61.745	
14,000.00	7,077.50	6,298.00	6,287.56	41.97	228.47	-60.39	-1,975.88	9,360.40	16,762.64	16,492.46	270.17	62.044	
14,100.00	7,077.17	6,298.00	6,287.56	42.27	228.47	-60.39	-1,975.88	9,360.40	16,862.11	16,591.63	270.48	62.342	
14,200.00	7,076.84	6,298.00	6,287.56	42.57	228.47	-60.39	-1,975.88	9,360.40	16,961.58	16,690.80	270.78	62.640	
14,300.00	7,076.51	6,298.00	6,287.56	42.87	228.47	-60.39	-1,975.88	9,360.40	17,061.06	16,789.98	271.08	62.937	
14,400.00	7,076.19	6,298.00	6,287.56	43.17	228.47	-60.39	-1,975.88	9,360.40	17,160.55	16,889.16	271.39	63.233	

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 750H - Slot B05
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 750H	**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	7,075.86	6,298.00	6,287.56	43.47	228.47	-60.39	-1,975.88	9,360.40	17,260.04	16,988.35	271.69	63.529	
14,600.00	7,075.53	6,298.00	6,287.56	43.77	228.47	-60.39	-1,975.88	9,360.40	17,359.54	17,087.55	271.99	63.824	
14,700.00	7,075.20	6,298.00	6,287.56	44.07	228.47	-60.39	-1,975.88	9,360.40	17,459.05	17,186.75	272.30	64.118	
14,800.00	7,074.87	6,298.00	6,287.56	44.37	228.47	-60.39	-1,975.88	9,360.40	17,558.56	17,285.96	272.60	64.412	
14,900.00	7,074.55	6,298.00	6,287.56	44.67	228.47	-60.39	-1,975.88	9,360.40	17,658.07	17,385.17	272.90	64.705	
15,000.00	7,074.22	6,298.00	6,287.56	44.97	228.47	-60.39	-1,975.88	9,360.40	17,757.59	17,484.39	273.20	64.997	
15,100.00	7,073.89	6,298.00	6,287.56	45.27	228.47	-60.39	-1,975.88	9,360.40	17,857.12	17,583.61	273.51	65.289	
15,200.00	7,073.56	6,298.00	6,287.56	45.57	228.47	-60.39	-1,975.88	9,360.40	17,956.65	17,682.84	273.81	65.581	
15,300.00	7,073.23	6,298.00	6,287.56	45.87	228.47	-60.39	-1,975.88	9,360.40	18,056.19	17,782.08	274.11	65.871	
15,400.00	7,072.91	6,298.00	6,287.56	46.17	228.47	-60.39	-1,975.88	9,360.40	18,155.73	17,881.32	274.42	66.161	
15,500.00	7,072.58	6,298.00	6,287.56	46.47	228.47	-60.39	-1,975.88	9,360.40	18,255.28	17,980.56	274.72	66.451	
15,600.00	7,072.25	6,298.00	6,287.56	46.77	228.47	-60.39	-1,975.88	9,360.40	18,354.83	18,079.81	275.02	66.740	
15,700.00	7,071.92	6,298.00	6,287.56	47.07	228.47	-60.39	-1,975.88	9,360.40	18,454.39	18,179.06	275.32	67.028	
15,800.00	7,071.59	6,298.00	6,287.56	47.37	228.47	-60.39	-1,975.88	9,360.40	18,553.95	18,278.32	275.63	67.315	
15,900.00	7,071.27	6,298.00	6,287.56	47.67	228.47	-60.39	-1,975.88	9,360.40	18,653.52	18,377.59	275.93	67.602	
16,000.00	7,070.94	6,298.00	6,287.56	47.97	228.47	-60.39	-1,975.88	9,360.40	18,753.09	18,476.85	276.23	67.889	
16,100.00	7,070.61	6,298.00	6,287.56	48.27	228.47	-60.39	-1,975.88	9,360.40	18,852.66	18,576.13	276.53	68.175	
16,200.00	7,070.28	6,298.00	6,287.56	48.57	228.47	-60.39	-1,975.88	9,360.40	18,952.24	18,675.41	276.84	68.460	
16,300.00	7,069.95	6,298.00	6,287.56	48.87	228.47	-60.39	-1,975.88	9,360.40	19,051.83	18,774.69	277.14	68.745	
16,400.00	7,069.63	6,298.00	6,287.56	49.17	228.47	-60.39	-1,975.88	9,360.40	19,151.42	18,873.97	277.44	69.029	
16,419.92	7,069.56	6,298.00	6,287.56	49.23	228.47	-60.39	-1,975.88	9,360.40	19,171.26	18,893.75	277.50	69.085	
16,500.00	7,069.30	6,298.00	6,287.56	49.47	228.47	-60.39	-1,975.88	9,360.40	19,251.01	18,973.26	277.74	69.312	
16,591.83	7,069.00	6,298.00	6,287.56	49.75	228.47	-60.39	-1,975.88	9,360.40	19,342.47	19,064.45	278.02	69.572	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	95.67	-601.85	6,058.60	6,088.42				
100.00	100.00	284.48	275.51	0.23	2.68	95.67	-601.85	6,058.60	6,088.42	6,085.52	2.90	2,097.590	
200.00	200.00	375.52	375.51	0.53	4.47	95.67	-601.85	6,058.60	6,088.42	6,083.43	4.99	1,219.658	
300.00	300.00	475.52	475.51	0.83	6.43	95.67	-601.85	6,058.60	6,088.42	6,081.17	7.26	838.916	
357.29	357.29	532.81	532.80	1.00	7.56	95.67	-601.29	6,058.60	6,088.37	6,079.81	8.56	711.637	CC
400.00	400.00	575.07	575.07	1.13	8.39	95.67	-601.31	6,058.60	6,088.37	6,078.86	9.51	639.913	
500.00	500.00	674.05	674.04	1.43	10.33	95.67	-601.47	6,058.60	6,088.39	6,076.63	11.76	517.729	
600.00	599.98	773.01	773.00	1.73	12.28	-108.79	-601.79	6,058.60	6,088.98	6,074.98	14.00	434.773	
707.91	707.73	883.29	883.24	2.05	14.45	-108.80	-601.85	6,058.60	6,090.86	6,074.36	16.50	369.139	ES
800.00	799.58	975.14	975.09	2.33	16.26	-108.86	-601.85	6,058.60	6,093.02	6,074.43	18.59	327.841	
900.00	899.31	1,074.12	1,074.06	2.63	18.21	-108.94	-600.77	6,058.60	6,095.27	6,074.43	20.83	292.555	
1,000.00	999.05	1,171.93	1,171.86	2.93	20.13	-109.00	-601.07	6,058.60	6,097.66	6,074.60	23.06	264.415	
1,100.00	1,098.79	1,269.79	1,269.72	3.23	22.06	-109.06	-601.69	6,058.60	6,100.09	6,074.80	25.29	241.222	
1,200.00	1,198.52	1,374.13	1,374.04	3.53	24.12	-109.12	-601.85	6,058.60	6,102.48	6,074.84	27.64	220.757	
1,300.00	1,298.26	1,473.87	1,473.77	3.83	26.08	-109.18	-601.85	6,058.60	6,104.86	6,074.96	29.91	204.121	
1,400.00	1,398.00	1,573.27	1,573.17	4.13	28.04	-109.25	-601.31	6,058.60	6,107.21	6,075.04	32.17	189.865	
1,500.00	1,497.73	1,672.08	1,671.98	4.43	29.99	-109.32	-601.45	6,058.60	6,109.62	6,075.21	34.41	177.542	
1,600.00	1,597.47	1,770.91	1,770.81	4.73	31.93	-109.38	-601.77	6,058.60	6,112.06	6,075.40	36.66	166.727	
1,700.00	1,697.21	1,872.86	1,872.72	5.03	34.00	-109.44	-601.85	6,058.60	6,114.48	6,075.45	39.03	156.676	
1,800.00	1,796.94	1,972.59	1,972.46	5.33	36.03	-109.50	-601.85	6,058.60	6,116.90	6,075.54	41.36	147.890	
1,900.00	1,896.68	2,071.76	2,071.61	5.63	38.06	-109.58	-600.77	6,058.60	6,119.24	6,075.56	43.68	140.078	
2,000.00	1,996.42	2,169.79	2,169.63	5.93	40.06	-109.64	-601.04	6,058.60	6,121.70	6,075.72	45.98	133.125	
2,100.00	2,096.15	2,267.86	2,267.70	6.23	42.06	-109.70	-601.65	6,058.60	6,124.20	6,075.92	48.29	126.833	
2,200.00	2,195.89	2,371.60	2,371.40	6.53	44.18	-109.76	-601.85	6,058.60	6,126.67	6,075.97	50.70	120.833	
2,300.00	2,295.63	2,471.34	2,471.14	6.83	46.21	-109.82	-601.85	6,058.60	6,129.13	6,076.09	53.04	115.556	
2,400.00	2,395.36	2,570.61	2,570.40	7.13	48.24	-109.89	-601.07	6,058.60	6,131.54	6,076.17	55.37	110.742	
2,500.00	2,495.10	2,669.10	2,668.89	7.43	50.25	-109.95	-601.29	6,058.60	6,134.03	6,076.35	57.68	106.348	
2,600.00	2,594.84	2,767.62	2,767.42	7.73	52.26	-110.01	-601.78	6,058.60	6,136.56	6,076.56	59.99	102.291	
2,700.00	2,694.57	2,870.34	2,870.09	8.03	54.43	-110.08	-601.85	6,058.60	6,139.05	6,076.59	62.46	98.290	
2,800.00	2,794.31	2,970.08	2,969.82	8.33	56.54	-110.14	-601.85	6,058.60	6,141.55	6,076.68	64.87	94.674	
2,900.00	2,894.05	3,068.95	3,068.68	8.63	58.64	-110.21	-600.86	6,058.60	6,143.98	6,076.72	67.26	91.341	
3,000.00	2,993.78	3,167.12	3,166.85	8.93	60.72	-110.27	-601.23	6,058.60	6,146.53	6,076.88	69.64	88.257	
3,100.00	3,093.52	3,269.36	3,269.03	9.23	62.85	-110.33	-601.85	6,058.60	6,149.09	6,077.02	72.07	85.316	
3,200.00	3,193.26	3,369.10	3,368.77	9.53	64.74	-110.39	-601.85	6,058.60	6,151.62	6,077.36	74.26	82.834	
3,300.00	3,292.99	3,468.83	3,468.51	9.83	66.63	-110.46	-601.85	6,058.60	6,154.16	6,077.70	76.45	80.495	
3,400.00	3,392.73	3,567.62	3,567.29	10.13	68.50	-110.53	-600.84	6,058.60	6,156.63	6,078.01	78.63	78.303	
3,500.00	3,492.47	3,665.98	3,665.63	10.43	70.36	-110.59	-601.23	6,058.60	6,159.21	6,078.42	80.79	76.238	
3,600.00	3,592.20	3,768.08	3,767.72	10.73	72.32	-110.65	-601.85	6,058.60	6,161.81	6,078.76	83.05	74.195	
3,700.00	3,691.94	3,867.81	3,867.45	11.03	74.36	-110.71	-601.85	6,058.60	6,164.38	6,078.99	85.39	72.194	
3,800.00	3,791.68	3,967.38	3,967.02	11.33	76.39	-110.77	-601.66	6,058.60	6,166.94	6,079.22	87.72	70.302	
3,900.00	3,891.41	4,066.65	4,066.29	11.63	78.42	-110.84	-601.76	6,058.60	6,169.53	6,079.48	90.05	68.513	
4,000.00	3,991.15	4,167.07	4,166.66	11.93	80.56	-110.90	-601.85	6,058.60	6,172.12	6,079.63	92.49	66.735	
4,100.00	4,090.89	4,266.81	4,266.40	12.23	82.75	-110.96	-601.85	6,058.60	6,174.72	6,079.74	94.98	65.011	
4,200.00	4,190.62	4,366.55	4,366.14	12.53	84.95	-111.02	-601.85	6,058.60	6,177.32	6,079.85	97.47	63.375	
4,300.00	4,290.36	4,466.28	4,465.87	12.83	87.14	-111.09	-601.85	6,058.60	6,179.93	6,079.97	99.96	61.821	
4,400.00	4,390.10	4,566.02	4,565.61	13.13	89.33	-111.15	-601.85	6,058.60	6,182.55	6,080.09	102.46	60.343	
4,500.00	4,489.84	4,665.76	4,665.35	13.43	91.52	-111.21	-601.85	6,058.60	6,185.18	6,080.23	104.95	58.935	
4,600.00	4,589.57	4,764.80	4,764.34	13.73	93.70	-111.31	-598.27	6,058.60	6,187.61	6,080.19	107.43	57.599	
4,700.00	4,689.31	4,863.83	4,863.36	14.03	95.88	-111.36	-598.59	6,058.60	6,190.28	6,080.37	109.90	56.325	
4,800.00	4,789.05	4,962.90	4,962.41	14.33	98.05	-111.42	-599.15	6,058.60	6,192.96	6,080.58	112.38	55.107	
4,900.00	4,888.78	5,062.01	5,061.50	14.63	100.23	-111.48	-599.93	6,058.60	6,195.66	6,080.80	114.86	53.942	
5,000.00	4,988.52	5,161.15	5,160.63	14.93	102.41	-111.53	-600.94	6,058.60	6,198.37	6,081.03	117.34	52.825	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	5,264.40	5,263.77	15.23	104.64	-111.58	-601.85	6,058.60	6,201.09	6,081.22	119.86	51.735	
5,200.00	5,187.99	5,364.14	5,363.51	15.53	106.68	-111.65	-601.85	6,058.60	6,203.76	6,081.56	122.20	50.767	
5,300.00	5,287.73	5,463.88	5,463.24	15.83	108.71	-111.71	-601.85	6,058.60	6,206.45	6,081.91	124.54	49.835	
5,400.00	5,387.47	5,563.61	5,562.98	16.13	110.75	-111.77	-601.85	6,058.60	6,209.14	6,082.26	126.88	48.937	
5,500.00	5,487.20	5,663.35	5,662.72	16.43	112.79	-111.83	-601.85	6,058.60	6,211.84	6,082.62	129.22	48.072	
5,600.00	5,586.94	5,763.09	5,762.45	16.73	114.83	-111.89	-601.85	6,058.60	6,214.55	6,082.99	131.56	47.237	
5,700.00	5,686.68	5,862.82	5,862.19	17.03	116.87	-111.96	-601.85	6,058.60	6,217.26	6,083.36	133.90	46.432	
5,800.00	5,786.41	5,962.56	5,961.93	17.33	118.91	-112.02	-601.85	6,058.60	6,219.98	6,083.74	136.24	45.655	
5,900.00	5,886.15	6,062.30	6,061.66	17.63	120.95	-112.08	-601.85	6,058.60	6,222.71	6,084.13	138.58	44.904	
6,000.00	5,985.89	6,162.03	6,161.40	17.93	122.99	-112.14	-601.85	6,058.60	6,225.44	6,084.53	140.92	44.178	
6,100.00	6,085.62	6,261.77	6,261.14	18.23	125.03	-112.20	-601.85	6,058.60	6,228.19	6,084.93	143.26	43.475	
6,200.00	6,185.36	6,361.51	6,360.87	18.53	127.07	-112.27	-601.85	6,058.60	6,230.94	6,085.34	145.60	42.796	
6,300.00	6,285.10	6,461.24	6,460.61	18.83	129.11	-112.33	-601.85	6,058.60	6,233.69	6,085.76	147.94	42.137	
6,400.00	6,384.83	6,560.98	6,560.35	19.13	131.15	-112.39	-601.85	6,058.60	6,236.46	6,086.18	150.28	41.500	SF
6,500.00	6,484.57	6,476.00	6,475.22	19.43	129.41	-112.34	-601.85	6,058.60	6,241.97	6,093.18	148.78	41.953	
6,559.90	6,544.31	6,476.00	6,475.22	19.61	129.41	-112.34	-601.85	6,058.60	6,245.69	6,096.76	148.92	41.939	
6,600.00	6,584.23	6,476.00	6,475.22	19.73	129.41	-144.50	-601.85	6,058.60	6,249.89	6,100.88	149.01	41.943	
6,650.00	6,633.60	6,476.00	6,475.22	19.88	129.41	-158.50	-601.85	6,058.60	6,259.37	6,110.26	149.11	41.978	
6,700.00	6,682.15	6,476.00	6,475.22	20.03	129.41	-164.32	-601.85	6,058.60	6,273.46	6,124.25	149.21	42.046	
6,750.00	6,729.52	6,476.00	6,475.22	20.18	129.41	-167.39	-601.85	6,058.60	6,292.02	6,142.72	149.30	42.144	
6,800.00	6,775.36	6,476.00	6,475.22	20.33	129.41	-169.23	-601.85	6,058.60	6,314.87	6,165.49	149.38	42.273	
6,850.00	6,819.31	6,476.00	6,475.22	20.48	129.41	-170.40	-601.85	6,058.60	6,341.80	6,192.33	149.47	42.429	
6,900.00	6,861.04	6,476.00	6,475.22	20.63	129.41	-171.16	-601.85	6,058.60	6,372.55	6,223.00	149.55	42.610	
6,950.00	6,900.22	6,476.00	6,475.22	20.78	129.41	-171.64	-601.85	6,058.60	6,406.83	6,257.19	149.64	42.815	
7,000.00	6,936.57	6,476.00	6,475.22	20.93	129.41	-171.88	-601.85	6,058.60	6,444.33	6,294.60	149.73	43.040	
7,050.00	6,969.80	6,476.00	6,475.22	21.08	129.41	-171.92	-601.85	6,058.60	6,484.70	6,334.88	149.82	43.283	
7,100.00	6,999.67	6,476.00	6,475.22	21.23	129.41	-171.73	-601.85	6,058.60	6,527.60	6,377.68	149.92	43.540	
7,150.00	7,025.94	6,476.00	6,475.22	21.38	129.41	-171.23	-601.85	6,058.60	6,572.64	6,422.62	150.03	43.810	
7,200.00	7,048.41	6,476.00	6,475.22	21.53	129.41	-170.25	-601.85	6,058.60	6,619.45	6,469.31	150.14	44.088	
7,250.00	7,066.92	6,476.00	6,475.22	21.68	129.41	-168.30	-601.85	6,058.60	6,667.64	6,517.37	150.26	44.373	
7,300.00	7,081.33	6,476.00	6,475.22	21.83	129.41	-163.62	-601.85	6,058.60	6,716.80	6,566.41	150.39	44.661	
7,350.00	7,091.51	6,476.00	6,475.22	21.98	129.41	-143.80	-601.85	6,058.60	6,766.56	6,616.03	150.54	44.950	
7,400.00	7,097.41	6,476.00	6,475.22	22.13	129.41	-31.73	-601.85	6,058.60	6,816.52	6,665.84	150.69	45.237	
7,444.73	7,099.00	6,476.00	6,475.22	22.27	129.41	-9.99	-601.85	6,058.60	6,861.08	6,710.26	150.83	45.489	
7,500.00	7,098.82	6,476.00	6,475.22	22.44	129.41	-9.99	-601.85	6,058.60	6,915.94	6,764.94	151.01	45.798	
7,600.00	7,098.49	6,476.00	6,475.22	22.74	129.41	-9.99	-601.85	6,058.60	7,015.22	6,863.89	151.33	46.356	
7,700.00	7,098.16	6,476.00	6,475.22	23.04	129.41	-9.99	-601.85	6,058.60	7,114.53	6,962.87	151.66	46.912	
7,800.00	7,097.83	6,476.00	6,475.22	23.34	129.41	-9.99	-601.85	6,058.60	7,213.84	7,061.86	151.98	47.466	
7,900.00	7,097.51	6,476.00	6,475.22	23.64	129.41	-9.99	-601.85	6,058.60	7,313.18	7,160.88	152.30	48.017	
8,000.00	7,097.18	6,476.00	6,475.22	23.94	129.41	-9.99	-601.85	6,058.60	7,412.54	7,259.91	152.62	48.567	
8,100.00	7,096.85	6,476.00	6,475.22	24.24	129.41	-9.99	-601.85	6,058.60	7,511.91	7,358.97	152.94	49.115	
8,200.00	7,096.52	6,476.00	6,475.22	24.54	129.41	-9.99	-601.85	6,058.60	7,611.30	7,458.04	153.26	49.661	
8,300.00	7,096.19	6,476.00	6,475.22	24.84	129.41	-9.99	-601.85	6,058.60	7,710.71	7,557.12	153.58	50.205	
8,400.00	7,095.87	6,476.00	6,475.22	25.14	129.41	-9.99	-601.85	6,058.60	7,810.13	7,656.23	153.90	50.748	
8,500.00	7,095.54	6,476.00	6,475.22	25.44	129.41	-9.99	-601.85	6,058.60	7,909.56	7,755.34	154.22	51.288	
8,600.00	7,095.21	6,476.00	6,475.22	25.74	129.41	-9.99	-601.85	6,058.60	8,009.01	7,854.48	154.54	51.826	
8,700.00	7,094.88	6,476.00	6,475.22	26.04	129.41	-9.99	-601.85	6,058.60	8,108.47	7,953.62	154.85	52.363	
8,800.00	7,094.55	6,476.00	6,475.22	26.35	129.41	-9.99	-601.85	6,058.60	8,207.95	8,052.78	155.17	52.897	
8,900.00	7,094.23	6,476.00	6,475.22	26.65	129.41	-9.99	-601.85	6,058.60	8,307.44	8,151.96	155.48	53.430	
9,000.00	7,093.90	6,476.00	6,475.22	26.95	129.41	-9.99	-601.85	6,058.60	8,406.94	8,251.14	155.80	53.961	
9,100.00	7,093.57	6,476.00	6,475.22	27.25	129.41	-9.99	-601.85	6,058.60	8,506.45	8,350.34	156.11	54.490	
9,200.00	7,093.24	6,476.00	6,475.22	27.55	129.41	-9.99	-601.85	6,058.60	8,605.97	8,449.55	156.42	55.017	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	6,476.00	6,475.22	27.85	129.41	-9.99	-601.85	6,058.60	8,705.51	8,548.77	156.74	55.542	
9,400.00	7,092.59	6,476.00	6,475.22	28.15	129.41	-9.99	-601.85	6,058.60	8,805.05	8,648.00	157.05	56.065	
9,500.00	7,092.26	6,476.00	6,475.22	28.45	129.41	-9.99	-601.85	6,058.60	8,904.61	8,747.25	157.36	56.586	
9,600.00	7,091.93	6,476.00	6,475.22	28.75	129.41	-9.99	-601.85	6,058.60	9,004.17	8,846.50	157.67	57.106	
9,700.00	7,091.60	6,476.00	6,475.22	29.05	129.41	-9.99	-601.85	6,058.60	9,103.75	8,945.76	157.99	57.624	
9,800.00	7,091.27	6,476.00	6,475.22	29.35	129.41	-9.99	-601.85	6,058.60	9,203.33	9,045.03	158.30	58.139	
9,900.00	7,090.95	6,476.00	6,475.22	29.65	129.41	-9.99	-601.85	6,058.60	9,302.92	9,144.32	158.61	58.653	
10,000.00	7,090.62	6,476.00	6,475.22	29.95	129.41	-9.99	-601.85	6,058.60	9,402.53	9,243.61	158.92	59.166	
10,100.00	7,090.29	6,476.00	6,475.22	30.25	129.41	-9.99	-601.85	6,058.60	9,502.14	9,342.91	159.23	59.676	
10,200.00	7,089.96	6,476.00	6,475.22	30.55	129.41	-9.99	-601.85	6,058.60	9,601.75	9,442.21	159.54	60.185	
10,300.00	7,089.63	6,476.00	6,475.22	30.85	129.41	-9.99	-601.85	6,058.60	9,701.38	9,541.53	159.85	60.691	
10,400.00	7,089.31	6,476.00	6,475.22	31.15	129.41	-9.99	-601.85	6,058.60	9,801.01	9,640.86	160.16	61.196	
10,500.00	7,088.98	6,476.00	6,475.22	31.45	129.41	-9.99	-601.85	6,058.60	9,900.65	9,740.19	160.47	61.699	
10,600.00	7,088.65	6,476.00	6,475.22	31.75	129.41	-9.99	-601.85	6,058.60	10,000.30	9,839.53	160.77	62.201	
10,700.00	7,088.32	6,476.00	6,475.22	32.06	129.41	-9.99	-601.85	6,058.60	10,099.96	9,938.87	161.08	62.700	
10,800.00	7,087.99	6,476.00	6,475.22	32.36	129.41	-9.99	-601.85	6,058.60	10,199.62	10,038.23	161.39	63.198	
10,900.00	7,087.67	6,476.00	6,475.22	32.66	129.41	-9.99	-601.85	6,058.60	10,299.29	10,137.59	161.70	63.694	
11,000.00	7,087.34	6,476.00	6,475.22	32.96	129.41	-9.99	-601.85	6,058.60	10,398.96	10,236.95	162.01	64.188	
11,100.00	7,087.01	6,476.00	6,475.22	33.26	129.41	-9.99	-601.85	6,058.60	10,498.64	10,336.33	162.31	64.681	
11,200.00	7,086.68	6,476.00	6,475.22	33.56	129.41	-9.99	-601.85	6,058.60	10,598.33	10,435.71	162.62	65.172	
11,300.00	7,086.35	6,476.00	6,475.22	33.86	129.41	-9.99	-601.85	6,058.60	10,698.02	10,535.09	162.93	65.661	
11,400.00	7,086.03	6,476.00	6,475.22	34.16	129.41	-9.99	-601.85	6,058.60	10,797.72	10,634.48	163.24	66.148	
11,500.00	7,085.70	6,476.00	6,475.22	34.46	129.41	-9.99	-601.85	6,058.60	10,897.42	10,733.88	163.54	66.634	
11,600.00	7,085.37	6,476.00	6,475.22	34.76	129.41	-9.99	-601.85	6,058.60	10,997.13	10,833.28	163.85	67.117	
11,700.00	7,085.04	6,476.00	6,475.22	35.06	129.41	-9.99	-601.85	6,058.60	11,096.85	10,932.69	164.16	67.600	
11,800.00	7,084.71	6,476.00	6,475.22	35.36	129.41	-9.99	-601.85	6,058.60	11,196.57	11,032.10	164.46	68.080	
11,900.00	7,084.39	6,476.00	6,475.22	35.66	129.41	-9.99	-601.85	6,058.60	11,296.29	11,131.52	164.77	68.559	
12,000.00	7,084.06	6,476.00	6,475.22	35.96	129.41	-9.99	-601.85	6,058.60	11,396.02	11,230.95	165.07	69.036	
12,100.00	7,083.73	6,476.00	6,475.22	36.26	129.41	-9.99	-601.85	6,058.60	11,495.75	11,330.37	165.38	69.511	
12,200.00	7,083.40	6,476.00	6,475.22	36.56	129.41	-9.99	-601.85	6,058.60	11,595.49	11,429.81	165.68	69.985	
12,300.00	7,083.07	6,476.00	6,475.22	36.86	129.41	-9.99	-601.85	6,058.60	11,695.23	11,529.24	165.99	70.457	
12,400.00	7,082.75	6,476.00	6,475.22	37.16	129.41	-9.99	-601.85	6,058.60	11,794.98	11,628.69	166.30	70.928	
12,500.00	7,082.42	6,476.00	6,475.22	37.46	129.41	-9.99	-601.85	6,058.60	11,894.73	11,728.13	166.60	71.397	
12,600.00	7,082.09	6,476.00	6,475.22	37.76	129.41	-9.99	-601.85	6,058.60	11,994.49	11,827.58	166.91	71.864	
12,700.00	7,081.76	6,476.00	6,475.22	38.06	129.41	-9.99	-601.85	6,058.60	12,094.25	11,927.04	167.21	72.329	
12,800.00	7,081.43	6,476.00	6,475.22	38.36	129.41	-9.99	-601.85	6,058.60	12,194.01	12,026.50	167.52	72.793	
12,900.00	7,081.11	6,476.00	6,475.22	38.66	129.41	-9.99	-601.85	6,058.60	12,293.78	12,125.96	167.82	73.256	
13,000.00	7,080.78	6,476.00	6,475.22	38.96	129.41	-9.99	-601.85	6,058.60	12,393.55	12,225.43	168.12	73.716	
13,100.00	7,080.45	6,476.00	6,475.22	39.26	129.41	-9.99	-601.85	6,058.60	12,493.33	12,324.90	168.43	74.176	
13,200.00	7,080.12	6,476.00	6,475.22	39.56	129.41	-9.99	-601.85	6,058.60	12,593.11	12,424.37	168.73	74.633	
13,300.00	7,079.79	6,476.00	6,475.22	39.86	129.41	-9.99	-601.85	6,058.60	12,692.89	12,523.85	169.04	75.089	
13,400.00	7,079.47	6,476.00	6,475.22	40.16	129.41	-9.99	-601.85	6,058.60	12,792.67	12,623.33	169.34	75.543	
13,500.00	7,079.14	6,476.00	6,475.22	40.46	129.41	-9.99	-601.85	6,058.60	12,892.46	12,722.82	169.65	75.996	
13,600.00	7,078.81	6,476.00	6,475.22	40.77	129.41	-9.99	-601.85	6,058.60	12,992.25	12,822.30	169.95	76.448	
13,700.00	7,078.48	6,476.00	6,475.22	41.07	129.41	-9.99	-601.85	6,058.60	13,092.05	12,921.79	170.25	76.897	
13,800.00	7,078.15	6,476.00	6,475.22	41.37	129.41	-9.99	-601.85	6,058.60	13,191.85	13,021.29	170.56	77.345	
13,900.00	7,077.83	6,476.00	6,475.22	41.67	129.41	-9.99	-601.85	6,058.60	13,291.65	13,120.79	170.86	77.792	
14,000.00	7,077.50	6,476.00	6,475.22	41.97	129.41	-9.99	-601.85	6,058.60	13,391.45	13,220.29	171.16	78.237	
14,100.00	7,077.17	6,476.00	6,475.22	42.27	129.41	-9.99	-601.85	6,058.60	13,491.26	13,319.79	171.47	78.681	
14,200.00	7,076.84	6,476.00	6,475.22	42.57	129.41	-9.99	-601.85	6,058.60	13,591.07	13,419.30	171.77	79.123	
14,300.00	7,076.51	6,476.00	6,475.22	42.87	129.41	-9.99	-601.85	6,058.60	13,690.88	13,518.81	172.08	79.563	
14,400.00	7,076.19	6,476.00	6,475.22	43.17	129.41	-9.99	-601.85	6,058.60	13,790.70	13,618.32	172.38	80.002	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	6,476.00	6,475.22	43.47	129.41	-9.99	-601.85	6,058.60	13,890.52	13,717.83	172.68	80.440	
14,600.00	7,075.53	6,476.00	6,475.22	43.77	129.41	-9.99	-601.85	6,058.60	13,990.34	13,817.35	172.99	80.876	
14,700.00	7,075.20	6,476.00	6,475.22	44.07	129.41	-9.99	-601.85	6,058.60	14,090.16	13,916.87	173.29	81.311	
14,800.00	7,074.87	6,476.00	6,475.22	44.37	129.41	-9.99	-601.85	6,058.60	14,189.99	14,016.39	173.59	81.744	
14,900.00	7,074.55	6,476.00	6,475.22	44.67	129.41	-9.99	-601.85	6,058.60	14,289.81	14,115.92	173.89	82.175	
15,000.00	7,074.22	6,476.00	6,475.22	44.97	129.41	-9.99	-601.85	6,058.60	14,389.64	14,215.45	174.20	82.606	
15,100.00	7,073.89	6,476.00	6,475.22	45.27	129.41	-9.99	-601.85	6,058.60	14,489.48	14,314.98	174.50	83.034	
15,200.00	7,073.56	6,476.00	6,475.22	45.57	129.41	-9.99	-601.85	6,058.60	14,589.31	14,414.51	174.80	83.462	
15,300.00	7,073.23	6,476.00	6,475.22	45.87	129.41	-9.99	-601.85	6,058.60	14,689.15	14,514.05	175.11	83.887	
15,400.00	7,072.91	6,476.00	6,475.22	46.17	129.41	-9.99	-601.85	6,058.60	14,788.99	14,613.58	175.41	84.312	
15,500.00	7,072.58	6,476.00	6,475.22	46.47	129.41	-9.99	-601.85	6,058.60	14,888.83	14,713.12	175.71	84.735	
15,600.00	7,072.25	6,476.00	6,475.22	46.77	129.41	-9.99	-601.85	6,058.60	14,988.68	14,812.66	176.01	85.156	
15,700.00	7,071.92	6,476.00	6,475.22	47.07	129.41	-9.99	-601.85	6,058.60	15,088.52	14,912.21	176.32	85.577	
15,800.00	7,071.59	6,476.00	6,475.22	47.37	129.41	-9.99	-601.85	6,058.60	15,188.37	15,011.75	176.62	85.995	
15,900.00	7,071.27	6,476.00	6,475.22	47.67	129.41	-9.99	-601.85	6,058.60	15,288.22	15,111.30	176.92	86.413	
16,000.00	7,070.94	6,476.00	6,475.22	47.97	129.41	-9.99	-601.85	6,058.60	15,388.07	15,210.85	177.22	86.829	
16,100.00	7,070.61	6,476.00	6,475.22	48.27	129.41	-9.99	-601.85	6,058.60	15,487.93	15,310.40	177.53	87.243	
16,200.00	7,070.28	6,476.00	6,475.22	48.57	129.41	-9.99	-601.85	6,058.60	15,587.78	15,409.95	177.83	87.656	
16,300.00	7,069.95	6,476.00	6,475.22	48.87	129.41	-9.99	-601.85	6,058.60	15,687.64	15,509.51	178.13	88.068	
16,400.00	7,069.63	6,476.00	6,475.22	49.17	129.41	-9.99	-601.85	6,058.60	15,787.50	15,609.07	178.43	88.479	
16,419.92	7,069.56	6,476.00	6,475.22	49.23	129.41	-9.99	-601.85	6,058.60	15,807.39	15,628.90	178.49	88.560	
16,500.00	7,069.30	6,476.00	6,475.22	49.47	129.41	-9.99	-601.85	6,058.60	15,887.36	15,708.63	178.73	88.888	
16,591.83	7,069.00	6,476.00	6,475.22	49.75	129.41	-9.99	-601.85	6,058.60	15,979.06	15,800.05	179.01	89.262	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	167.29	167.29	0.00	0.14	104.40	-1,737.57	6,769.76	6,989.19				
100.00	100.00	246.37	246.37	0.23	0.25	104.39	-1,737.01	6,770.00	6,989.32	6,988.97	0.36	N/A	
200.00	200.00	349.83	349.82	0.53	0.38	104.38	-1,736.22	6,770.49	6,989.59	6,988.85	0.74	9,484.761	
300.00	300.00	446.25	446.24	0.83	0.51	104.38	-1,735.39	6,771.02	6,989.91	6,988.80	1.11	6,290.646	
400.00	400.00	545.37	545.35	1.13	0.64	104.37	-1,734.62	6,771.61	6,990.29	6,988.80	1.49	4,689.549 ES	
500.00	500.00	640.20	640.18	1.43	0.76	104.36	-1,733.91	6,772.17	6,990.68	6,988.81	1.87	3,742.129	
600.00	599.98	737.60	737.58	1.73	0.89	-100.10	-1,733.12	6,772.83	6,991.44	6,989.19	2.25	3,108.218	
707.91	707.73	831.86	831.82	2.05	1.01	-100.12	-1,732.25	6,773.59	6,993.06	6,990.41	2.65	2,635.757	
800.00	799.58	910.55	910.51	2.33	1.11	-100.17	-1,731.45	6,774.38	6,994.91	6,991.91	3.00	2,332.459	
900.00	899.31	1,004.88	1,004.83	2.63	1.23	-100.24	-1,730.55	6,775.51	6,997.12	6,993.73	3.39	2,065.557	
1,000.00	999.05	1,106.81	1,106.75	2.93	1.36	-100.31	-1,729.67	6,776.66	6,999.30	6,995.52	3.79	1,849.116	
1,100.00	1,098.79	1,211.08	1,211.00	3.23	1.49	-100.38	-1,728.56	6,777.90	7,001.51	6,997.33	4.18	1,674.116	
1,200.00	1,198.52	1,329.20	1,329.11	3.53	1.65	-100.46	-1,726.93	6,779.01	7,003.39	6,998.81	4.58	1,530.100	
1,300.00	1,298.26	1,427.82	1,427.71	3.83	1.78	-100.53	-1,725.48	6,779.92	7,005.25	7,000.30	4.95	1,413.942	
1,400.00	1,398.00	1,503.62	1,503.50	4.13	1.88	-100.59	-1,724.34	6,780.78	7,007.32	7,002.01	5.32	1,317.757	
1,500.00	1,497.73	1,604.55	1,604.41	4.43	2.01	-100.66	-1,723.10	6,782.02	7,009.57	7,003.86	5.71	1,227.774	
1,600.00	1,597.47	1,665.60	1,665.45	4.73	2.09	-100.70	-1,722.22	6,782.97	7,012.09	7,006.02	6.07	1,155.895	
1,700.00	1,697.21	1,764.05	1,763.88	5.03	2.21	-100.78	-1,720.88	6,784.71	7,014.85	7,008.39	6.46	1,085.476	
1,800.00	1,796.94	1,846.64	1,846.44	5.33	2.32	-100.84	-1,719.72	6,786.44	7,017.90	7,011.06	6.85	1,025.111	
1,900.00	1,896.68	1,943.47	1,943.24	5.63	2.44	-100.91	-1,718.39	6,788.39	7,020.91	7,013.67	7.24	969.219	
2,000.00	1,996.42	2,024.16	2,023.90	5.93	2.54	-100.97	-1,717.09	6,790.24	7,024.17	7,016.54	7.63	921.122	
2,100.00	2,096.15	2,094.90	2,094.60	6.23	2.63	-101.02	-1,716.13	6,792.15	7,027.84	7,019.84	8.00	878.235	
2,200.00	2,195.89	2,207.73	2,207.39	6.53	2.77	-101.10	-1,714.90	6,795.05	7,031.49	7,023.06	8.43	834.385	
2,300.00	2,295.63	2,285.26	2,284.89	6.83	2.86	-101.16	-1,713.94	6,797.19	7,035.30	7,026.49	8.81	798.269	
2,400.00	2,395.36	2,394.16	2,393.73	7.13	3.00	-101.23	-1,712.71	6,800.28	7,039.22	7,029.99	9.24	762.171	
2,500.00	2,495.10	2,469.58	2,469.11	7.43	3.09	-101.29	-1,711.81	6,802.58	7,043.33	7,033.71	9.62	732.023	
2,600.00	2,594.84	2,553.15	2,552.64	7.73	3.19	-101.35	-1,710.77	6,805.14	7,047.49	7,037.48	10.02	703.576	
2,700.00	2,694.57	2,636.04	2,635.47	8.03	3.29	-101.41	-1,709.74	6,807.98	7,052.01	7,041.60	10.41	677.274	
2,800.00	2,794.31	2,714.90	2,714.27	8.33	3.39	-101.47	-1,708.79	6,811.03	7,056.93	7,046.13	10.80	653.127	
2,900.00	2,894.05	2,786.83	2,786.13	8.63	3.48	-101.53	-1,707.73	6,814.00	7,062.11	7,050.92	11.19	631.172	
3,000.00	2,993.78	2,879.35	2,878.55	8.93	3.59	-101.60	-1,706.38	6,818.16	7,067.63	7,056.04	11.60	609.424	
3,100.00	3,093.52	3,003.40	3,002.47	9.23	3.74	-101.69	-1,704.42	6,823.40	7,072.86	7,060.82	12.04	587.443	
3,200.00	3,193.26	3,077.14	3,076.13	9.53	3.84	-101.75	-1,703.19	6,826.59	7,078.21	7,065.78	12.43	569.630	
3,300.00	3,292.99	3,170.29	3,169.17	9.83	3.95	-101.83	-1,701.46	6,830.80	7,083.72	7,070.89	12.83	551.984	
3,400.00	3,392.73	3,236.29	3,235.08	10.13	4.04	-101.88	-1,700.24	6,834.05	7,089.63	7,076.42	13.21	536.648	
3,500.00	3,492.47	3,324.09	3,322.74	10.43	4.14	-101.95	-1,698.60	6,838.68	7,095.89	7,082.27	13.61	521.211	
3,600.00	3,592.20	3,408.16	3,406.67	10.73	4.25	-102.02	-1,696.99	6,843.24	7,102.30	7,088.29	14.01	506.819	
3,700.00	3,691.94	3,516.87	3,515.19	11.03	4.38	-102.11	-1,695.00	6,849.22	7,108.84	7,094.40	14.44	492.234	
3,800.00	3,791.68	3,686.73	3,684.88	11.33	4.59	-102.23	-1,693.18	6,856.72	7,114.27	7,099.33	14.95	475.985	
3,900.00	3,891.41	3,809.54	3,807.59	11.63	4.74	-102.32	-1,692.18	6,861.50	7,119.45	7,104.05	15.40	462.399	
4,000.00	3,991.15	3,915.46	3,913.43	11.93	4.87	-102.39	-1,691.35	6,865.49	7,124.54	7,108.71	15.83	450.147	
4,100.00	4,090.89	4,100.00	4,064.39	12.23	5.09	-102.49	-1,690.56	6,870.54	7,129.30	7,112.94	16.36	435.867	
4,200.00	4,190.62	4,276.61	4,274.46	12.53	5.28	-102.61	-1,691.01	6,874.26	7,132.44	7,115.56	16.88	422.484	
4,300.00	4,290.36	4,441.81	4,439.65	12.83	5.36	-102.70	-1,692.33	6,875.39	7,134.93	7,117.57	17.36	411.015	
4,400.00	4,390.10	4,579.65	4,577.49	13.13	5.34	-102.78	-1,692.50	6,875.19	7,136.36	7,118.69	17.67	403.890	
4,500.00	4,489.84	4,667.57	4,665.40	13.43	5.33	-102.82	-1,692.78	6,874.94	7,137.77	7,119.79	17.98	396.994	
4,600.00	4,589.57	4,763.19	4,761.03	13.73	5.32	-102.87	-1,693.63	6,874.76	7,139.37	7,121.05	18.33	389.555	
4,700.00	4,689.31	4,860.90	4,858.72	14.03	5.31	-102.92	-1,694.60	6,874.60	7,141.03	7,122.35	18.68	382.289	
4,800.00	4,789.05	4,954.02	4,951.84	14.33	5.31	-102.96	-1,695.56	6,874.50	7,142.75	7,123.72	19.03	375.246	
4,900.00	4,888.78	5,063.42	5,061.24	14.63	5.30	-103.02	-1,696.59	6,874.24	7,144.34	7,124.95	19.39	368.475	
5,000.00	4,988.52	5,160.34	5,158.15	14.93	5.31	-103.06	-1,697.54	6,874.15	7,146.08	7,126.33	19.75	361.870	
5,100.00	5,088.26	5,254.58	5,252.39	15.23	5.31	-103.11	-1,698.59	6,874.01	7,147.79	7,127.69	20.10	355.579	

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 750H - Slot B05
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 750H	**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
5,200.00	5,187.99	5,359.88	5,357.68	15.53	5.32	-103.16	-1,699.77	6,873.85	7,149.52	7,129.06	20.46	349.387	
5,300.00	5,287.73	5,465.90	5,463.69	15.83	5.33	-103.21	-1,701.03	6,873.66	7,151.24	7,130.42	20.82	343.425	
5,400.00	5,387.47	5,557.21	5,554.99	16.13	5.35	-103.25	-1,702.12	6,873.52	7,152.98	7,131.80	21.18	337.757	
5,500.00	5,487.20	5,500.00	5,641.75	16.43	5.34	-103.29	-1,703.03	6,873.57	7,154.89	7,133.45	21.44	333.725	
5,600.00	5,586.94	5,733.75	5,731.53	16.73	5.41	-103.34	-1,703.91	6,873.59	7,156.77	7,134.87	21.90	326.765	
5,700.00	5,686.68	5,819.49	5,817.26	17.03	5.46	-103.38	-1,704.64	6,873.80	7,158.86	7,136.59	22.28	321.365	
5,800.00	5,786.41	5,929.55	5,927.31	17.33	5.51	-103.43	-1,706.71	6,874.05	7,161.15	7,138.48	22.66	315.997	
5,900.00	5,886.15	6,035.17	6,032.89	17.63	5.55	-103.47	-1,709.27	6,874.00	7,163.25	7,140.22	23.03	311.012	
6,000.00	5,985.89	6,164.49	6,162.19	17.93	5.59	-103.52	-1,711.93	6,873.70	7,165.13	7,141.72	23.41	306.078	
6,100.00	6,085.62	6,261.47	6,259.15	18.23	5.62	-103.56	-1,713.50	6,873.37	7,166.80	7,143.04	23.76	301.620	
6,200.00	6,185.36	6,359.42	6,357.09	18.53	5.66	-103.60	-1,714.99	6,873.02	7,168.44	7,144.33	24.11	297.292	
6,300.00	6,285.10	6,467.23	6,464.88	18.83	5.69	-103.65	-1,716.61	6,872.65	7,170.10	7,145.63	24.47	293.018	
6,400.00	6,384.83	6,550.00	6,547.64	19.13	5.73	-103.69	-1,717.92	6,872.36	7,171.77	7,146.96	24.81	289.023	
6,500.00	6,484.57	6,661.13	6,658.76	19.43	5.77	-103.74	-1,719.66	6,871.97	7,173.44	7,148.27	25.17	284.949	
6,559.90	6,544.31	6,716.20	6,713.83	19.61	5.80	-103.76	-1,720.41	6,871.86	7,174.50	7,149.12	25.39	282.617	
6,600.00	6,584.23	6,750.00	6,747.62	19.73	5.82	-135.92	-1,720.81	6,871.79	7,176.58	7,151.05	25.53	281.150	
6,650.00	6,633.60	6,797.29	6,794.91	19.88	5.84	-149.86	-1,721.42	6,871.74	7,183.08	7,157.38	25.71	279.432	
6,700.00	6,682.15	6,843.85	6,841.47	20.03	5.87	-155.57	-1,721.91	6,871.67	7,193.77	7,167.89	25.88	277.921	
6,750.00	6,729.52	6,884.80	6,882.41	20.18	5.89	-158.45	-1,722.37	6,871.68	7,208.69	7,182.62	26.06	276.592	
6,800.00	6,775.36	6,948.10	6,945.70	20.33	5.93	-160.06	-1,723.13	6,871.62	7,227.59	7,201.34	26.25	275.307	
6,850.00	6,819.31	6,991.12	6,988.72	20.48	5.95	-160.90	-1,723.52	6,871.54	7,250.33	7,223.90	26.43	274.349	
6,900.00	6,861.04	7,035.07	7,032.67	20.63	5.98	-161.23	-1,723.89	6,871.47	7,276.78	7,250.18	26.60	273.539	
6,950.00	6,900.22	7,070.06	7,067.66	20.78	5.99	-161.15	-1,724.20	6,871.41	7,306.76	7,279.99	26.77	272.921	
7,000.00	6,936.57	7,113.36	7,110.96	20.93	6.02	-160.72	-1,724.53	6,871.35	7,340.04	7,313.09	26.95	272.388	
7,050.00	6,969.80	7,145.37	7,142.97	21.08	6.04	-159.87	-1,724.78	6,871.28	7,376.34	7,349.23	27.11	272.048	
7,100.00	6,999.67	7,172.25	7,169.85	21.23	6.05	-158.53	-1,725.02	6,871.22	7,415.43	7,388.15	27.28	271.833	
7,150.00	7,025.94	7,189.49	7,187.08	21.38	6.06	-156.53	-1,725.19	6,871.20	7,457.00	7,429.56	27.44	271.751	
7,200.00	7,048.41	7,204.98	7,202.58	21.53	6.07	-153.61	-1,725.34	6,871.20	7,500.76	7,473.16	27.60	271.754	
7,250.00	7,066.92	7,221.56	7,219.15	21.68	6.08	-149.29	-1,725.49	6,871.21	7,546.34	7,518.58	27.76	271.804	
7,300.00	7,081.33	7,253.48	7,251.07	21.83	6.11	-142.82	-1,725.71	6,871.22	7,593.38	7,565.44	27.94	271.809	
7,350.00	7,091.51	7,265.06	7,262.66	21.98	6.11	-131.95	-1,725.79	6,871.20	7,641.52	7,613.42	28.09	272.007	
7,400.00	7,097.41	7,272.89	7,270.48	22.13	6.12	-113.55	-1,725.85	6,871.19	7,690.40	7,662.15	28.25	272.247	
7,444.73	7,099.00	7,275.09	7,272.69	22.27	6.12	-89.06	-1,725.86	6,871.19	7,734.47	7,706.08	28.38	272.497	
7,500.00	7,098.82	7,274.99	7,272.59	22.44	6.12	-89.05	-1,725.86	6,871.19	7,789.00	7,760.45	28.55	272.822	
7,600.00	7,098.49	7,274.80	7,272.40	22.74	6.12	-89.04	-1,725.86	6,871.19	7,887.68	7,858.83	28.85	273.400	
7,700.00	7,098.16	7,274.61	7,272.21	23.04	6.12	-89.03	-1,725.86	6,871.19	7,986.41	7,957.25	29.15	273.968	
7,800.00	7,097.83	7,274.42	7,272.02	23.34	6.12	-89.03	-1,725.86	6,871.19	8,085.16	8,055.71	29.45	274.526	
7,900.00	7,097.51	7,274.23	7,271.82	23.64	6.12	-89.02	-1,725.86	6,871.19	8,183.94	8,154.19	29.75	275.074	
8,000.00	7,097.18	7,274.03	7,271.63	23.94	6.12	-89.01	-1,725.85	6,871.19	8,282.75	8,252.70	30.05	275.612	
8,100.00	7,096.85	7,273.83	7,271.43	24.24	6.12	-89.00	-1,725.85	6,871.19	8,381.59	8,351.24	30.35	276.141	
8,200.00	7,096.52	7,273.63	7,271.23	24.54	6.12	-88.99	-1,725.85	6,871.19	8,480.46	8,449.81	30.65	276.660	
8,300.00	7,096.19	7,273.43	7,271.02	24.84	6.12	-88.98	-1,725.85	6,871.19	8,579.35	8,548.40	30.95	277.170	
8,400.00	7,095.87	7,273.22	7,270.82	25.14	6.12	-88.97	-1,725.85	6,871.19	8,678.27	8,647.02	31.25	277.671	
8,500.00	7,095.54	7,273.01	7,270.61	25.44	6.12	-88.96	-1,725.85	6,871.19	8,777.21	8,745.66	31.55	278.164	
8,600.00	7,095.21	7,272.80	7,270.40	25.74	6.12	-88.95	-1,725.84	6,871.19	8,876.18	8,844.33	31.85	278.648	
8,700.00	7,094.88	7,272.59	7,270.18	26.04	6.12	-88.94	-1,725.84	6,871.19	8,975.17	8,943.02	32.15	279.124	
8,800.00	7,094.55	7,272.37	7,269.96	26.35	6.12	-88.93	-1,725.84	6,871.19	9,074.18	9,041.73	32.46	279.592	
8,900.00	7,094.23	7,272.15	7,269.74	26.65	6.12	-88.92	-1,725.84	6,871.19	9,173.22	9,140.46	32.76	280.053	
9,000.00	7,093.90	7,271.93	7,269.52	26.95	6.12	-88.91	-1,725.84	6,871.19	9,272.27	9,239.22	33.06	280.505	
9,100.00	7,093.57	7,271.70	7,269.30	27.25	6.12	-88.90	-1,725.84	6,871.19	9,371.35	9,337.99	33.36	280.951	
9,200.00	7,093.24	7,271.47	7,269.07	27.55	6.12	-88.89	-1,725.83	6,871.19	9,470.44	9,436.78	33.66	281.389	
9,300.00	7,092.91	7,271.24	7,268.84	27.85	6.12	-88.88	-1,725.83	6,871.19	9,569.55	9,535.60	33.96	281.820	

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 750H - Slot B05
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 750H	**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
9,400.00	7,092.59	7,271.01	7,268.60	28.15	6.12	-88.87	-1,725.83	6,871.19	9,668.68	9,634.43	34.26	282.244	
9,500.00	7,092.26	7,270.77	7,268.37	28.45	6.12	-88.86	-1,725.83	6,871.19	9,767.83	9,733.27	34.56	282.661	
9,600.00	7,091.93	7,270.53	7,268.13	28.75	6.12	-88.85	-1,725.83	6,871.19	9,867.00	9,832.14	34.86	283.071	
9,700.00	7,091.60	7,270.29	7,267.88	29.05	6.12	-88.84	-1,725.83	6,871.19	9,966.18	9,931.02	35.16	283.476	
9,800.00	7,091.27	7,270.04	7,267.64	29.35	6.12	-88.83	-1,725.82	6,871.20	10,065.38	10,029.92	35.46	283.873	
9,900.00	7,090.95	7,269.79	7,267.39	29.65	6.12	-88.82	-1,725.82	6,871.20	10,164.59	10,128.83	35.76	284.265	
10,000.00	7,090.62	7,269.54	7,267.13	29.95	6.12	-88.80	-1,725.82	6,871.20	10,263.82	10,227.76	36.06	284.651	
10,100.00	7,090.29	7,269.28	7,266.87	30.25	6.12	-88.79	-1,725.82	6,871.20	10,363.07	10,326.71	36.36	285.031	
10,200.00	7,089.96	7,269.02	7,266.61	30.55	6.12	-88.78	-1,725.82	6,871.20	10,462.32	10,425.67	36.66	285.405	
10,300.00	7,089.63	7,268.75	7,266.35	30.85	6.12	-88.77	-1,725.81	6,871.20	10,561.60	10,524.64	36.96	285.773	
10,400.00	7,089.31	7,268.49	7,266.08	31.15	6.12	-88.76	-1,725.81	6,871.20	10,660.88	10,623.63	37.26	286.136	
10,500.00	7,088.98	7,268.21	7,265.81	31.45	6.12	-88.74	-1,725.81	6,871.20	10,760.18	10,722.63	37.56	286.494	
10,600.00	7,088.65	7,267.94	7,265.53	31.75	6.12	-88.73	-1,725.81	6,871.20	10,859.50	10,821.64	37.86	286.846	
10,700.00	7,088.32	7,267.66	7,265.25	32.06	6.12	-88.72	-1,725.81	6,871.20	10,958.82	10,920.66	38.16	287.193	
10,800.00	7,087.99	7,267.37	7,264.97	32.36	6.11	-88.71	-1,725.80	6,871.20	11,058.16	11,019.70	38.46	287.535	
10,900.00	7,087.67	7,267.09	7,264.68	32.66	6.11	-88.69	-1,725.80	6,871.20	11,157.51	11,118.75	38.76	287.872	
11,000.00	7,087.34	7,266.79	7,264.39	32.96	6.11	-88.68	-1,725.80	6,871.20	11,256.87	11,217.81	39.06	288.205	
11,100.00	7,087.01	7,266.50	7,264.09	33.26	6.11	-88.67	-1,725.80	6,871.20	11,356.24	11,316.88	39.36	288.532	
11,200.00	7,086.68	7,266.20	7,263.79	33.56	6.11	-88.65	-1,725.79	6,871.20	11,455.62	11,415.96	39.66	288.855	
11,300.00	7,086.35	7,265.89	7,263.49	33.86	6.11	-88.64	-1,725.79	6,871.20	11,555.01	11,515.06	39.96	289.174	
11,400.00	7,086.03	7,265.58	7,263.18	34.16	6.11	-88.63	-1,725.79	6,871.20	11,654.42	11,614.16	40.26	289.488	
11,500.00	7,085.70	7,265.27	7,262.86	34.46	6.11	-88.61	-1,725.79	6,871.20	11,753.83	11,713.27	40.56	289.798	
11,600.00	7,085.37	7,264.95	7,262.54	34.76	6.11	-88.60	-1,725.79	6,871.20	11,853.26	11,812.40	40.86	290.103	
11,700.00	7,085.04	7,264.62	7,262.22	35.06	6.11	-88.58	-1,725.78	6,871.20	11,952.69	11,911.53	41.16	290.404	
11,800.00	7,084.71	7,264.29	7,261.89	35.36	6.11	-88.57	-1,725.78	6,871.20	12,052.13	12,010.67	41.46	290.702	
11,900.00	7,084.39	7,263.96	7,261.55	35.66	6.11	-88.55	-1,725.78	6,871.20	12,151.58	12,109.82	41.76	290.995	
12,000.00	7,084.06	7,263.62	7,261.21	35.96	6.11	-88.54	-1,725.78	6,871.21	12,251.04	12,208.98	42.06	291.284	
12,100.00	7,083.73	7,263.27	7,260.87	36.26	6.11	-88.52	-1,725.77	6,871.21	12,350.51	12,308.15	42.36	291.569	
12,200.00	7,083.40	7,262.92	7,260.52	36.56	6.11	-88.50	-1,725.77	6,871.21	12,449.99	12,407.33	42.66	291.851	
12,300.00	7,083.07	7,262.57	7,260.16	36.86	6.11	-88.49	-1,725.77	6,871.21	12,549.48	12,506.52	42.96	292.129	
12,400.00	7,082.75	7,262.20	7,259.80	37.16	6.11	-88.47	-1,725.77	6,871.21	12,648.97	12,605.71	43.26	292.403	
12,500.00	7,082.42	7,261.83	7,259.43	37.46	6.11	-88.46	-1,725.76	6,871.21	12,748.47	12,704.91	43.56	292.674	
12,600.00	7,082.09	7,261.46	7,259.06	37.76	6.11	-88.44	-1,725.76	6,871.21	12,847.98	12,804.12	43.86	292.941	
12,700.00	7,081.76	7,261.08	7,258.67	38.06	6.11	-88.42	-1,725.76	6,871.21	12,947.50	12,903.34	44.16	293.205	
12,800.00	7,081.43	7,260.69	7,258.29	38.36	6.11	-88.40	-1,725.76	6,871.21	13,047.02	13,002.57	44.46	293.466	
12,900.00	7,081.11	12,900.00	7,239.89	38.66	12.70	-87.57	-1,725.63	6,871.22	13,146.56	13,097.85	48.71	269.889	
13,000.00	7,080.78	13,000.00	7,239.54	38.96	12.83	-87.56	-1,725.63	6,871.22	13,246.10	13,197.01	49.08	269.888	
13,100.00	7,080.45	13,100.00	7,239.20	39.26	12.96	-87.54	-1,725.63	6,871.22	13,345.64	13,296.19	49.45	269.887	
13,200.00	7,080.12	13,200.00	7,238.86	39.56	13.09	-87.52	-1,725.63	6,871.22	13,445.19	13,395.37	49.82	269.887	SF
13,300.00	7,079.79	13,300.00	7,238.51	39.86	13.23	-87.51	-1,725.62	6,871.22	13,544.75	13,494.56	50.19	269.887	
13,400.00	7,079.47	13,400.00	7,238.17	40.16	13.36	-87.49	-1,725.62	6,871.22	13,644.32	13,593.76	50.56	269.888	
13,500.00	7,079.14	13,500.00	7,237.83	40.46	13.49	-87.48	-1,725.62	6,871.22	13,743.89	13,692.96	50.92	269.890	
13,600.00	7,078.81	13,600.00	7,237.48	40.77	13.63	-87.46	-1,725.62	6,871.22	13,843.47	13,792.17	51.29	269.892	
13,700.00	7,078.48	13,700.00	7,237.14	41.07	13.76	-87.45	-1,725.62	6,871.22	13,943.05	13,891.39	51.66	269.894	
13,800.00	7,078.15	13,800.00	7,236.79	41.37	13.89	-87.43	-1,725.61	6,871.22	14,042.64	13,990.61	52.03	269.897	
13,900.00	7,077.83	13,900.00	7,236.45	41.67	14.03	-87.42	-1,725.61	6,871.22	14,142.24	14,089.84	52.40	269.900	
14,000.00	7,077.50	14,000.00	7,236.11	41.97	14.16	-87.40	-1,725.61	6,871.22	14,241.84	14,189.07	52.77	269.904	
14,100.00	7,077.17	14,100.00	7,235.76	42.27	14.29	-87.38	-1,725.61	6,871.22	14,341.44	14,288.31	53.13	269.908	
14,200.00	7,076.84	14,200.00	7,235.42	42.57	14.43	-87.37	-1,725.60	6,871.22	14,441.06	14,387.55	53.50	269.912	
14,300.00	7,076.51	14,300.00	7,235.07	42.87	14.56	-87.35	-1,725.60	6,871.22	14,540.67	14,486.80	53.87	269.917	
14,400.00	7,076.19	14,400.00	7,234.73	43.17	14.70	-87.34	-1,725.60	6,871.22	14,640.30	14,586.06	54.24	269.922	
14,500.00	7,075.86	14,500.00	7,234.39	43.47	14.83	-87.32	-1,725.60	6,871.22	14,739.92	14,685.32	54.61	269.928	

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 750H - Slot B05
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 750H	**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
14,600.00	7,075.53	14,600.00	7,234.04	43.77	14.96	-87.31	-1,725.59	6,871.22	14,839.56	14,784.58	54.97	269.934	
14,700.00	7,075.20	14,700.00	7,233.70	44.07	15.10	-87.29	-1,725.59	6,871.22	14,939.19	14,883.85	55.34	269.940	
14,800.00	7,074.87	14,800.00	7,233.35	44.37	15.23	-87.28	-1,725.59	6,871.22	15,038.84	14,983.13	55.71	269.946	
14,900.00	7,074.55	14,900.00	7,233.01	44.67	15.37	-87.26	-1,725.59	6,871.22	15,138.48	15,082.40	56.08	269.953	
15,000.00	7,074.22	15,000.00	7,232.67	44.97	15.50	-87.24	-1,725.58	6,871.22	15,238.13	15,181.69	56.45	269.960	
15,100.00	7,073.89	7,221.07	7,218.67	45.27	6.08	-86.61	-1,725.49	6,871.21	15,337.79	15,286.46	51.34	298.768	
15,200.00	7,073.56	7,220.76	7,218.36	45.57	6.08	-86.60	-1,725.48	6,871.21	15,437.45	15,385.82	51.64	298.963	
15,300.00	7,073.23	7,220.45	7,218.05	45.87	6.08	-86.58	-1,725.48	6,871.21	15,537.12	15,485.18	51.94	299.156	
15,400.00	7,072.91	7,220.15	7,217.74	46.17	6.08	-86.57	-1,725.48	6,871.21	15,636.79	15,584.55	52.24	299.347	
15,500.00	7,072.58	7,219.84	7,217.44	46.47	6.08	-86.56	-1,725.48	6,871.21	15,736.46	15,683.92	52.54	299.535	
15,600.00	7,072.25	7,219.54	7,217.13	46.77	6.08	-86.54	-1,725.47	6,871.21	15,836.14	15,783.30	52.84	299.722	
15,700.00	7,071.92	7,219.23	7,216.83	47.07	6.08	-86.53	-1,725.47	6,871.21	15,935.82	15,882.68	53.14	299.906	
15,800.00	7,071.59	7,218.93	7,216.53	47.37	6.08	-86.52	-1,725.47	6,871.21	16,035.50	15,982.07	53.44	300.089	
15,900.00	7,071.27	7,218.63	7,216.23	47.67	6.08	-86.50	-1,725.47	6,871.21	16,135.19	16,081.46	53.74	300.269	
16,000.00	7,070.94	7,218.33	7,215.93	47.97	6.08	-86.49	-1,725.46	6,871.21	16,234.89	16,180.85	54.04	300.448	
16,100.00	7,070.61	7,218.04	7,215.63	48.27	6.08	-86.48	-1,725.46	6,871.21	16,334.58	16,280.25	54.34	300.624	
16,200.00	7,070.28	7,217.74	7,215.34	48.57	6.08	-86.46	-1,725.46	6,871.21	16,434.28	16,379.65	54.64	300.799	
16,300.00	7,069.95	7,217.44	7,215.04	48.87	6.08	-86.45	-1,725.46	6,871.21	16,533.99	16,479.05	54.94	300.972	
16,400.00	7,069.63	7,217.15	7,214.75	49.17	6.08	-86.44	-1,725.45	6,871.21	16,633.70	16,578.46	55.24	301.143	
16,419.92	7,069.56	7,217.09	7,214.69	49.23	6.08	-86.43	-1,725.45	6,871.21	16,653.56	16,598.26	55.29	301.177	
16,500.00	7,069.30	7,216.86	7,214.45	49.47	6.08	-86.42	-1,725.45	6,871.21	16,733.41	16,677.87	55.54	301.312	
16,591.83	7,069.00	7,216.59	7,214.19	49.75	6.08	-86.41	-1,725.45	6,871.21	16,824.97	16,769.16	55.81	301.466	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-98.27	-1,356.45	-9,336.64	9,434.66				
100.00	100.00	84.51	84.51	0.23	0.75	-98.27	-1,356.45	-9,336.64	9,434.66	9,433.68	0.98	9,673.746	
200.00	200.00	275.49	184.51	0.53	2.86	-98.27	-1,356.45	-9,336.64	9,434.66	9,431.27	3.38	2,787.925	
300.00	300.00	284.51	284.51	0.83	3.02	-98.27	-1,356.45	-9,336.64	9,434.66	9,430.81	3.85	2,452.540	
400.00	400.00	384.51	384.51	1.13	4.82	-98.27	-1,356.45	-9,336.64	9,434.66	9,428.71	5.95	1,585.657	
500.00	500.00	484.51	484.51	1.43	6.63	-98.27	-1,356.45	-9,336.64	9,434.66	9,426.61	8.05	1,171.555	
600.00	599.98	583.91	583.91	1.73	8.42	57.30	-1,356.14	-9,336.64	9,433.67	9,423.53	10.15	929.856	
707.91	707.73	690.60	690.60	2.05	10.34	57.39	-1,356.22	-9,336.64	9,430.55	9,418.16	12.39	760.970	
800.00	799.58	781.55	781.54	2.33	11.98	57.42	-1,356.36	-9,336.64	9,426.97	9,412.66	14.31	658.814	
900.00	899.31	883.84	883.83	2.63	13.85	57.46	-1,356.45	-9,336.64	9,423.07	9,406.59	16.48	571.830	
1,000.00	999.05	983.58	983.56	2.93	15.69	57.49	-1,356.45	-9,336.64	9,419.16	9,400.55	18.62	505.933	
1,100.00	1,098.79	1,081.47	1,081.45	3.23	17.50	57.53	-1,356.06	-9,336.64	9,415.21	9,394.49	20.72	454.357	
1,200.00	1,198.52	1,178.39	1,178.38	3.53	19.28	57.57	-1,356.30	-9,336.64	9,411.34	9,388.53	22.81	412.619	
1,300.00	1,298.26	1,282.80	1,282.77	3.83	21.24	57.60	-1,356.45	-9,336.64	9,407.47	9,382.40	25.07	375.305	
1,400.00	1,398.00	1,382.54	1,382.51	4.13	23.13	57.64	-1,356.45	-9,336.64	9,403.58	9,376.33	27.25	345.040	
1,500.00	1,497.73	1,481.84	1,481.81	4.43	25.01	57.68	-1,355.91	-9,336.64	9,399.62	9,370.19	29.43	319.358	
1,600.00	1,597.47	1,579.36	1,579.32	4.73	26.85	57.72	-1,356.03	-9,336.64	9,395.75	9,364.18	31.58	297.539	
1,700.00	1,697.21	1,676.90	1,676.86	5.03	28.70	57.75	-1,356.31	-9,336.64	9,391.92	9,358.19	33.72	278.493	
1,800.00	1,796.94	1,781.51	1,781.46	5.33	30.76	57.79	-1,356.45	-9,336.64	9,388.06	9,351.97	36.08	260.167	
1,900.00	1,896.68	1,881.25	1,881.19	5.63	32.76	57.83	-1,356.45	-9,336.64	9,384.19	9,345.80	38.38	244.476	
2,000.00	1,996.42	1,980.31	1,980.25	5.93	34.74	57.87	-1,355.63	-9,336.64	9,380.21	9,339.54	40.67	230.633	
2,100.00	2,096.15	2,076.88	2,076.81	6.23	36.68	57.91	-1,355.81	-9,336.64	9,376.37	9,333.47	42.91	218.522	
2,200.00	2,195.89	2,173.48	2,173.41	6.53	38.62	57.94	-1,356.22	-9,336.64	9,372.57	9,327.43	45.15	207.609	
2,300.00	2,295.63	2,280.26	2,280.14	6.83	40.82	57.98	-1,356.45	-9,336.64	9,368.75	9,321.11	47.64	196.650	
2,400.00	2,395.36	2,379.99	2,379.88	7.13	42.89	58.02	-1,356.45	-9,336.64	9,364.90	9,314.88	50.02	187.223	
2,500.00	2,495.10	2,478.78	2,478.65	7.43	44.95	58.06	-1,355.38	-9,336.64	9,360.91	9,308.53	52.38	178.717	
2,600.00	2,594.84	2,574.40	2,574.27	7.73	46.94	58.09	-1,355.61	-9,336.64	9,357.10	9,302.43	54.67	171.154	
2,700.00	2,694.57	2,670.06	2,669.92	8.03	48.94	58.13	-1,356.17	-9,336.64	9,353.34	9,296.38	56.96	164.197	
2,800.00	2,794.31	2,779.02	2,778.82	8.33	51.22	58.17	-1,356.45	-9,336.64	9,349.54	9,289.99	59.55	157.011	
2,900.00	2,894.05	2,878.75	2,878.56	8.63	53.32	58.20	-1,356.45	-9,336.64	9,345.71	9,283.76	61.94	150.879	
3,000.00	2,993.78	2,978.49	2,978.30	8.93	55.41	58.24	-1,356.45	-9,336.64	9,341.88	9,277.54	64.34	145.203	
3,100.00	3,093.52	3,076.03	3,075.82	9.23	57.46	58.29	-1,355.17	-9,336.64	9,337.90	9,271.21	66.69	140.029	
3,200.00	3,193.26	3,172.54	3,172.33	9.53	59.49	58.32	-1,355.48	-9,336.64	9,334.12	9,265.11	69.01	135.253	
3,300.00	3,292.99	3,269.09	3,268.87	9.83	61.51	58.35	-1,356.05	-9,336.64	9,330.38	9,259.04	71.34	130.787	
3,400.00	3,392.73	3,365.68	3,365.45	10.13	63.54	58.39	-1,356.89	-9,336.64	9,326.68	9,253.01	73.67	126.603	
3,500.00	3,492.47	3,337.00	3,336.71	10.43	62.94	58.38	-1,356.45	-9,336.64	9,323.87	9,250.51	73.36	127.096	
3,600.00	3,592.20	3,337.00	3,336.71	10.73	62.94	58.38	-1,356.45	-9,336.64	9,322.10	9,248.45	73.65	126.578	
3,700.00	3,691.94	3,337.00	3,336.71	11.03	62.94	58.38	-1,356.45	-9,336.64	9,321.41	9,247.48	73.93	126.090	
3,714.69	3,706.59	3,337.00	3,336.71	11.07	62.94	58.38	-1,356.45	-9,336.64	9,321.40	9,247.43	73.97	126.020	
3,800.00	3,791.68	3,337.00	3,336.71	11.33	62.94	58.38	-1,356.45	-9,336.64	9,321.79	9,247.59	74.20	125.631	
3,900.00	3,891.41	3,337.00	3,336.71	11.63	62.94	58.38	-1,356.45	-9,336.64	9,323.24	9,248.77	74.47	125.203	
4,000.00	3,991.15	3,337.00	3,336.71	11.93	62.94	58.38	-1,356.45	-9,336.64	9,325.76	9,251.04	74.72	124.803	
4,100.00	4,090.89	3,337.00	3,336.71	12.23	62.94	58.38	-1,356.45	-9,336.64	9,329.36	9,254.38	74.98	124.432	
4,200.00	4,190.62	3,337.00	3,336.71	12.53	62.94	58.38	-1,356.45	-9,336.64	9,334.02	9,258.80	75.22	124.090	
4,300.00	4,290.36	3,337.00	3,336.71	12.83	62.94	58.38	-1,356.45	-9,336.64	9,339.75	9,264.30	75.46	123.775	
4,400.00	4,390.10	3,337.00	3,336.71	13.13	62.94	58.38	-1,356.45	-9,336.64	9,346.55	9,270.86	75.69	123.487	
4,500.00	4,489.84	3,337.00	3,336.71	13.43	62.94	58.38	-1,356.45	-9,336.64	9,354.42	9,278.50	75.91	123.226	
4,600.00	4,589.57	3,337.00	3,336.71	13.73	62.94	58.38	-1,356.45	-9,336.64	9,363.34	9,287.21	76.13	122.991	
4,700.00	4,689.31	3,337.00	3,336.71	14.03	62.94	58.38	-1,356.45	-9,336.64	9,373.33	9,296.99	76.34	122.782	
4,800.00	4,789.05	3,337.00	3,336.71	14.33	62.94	58.38	-1,356.45	-9,336.64	9,384.37	9,307.82	76.55	122.599	
4,900.00	4,888.78	3,337.00	3,336.71	14.63	62.94	58.38	-1,356.45	-9,336.64	9,396.46	9,319.71	76.74	122.440	
5,000.00	4,988.52	3,337.00	3,336.71	14.93	62.94	58.38	-1,356.45	-9,336.64	9,409.59	9,332.66	76.93	122.306	

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 750H - Slot B05
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 750H	**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	5,088.26	3,337.00	3,336.71	15.23	62.94	58.38	-1,356.45	-9,336.64	9,423.77	9,346.65	77.12	122.197	
5,200.00	5,187.99	3,337.00	3,336.71	15.53	62.94	58.38	-1,356.45	-9,336.64	9,438.99	9,361.69	77.30	122.111	
5,300.00	5,287.73	3,337.00	3,336.71	15.83	62.94	58.38	-1,356.45	-9,336.64	9,455.24	9,377.77	77.47	122.049	
5,400.00	5,387.47	3,337.00	3,336.71	16.13	62.94	58.38	-1,356.45	-9,336.64	9,472.52	9,394.88	77.64	122.009	
5,500.00	5,487.20	3,337.00	3,336.71	16.43	62.94	58.38	-1,356.45	-9,336.64	9,490.82	9,413.03	77.80	121.993	
5,600.00	5,586.94	3,337.00	3,336.71	16.73	62.94	58.38	-1,356.45	-9,336.64	9,510.14	9,432.19	77.95	121.998	
5,700.00	5,686.68	3,337.00	3,336.71	17.03	62.94	58.38	-1,356.45	-9,336.64	9,530.47	9,452.37	78.10	122.025	
5,800.00	5,786.41	3,337.00	3,336.71	17.33	62.94	58.38	-1,356.45	-9,336.64	9,551.80	9,473.56	78.25	122.073	
5,900.00	5,886.15	3,337.00	3,336.71	17.63	62.94	58.38	-1,356.45	-9,336.64	9,574.13	9,495.75	78.38	122.143	
6,000.00	5,985.89	3,337.00	3,336.71	17.93	62.94	58.38	-1,356.45	-9,336.64	9,597.45	9,518.93	78.52	122.233	
6,100.00	6,085.62	3,337.00	3,336.71	18.23	62.94	58.38	-1,356.45	-9,336.64	9,621.75	9,543.11	78.65	122.343	
6,200.00	6,185.36	3,337.00	3,336.71	18.53	62.94	58.38	-1,356.45	-9,336.64	9,647.03	9,568.26	78.77	122.473	
6,300.00	6,285.10	3,337.00	3,336.71	18.83	62.94	58.38	-1,356.45	-9,336.64	9,673.27	9,594.39	78.89	122.622	
6,400.00	6,384.83	3,337.00	3,336.71	19.13	62.94	58.38	-1,356.45	-9,336.64	9,700.48	9,621.48	79.00	122.790	
6,500.00	6,484.57	3,337.00	3,336.71	19.43	62.94	58.38	-1,356.45	-9,336.64	9,728.64	9,649.53	79.11	122.977	
6,559.90	6,544.31	3,337.00	3,336.71	19.61	62.94	58.38	-1,356.45	-9,336.64	9,745.95	9,666.78	79.17	123.098	
6,600.00	6,584.23	3,337.00	3,336.71	19.73	62.94	26.34	-1,356.45	-9,336.64	9,756.40	9,677.19	79.21	123.169	
6,650.00	6,633.60	3,337.00	3,336.71	19.88	62.94	12.43	-1,356.45	-9,336.64	9,765.84	9,686.58	79.26	123.217	
6,700.00	6,682.15	3,337.00	3,336.71	20.03	62.94	6.63	-1,356.45	-9,336.64	9,771.25	9,691.95	79.30	123.219	
6,750.00	6,729.52	3,337.00	3,336.71	20.18	62.94	3.50	-1,356.45	-9,336.64	9,772.60	9,693.26	79.34	123.173	
6,800.00	6,775.36	3,337.00	3,336.71	20.33	62.94	1.54	-1,356.45	-9,336.64	9,769.88	9,690.50	79.38	123.077	
6,850.00	6,819.31	3,337.00	3,336.71	20.48	62.94	0.16	-1,356.45	-9,336.64	9,763.11	9,683.69	79.42	122.932	
6,900.00	6,861.04	3,337.00	3,336.71	20.63	62.94	-0.89	-1,356.45	-9,336.64	9,752.32	9,672.87	79.46	122.736	
6,950.00	6,900.22	3,337.00	3,336.71	20.78	62.94	-1.77	-1,356.45	-9,336.64	9,737.60	9,658.10	79.50	122.490	
7,000.00	6,936.57	3,337.00	3,336.71	20.93	62.94	-2.55	-1,356.45	-9,336.64	9,719.02	9,639.48	79.54	122.193	
7,050.00	6,969.80	3,337.00	3,336.71	21.08	62.94	-3.29	-1,356.45	-9,336.64	9,696.72	9,617.14	79.58	121.845	
7,100.00	6,999.67	3,337.00	3,336.71	21.23	62.94	-4.05	-1,356.45	-9,336.64	9,670.83	9,591.20	79.63	121.447	
7,150.00	7,025.94	3,337.00	3,336.71	21.38	62.94	-4.85	-1,356.45	-9,336.64	9,641.53	9,561.85	79.68	121.001	
7,200.00	7,048.41	3,337.00	3,336.71	21.53	62.94	-5.74	-1,356.45	-9,336.64	9,609.01	9,529.27	79.74	120.506	
7,250.00	7,066.92	3,337.00	3,336.71	21.68	62.94	-6.80	-1,356.45	-9,336.64	9,573.48	9,493.68	79.80	119.966	
7,300.00	7,081.33	3,337.00	3,336.71	21.83	62.94	-8.08	-1,356.45	-9,336.64	9,535.19	9,455.32	79.87	119.382	
7,350.00	7,091.51	3,337.00	3,336.71	21.98	62.94	-9.71	-1,356.45	-9,336.64	9,494.39	9,414.44	79.95	118.755	
7,400.00	7,097.41	3,337.00	3,336.71	22.13	62.94	-11.89	-1,356.45	-9,336.64	9,451.36	9,371.33	80.04	118.090	
7,444.73	7,099.00	3,337.00	3,336.71	22.27	62.94	-14.56	-1,356.45	-9,336.64	9,411.22	9,331.10	80.12	117.464	
7,500.00	7,098.82	3,337.00	3,336.71	22.44	62.94	-14.56	-1,356.45	-9,336.64	9,360.80	9,280.57	80.23	116.674	
7,600.00	7,098.49	3,337.00	3,336.71	22.74	62.94	-14.56	-1,356.45	-9,336.64	9,269.70	9,189.27	80.43	115.256	
7,700.00	7,098.16	3,337.00	3,336.71	23.04	62.94	-14.56	-1,356.45	-9,336.64	9,178.79	9,098.17	80.62	113.852	
7,800.00	7,097.83	3,337.00	3,336.71	23.34	62.94	-14.56	-1,356.45	-9,336.64	9,088.07	9,007.26	80.81	112.461	
7,900.00	7,097.51	3,337.00	3,336.71	23.64	62.94	-14.56	-1,356.45	-9,336.64	8,997.54	8,916.54	81.00	111.084	
8,000.00	7,097.18	3,337.00	3,336.71	23.94	62.94	-14.56	-1,356.45	-9,336.64	8,907.22	8,826.04	81.18	109.721	
8,100.00	7,096.85	3,337.00	3,336.71	24.24	62.94	-14.56	-1,356.45	-9,336.64	8,817.11	8,735.75	81.36	108.371	
8,200.00	7,096.52	3,337.00	3,336.71	24.54	62.94	-14.56	-1,356.45	-9,336.64	8,727.21	8,645.67	81.54	107.034	
8,300.00	7,096.19	3,337.00	3,336.71	24.84	62.94	-14.56	-1,356.45	-9,336.64	8,637.53	8,555.82	81.71	105.711	
8,400.00	7,095.87	3,337.00	3,336.71	25.14	62.94	-14.56	-1,356.45	-9,336.64	8,548.09	8,466.21	81.88	104.402	
8,500.00	7,095.54	3,337.00	3,336.71	25.44	62.94	-14.56	-1,356.45	-9,336.64	8,458.88	8,376.84	82.04	103.106	
8,600.00	7,095.21	3,337.00	3,336.71	25.74	62.94	-14.56	-1,356.45	-9,336.64	8,369.91	8,287.71	82.20	101.824	
8,700.00	7,094.88	3,337.00	3,336.71	26.04	62.94	-14.56	-1,356.45	-9,336.64	8,281.19	8,198.84	82.35	100.555	
8,800.00	7,094.55	3,337.00	3,336.71	26.35	62.94	-14.56	-1,356.45	-9,336.64	8,192.74	8,110.24	82.50	99.300	
8,900.00	7,094.23	3,337.00	3,336.71	26.65	62.94	-14.56	-1,356.45	-9,336.64	8,104.55	8,021.90	82.65	98.059	
9,000.00	7,093.90	3,337.00	3,336.71	26.95	62.94	-14.56	-1,356.45	-9,336.64	8,016.65	7,933.86	82.79	96.831	
9,100.00	7,093.57	3,337.00	3,336.71	27.25	62.94	-14.56	-1,356.45	-9,336.64	7,929.02	7,846.10	82.93	95.617	
9,200.00	7,093.24	3,337.00	3,336.71	27.55	62.94	-14.56	-1,356.45	-9,336.64	7,841.70	7,758.64	83.05	94.416	

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 750H - Slot B05
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 750H	**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	7,092.91	3,337.00	3,336.71	27.85	62.94	-14.56	-1,356.45	-9,336.64	7,754.68	7,671.50	83.18	93.230	
9,400.00	7,092.59	3,337.00	3,336.71	28.15	62.94	-14.56	-1,356.45	-9,336.64	7,667.97	7,584.68	83.30	92.057	
9,500.00	7,092.26	3,337.00	3,336.71	28.45	62.94	-14.56	-1,356.45	-9,336.64	7,581.60	7,498.19	83.41	90.899	
9,600.00	7,091.93	3,337.00	3,336.71	28.75	62.94	-14.56	-1,356.45	-9,336.64	7,495.56	7,412.05	83.51	89.754	
9,700.00	7,091.60	3,337.00	3,336.71	29.05	62.94	-14.56	-1,356.45	-9,336.64	7,409.87	7,326.26	83.61	88.624	
9,800.00	7,091.27	3,337.00	3,336.71	29.35	62.94	-14.56	-1,356.45	-9,336.64	7,324.55	7,240.85	83.70	87.508	
9,900.00	7,090.95	3,337.00	3,336.71	29.65	62.94	-14.56	-1,356.45	-9,336.64	7,239.60	7,155.82	83.78	86.407	
10,000.00	7,090.62	3,337.00	3,336.71	29.95	62.94	-14.56	-1,356.45	-9,336.64	7,155.04	7,071.18	83.86	85.320	
10,100.00	7,090.29	3,337.00	3,336.71	30.25	62.94	-14.56	-1,356.45	-9,336.64	7,070.89	6,986.96	83.93	84.248	
10,200.00	7,089.96	3,337.00	3,336.71	30.55	62.94	-14.56	-1,356.45	-9,336.64	6,987.15	6,903.16	83.99	83.191	
10,300.00	7,089.63	3,337.00	3,336.71	30.85	62.94	-14.56	-1,356.45	-9,336.64	6,903.84	6,819.80	84.04	82.149	
10,400.00	7,089.31	3,337.00	3,336.71	31.15	62.94	-14.56	-1,356.45	-9,336.64	6,820.99	6,736.91	84.08	81.122	
10,500.00	7,088.98	3,337.00	3,336.71	31.45	62.94	-14.56	-1,356.45	-9,336.64	6,738.60	6,654.48	84.12	80.111	
10,600.00	7,088.65	3,337.00	3,336.71	31.75	62.94	-14.56	-1,356.45	-9,336.64	6,656.69	6,572.55	84.14	79.116	
10,700.00	7,088.32	3,337.00	3,336.71	32.06	62.94	-14.56	-1,356.45	-9,336.64	6,575.28	6,491.13	84.15	78.136	
10,800.00	7,087.99	3,337.00	3,336.71	32.36	62.94	-14.56	-1,356.45	-9,336.64	6,494.39	6,410.24	84.15	77.173	
10,900.00	7,087.67	3,337.00	3,336.71	32.66	62.94	-14.56	-1,356.45	-9,336.64	6,414.04	6,329.89	84.15	76.226	
11,000.00	7,087.34	3,337.00	3,336.71	32.96	62.94	-14.56	-1,356.45	-9,336.64	6,334.25	6,250.12	84.13	75.295	
11,100.00	7,087.01	3,337.00	3,336.71	33.26	62.94	-14.56	-1,356.45	-9,336.64	6,255.04	6,170.95	84.09	74.382	
11,200.00	7,086.68	3,337.00	3,336.71	33.56	62.94	-14.56	-1,356.45	-9,336.64	6,176.43	6,092.38	84.05	73.486	
11,300.00	7,086.35	3,337.00	3,336.71	33.86	62.94	-14.56	-1,356.45	-9,336.64	6,098.45	6,014.46	83.99	72.608	
11,400.00	7,086.03	3,337.00	3,336.71	34.16	62.94	-14.56	-1,356.45	-9,336.64	6,021.12	5,937.20	83.92	71.748	
11,500.00	7,085.70	3,337.00	3,336.71	34.46	62.94	-14.56	-1,356.45	-9,336.64	5,944.47	5,860.64	83.84	70.906	
11,600.00	7,085.37	3,337.00	3,336.71	34.76	62.94	-14.56	-1,356.45	-9,336.64	5,868.52	5,784.78	83.74	70.083	
11,700.00	7,085.04	3,337.00	3,336.71	35.06	62.94	-14.56	-1,356.45	-9,336.64	5,793.30	5,709.68	83.62	69.280	
11,800.00	7,084.71	3,337.00	3,336.71	35.36	62.94	-14.56	-1,356.45	-9,336.64	5,718.84	5,635.35	83.49	68.496	
11,900.00	7,084.39	3,337.00	3,336.71	35.66	62.94	-14.56	-1,356.45	-9,336.64	5,645.17	5,561.83	83.34	67.733	
12,000.00	7,084.06	3,337.00	3,336.71	35.96	62.94	-14.56	-1,356.45	-9,336.64	5,572.32	5,489.14	83.18	66.990	
12,100.00	7,083.73	3,337.00	3,336.71	36.26	62.94	-14.56	-1,356.45	-9,336.64	5,500.32	5,417.32	83.00	66.269	
12,200.00	7,083.40	3,337.00	3,336.71	36.56	62.94	-14.56	-1,356.45	-9,336.64	5,429.21	5,346.41	82.80	65.570	
12,300.00	7,083.07	3,337.00	3,336.71	36.86	62.94	-14.56	-1,356.45	-9,336.64	5,359.03	5,276.44	82.58	64.893	
12,400.00	7,082.75	3,337.00	3,336.71	37.16	62.94	-14.56	-1,356.45	-9,336.64	5,289.80	5,207.45	82.35	64.239	
12,500.00	7,082.42	3,337.00	3,336.71	37.46	62.94	-14.56	-1,356.45	-9,336.64	5,221.57	5,139.48	82.09	63.609	
12,600.00	7,082.09	3,337.00	3,336.71	37.76	62.94	-14.56	-1,356.45	-9,336.64	5,154.38	5,072.57	81.81	63.004	
12,700.00	7,081.76	3,337.00	3,336.71	38.06	62.94	-14.56	-1,356.45	-9,336.64	5,088.26	5,006.75	81.51	62.424	
12,800.00	7,081.43	3,337.00	3,336.71	38.36	62.94	-14.56	-1,356.45	-9,336.64	5,023.27	4,942.07	81.19	61.869	
12,900.00	7,081.11	3,337.00	3,336.71	38.66	62.94	-14.56	-1,356.45	-9,336.64	4,959.44	4,878.59	80.85	61.342	
13,000.00	7,080.78	3,337.00	3,336.71	38.96	62.94	-14.56	-1,356.45	-9,336.64	4,896.82	4,816.33	80.48	60.842	
13,100.00	7,080.45	3,337.00	3,336.71	39.26	62.94	-14.56	-1,356.45	-9,336.64	4,835.45	4,755.36	80.10	60.370	
13,200.00	7,080.12	3,337.00	3,336.71	39.56	62.94	-14.56	-1,356.45	-9,336.64	4,775.40	4,695.71	79.69	59.928	
13,300.00	7,079.79	3,337.00	3,336.71	39.86	62.94	-14.56	-1,356.45	-9,336.64	4,716.70	4,637.44	79.25	59.515	
13,400.00	7,079.47	3,337.00	3,336.71	40.16	62.94	-14.56	-1,356.45	-9,336.64	4,659.40	4,580.61	78.79	59.133	
13,500.00	7,079.14	3,337.00	3,336.71	40.46	62.94	-14.56	-1,356.45	-9,336.64	4,603.57	4,525.25	78.31	58.783	
13,600.00	7,078.81	3,337.00	3,336.71	40.77	62.94	-14.56	-1,356.45	-9,336.64	4,549.25	4,471.44	77.81	58.466	
13,700.00	7,078.48	3,337.00	3,336.71	41.07	62.94	-14.56	-1,356.45	-9,336.64	4,496.49	4,419.21	77.28	58.181	
13,800.00	7,078.15	3,337.00	3,336.71	41.37	62.94	-14.56	-1,356.45	-9,336.64	4,445.36	4,368.63	76.74	57.930	
13,900.00	7,077.83	3,337.00	3,336.71	41.67	62.94	-14.56	-1,356.45	-9,336.64	4,395.91	4,319.75	76.17	57.713	
14,000.00	7,077.50	3,337.00	3,336.71	41.97	62.94	-14.56	-1,356.45	-9,336.64	4,348.20	4,272.62	75.58	57.531	
14,100.00	7,077.17	3,337.00	3,336.71	42.27	62.94	-14.56	-1,356.45	-9,336.64	4,302.29	4,227.31	74.97	57.384	
14,200.00	7,076.84	3,337.00	3,336.71	42.57	62.94	-14.56	-1,356.45	-9,336.64	4,258.22	4,183.87	74.35	57.272	
14,300.00	7,076.51	3,337.00	3,336.71	42.87	62.94	-14.56	-1,356.45	-9,336.64	4,216.07	4,142.36	73.71	57.195	
14,400.00	7,076.19	3,337.00	3,336.71	43.17	62.94	-14.56	-1,356.45	-9,336.64	4,175.89	4,102.83	73.07	57.151	

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 750H - Slot B05
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 750H	**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	7,075.86	3,337.00	3,336.71	43.47	62.94	-14.56	-1,356.45	-9,336.64	4,137.74	4,065.33	72.41	57.141	
14,600.00	7,075.53	3,337.00	3,336.71	43.77	62.94	-14.56	-1,356.45	-9,336.64	4,101.67	4,029.91	71.76	57.161	
14,700.00	7,075.20	3,337.00	3,336.71	44.07	62.94	-14.56	-1,356.45	-9,336.64	4,067.74	3,996.64	71.10	57.210	
14,800.00	7,074.87	3,337.00	3,336.71	44.37	62.94	-14.56	-1,356.45	-9,336.64	4,036.00	3,965.55	70.45	57.285	
14,900.00	7,074.55	3,337.00	3,336.71	44.67	62.94	-14.56	-1,356.45	-9,336.64	4,006.51	3,936.69	69.82	57.381	
15,000.00	7,074.22	3,337.00	3,336.71	44.97	62.94	-14.56	-1,356.45	-9,336.64	3,979.31	3,910.10	69.21	57.494	
15,100.00	7,073.89	3,337.00	3,336.71	45.27	62.94	-14.56	-1,356.45	-9,336.64	3,954.46	3,885.82	68.63	57.616	
15,200.00	7,073.56	3,337.00	3,336.71	45.57	62.94	-14.56	-1,356.45	-9,336.64	3,931.99	3,863.89	68.10	57.740	
15,300.00	7,073.23	3,337.00	3,336.71	45.87	62.94	-14.56	-1,356.45	-9,336.64	3,911.95	3,844.33	67.61	57.858	
15,400.00	7,072.91	3,337.00	3,336.71	46.17	62.94	-14.56	-1,356.45	-9,336.64	3,894.37	3,827.18	67.19	57.959	
15,500.00	7,072.58	3,337.00	3,336.71	46.47	62.94	-14.56	-1,356.45	-9,336.64	3,879.30	3,812.45	66.85	58.032	
15,600.00	7,072.25	3,337.00	3,336.71	46.77	62.94	-14.56	-1,356.45	-9,336.64	3,866.75	3,800.16	66.59	58.067	
15,700.00	7,071.92	3,337.00	3,336.71	47.07	62.94	-14.56	-1,356.45	-9,336.64	3,856.75	3,790.32	66.44	58.051	
15,800.00	7,071.59	3,337.00	3,336.71	47.37	62.94	-14.56	-1,356.45	-9,336.64	3,849.33	3,782.94	66.39	57.977	
15,900.00	7,071.27	3,337.00	3,336.71	47.67	62.94	-14.56	-1,356.45	-9,336.64	3,844.50	3,778.03	66.47	57.836	
16,000.00	7,070.94	3,337.00	3,336.71	47.97	62.94	-14.56	-1,356.45	-9,336.64	3,842.26	3,775.58	66.68	57.624	
16,035.97	7,070.82	3,337.00	3,336.71	48.08	62.94	-14.56	-1,356.45	-9,336.64	3,842.09	3,775.31	66.78	57.531	CC, ES
16,100.00	7,070.61	3,337.00	3,336.71	48.27	62.94	-14.56	-1,356.45	-9,336.64	3,842.63	3,775.61	67.01	57.342	
16,200.00	7,070.28	3,337.00	3,336.71	48.57	62.94	-14.56	-1,356.45	-9,336.64	3,845.59	3,778.12	67.48	56.991	
16,300.00	7,069.95	3,337.00	3,336.71	48.87	62.94	-14.56	-1,356.45	-9,336.64	3,851.15	3,783.09	68.06	56.581	
16,400.00	7,069.63	3,337.00	3,336.71	49.17	62.94	-14.56	-1,356.45	-9,336.64	3,859.30	3,790.53	68.77	56.119	
16,419.92	7,069.56	3,337.00	3,336.71	49.23	62.94	-14.56	-1,356.45	-9,336.64	3,861.23	3,792.31	68.92	56.022	
16,500.00	7,069.30	3,337.00	3,336.71	49.47	62.94	-14.56	-1,356.45	-9,336.64	3,870.01	3,800.43	69.58	55.618	
16,591.83	7,069.00	3,337.00	3,336.71	49.75	62.94	-14.56	-1,356.45	-9,336.64	3,882.09	3,811.68	70.41	55.135	SF

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 750H - Slot B05
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 750H	**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	-105.21	-1,737.83	-6,392.46	6,625.18				
100.00	100.00	3.51	3.51	0.23	0.04	-105.21	-1,737.83	-6,392.46	6,624.48	6,624.21	0.26	N/A	
200.00	200.00	103.51	103.51	0.53	1.10	-105.21	-1,737.83	-6,392.46	6,624.48	6,622.85	1.63	4,068.625	
300.00	300.00	203.51	203.51	0.83	2.17	-105.21	-1,737.83	-6,392.46	6,624.48	6,621.48	2.99	2,213.851	
400.00	400.00	340.47	303.51	1.13	3.80	-105.21	-1,737.83	-6,392.46	6,624.48	6,619.54	4.93	1,343.532	
500.00	500.00	403.53	403.51	1.43	5.09	-105.21	-1,737.83	-6,392.46	6,624.48	6,617.96	6.52	1,016.094	
600.00	599.98	503.51	503.49	1.73	7.14	50.36	-1,737.83	-6,392.46	6,623.36	6,614.50	8.86	747.294	
707.91	707.73	607.34	607.31	2.05	9.26	50.47	-1,736.91	-6,392.46	6,619.42	6,608.12	11.31	585.312	
800.00	799.58	693.49	693.46	2.33	11.02	50.50	-1,737.25	-6,392.46	6,615.26	6,601.92	13.35	495.659	
900.00	899.31	802.89	802.83	2.63	13.26	50.55	-1,737.83	-6,392.46	6,610.79	6,594.91	15.88	416.222	
1,000.00	999.05	902.63	902.56	2.93	15.30	50.60	-1,737.83	-6,392.46	6,606.18	6,587.96	18.22	362.532	
1,100.00	1,098.79	1,002.37	1,002.30	3.23	17.34	50.65	-1,737.83	-6,392.46	6,601.57	6,581.01	20.56	321.059	
1,200.00	1,198.52	1,100.35	1,100.28	3.53	19.34	50.70	-1,736.94	-6,392.46	6,596.74	6,573.87	22.87	288.502	
1,300.00	1,298.26	1,196.32	1,196.24	3.83	21.30	50.75	-1,737.14	-6,392.46	6,592.20	6,567.07	25.13	262.345	
1,400.00	1,398.00	1,292.32	1,292.24	4.13	23.26	50.79	-1,737.57	-6,392.46	6,587.72	6,560.33	27.39	240.506	
1,500.00	1,497.73	1,401.38	1,401.25	4.43	25.55	50.84	-1,737.83	-6,392.46	6,583.19	6,553.22	29.97	219.634	
1,600.00	1,597.47	1,501.12	1,500.98	4.73	27.67	50.89	-1,737.83	-6,392.46	6,578.61	6,546.21	32.39	203.080	
1,700.00	1,697.21	1,598.03	1,597.88	5.03	29.73	50.95	-1,736.92	-6,392.46	6,573.80	6,539.04	34.75	189.149	
1,800.00	1,796.94	1,691.59	1,691.44	5.33	31.72	50.99	-1,737.25	-6,392.46	6,569.31	6,532.27	37.04	177.338	
1,900.00	1,896.68	1,800.39	1,800.19	5.63	34.03	51.04	-1,737.83	-6,392.46	6,564.89	6,525.23	39.66	165.539	
2,000.00	1,996.42	1,900.13	1,899.93	5.93	36.15	51.09	-1,737.83	-6,392.46	6,560.32	6,518.24	42.08	155.904	
2,100.00	2,096.15	1,999.87	1,999.67	6.23	38.27	51.14	-1,737.83	-6,392.46	6,555.76	6,511.26	44.50	147.318	
2,200.00	2,195.89	2,095.50	2,095.29	6.53	40.31	51.19	-1,736.84	-6,392.46	6,550.96	6,504.13	46.84	139.873	
2,300.00	2,295.63	2,189.91	2,189.69	6.83	42.32	51.24	-1,737.23	-6,392.46	6,546.51	6,497.37	49.14	133.213	
2,400.00	2,395.36	2,299.15	2,298.88	7.13	44.64	51.29	-1,737.83	-6,392.46	6,542.11	6,490.35	51.77	126.376	
2,500.00	2,495.10	2,398.89	2,398.61	7.43	46.76	51.34	-1,737.83	-6,392.46	6,537.57	6,483.38	54.19	120.643	
2,600.00	2,594.84	2,498.63	2,498.35	7.73	48.88	51.39	-1,737.83	-6,392.46	6,533.04	6,476.43	56.61	115.402	
2,700.00	2,694.57	2,594.28	2,593.99	8.03	50.92	51.44	-1,736.84	-6,392.46	6,528.27	6,469.32	58.95	110.749	
2,800.00	2,794.31	2,688.77	2,688.48	8.33	52.93	51.49	-1,737.24	-6,392.46	6,523.85	6,462.59	61.26	106.500	
2,900.00	2,894.05	2,797.91	2,797.56	8.63	55.23	51.53	-1,737.83	-6,392.46	6,519.46	6,455.61	63.86	102.097	
3,000.00	2,993.78	2,897.65	2,897.30	8.93	57.27	51.58	-1,737.83	-6,392.46	6,514.95	6,448.75	66.19	98.422	
3,100.00	3,093.52	2,993.10	2,992.74	9.23	59.22	51.64	-1,737.17	-6,392.46	6,510.28	6,441.83	68.44	95.117	
3,200.00	3,193.26	3,085.45	3,085.08	9.53	61.11	51.68	-1,737.64	-6,392.46	6,505.89	6,435.26	70.63	92.110	
3,300.00	3,292.99	3,196.90	3,196.51	9.83	63.31	51.73	-1,737.83	-6,392.46	6,501.43	6,428.29	73.14	88.893	
3,400.00	3,392.73	3,296.64	3,296.24	10.13	65.27	51.78	-1,737.83	-6,392.46	6,496.94	6,421.54	75.39	86.174	
3,500.00	3,492.47	3,396.37	3,395.98	10.43	67.22	51.84	-1,737.83	-6,392.46	6,492.45	6,414.80	77.65	83.612	
3,600.00	3,592.20	3,384.00	3,383.58	10.73	66.98	51.83	-1,737.83	-6,392.46	6,488.93	6,411.23	77.70	83.516	
3,700.00	3,691.94	3,384.00	3,383.58	11.03	66.98	51.83	-1,737.83	-6,392.46	6,486.94	6,408.97	77.97	83.196	
3,779.02	3,770.75	3,384.00	3,383.58	11.26	66.98	51.83	-1,737.83	-6,392.46	6,486.46	6,408.28	78.18	82.970	
3,800.00	3,791.68	3,384.00	3,383.58	11.33	66.98	51.83	-1,737.83	-6,392.46	6,486.49	6,408.26	78.23	82.914	
3,900.00	3,891.41	3,384.00	3,383.58	11.63	66.98	51.83	-1,737.83	-6,392.46	6,487.59	6,409.11	78.48	82.671	
4,000.00	3,991.15	3,384.00	3,383.58	11.93	66.98	51.83	-1,737.83	-6,392.46	6,490.22	6,411.52	78.70	82.464	
4,100.00	4,090.89	3,384.00	3,383.58	12.23	66.98	51.83	-1,737.83	-6,392.46	6,494.40	6,415.48	78.92	82.294	
4,200.00	4,190.62	3,384.00	3,383.58	12.53	66.98	51.83	-1,737.83	-6,392.46	6,500.11	6,420.99	79.12	82.160	
4,300.00	4,290.36	3,384.00	3,383.58	12.83	66.98	51.83	-1,737.83	-6,392.46	6,507.35	6,428.05	79.30	82.062	
4,400.00	4,390.10	3,384.00	3,383.58	13.13	66.98	51.83	-1,737.83	-6,392.46	6,516.12	6,436.65	79.47	81.998	
4,500.00	4,489.84	3,384.00	3,383.58	13.43	66.98	51.83	-1,737.83	-6,392.46	6,526.41	6,446.79	79.62	81.969	
4,600.00	4,589.57	3,384.00	3,383.58	13.73	66.98	51.83	-1,737.83	-6,392.46	6,538.21	6,458.45	79.76	81.974	
4,700.00	4,689.31	3,384.00	3,383.58	14.03	66.98	51.83	-1,737.83	-6,392.46	6,551.52	6,471.63	79.88	82.012	
4,800.00	4,789.05	3,384.00	3,383.58	14.33	66.98	51.83	-1,737.83	-6,392.46	6,566.32	6,486.32	80.00	82.083	
4,900.00	4,888.78	3,384.00	3,383.58	14.63	66.98	51.83	-1,737.83	-6,392.46	6,582.61	6,502.52	80.09	82.186	
5,000.00	4,988.52	3,384.00	3,383.58	14.93	66.98	51.83	-1,737.83	-6,392.46	6,600.38	6,520.20	80.18	82.321	

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 750H - Slot B05
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 750H	**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	5,088.26	3,384.00	3,383.58	15.23	66.98	51.83	-1,737.83	-6,392.46	6,619.60	6,539.35	80.25	82.487	
5,200.00	5,187.99	3,384.00	3,383.58	15.53	66.98	51.83	-1,737.83	-6,392.46	6,640.28	6,559.97	80.31	82.683	
5,300.00	5,287.73	3,384.00	3,383.58	15.83	66.98	51.83	-1,737.83	-6,392.46	6,662.40	6,582.04	80.36	82.910	
5,400.00	5,387.47	3,384.00	3,383.58	16.13	66.98	51.83	-1,737.83	-6,392.46	6,685.94	6,605.54	80.39	83.165	
5,500.00	5,487.20	3,384.00	3,383.58	16.43	66.98	51.83	-1,737.83	-6,392.46	6,710.88	6,630.46	80.42	83.450	
5,600.00	5,586.94	3,384.00	3,383.58	16.73	66.98	51.83	-1,737.83	-6,392.46	6,737.22	6,656.79	80.43	83.762	
5,700.00	5,686.68	3,384.00	3,383.58	17.03	66.98	51.83	-1,737.83	-6,392.46	6,764.93	6,684.50	80.44	84.103	
5,800.00	5,786.41	3,384.00	3,383.58	17.33	66.98	51.83	-1,737.83	-6,392.46	6,794.01	6,713.58	80.43	84.470	
5,900.00	5,886.15	3,384.00	3,383.58	17.63	66.98	51.83	-1,737.83	-6,392.46	6,824.42	6,744.01	80.42	84.864	
6,000.00	5,985.89	3,384.00	3,383.58	17.93	66.98	51.83	-1,737.83	-6,392.46	6,856.16	6,775.77	80.39	85.284	
6,100.00	6,085.62	3,384.00	3,383.58	18.23	66.98	51.83	-1,737.83	-6,392.46	6,889.20	6,808.84	80.36	85.730	
6,200.00	6,185.36	3,384.00	3,383.58	18.53	66.98	51.83	-1,737.83	-6,392.46	6,923.53	6,843.21	80.32	86.200	
6,300.00	6,285.10	3,384.00	3,383.58	18.83	66.98	51.83	-1,737.83	-6,392.46	6,959.13	6,878.86	80.27	86.695	
6,400.00	6,384.83	3,384.00	3,383.58	19.13	66.98	51.83	-1,737.83	-6,392.46	6,995.98	6,915.76	80.22	87.213	
6,500.00	6,484.57	3,384.00	3,383.58	19.43	66.98	51.83	-1,737.83	-6,392.46	7,034.05	6,953.90	80.16	87.754	
6,559.90	6,544.31	3,384.00	3,383.58	19.61	66.98	51.83	-1,737.83	-6,392.46	7,057.44	6,977.32	80.12	88.089	
6,600.00	6,584.23	3,384.00	3,383.58	19.73	66.98	20.02	-1,737.83	-6,392.46	7,072.08	6,991.99	80.09	88.307	
6,650.00	6,633.60	3,384.00	3,383.58	19.88	66.98	6.36	-1,737.83	-6,392.46	7,087.00	7,006.96	80.04	88.544	
6,700.00	6,682.15	3,384.00	3,383.58	20.03	66.98	0.75	-1,737.83	-6,392.46	7,098.16	7,018.18	79.99	88.742	
6,750.00	6,729.52	3,384.00	3,383.58	20.18	66.98	-2.22	-1,737.83	-6,392.46	7,105.49	7,025.56	79.93	88.899	
6,800.00	6,775.36	3,384.00	3,383.58	20.33	66.98	-4.08	-1,737.83	-6,392.46	7,108.93	7,029.06	79.86	89.012	
6,850.00	6,819.31	3,384.00	3,383.58	20.48	66.98	-5.38	-1,737.83	-6,392.46	7,108.47	7,028.67	79.80	89.080	
6,900.00	6,861.04	3,384.00	3,383.58	20.63	66.98	-6.39	-1,737.83	-6,392.46	7,104.12	7,024.39	79.73	89.101	
6,950.00	6,900.22	3,384.00	3,383.58	20.78	66.98	-7.26	-1,737.83	-6,392.46	7,095.89	7,016.23	79.66	89.075	
7,000.00	6,936.57	3,384.00	3,383.58	20.93	66.98	-8.05	-1,737.83	-6,392.46	7,083.84	7,004.25	79.59	88.999	
7,050.00	6,969.80	3,384.00	3,383.58	21.08	66.98	-8.84	-1,737.83	-6,392.46	7,068.05	6,988.51	79.53	88.873	
7,100.00	6,999.67	3,384.00	3,383.58	21.23	66.98	-9.66	-1,737.83	-6,392.46	7,048.59	6,969.12	79.47	88.696	
7,150.00	7,025.94	3,384.00	3,383.58	21.38	66.98	-10.55	-1,737.83	-6,392.46	7,025.60	6,946.19	79.41	88.468	
7,200.00	7,048.41	3,384.00	3,383.58	21.53	66.98	-11.56	-1,737.83	-6,392.46	6,999.22	6,919.85	79.37	88.189	
7,250.00	7,066.92	3,384.00	3,383.58	21.68	66.98	-12.73	-1,737.83	-6,392.46	6,969.61	6,890.28	79.33	87.859	
7,300.00	7,081.33	3,384.00	3,383.58	21.83	66.98	-14.12	-1,737.83	-6,392.46	6,936.94	6,857.65	79.30	87.478	
7,350.00	7,091.51	3,384.00	3,383.58	21.98	66.98	-15.82	-1,737.83	-6,392.46	6,901.44	6,822.16	79.28	87.048	
7,400.00	7,097.41	3,384.00	3,383.58	22.13	66.98	-17.94	-1,737.83	-6,392.46	6,863.34	6,784.05	79.28	86.570	
7,444.73	7,099.00	3,384.00	3,383.58	22.27	66.98	-20.34	-1,737.83	-6,392.46	6,827.23	6,747.94	79.29	86.102	
7,500.00	7,098.82	3,384.00	3,383.58	22.44	66.98	-20.34	-1,737.83	-6,392.46	6,781.60	6,702.29	79.31	85.503	
7,600.00	7,098.49	3,384.00	3,383.58	22.74	66.98	-20.34	-1,737.83	-6,392.46	6,699.42	6,620.07	79.35	84.433	
7,700.00	7,098.16	3,384.00	3,383.58	23.04	66.98	-20.34	-1,737.83	-6,392.46	6,617.72	6,538.35	79.37	83.379	
7,800.00	7,097.83	3,384.00	3,383.58	23.34	66.98	-20.34	-1,737.83	-6,392.46	6,536.54	6,457.15	79.38	82.343	
7,900.00	7,097.51	3,384.00	3,383.58	23.64	66.98	-20.34	-1,737.83	-6,392.46	6,455.88	6,376.49	79.38	81.325	
8,000.00	7,097.18	3,384.00	3,383.58	23.94	66.98	-20.34	-1,737.83	-6,392.46	6,375.77	6,296.39	79.37	80.325	
8,100.00	7,096.85	3,384.00	3,383.58	24.24	66.98	-20.34	-1,737.83	-6,392.46	6,296.22	6,216.87	79.35	79.344	
8,200.00	7,096.52	3,384.00	3,383.58	24.54	66.98	-20.34	-1,737.83	-6,392.46	6,217.27	6,137.95	79.32	78.380	
8,300.00	7,096.19	3,384.00	3,383.58	24.84	66.98	-20.34	-1,737.83	-6,392.46	6,138.94	6,059.66	79.28	77.436	
8,400.00	7,095.87	3,384.00	3,383.58	25.14	66.98	-20.34	-1,737.83	-6,392.46	6,061.24	5,982.02	79.22	76.512	
8,500.00	7,095.54	3,384.00	3,383.58	25.44	66.98	-20.34	-1,737.83	-6,392.46	5,984.20	5,905.05	79.15	75.607	
8,600.00	7,095.21	3,384.00	3,383.58	25.74	66.98	-20.34	-1,737.83	-6,392.46	5,907.85	5,828.78	79.06	74.722	
8,700.00	7,094.88	3,384.00	3,383.58	26.04	66.98	-20.34	-1,737.83	-6,392.46	5,832.21	5,753.25	78.97	73.857	
8,800.00	7,094.55	3,384.00	3,383.58	26.35	66.98	-20.34	-1,737.83	-6,392.46	5,757.32	5,678.47	78.85	73.014	
8,900.00	7,094.23	3,384.00	3,383.58	26.65	66.98	-20.34	-1,737.83	-6,392.46	5,683.20	5,604.48	78.72	72.192	
9,000.00	7,093.90	3,384.00	3,383.58	26.95	66.98	-20.34	-1,737.83	-6,392.46	5,609.89	5,531.31	78.58	71.392	
9,100.00	7,093.57	3,384.00	3,383.58	27.25	66.98	-20.34	-1,737.83	-6,392.46	5,537.41	5,458.99	78.42	70.614	
9,200.00	7,093.24	3,384.00	3,383.58	27.55	66.98	-20.34	-1,737.83	-6,392.46	5,465.80	5,387.56	78.24	69.860	

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 750H - Slot B05
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 750H	**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	7,092.91	3,384.00	3,383.58	27.85	66.98	-20.34	-1,737.83	-6,392.46	5,395.09	5,317.05	78.04	69.129	
9,400.00	7,092.59	3,384.00	3,383.58	28.15	66.98	-20.34	-1,737.83	-6,392.46	5,325.32	5,247.49	77.83	68.422	
9,500.00	7,092.26	3,384.00	3,383.58	28.45	66.98	-20.34	-1,737.83	-6,392.46	5,256.53	5,178.93	77.60	67.740	
9,600.00	7,091.93	3,384.00	3,383.58	28.75	66.98	-20.34	-1,737.83	-6,392.46	5,188.75	5,111.40	77.35	67.083	
9,700.00	7,091.60	3,384.00	3,383.58	29.05	66.98	-20.34	-1,737.83	-6,392.46	5,122.03	5,044.95	77.08	66.453	
9,800.00	7,091.27	3,384.00	3,383.58	29.35	66.98	-20.34	-1,737.83	-6,392.46	5,056.40	4,979.62	76.79	65.850	
9,900.00	7,090.95	3,384.00	3,383.58	29.65	66.98	-20.34	-1,737.83	-6,392.46	4,991.92	4,915.44	76.48	65.274	
10,000.00	7,090.62	3,384.00	3,383.58	29.95	66.98	-20.34	-1,737.83	-6,392.46	4,928.62	4,852.48	76.15	64.726	
10,100.00	7,090.29	3,384.00	3,383.58	30.25	66.98	-20.34	-1,737.83	-6,392.46	4,866.55	4,790.76	75.79	64.207	
10,200.00	7,089.96	3,384.00	3,383.58	30.55	66.98	-20.34	-1,737.83	-6,392.46	4,805.77	4,730.34	75.42	63.718	
10,300.00	7,089.63	3,384.00	3,383.58	30.85	66.98	-20.34	-1,737.83	-6,392.46	4,746.31	4,671.28	75.03	63.259	
10,400.00	7,089.31	3,384.00	3,383.58	31.15	66.98	-20.34	-1,737.83	-6,392.46	4,688.23	4,613.61	74.62	62.831	
10,500.00	7,088.98	3,384.00	3,383.58	31.45	66.98	-20.34	-1,737.83	-6,392.46	4,631.58	4,557.40	74.18	62.435	
10,600.00	7,088.65	3,384.00	3,383.58	31.75	66.98	-20.34	-1,737.83	-6,392.46	4,576.42	4,502.69	73.73	62.071	
10,700.00	7,088.32	3,384.00	3,383.58	32.06	66.98	-20.34	-1,737.83	-6,392.46	4,522.79	4,449.53	73.26	61.739	
10,800.00	7,087.99	3,384.00	3,383.58	32.36	66.98	-20.34	-1,737.83	-6,392.46	4,470.76	4,397.99	72.77	61.441	
10,900.00	7,087.67	3,384.00	3,383.58	32.66	66.98	-20.34	-1,737.83	-6,392.46	4,420.38	4,348.12	72.26	61.176	
11,000.00	7,087.34	3,384.00	3,383.58	32.96	66.98	-20.34	-1,737.83	-6,392.46	4,371.70	4,299.97	71.73	60.945	
11,100.00	7,087.01	3,384.00	3,383.58	33.26	66.98	-20.34	-1,737.83	-6,392.46	4,324.79	4,253.60	71.19	60.747	
11,200.00	7,086.68	3,384.00	3,383.58	33.56	66.98	-20.34	-1,737.83	-6,392.46	4,279.70	4,209.06	70.64	60.582	
11,300.00	7,086.35	3,384.00	3,383.58	33.86	66.98	-20.34	-1,737.83	-6,392.46	4,236.50	4,166.41	70.08	60.449	
11,400.00	7,086.03	3,384.00	3,383.58	34.16	66.98	-20.34	-1,737.83	-6,392.46	4,195.23	4,125.71	69.52	60.347	
11,500.00	7,085.70	3,384.00	3,383.58	34.46	66.98	-20.34	-1,737.83	-6,392.46	4,155.96	4,087.01	68.95	60.275	
11,600.00	7,085.37	3,384.00	3,383.58	34.76	66.98	-20.34	-1,737.83	-6,392.46	4,118.74	4,050.36	68.38	60.231	
11,700.00	7,085.04	3,384.00	3,383.58	35.06	66.98	-20.34	-1,737.83	-6,392.46	4,083.64	4,015.82	67.82	60.211	
11,800.00	7,084.71	3,384.00	3,383.58	35.36	66.98	-20.34	-1,737.83	-6,392.46	4,050.70	3,983.42	67.27	60.213	
11,900.00	7,084.39	3,384.00	3,383.58	35.66	66.98	-20.34	-1,737.83	-6,392.46	4,019.97	3,953.23	66.74	60.233	
12,000.00	7,084.06	3,384.00	3,383.58	35.96	66.98	-20.34	-1,737.83	-6,392.46	3,991.52	3,925.29	66.23	60.265	
12,100.00	7,083.73	3,384.00	3,383.58	36.26	66.98	-20.34	-1,737.83	-6,392.46	3,965.38	3,899.63	65.76	60.304	
12,200.00	7,083.40	3,384.00	3,383.58	36.56	66.98	-20.34	-1,737.83	-6,392.46	3,941.61	3,876.29	65.32	60.344	
12,300.00	7,083.07	3,384.00	3,383.58	36.86	66.98	-20.34	-1,737.83	-6,392.46	3,920.25	3,855.32	64.93	60.377	
12,400.00	7,082.75	3,384.00	3,383.58	37.16	66.98	-20.34	-1,737.83	-6,392.46	3,901.33	3,836.74	64.60	60.395	
12,500.00	7,082.42	3,384.00	3,383.58	37.46	66.98	-20.34	-1,737.83	-6,392.46	3,884.90	3,820.57	64.33	60.392	
12,600.00	7,082.09	3,384.00	3,383.58	37.76	66.98	-20.34	-1,737.83	-6,392.46	3,870.98	3,806.85	64.13	60.358	
12,700.00	7,081.76	3,384.00	3,383.58	38.06	66.98	-20.34	-1,737.83	-6,392.46	3,859.61	3,795.58	64.02	60.287	
12,800.00	7,081.43	3,384.00	3,383.58	38.36	66.98	-20.34	-1,737.83	-6,392.46	3,850.79	3,786.79	64.00	60.171	
12,900.00	7,081.11	3,384.00	3,383.58	38.66	66.98	-20.34	-1,737.83	-6,392.46	3,844.56	3,780.49	64.07	60.007	
13,000.00	7,080.78	3,384.00	3,383.58	38.96	66.98	-20.34	-1,737.83	-6,392.46	3,840.92	3,776.68	64.24	59.791	
13,089.77	7,080.48	3,384.00	3,383.58	39.23	66.98	-20.34	-1,737.83	-6,392.46	3,839.87	3,775.39	64.48	59.551	CC
13,100.00	7,080.45	3,384.00	3,383.58	39.26	66.98	-20.34	-1,737.83	-6,392.46	3,839.89	3,775.37	64.51	59.522	ES
13,200.00	7,080.12	3,384.00	3,383.58	39.56	66.98	-20.34	-1,737.83	-6,392.46	3,841.46	3,776.57	64.89	59.201	
13,300.00	7,079.79	3,384.00	3,383.58	39.86	66.98	-20.34	-1,737.83	-6,392.46	3,845.62	3,780.26	65.37	58.832	
13,400.00	7,079.47	3,384.00	3,383.58	40.16	66.98	-20.34	-1,737.83	-6,392.46	3,852.39	3,786.44	65.94	58.421	
13,500.00	7,079.14	3,384.00	3,383.58	40.46	66.98	-20.34	-1,737.83	-6,392.46	3,861.73	3,795.12	66.61	57.975	
13,600.00	7,078.81	3,384.00	3,383.58	40.77	66.98	-20.34	-1,737.83	-6,392.46	3,873.62	3,806.26	67.36	57.503	
13,700.00	7,078.48	3,384.00	3,383.58	41.07	66.98	-20.34	-1,737.83	-6,392.46	3,888.06	3,819.86	68.20	57.013	
13,800.00	7,078.15	3,384.00	3,383.58	41.37	66.98	-20.34	-1,737.83	-6,392.46	3,905.00	3,835.90	69.10	56.513	
13,900.00	7,077.83	3,384.00	3,383.58	41.67	66.98	-20.34	-1,737.83	-6,392.46	3,924.42	3,854.36	70.06	56.012	
14,000.00	7,077.50	3,384.00	3,383.58	41.97	66.98	-20.34	-1,737.83	-6,392.46	3,946.28	3,875.20	71.08	55.519	
14,100.00	7,077.17	3,384.00	3,383.58	42.27	66.98	-20.34	-1,737.83	-6,392.46	3,970.54	3,898.40	72.14	55.039	
14,200.00	7,076.84	3,384.00	3,383.58	42.57	66.98	-20.34	-1,737.83	-6,392.46	3,997.15	3,923.92	73.24	54.578	
14,300.00	7,076.51	3,384.00	3,383.58	42.87	66.98	-20.34	-1,737.83	-6,392.46	4,026.08	3,951.71	74.36	54.141	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	3,384.00	3,383.58	43.17	66.98	-20.34	-1,737.83	-6,392.46	4,057.26	3,981.75	75.51	53.732	
14,500.00	7,075.86	3,384.00	3,383.58	43.47	66.98	-20.34	-1,737.83	-6,392.46	4,090.65	4,013.98	76.67	53.354	
14,600.00	7,075.53	3,384.00	3,383.58	43.77	66.98	-20.34	-1,737.83	-6,392.46	4,126.19	4,048.35	77.84	53.009	
14,700.00	7,075.20	3,384.00	3,383.58	44.07	66.98	-20.34	-1,737.83	-6,392.46	4,163.83	4,084.82	79.01	52.697	
14,800.00	7,074.87	3,384.00	3,383.58	44.37	66.98	-20.34	-1,737.83	-6,392.46	4,203.51	4,123.33	80.19	52.421	
14,900.00	7,074.55	3,384.00	3,383.58	44.67	66.98	-20.34	-1,737.83	-6,392.46	4,245.18	4,163.82	81.36	52.180	
15,000.00	7,074.22	3,384.00	3,383.58	44.97	66.98	-20.34	-1,737.83	-6,392.46	4,288.78	4,206.26	82.52	51.974	
15,100.00	7,073.89	3,384.00	3,383.58	45.27	66.98	-20.34	-1,737.83	-6,392.46	4,334.24	4,250.57	83.67	51.802	
15,200.00	7,073.56	3,384.00	3,383.58	45.57	66.98	-20.34	-1,737.83	-6,392.46	4,381.52	4,296.71	84.81	51.664	
15,300.00	7,073.23	3,384.00	3,383.58	45.87	66.98	-20.34	-1,737.83	-6,392.46	4,430.55	4,344.62	85.93	51.560	
15,400.00	7,072.91	3,384.00	3,383.58	46.17	66.98	-20.34	-1,737.83	-6,392.46	4,481.27	4,394.23	87.04	51.487	
15,500.00	7,072.58	3,384.00	3,383.58	46.47	66.98	-20.34	-1,737.83	-6,392.46	4,533.63	4,445.51	88.13	51.445	
15,600.00	7,072.25	3,384.00	3,383.58	46.77	66.98	-20.34	-1,737.83	-6,392.46	4,587.58	4,498.38	89.20	51.433	SF
15,700.00	7,071.92	3,384.00	3,383.58	47.07	66.98	-20.34	-1,737.83	-6,392.46	4,643.05	4,552.81	90.25	51.449	
15,800.00	7,071.59	3,384.00	3,383.58	47.37	66.98	-20.34	-1,737.83	-6,392.46	4,700.00	4,608.72	91.27	51.493	
15,900.00	7,071.27	3,384.00	3,383.58	47.67	66.98	-20.34	-1,737.83	-6,392.46	4,758.36	4,666.08	92.28	51.562	
16,000.00	7,070.94	3,384.00	3,383.58	47.97	66.98	-20.34	-1,737.83	-6,392.46	4,818.10	4,724.83	93.27	51.657	
16,100.00	7,070.61	3,384.00	3,383.58	48.27	66.98	-20.34	-1,737.83	-6,392.46	4,879.15	4,784.91	94.24	51.774	
16,200.00	7,070.28	3,384.00	3,383.58	48.57	66.98	-20.34	-1,737.83	-6,392.46	4,941.47	4,846.29	95.18	51.914	
16,300.00	7,069.95	3,384.00	3,383.58	48.87	66.98	-20.34	-1,737.83	-6,392.46	5,005.02	4,908.91	96.11	52.076	
16,400.00	7,069.63	3,384.00	3,383.58	49.17	66.98	-20.34	-1,737.83	-6,392.46	5,069.74	4,972.72	97.02	52.257	
16,419.92	7,069.56	3,384.00	3,383.58	49.23	66.98	-20.34	-1,737.83	-6,392.46	5,082.77	4,985.58	97.19	52.295	
16,500.00	7,069.30	3,384.00	3,383.58	49.47	66.98	-20.34	-1,737.83	-6,392.46	5,135.59	5,037.69	97.90	52.457	
16,591.83	7,069.00	3,384.00	3,383.58	49.75	66.98	-20.34	-1,737.83	-6,392.46	5,197.02	5,098.33	98.70	52.657	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-178.30	-1,335.80	-39.58	1,336.94				
100.00	100.00	61.51	61.51	0.23	0.57	-178.30	-1,335.80	-39.58	1,336.39	1,335.59	0.80	1,680.566	
200.00	200.00	161.51	161.51	0.53	1.49	-178.30	-1,335.80	-39.58	1,336.39	1,334.37	2.02	661.776	
300.00	300.00	261.52	261.51	0.83	2.66	-178.30	-1,335.80	-39.58	1,336.39	1,332.90	3.49	383.060	
400.00	400.00	361.52	361.51	1.13	4.51	-178.30	-1,335.80	-39.58	1,336.39	1,330.75	5.64	237.064	
500.00	500.00	461.52	461.51	1.43	6.36	-178.30	-1,335.80	-39.58	1,336.39	1,328.60	7.79	171.644	
600.00	599.98	560.25	560.25	1.73	8.18	-22.80	-1,335.25	-39.58	1,334.22	1,324.31	9.91	134.620	
707.91	707.73	665.73	665.73	2.05	10.13	-22.93	-1,335.43	-39.58	1,329.07	1,316.89	12.18	109.077	
800.00	799.58	755.67	755.66	2.33	11.80	-23.04	-1,335.74	-39.58	1,323.24	1,309.11	14.12	93.691	
900.00	899.31	860.85	860.83	2.63	13.79	-23.18	-1,335.80	-39.58	1,316.62	1,300.20	16.42	80.207	
1,000.00	999.05	960.59	960.56	2.93	15.68	-23.30	-1,335.80	-39.58	1,309.95	1,291.34	18.61	70.384	
1,100.00	1,098.79	1,060.10	1,060.07	3.23	17.58	-23.43	-1,335.20	-39.58	1,302.69	1,281.88	20.80	62.619	
1,200.00	1,198.52	1,157.85	1,157.82	3.53	19.44	-23.55	-1,335.29	-39.58	1,296.13	1,273.17	22.96	56.447	
1,300.00	1,298.26	1,255.62	1,255.60	3.83	21.29	-23.68	-1,335.53	-39.58	1,289.73	1,264.61	25.12	51.341	
1,400.00	1,398.00	1,359.57	1,359.51	4.13	23.31	-23.81	-1,335.80	-39.58	1,283.35	1,255.92	27.44	46.775	
1,500.00	1,497.73	1,459.30	1,459.25	4.43	25.33	-23.94	-1,335.80	-39.58	1,276.72	1,246.97	29.75	42.909	
1,600.00	1,597.47	1,559.04	1,558.98	4.73	27.34	-24.08	-1,335.80	-39.58	1,270.09	1,238.02	32.07	39.602	
1,700.00	1,697.21	1,655.97	1,655.91	5.03	29.31	-24.21	-1,335.09	-39.58	1,262.77	1,228.43	34.33	36.781	
1,800.00	1,796.94	1,752.50	1,752.44	5.33	31.26	-24.34	-1,335.43	-39.58	1,256.50	1,219.92	36.58	34.345	
1,900.00	1,896.68	1,858.31	1,858.19	5.63	33.43	-24.48	-1,335.80	-39.58	1,250.25	1,211.20	39.06	32.011	
2,000.00	1,996.42	1,958.04	1,957.93	5.93	35.53	-24.62	-1,335.80	-39.58	1,243.66	1,202.20	41.45	30.002	
2,100.00	2,096.15	2,057.78	2,057.67	6.23	37.62	-24.76	-1,335.80	-39.58	1,237.06	1,193.22	43.85	28.213	
2,200.00	2,195.89	2,153.68	2,153.55	6.53	39.64	-24.90	-1,334.86	-39.58	1,229.55	1,183.39	46.16	26.635	
2,300.00	2,295.63	2,249.33	2,249.19	6.83	41.65	-25.03	-1,335.33	-39.58	1,223.45	1,174.98	48.47	25.240	
2,400.00	2,395.36	2,357.07	2,356.88	7.13	43.91	-25.19	-1,335.80	-39.58	1,217.34	1,166.29	51.04	23.850	
2,500.00	2,495.10	2,456.80	2,456.61	7.43	46.02	-25.34	-1,335.80	-39.58	1,210.77	1,157.33	53.45	22.653	
2,600.00	2,594.84	2,556.54	2,556.35	7.73	48.13	-25.48	-1,335.80	-39.58	1,204.22	1,148.37	55.85	21.560	
2,700.00	2,694.57	2,652.88	2,652.68	8.03	50.16	-25.63	-1,334.80	-39.58	1,196.68	1,138.49	58.19	20.566	
2,800.00	2,794.31	2,748.78	2,748.57	8.33	52.19	-25.77	-1,335.23	-39.58	1,190.59	1,130.08	60.51	19.675	
2,900.00	2,894.05	2,855.83	2,855.56	8.63	54.45	-25.94	-1,335.80	-39.58	1,184.61	1,121.54	63.08	18.781	
3,000.00	2,993.78	2,955.57	2,955.30	8.93	56.56	-26.09	-1,335.80	-39.58	1,178.09	1,112.60	65.49	17.990	
3,100.00	3,093.52	3,053.66	3,053.38	9.23	58.64	-26.24	-1,334.97	-39.58	1,170.75	1,102.89	67.86	17.251	
3,200.00	3,193.26	3,148.51	3,148.22	9.53	60.65	-26.39	-1,335.30	-39.58	1,164.60	1,094.43	70.17	16.596	
3,300.00	3,292.99	3,254.83	3,254.51	9.83	62.90	-26.56	-1,335.80	-39.58	1,158.58	1,085.86	72.72	15.931	
3,400.00	3,392.73	3,354.57	3,354.24	10.13	65.01	-26.72	-1,335.80	-39.58	1,152.10	1,076.96	75.14	15.333	
3,500.00	3,492.47	3,402.00	3,401.64	10.43	66.02	-26.80	-1,335.80	-39.58	1,146.82	1,070.44	76.38	15.015	
3,521.93	3,514.34	3,402.00	3,401.64	10.49	66.02	-26.80	-1,335.80	-39.58	1,146.61	1,070.23	76.37	15.013	CC, ES, SF
3,600.00	3,592.20	3,402.00	3,401.64	10.73	66.02	-26.80	-1,335.80	-39.58	1,149.26	1,073.08	76.18	15.086	
3,700.00	3,691.94	3,402.00	3,401.64	11.03	66.02	-26.80	-1,335.80	-39.58	1,160.35	1,084.84	75.51	15.366	
3,800.00	3,791.68	3,402.00	3,401.64	11.33	66.02	-26.80	-1,335.80	-39.58	1,179.84	1,105.42	74.43	15.852	
3,900.00	3,891.41	3,402.00	3,401.64	11.63	66.02	-26.80	-1,335.80	-39.58	1,207.33	1,134.34	72.99	16.541	
4,000.00	3,991.15	3,402.00	3,401.64	11.93	66.02	-26.80	-1,335.80	-39.58	1,242.28	1,170.99	71.29	17.427	
4,100.00	4,090.89	3,402.00	3,401.64	12.23	66.02	-26.80	-1,335.80	-39.58	1,284.09	1,214.69	69.40	18.503	
4,200.00	4,190.62	3,402.00	3,401.64	12.53	66.02	-26.80	-1,335.80	-39.58	1,332.10	1,264.70	67.40	19.763	
4,300.00	4,290.36	3,402.00	3,401.64	12.83	66.02	-26.80	-1,335.80	-39.58	1,385.68	1,320.31	65.37	21.198	
4,400.00	4,390.10	3,402.00	3,401.64	13.13	66.02	-26.80	-1,335.80	-39.58	1,444.20	1,380.85	63.35	22.798	
4,500.00	4,489.84	3,402.00	3,401.64	13.43	66.02	-26.80	-1,335.80	-39.58	1,507.09	1,445.71	61.38	24.553	
4,600.00	4,589.57	3,402.00	3,401.64	13.73	66.02	-26.80	-1,335.80	-39.58	1,573.83	1,514.34	59.49	26.454	
4,700.00	4,689.31	3,402.00	3,401.64	14.03	66.02	-26.80	-1,335.80	-39.58	1,643.95	1,586.24	57.71	28.489	
4,800.00	4,789.05	3,402.00	3,401.64	14.33	66.02	-26.80	-1,335.80	-39.58	1,717.02	1,661.00	56.03	30.647	
4,900.00	4,888.78	3,402.00	3,401.64	14.63	66.02	-26.80	-1,335.80	-39.58	1,792.70	1,738.24	54.46	32.917	
5,000.00	4,988.52	3,402.00	3,401.64	14.93	66.02	-26.80	-1,335.80	-39.58	1,870.67	1,817.66	53.01	35.288	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	3,402.00	3,401.64	15.23	66.02	-26.80	-1,335.80	-39.58	1,950.64	1,898.97	51.67	37.750	
5,200.00	5,187.99	3,402.00	3,401.64	15.53	66.02	-26.80	-1,335.80	-39.58	2,032.39	1,981.95	50.44	40.292	
5,300.00	5,287.73	3,402.00	3,401.64	15.83	66.02	-26.80	-1,335.80	-39.58	2,115.71	2,066.40	49.31	42.903	
5,400.00	5,387.47	3,402.00	3,401.64	16.13	66.02	-26.80	-1,335.80	-39.58	2,200.42	2,152.14	48.28	45.574	
5,500.00	5,487.20	3,402.00	3,401.64	16.43	66.02	-26.80	-1,335.80	-39.58	2,286.36	2,239.02	47.34	48.296	
5,600.00	5,586.94	3,402.00	3,401.64	16.73	66.02	-26.80	-1,335.80	-39.58	2,373.41	2,326.93	46.48	51.059	
5,700.00	5,686.68	3,402.00	3,401.64	17.03	66.02	-26.80	-1,335.80	-39.58	2,461.44	2,415.74	45.70	53.856	
5,800.00	5,786.41	3,402.00	3,401.64	17.33	66.02	-26.80	-1,335.80	-39.58	2,550.35	2,505.36	45.00	56.678	
5,900.00	5,886.15	3,402.00	3,401.64	17.63	66.02	-26.80	-1,335.80	-39.58	2,640.06	2,595.70	44.36	59.517	
6,000.00	5,985.89	3,402.00	3,401.64	17.93	66.02	-26.80	-1,335.80	-39.58	2,730.48	2,686.70	43.78	62.368	
6,100.00	6,085.62	3,402.00	3,401.64	18.23	66.02	-26.80	-1,335.80	-39.58	2,821.55	2,778.29	43.26	65.224	
6,200.00	6,185.36	3,402.00	3,401.64	18.53	66.02	-26.80	-1,335.80	-39.58	2,913.20	2,870.41	42.79	68.078	
6,300.00	6,285.10	3,402.00	3,401.64	18.83	66.02	-26.80	-1,335.80	-39.58	3,005.39	2,963.02	42.37	70.926	
6,400.00	6,384.83	3,402.00	3,401.64	19.13	66.02	-26.80	-1,335.80	-39.58	3,098.06	3,056.06	42.00	73.763	
6,500.00	6,484.57	3,402.00	3,401.64	19.43	66.02	-26.80	-1,335.80	-39.58	3,191.17	3,149.51	41.67	76.584	
6,559.90	6,544.31	3,402.00	3,401.64	19.61	66.02	-26.80	-1,335.80	-39.58	3,247.14	3,205.65	41.49	78.264	
6,600.00	6,584.23	3,402.00	3,401.64	19.73	66.02	-48.33	-1,335.80	-39.58	3,284.69	3,243.31	41.38	79.378	
6,650.00	6,633.60	3,402.00	3,401.64	19.88	66.02	-49.76	-1,335.80	-39.58	3,331.37	3,290.10	41.26	80.733	
6,700.00	6,682.15	3,402.00	3,401.64	20.03	66.02	-44.76	-1,335.80	-39.58	3,377.58	3,336.41	41.17	82.036	
6,750.00	6,729.52	3,402.00	3,401.64	20.18	66.02	-39.09	-1,335.80	-39.58	3,423.01	3,381.91	41.11	83.272	
6,800.00	6,775.36	3,402.00	3,401.64	20.33	66.02	-34.10	-1,335.80	-39.58	3,467.35	3,426.28	41.07	84.421	
6,850.00	6,819.31	3,402.00	3,401.64	20.48	66.02	-29.99	-1,335.80	-39.58	3,510.30	3,469.23	41.07	85.469	
6,900.00	6,861.04	3,402.00	3,401.64	20.63	66.02	-26.67	-1,335.80	-39.58	3,551.59	3,510.48	41.11	86.398	
6,950.00	6,900.22	3,402.00	3,401.64	20.78	66.02	-24.01	-1,335.80	-39.58	3,590.98	3,549.79	41.18	87.192	
7,000.00	6,936.57	3,402.00	3,401.64	20.93	66.02	-21.86	-1,335.80	-39.58	3,628.22	3,586.92	41.31	87.838	
7,050.00	6,969.80	3,402.00	3,401.64	21.08	66.02	-20.11	-1,335.80	-39.58	3,663.11	3,621.64	41.47	88.324	
7,100.00	6,999.67	3,402.00	3,401.64	21.23	66.02	-18.68	-1,335.80	-39.58	3,695.45	3,653.76	41.69	88.642	
7,150.00	7,025.94	3,402.00	3,401.64	21.38	66.02	-17.51	-1,335.80	-39.58	3,725.06	3,683.11	41.96	88.785	
7,200.00	7,048.41	3,402.00	3,401.64	21.53	66.02	-16.55	-1,335.80	-39.58	3,751.79	3,709.52	42.27	88.752	
7,250.00	7,066.92	3,402.00	3,401.64	21.68	66.02	-15.76	-1,335.80	-39.58	3,775.49	3,732.85	42.64	88.543	
7,300.00	7,081.33	3,402.00	3,401.64	21.83	66.02	-15.11	-1,335.80	-39.58	3,796.05	3,752.99	43.06	88.163	
7,350.00	7,091.51	3,402.00	3,401.64	21.98	66.02	-14.59	-1,335.80	-39.58	3,813.35	3,769.83	43.52	87.619	
7,400.00	7,097.41	3,402.00	3,401.64	22.13	66.02	-14.18	-1,335.80	-39.58	3,827.32	3,783.29	44.03	86.921	
7,444.73	7,099.00	3,402.00	3,401.64	22.27	66.02	-13.89	-1,335.80	-39.58	3,836.92	3,792.40	44.52	86.175	
7,500.00	7,098.82	3,402.00	3,401.64	22.44	66.02	-13.89	-1,335.80	-39.58	3,847.48	3,802.31	45.17	85.179	
7,600.00	7,098.49	3,402.00	3,401.64	22.74	66.02	-13.89	-1,335.80	-39.58	3,868.50	3,822.12	46.38	83.406	
7,700.00	7,098.16	3,402.00	3,401.64	23.04	66.02	-13.89	-1,335.80	-39.58	3,891.98	3,844.34	47.64	81.692	
7,800.00	7,097.83	3,402.00	3,401.64	23.34	66.02	-13.89	-1,335.80	-39.58	3,917.88	3,868.94	48.94	80.055	
7,900.00	7,097.51	3,402.00	3,401.64	23.64	66.02	-13.89	-1,335.80	-39.58	3,946.14	3,895.87	50.26	78.509	
8,000.00	7,097.18	3,402.00	3,401.64	23.94	66.02	-13.89	-1,335.80	-39.58	3,976.71	3,925.10	51.60	77.061	
8,100.00	7,096.85	3,402.00	3,401.64	24.24	66.02	-13.89	-1,335.80	-39.58	4,009.54	3,956.59	52.95	75.717	
8,200.00	7,096.52	3,402.00	3,401.64	24.54	66.02	-13.89	-1,335.80	-39.58	4,044.59	3,990.28	54.31	74.476	
8,300.00	7,096.19	3,402.00	3,401.64	24.84	66.02	-13.89	-1,335.80	-39.58	4,081.78	4,026.12	55.66	73.339	
8,400.00	7,095.87	3,402.00	3,401.64	25.14	66.02	-13.89	-1,335.80	-39.58	4,121.06	4,064.06	57.00	72.302	
8,500.00	7,095.54	3,402.00	3,401.64	25.44	66.02	-13.89	-1,335.80	-39.58	4,162.37	4,104.05	58.33	71.363	
8,600.00	7,095.21	3,402.00	3,401.64	25.74	66.02	-13.89	-1,335.80	-39.58	4,205.66	4,146.02	59.64	70.518	
8,700.00	7,094.88	3,402.00	3,401.64	26.04	66.02	-13.89	-1,335.80	-39.58	4,250.86	4,189.93	60.93	69.761	
8,800.00	7,094.55	3,402.00	3,401.64	26.35	66.02	-13.89	-1,335.80	-39.58	4,297.91	4,235.70	62.21	69.088	
8,900.00	7,094.23	3,402.00	3,401.64	26.65	66.02	-13.89	-1,335.80	-39.58	4,346.75	4,283.29	63.46	68.495	
9,000.00	7,093.90	3,402.00	3,401.64	26.95	66.02	-13.89	-1,335.80	-39.58	4,397.33	4,332.64	64.69	67.977	
9,100.00	7,093.57	3,402.00	3,401.64	27.25	66.02	-13.89	-1,335.80	-39.58	4,449.58	4,383.68	65.89	67.529	
9,200.00	7,093.24	3,402.00	3,401.64	27.55	66.02	-13.89	-1,335.80	-39.58	4,503.44	4,436.37	67.07	67.146	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	3,402.00	3,401.64	27.85	66.02	-13.89	-1,335.80	-39.58	4,558.86	4,490.64	68.22	66.825	
9,400.00	7,092.59	3,402.00	3,401.64	28.15	66.02	-13.89	-1,335.80	-39.58	4,615.78	4,546.43	69.35	66.561	
9,500.00	7,092.26	3,402.00	3,401.64	28.45	66.02	-13.89	-1,335.80	-39.58	4,674.15	4,603.70	70.45	66.351	
9,600.00	7,091.93	3,402.00	3,401.64	28.75	66.02	-13.89	-1,335.80	-39.58	4,733.91	4,662.39	71.52	66.191	
9,700.00	7,091.60	3,402.00	3,401.64	29.05	66.02	-13.89	-1,335.80	-39.58	4,795.01	4,722.44	72.57	66.078	
9,800.00	7,091.27	3,402.00	3,401.64	29.35	66.02	-13.89	-1,335.80	-39.58	4,857.40	4,783.81	73.59	66.008	
9,900.00	7,090.95	3,402.00	3,401.64	29.65	66.02	-13.89	-1,335.80	-39.58	4,921.03	4,846.45	74.58	65.979	
10,000.00	7,090.62	3,402.00	3,401.64	29.95	66.02	-13.89	-1,335.80	-39.58	4,985.86	4,910.30	75.56	65.989	
10,100.00	7,090.29	3,402.00	3,401.64	30.25	66.02	-13.89	-1,335.80	-39.58	5,051.83	4,975.33	76.50	66.033	
10,200.00	7,089.96	3,402.00	3,401.64	30.55	66.02	-13.89	-1,335.80	-39.58	5,118.91	5,041.48	77.43	66.111	
10,300.00	7,089.63	3,402.00	3,401.64	30.85	66.02	-13.89	-1,335.80	-39.58	5,187.05	5,108.72	78.33	66.220	
10,400.00	7,089.31	3,402.00	3,401.64	31.15	66.02	-13.89	-1,335.80	-39.58	5,256.21	5,177.00	79.21	66.358	
10,500.00	7,088.98	3,402.00	3,401.64	31.45	66.02	-13.89	-1,335.80	-39.58	5,326.34	5,246.28	80.07	66.523	
10,600.00	7,088.65	3,402.00	3,401.64	31.75	66.02	-13.89	-1,335.80	-39.58	5,397.42	5,316.52	80.91	66.713	
10,700.00	7,088.32	3,402.00	3,401.64	32.06	66.02	-13.89	-1,335.80	-39.58	5,469.40	5,387.68	81.72	66.926	
10,800.00	7,087.99	3,402.00	3,401.64	32.36	66.02	-13.89	-1,335.80	-39.58	5,542.26	5,459.74	82.52	67.162	
10,900.00	7,087.67	3,402.00	3,401.64	32.66	66.02	-13.89	-1,335.80	-39.58	5,615.95	5,532.65	83.30	67.418	
11,000.00	7,087.34	3,402.00	3,401.64	32.96	66.02	-13.89	-1,335.80	-39.58	5,690.44	5,606.38	84.06	67.694	
11,100.00	7,087.01	3,402.00	3,401.64	33.26	66.02	-13.89	-1,335.80	-39.58	5,765.70	5,680.89	84.81	67.987	
11,200.00	7,086.68	3,402.00	3,401.64	33.56	66.02	-13.89	-1,335.80	-39.58	5,841.71	5,756.17	85.53	68.297	
11,300.00	7,086.35	3,402.00	3,401.64	33.86	66.02	-13.89	-1,335.80	-39.58	5,918.43	5,832.18	86.24	68.623	
11,400.00	7,086.03	3,402.00	3,401.64	34.16	66.02	-13.89	-1,335.80	-39.58	5,995.83	5,908.89	86.94	68.964	
11,500.00	7,085.70	3,402.00	3,401.64	34.46	66.02	-13.89	-1,335.80	-39.58	6,073.90	5,986.27	87.62	69.319	
11,600.00	7,085.37	3,402.00	3,401.64	34.76	66.02	-13.89	-1,335.80	-39.58	6,152.60	6,064.31	88.29	69.686	
11,700.00	7,085.04	3,402.00	3,401.64	35.06	66.02	-13.89	-1,335.80	-39.58	6,231.91	6,142.96	88.94	70.066	
11,800.00	7,084.71	3,402.00	3,401.64	35.36	66.02	-13.89	-1,335.80	-39.58	6,311.81	6,222.22	89.58	70.456	
11,900.00	7,084.39	3,402.00	3,401.64	35.66	66.02	-13.89	-1,335.80	-39.58	6,392.27	6,302.06	90.21	70.858	
12,000.00	7,084.06	3,402.00	3,401.64	35.96	66.02	-13.89	-1,335.80	-39.58	6,473.28	6,382.45	90.83	71.269	
12,100.00	7,083.73	3,402.00	3,401.64	36.26	66.02	-13.89	-1,335.80	-39.58	6,554.81	6,463.38	91.43	71.689	
12,200.00	7,083.40	3,402.00	3,401.64	36.56	66.02	-13.89	-1,335.80	-39.58	6,636.85	6,544.83	92.03	72.118	
12,300.00	7,083.07	3,402.00	3,401.64	36.86	66.02	-13.89	-1,335.80	-39.58	6,719.38	6,626.77	92.61	72.555	
12,400.00	7,082.75	3,402.00	3,401.64	37.16	66.02	-13.89	-1,335.80	-39.58	6,802.37	6,709.19	93.18	72.999	
12,500.00	7,082.42	3,402.00	3,401.64	37.46	66.02	-13.89	-1,335.80	-39.58	6,885.82	6,792.07	93.75	73.450	
12,600.00	7,082.09	3,402.00	3,401.64	37.76	66.02	-13.89	-1,335.80	-39.58	6,969.70	6,875.40	94.30	73.908	
12,700.00	7,081.76	3,402.00	3,401.64	38.06	66.02	-13.89	-1,335.80	-39.58	7,054.00	6,959.16	94.85	74.372	
12,800.00	7,081.43	3,402.00	3,401.64	38.36	66.02	-13.89	-1,335.80	-39.58	7,138.71	7,043.33	95.38	74.842	
12,900.00	7,081.11	3,402.00	3,401.64	38.66	66.02	-13.89	-1,335.80	-39.58	7,223.81	7,127.90	95.91	75.317	
13,000.00	7,080.78	3,402.00	3,401.64	38.96	66.02	-13.89	-1,335.80	-39.58	7,309.29	7,212.85	96.43	75.796	
13,100.00	7,080.45	3,402.00	3,401.64	39.26	66.02	-13.89	-1,335.80	-39.58	7,395.13	7,298.18	96.95	76.281	
13,200.00	7,080.12	3,402.00	3,401.64	39.56	66.02	-13.89	-1,335.80	-39.58	7,481.32	7,383.87	97.45	76.769	
13,300.00	7,079.79	3,402.00	3,401.64	39.86	66.02	-13.89	-1,335.80	-39.58	7,567.85	7,469.90	97.95	77.262	
13,400.00	7,079.47	3,402.00	3,401.64	40.16	66.02	-13.89	-1,335.80	-39.58	7,654.71	7,556.27	98.44	77.758	
13,500.00	7,079.14	3,402.00	3,401.64	40.46	66.02	-13.89	-1,335.80	-39.58	7,741.89	7,642.96	98.93	78.257	
13,600.00	7,078.81	3,402.00	3,401.64	40.77	66.02	-13.89	-1,335.80	-39.58	7,829.37	7,729.96	99.41	78.759	
13,700.00	7,078.48	3,402.00	3,401.64	41.07	66.02	-13.89	-1,335.80	-39.58	7,917.15	7,817.27	99.88	79.264	
13,800.00	7,078.15	3,402.00	3,401.64	41.37	66.02	-13.89	-1,335.80	-39.58	8,005.22	7,904.86	100.35	79.772	
13,900.00	7,077.83	3,402.00	3,401.64	41.67	66.02	-13.89	-1,335.80	-39.58	8,093.56	7,992.75	100.81	80.282	
14,000.00	7,077.50	3,402.00	3,401.64	41.97	66.02	-13.89	-1,335.80	-39.58	8,182.17	8,080.90	101.27	80.794	
14,100.00	7,077.17	3,402.00	3,401.64	42.27	66.02	-13.89	-1,335.80	-39.58	8,271.04	8,169.32	101.72	81.309	
14,200.00	7,076.84	3,402.00	3,401.64	42.57	66.02	-13.89	-1,335.80	-39.58	8,360.17	8,258.00	102.17	81.825	
14,300.00	7,076.51	3,402.00	3,401.64	42.87	66.02	-13.89	-1,335.80	-39.58	8,449.53	8,346.92	102.61	82.342	
14,400.00	7,076.19	3,402.00	3,401.64	43.17	66.02	-13.89	-1,335.80	-39.58	8,539.14	8,436.08	103.05	82.861	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	3,402.00	3,401.64	43.47	66.02	-13.89	-1,335.80	-39.58	8,628.97	8,525.48	103.49	83.381	
14,600.00	7,075.53	3,402.00	3,401.64	43.77	66.02	-13.89	-1,335.80	-39.58	8,719.02	8,615.10	103.92	83.903	
14,700.00	7,075.20	3,402.00	3,401.64	44.07	66.02	-13.89	-1,335.80	-39.58	8,809.29	8,704.94	104.34	84.425	
14,800.00	7,074.87	3,402.00	3,401.64	44.37	66.02	-13.89	-1,335.80	-39.58	8,899.76	8,795.00	104.77	84.948	
14,900.00	7,074.55	3,402.00	3,401.64	44.67	66.02	-13.89	-1,335.80	-39.58	8,990.44	8,885.25	105.19	85.472	
15,000.00	7,074.22	3,402.00	3,401.64	44.97	66.02	-13.89	-1,335.80	-39.58	9,081.31	8,975.71	105.60	85.996	
15,100.00	7,073.89	3,402.00	3,401.64	45.27	66.02	-13.89	-1,335.80	-39.58	9,172.37	9,066.36	106.01	86.521	
15,200.00	7,073.56	3,402.00	3,401.64	45.57	66.02	-13.89	-1,335.80	-39.58	9,263.62	9,157.20	106.42	87.046	
15,300.00	7,073.23	3,402.00	3,401.64	45.87	66.02	-13.89	-1,335.80	-39.58	9,355.05	9,248.22	106.83	87.572	
15,400.00	7,072.91	3,402.00	3,401.64	46.17	66.02	-13.89	-1,335.80	-39.58	9,446.65	9,339.42	107.23	88.097	
15,500.00	7,072.58	3,402.00	3,401.64	46.47	66.02	-13.89	-1,335.80	-39.58	9,538.42	9,430.79	107.63	88.623	
15,600.00	7,072.25	3,402.00	3,401.64	46.77	66.02	-13.89	-1,335.80	-39.58	9,630.35	9,522.32	108.03	89.148	
15,700.00	7,071.92	3,402.00	3,401.64	47.07	66.02	-13.89	-1,335.80	-39.58	9,722.44	9,614.02	108.42	89.674	
15,800.00	7,071.59	3,402.00	3,401.64	47.37	66.02	-13.89	-1,335.80	-39.58	9,814.69	9,705.87	108.81	90.199	
15,900.00	7,071.27	3,402.00	3,401.64	47.67	66.02	-13.89	-1,335.80	-39.58	9,907.08	9,797.88	109.20	90.724	
16,000.00	7,070.94	3,402.00	3,401.64	47.97	66.02	-13.89	-1,335.80	-39.58	9,999.63	9,890.04	109.59	91.248	
16,100.00	7,070.61	3,402.00	3,401.64	48.27	66.02	-13.89	-1,335.80	-39.58	10,092.31	9,982.34	109.97	91.773	
16,200.00	7,070.28	3,402.00	3,401.64	48.57	66.02	-13.89	-1,335.80	-39.58	10,185.13	10,074.78	110.35	92.296	
16,300.00	7,069.95	3,402.00	3,401.64	48.87	66.02	-13.89	-1,335.80	-39.58	10,278.09	10,167.36	110.73	92.819	
16,400.00	7,069.63	3,402.00	3,401.64	49.17	66.02	-13.89	-1,335.80	-39.58	10,371.18	10,260.07	111.11	93.342	
16,419.92	7,069.56	3,402.00	3,401.64	49.23	66.02	-13.89	-1,335.80	-39.58	10,389.74	10,278.56	111.18	93.446	
16,500.00	7,069.30	3,402.00	3,401.64	49.47	66.02	-13.89	-1,335.80	-39.58	10,464.40	10,352.91	111.49	93.864	
16,591.83	7,069.00	3,402.00	3,401.64	49.75	66.02	-13.89	-1,335.80	-39.58	10,550.11	10,438.28	111.83	94.342	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	107.64	-1,021.76	3,212.68	3,371.58				
100.00	100.00	52.51	52.51	0.23	0.49	107.64	-1,021.76	3,212.68	3,371.24	3,370.53	0.71	4,735.142	
200.00	200.00	152.51	152.51	0.53	1.91	107.64	-1,021.76	3,212.68	3,371.24	3,368.80	2.44	1,381.519	
224.98	224.98	177.50	177.49	0.60	2.39	107.64	-1,021.59	3,212.67	3,371.19	3,368.20	2.99	1,127.286	
300.00	300.00	248.39	248.38	0.83	3.74	107.64	-1,021.73	3,212.68	3,371.24	3,366.67	4.56	738.577	
400.00	400.00	352.52	352.51	1.13	5.66	107.64	-1,021.76	3,212.68	3,371.24	3,364.45	6.79	496.422	
420.87	420.87	372.67	372.65	1.19	6.04	107.64	-1,021.41	3,212.67	3,371.14	3,363.91	7.23	466.544	CC
500.00	500.00	447.15	447.13	1.43	7.41	107.64	-1,021.64	3,212.68	3,371.21	3,362.37	8.84	381.409	
600.00	599.98	552.51	552.49	1.73	9.36	-96.84	-1,021.76	3,212.68	3,371.45	3,360.36	11.09	304.120	
707.91	707.73	660.26	660.24	2.05	11.35	-96.92	-1,021.76	3,212.68	3,372.14	3,358.74	13.40	251.632	
800.00	799.58	751.92	751.90	2.33	13.04	-97.04	-1,021.47	3,212.67	3,372.87	3,357.50	15.37	219.425	
900.00	899.31	850.84	850.82	2.63	14.87	-97.16	-1,021.53	3,212.67	3,373.79	3,356.29	17.50	192.793	
1,000.00	999.05	949.76	949.74	2.93	16.70	-97.28	-1,021.67	3,212.68	3,374.75	3,355.12	19.63	171.936	
1,100.00	1,098.79	1,051.34	1,051.30	3.23	18.68	-97.40	-1,021.76	3,212.68	3,375.70	3,353.79	21.91	154.095	
1,200.00	1,198.52	1,151.08	1,151.04	3.53	20.69	-97.52	-1,021.76	3,212.68	3,376.64	3,352.42	24.22	139.412	
1,300.00	1,298.26	1,250.55	1,250.51	3.83	22.70	-97.66	-1,020.95	3,212.67	3,377.37	3,350.84	26.53	127.308	
1,400.00	1,398.00	1,347.82	1,347.77	4.13	24.67	-97.77	-1,021.10	3,212.67	3,378.39	3,349.59	28.79	117.333	
1,500.00	1,497.73	1,445.12	1,445.07	4.43	26.63	-97.88	-1,021.50	3,212.67	3,379.50	3,348.44	31.06	108.813	
1,600.00	1,597.47	1,550.08	1,549.98	4.73	28.76	-98.01	-1,021.76	3,212.68	3,380.57	3,347.09	33.49	100.956	
1,700.00	1,697.21	1,649.82	1,649.72	5.03	30.79	-98.13	-1,021.76	3,212.68	3,381.59	3,345.78	35.81	94.423	
1,800.00	1,796.94	1,749.20	1,749.09	5.33	32.81	-98.27	-1,020.67	3,212.67	3,382.33	3,344.19	38.13	88.696	
1,900.00	1,896.68	1,845.80	1,845.68	5.63	34.77	-98.38	-1,020.87	3,212.67	3,383.44	3,343.04	40.40	83.753	
2,000.00	1,996.42	1,942.44	1,942.32	5.93	36.74	-98.49	-1,021.40	3,212.67	3,384.65	3,341.99	42.66	79.335	
2,100.00	2,096.15	2,048.82	2,048.67	6.23	38.95	-98.61	-1,021.76	3,212.68	3,385.83	3,340.65	45.17	74.955	
2,200.00	2,195.89	2,148.56	2,148.40	6.53	41.05	-98.74	-1,021.76	3,212.68	3,386.92	3,339.35	47.57	71.192	
2,300.00	2,295.63	2,248.03	2,247.87	6.83	43.15	-98.87	-1,020.95	3,212.67	3,387.82	3,337.84	49.97	67.794	
2,400.00	2,395.36	2,345.47	2,345.30	7.13	45.20	-98.98	-1,021.10	3,212.67	3,388.99	3,336.66	52.33	64.765	
2,500.00	2,495.10	2,442.94	2,442.77	7.43	47.26	-99.10	-1,021.50	3,212.67	3,390.24	3,335.56	54.68	61.999	
2,600.00	2,594.84	2,547.59	2,547.35	7.73	49.42	-99.22	-1,021.76	3,212.68	3,391.46	3,334.31	57.15	59.345	
2,700.00	2,694.57	2,647.32	2,647.09	8.03	51.46	-99.34	-1,021.76	3,212.68	3,392.63	3,333.15	59.49	57.033	
2,800.00	2,794.31	2,747.06	2,746.82	8.33	53.50	-99.46	-1,021.76	3,212.68	3,393.82	3,332.00	61.82	54.897	
2,900.00	2,894.05	2,846.35	2,846.09	8.63	55.52	-99.61	-1,019.89	3,212.67	3,394.54	3,330.39	64.15	52.916	
3,000.00	2,993.78	2,943.46	2,943.19	8.93	57.51	-99.72	-1,020.09	3,212.67	3,395.82	3,329.38	66.43	51.116	
3,100.00	3,093.52	3,040.61	3,040.34	9.23	59.49	-99.83	-1,020.59	3,212.67	3,397.18	3,328.46	68.72	49.437	
3,200.00	3,193.26	3,137.82	3,137.54	9.53	61.48	-99.94	-1,021.38	3,212.67	3,398.64	3,327.63	71.00	47.867	
3,300.00	3,292.99	3,245.83	3,245.51	9.83	63.53	-100.06	-1,021.76	3,212.68	3,399.98	3,326.63	73.35	46.352	
3,400.00	3,392.73	3,345.56	3,345.24	10.13	65.34	-100.18	-1,021.76	3,212.68	3,401.26	3,325.79	75.47	45.067	
3,500.00	3,492.47	3,414.00	3,413.67	10.43	66.59	-100.26	-1,021.76	3,212.68	3,402.70	3,325.68	77.02	44.181	ES
3,600.00	3,592.20	3,414.00	3,413.67	10.73	66.59	-100.26	-1,021.76	3,212.68	3,406.38	3,329.11	77.27	44.083	
3,700.00	3,691.94	3,414.00	3,413.67	11.03	66.59	-100.26	-1,021.76	3,212.68	3,412.99	3,335.52	77.47	44.055	SF
3,800.00	3,791.68	3,414.00	3,413.67	11.33	66.59	-100.26	-1,021.76	3,212.68	3,422.52	3,344.90	77.62	44.095	
3,900.00	3,891.41	3,414.00	3,413.67	11.63	66.59	-100.26	-1,021.76	3,212.68	3,434.92	3,357.21	77.71	44.202	
4,000.00	3,991.15	3,414.00	3,413.67	11.93	66.59	-100.26	-1,021.76	3,212.68	3,450.19	3,372.44	77.75	44.375	
4,100.00	4,090.89	3,414.00	3,413.67	12.23	66.59	-100.26	-1,021.76	3,212.68	3,468.27	3,390.53	77.74	44.612	
4,200.00	4,190.62	3,414.00	3,413.67	12.53	66.59	-100.26	-1,021.76	3,212.68	3,489.12	3,411.44	77.69	44.912	
4,300.00	4,290.36	3,414.00	3,413.67	12.83	66.59	-100.26	-1,021.76	3,212.68	3,512.70	3,435.11	77.59	45.274	
4,400.00	4,390.10	3,414.00	3,413.67	13.13	66.59	-100.26	-1,021.76	3,212.68	3,538.95	3,461.50	77.45	45.695	
4,500.00	4,489.84	3,414.00	3,413.67	13.43	66.59	-100.26	-1,021.76	3,212.68	3,567.81	3,490.54	77.27	46.175	
4,600.00	4,589.57	3,414.00	3,413.67	13.73	66.59	-100.26	-1,021.76	3,212.68	3,599.21	3,522.16	77.05	46.711	
4,700.00	4,689.31	3,414.00	3,413.67	14.03	66.59	-100.26	-1,021.76	3,212.68	3,633.10	3,556.30	76.81	47.303	
4,800.00	4,789.05	3,414.00	3,413.67	14.33	66.59	-100.26	-1,021.76	3,212.68	3,669.40	3,592.88	76.53	47.948	
4,900.00	4,888.78	3,414.00	3,413.67	14.63	66.59	-100.26	-1,021.76	3,212.68	3,708.05	3,631.82	76.23	48.646	

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 750H - Slot B05
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 750H	**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
5,000.00	4,988.52	3,414.00	3,413.67	14.93	66.59	-100.26	-1,021.76	3,212.68	3,748.96	3,673.06	75.90	49.394	
5,100.00	5,088.26	3,414.00	3,413.67	15.23	66.59	-100.26	-1,021.76	3,212.68	3,792.07	3,716.52	75.55	50.190	
5,200.00	5,187.99	3,414.00	3,413.67	15.53	66.59	-100.26	-1,021.76	3,212.68	3,837.30	3,762.11	75.19	51.034	
5,300.00	5,287.73	3,414.00	3,413.67	15.83	66.59	-100.26	-1,021.76	3,212.68	3,884.58	3,809.77	74.81	51.923	
5,400.00	5,387.47	3,414.00	3,413.67	16.13	66.59	-100.26	-1,021.76	3,212.68	3,933.84	3,859.41	74.43	52.856	
5,500.00	5,487.20	3,414.00	3,413.67	16.43	66.59	-100.26	-1,021.76	3,212.68	3,984.99	3,910.96	74.03	53.830	
5,600.00	5,586.94	3,414.00	3,413.67	16.73	66.59	-100.26	-1,021.76	3,212.68	4,037.98	3,964.35	73.62	54.845	
5,700.00	5,686.68	3,414.00	3,413.67	17.03	66.59	-100.26	-1,021.76	3,212.68	4,092.72	4,019.50	73.22	55.899	
5,800.00	5,786.41	3,414.00	3,413.67	17.33	66.59	-100.26	-1,021.76	3,212.68	4,149.15	4,076.34	72.81	56.990	
5,900.00	5,886.15	3,414.00	3,413.67	17.63	66.59	-100.26	-1,021.76	3,212.68	4,207.20	4,134.81	72.39	58.116	
6,000.00	5,985.89	3,414.00	3,413.67	17.93	66.59	-100.26	-1,021.76	3,212.68	4,266.81	4,194.82	71.98	59.276	
6,100.00	6,085.62	3,414.00	3,413.67	18.23	66.59	-100.26	-1,021.76	3,212.68	4,327.90	4,256.33	71.57	60.467	
6,200.00	6,185.36	3,414.00	3,413.67	18.53	66.59	-100.26	-1,021.76	3,212.68	4,390.42	4,319.25	71.17	61.689	
6,300.00	6,285.10	3,414.00	3,413.67	18.83	66.59	-100.26	-1,021.76	3,212.68	4,454.31	4,383.54	70.77	62.940	
6,400.00	6,384.83	3,414.00	3,413.67	19.13	66.59	-100.26	-1,021.76	3,212.68	4,519.51	4,449.13	70.38	64.218	
6,500.00	6,484.57	3,414.00	3,413.67	19.43	66.59	-100.26	-1,021.76	3,212.68	4,585.97	4,515.97	69.99	65.522	
6,559.90	6,544.31	3,414.00	3,413.67	19.61	66.59	-100.26	-1,021.76	3,212.68	4,626.35	4,556.58	69.76	66.314	
6,600.00	6,584.23	3,414.00	3,413.67	19.73	66.59	-131.45	-1,021.76	3,212.68	4,654.59	4,584.97	69.62	66.853	
6,650.00	6,633.60	3,414.00	3,413.67	19.88	66.59	-143.90	-1,021.76	3,212.68	4,692.61	4,623.13	69.48	67.539	
6,700.00	6,682.15	3,414.00	3,413.67	20.03	66.59	-147.64	-1,021.76	3,212.68	4,733.39	4,664.02	69.37	68.235	
6,750.00	6,729.52	3,414.00	3,413.67	20.18	66.59	-147.83	-1,021.76	3,212.68	4,776.57	4,707.27	69.30	68.930	
6,800.00	6,775.36	3,414.00	3,413.67	20.33	66.59	-145.52	-1,021.76	3,212.68	4,821.75	4,752.49	69.26	69.618	
6,850.00	6,819.31	3,414.00	3,413.67	20.48	66.59	-140.36	-1,021.76	3,212.68	4,868.54	4,799.27	69.26	70.289	
6,900.00	6,861.04	3,414.00	3,413.67	20.63	66.59	-130.82	-1,021.76	3,212.68	4,916.54	4,847.23	69.31	70.938	
6,950.00	6,900.22	3,414.00	3,413.67	20.78	66.59	-113.81	-1,021.76	3,212.68	4,965.36	4,895.97	69.39	71.556	
7,000.00	6,936.57	3,414.00	3,413.67	20.93	66.59	-87.21	-1,021.76	3,212.68	5,014.60	4,945.09	69.51	72.138	
7,050.00	6,969.80	3,414.00	3,413.67	21.08	66.59	-59.15	-1,021.76	3,212.68	5,063.89	4,994.22	69.67	72.679	
7,100.00	6,999.67	3,414.00	3,413.67	21.23	66.59	-39.88	-1,021.76	3,212.68	5,112.86	5,042.98	69.87	73.173	
7,150.00	7,025.94	3,414.00	3,413.67	21.38	66.59	-28.51	-1,021.76	3,212.68	5,161.14	5,091.03	70.11	73.618	
7,200.00	7,048.41	3,414.00	3,413.67	21.53	66.59	-21.61	-1,021.76	3,212.68	5,208.39	5,138.01	70.38	74.009	
7,250.00	7,066.92	3,414.00	3,413.67	21.68	66.59	-17.14	-1,021.76	3,212.68	5,254.29	5,183.61	70.68	74.344	
7,300.00	7,081.33	3,414.00	3,413.67	21.83	66.59	-14.06	-1,021.76	3,212.68	5,298.52	5,227.52	71.00	74.622	
7,350.00	7,091.51	3,414.00	3,413.67	21.98	66.59	-11.83	-1,021.76	3,212.68	5,340.80	5,269.44	71.36	74.841	
7,400.00	7,097.41	3,414.00	3,413.67	22.13	66.59	-10.16	-1,021.76	3,212.68	5,380.85	5,309.11	71.74	75.001	
7,444.73	7,099.00	3,414.00	3,413.67	22.27	66.59	-8.98	-1,021.76	3,212.68	5,414.59	5,342.49	72.11	75.093	
7,500.00	7,098.82	3,414.00	3,413.67	22.44	66.59	-8.98	-1,021.76	3,212.68	5,455.11	5,382.55	72.56	75.178	
7,600.00	7,098.49	3,414.00	3,413.67	22.74	66.59	-8.98	-1,021.76	3,212.68	5,529.07	5,455.70	73.37	75.355	
7,700.00	7,098.16	3,414.00	3,413.67	23.04	66.59	-8.98	-1,021.76	3,212.68	5,603.84	5,529.68	74.16	75.560	
7,800.00	7,097.83	3,414.00	3,413.67	23.34	66.59	-8.98	-1,021.76	3,212.68	5,679.39	5,604.45	74.94	75.789	
7,900.00	7,097.51	3,414.00	3,413.67	23.64	66.59	-8.98	-1,021.76	3,212.68	5,755.68	5,679.99	75.69	76.042	
8,000.00	7,097.18	3,414.00	3,413.67	23.94	66.59	-8.98	-1,021.76	3,212.68	5,832.69	5,756.26	76.43	76.317	
8,100.00	7,096.85	3,414.00	3,413.67	24.24	66.59	-8.98	-1,021.76	3,212.68	5,910.39	5,833.24	77.15	76.613	
8,200.00	7,096.52	3,414.00	3,413.67	24.54	66.59	-8.98	-1,021.76	3,212.68	5,988.75	5,910.90	77.85	76.927	
8,300.00	7,096.19	3,414.00	3,413.67	24.84	66.59	-8.98	-1,021.76	3,212.68	6,067.74	5,989.21	78.54	77.259	
8,400.00	7,095.87	3,414.00	3,413.67	25.14	66.59	-8.98	-1,021.76	3,212.68	6,147.35	6,068.14	79.21	77.607	
8,500.00	7,095.54	3,414.00	3,413.67	25.44	66.59	-8.98	-1,021.76	3,212.68	6,227.55	6,147.68	79.87	77.970	
8,600.00	7,095.21	3,414.00	3,413.67	25.74	66.59	-8.98	-1,021.76	3,212.68	6,308.31	6,227.79	80.52	78.348	
8,700.00	7,094.88	3,414.00	3,413.67	26.04	66.59	-8.98	-1,021.76	3,212.68	6,389.61	6,308.46	81.15	78.739	
8,800.00	7,094.55	3,414.00	3,413.67	26.35	66.59	-8.98	-1,021.76	3,212.68	6,471.44	6,389.67	81.77	79.142	
8,900.00	7,094.23	3,414.00	3,413.67	26.65	66.59	-8.98	-1,021.76	3,212.68	6,553.78	6,471.40	82.38	79.557	
9,000.00	7,093.90	3,414.00	3,413.67	26.95	66.59	-8.98	-1,021.76	3,212.68	6,636.60	6,553.62	82.98	79.982	
9,100.00	7,093.57	3,414.00	3,413.67	27.25	66.59	-8.98	-1,021.76	3,212.68	6,719.88	6,636.32	83.56	80.418	

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 750H - Slot B05
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 750H	**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
9,200.00	7,093.24	3,414.00	3,413.67	27.55	66.59	-8.98	-1,021.76	3,212.68	6,803.62	6,719.48	84.14	80.862	
9,300.00	7,092.91	3,414.00	3,413.67	27.85	66.59	-8.98	-1,021.76	3,212.68	6,887.79	6,803.09	84.70	81.316	
9,400.00	7,092.59	3,414.00	3,413.67	28.15	66.59	-8.98	-1,021.76	3,212.68	6,972.38	6,887.12	85.26	81.777	
9,500.00	7,092.26	3,414.00	3,413.67	28.45	66.59	-8.98	-1,021.76	3,212.68	7,057.37	6,971.56	85.81	82.246	
9,600.00	7,091.93	3,414.00	3,413.67	28.75	66.59	-8.98	-1,021.76	3,212.68	7,142.75	7,056.40	86.35	82.722	
9,700.00	7,091.60	3,414.00	3,413.67	29.05	66.59	-8.98	-1,021.76	3,212.68	7,228.51	7,141.63	86.88	83.204	
9,800.00	7,091.27	3,414.00	3,413.67	29.35	66.59	-8.98	-1,021.76	3,212.68	7,314.62	7,227.22	87.40	83.692	
9,900.00	7,090.95	3,414.00	3,413.67	29.65	66.59	-8.98	-1,021.76	3,212.68	7,401.09	7,313.18	87.91	84.186	
10,000.00	7,090.62	3,414.00	3,413.67	29.95	66.59	-8.98	-1,021.76	3,212.68	7,487.89	7,399.47	88.42	84.685	
10,100.00	7,090.29	3,414.00	3,413.67	30.25	66.59	-8.98	-1,021.76	3,212.68	7,575.02	7,486.10	88.92	85.188	
10,200.00	7,089.96	3,414.00	3,413.67	30.55	66.59	-8.98	-1,021.76	3,212.68	7,662.46	7,573.05	89.41	85.696	
10,300.00	7,089.63	3,414.00	3,413.67	30.85	66.59	-8.98	-1,021.76	3,212.68	7,750.21	7,660.31	89.90	86.208	
10,400.00	7,089.31	3,414.00	3,413.67	31.15	66.59	-8.98	-1,021.76	3,212.68	7,838.25	7,747.87	90.38	86.724	
10,500.00	7,088.98	3,414.00	3,413.67	31.45	66.59	-8.98	-1,021.76	3,212.68	7,926.57	7,835.72	90.86	87.243	
10,600.00	7,088.65	3,414.00	3,413.67	31.75	66.59	-8.98	-1,021.76	3,212.68	8,015.17	7,923.85	91.33	87.765	
10,700.00	7,088.32	3,414.00	3,413.67	32.06	66.59	-8.98	-1,021.76	3,212.68	8,104.04	8,012.25	91.79	88.290	
10,800.00	7,087.99	3,414.00	3,413.67	32.36	66.59	-8.98	-1,021.76	3,212.68	8,193.16	8,100.91	92.25	88.817	
10,900.00	7,087.67	3,414.00	3,413.67	32.66	66.59	-8.98	-1,021.76	3,212.68	8,282.53	8,189.83	92.70	89.347	
11,000.00	7,087.34	3,414.00	3,413.67	32.96	66.59	-8.98	-1,021.76	3,212.68	8,372.14	8,278.99	93.15	89.879	
11,100.00	7,087.01	3,414.00	3,413.67	33.26	66.59	-8.98	-1,021.76	3,212.68	8,461.98	8,368.39	93.59	90.413	
11,200.00	7,086.68	3,414.00	3,413.67	33.56	66.59	-8.98	-1,021.76	3,212.68	8,552.05	8,458.01	94.03	90.949	
11,300.00	7,086.35	3,414.00	3,413.67	33.86	66.59	-8.98	-1,021.76	3,212.68	8,642.33	8,547.87	94.47	91.486	
11,400.00	7,086.03	3,414.00	3,413.67	34.16	66.59	-8.98	-1,021.76	3,212.68	8,732.83	8,637.93	94.90	92.025	
11,500.00	7,085.70	3,414.00	3,413.67	34.46	66.59	-8.98	-1,021.76	3,212.68	8,823.53	8,728.21	95.32	92.564	
11,600.00	7,085.37	3,414.00	3,413.67	34.76	66.59	-8.98	-1,021.76	3,212.68	8,914.43	8,818.69	95.75	93.105	
11,700.00	7,085.04	3,414.00	3,413.67	35.06	66.59	-8.98	-1,021.76	3,212.68	9,005.53	8,909.36	96.17	93.647	
11,800.00	7,084.71	3,414.00	3,413.67	35.36	66.59	-8.98	-1,021.76	3,212.68	9,096.81	9,000.23	96.58	94.189	
11,900.00	7,084.39	3,414.00	3,413.67	35.66	66.59	-8.98	-1,021.76	3,212.68	9,188.27	9,091.28	96.99	94.732	
12,000.00	7,084.06	3,414.00	3,413.67	35.96	66.59	-8.98	-1,021.76	3,212.68	9,279.91	9,182.51	97.40	95.275	
12,100.00	7,083.73	3,414.00	3,413.67	36.26	66.59	-8.98	-1,021.76	3,212.68	9,371.72	9,273.92	97.81	95.818	
12,200.00	7,083.40	3,414.00	3,413.67	36.56	66.59	-8.98	-1,021.76	3,212.68	9,463.70	9,365.49	98.21	96.362	
12,300.00	7,083.07	3,414.00	3,413.67	36.86	66.59	-8.98	-1,021.76	3,212.68	9,555.84	9,457.23	98.61	96.906	
12,400.00	7,082.75	3,414.00	3,413.67	37.16	66.59	-8.98	-1,021.76	3,212.68	9,648.13	9,549.12	99.01	97.450	
12,500.00	7,082.42	3,414.00	3,413.67	37.46	66.59	-8.98	-1,021.76	3,212.68	9,740.58	9,641.18	99.40	97.993	
12,600.00	7,082.09	3,414.00	3,413.67	37.76	66.59	-8.98	-1,021.76	3,212.68	9,833.17	9,733.38	99.79	98.537	
12,700.00	7,081.76	3,414.00	3,413.67	38.06	66.59	-8.98	-1,021.76	3,212.68	9,925.91	9,825.73	100.18	99.080	
12,800.00	7,081.43	3,414.00	3,413.67	38.36	66.59	-8.98	-1,021.76	3,212.68	10,018.79	9,918.22	100.57	99.623	
12,900.00	7,081.11	3,414.00	3,413.67	38.66	66.59	-8.98	-1,021.76	3,212.68	10,111.80	10,010.85	100.95	100.165	
13,000.00	7,080.78	3,414.00	3,413.67	38.96	66.59	-8.98	-1,021.76	3,212.68	10,204.94	10,103.61	101.33	100.707	
13,100.00	7,080.45	3,414.00	3,413.67	39.26	66.59	-8.98	-1,021.76	3,212.68	10,298.22	10,196.51	101.71	101.248	
13,200.00	7,080.12	3,414.00	3,413.67	39.56	66.59	-8.98	-1,021.76	3,212.68	10,391.62	10,289.53	102.09	101.789	
13,300.00	7,079.79	3,414.00	3,413.67	39.86	66.59	-8.98	-1,021.76	3,212.68	10,485.14	10,382.67	102.47	102.329	
13,400.00	7,079.47	3,414.00	3,413.67	40.16	66.59	-8.98	-1,021.76	3,212.68	10,578.78	10,475.94	102.84	102.868	
13,500.00	7,079.14	3,414.00	3,413.67	40.46	66.59	-8.98	-1,021.76	3,212.68	10,672.53	10,569.32	103.21	103.406	
13,600.00	7,078.81	3,414.00	3,413.67	40.77	66.59	-8.98	-1,021.76	3,212.68	10,766.40	10,662.82	103.58	103.943	
13,700.00	7,078.48	3,414.00	3,413.67	41.07	66.59	-8.98	-1,021.76	3,212.68	10,860.38	10,756.43	103.95	104.479	
13,800.00	7,078.15	3,414.00	3,413.67	41.37	66.59	-8.98	-1,021.76	3,212.68	10,954.46	10,850.15	104.31	105.015	
13,900.00	7,077.83	3,414.00	3,413.67	41.67	66.59	-8.98	-1,021.76	3,212.68	11,048.65	10,943.97	104.68	105.549	
14,000.00	7,077.50	3,414.00	3,413.67	41.97	66.59	-8.98	-1,021.76	3,212.68	11,142.94	11,037.90	105.04	106.082	
14,100.00	7,077.17	3,414.00	3,413.67	42.27	66.59	-8.98	-1,021.76	3,212.68	11,237.32	11,131.92	105.40	106.614	
14,200.00	7,076.84	3,414.00	3,413.67	42.57	66.59	-8.98	-1,021.76	3,212.68	11,331.81	11,226.05	105.76	107.145	
14,300.00	7,076.51	3,414.00	3,413.67	42.87	66.59	-8.98	-1,021.76	3,212.68	11,426.38	11,320.26	106.12	107.674	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	3,414.00	3,413.67	43.17	66.59	-8.98	-1,021.76	3,212.68	11,521.05	11,414.58	106.48	108.203	
14,500.00	7,075.86	3,414.00	3,413.67	43.47	66.59	-8.98	-1,021.76	3,212.68	11,615.81	11,508.98	106.83	108.730	
14,600.00	7,075.53	3,414.00	3,413.67	43.77	66.59	-8.98	-1,021.76	3,212.68	11,710.66	11,603.47	107.19	109.255	
14,700.00	7,075.20	3,414.00	3,413.67	44.07	66.59	-8.98	-1,021.76	3,212.68	11,805.59	11,698.05	107.54	109.780	
14,800.00	7,074.87	3,414.00	3,413.67	44.37	66.59	-8.98	-1,021.76	3,212.68	11,900.60	11,792.71	107.89	110.303	
14,900.00	7,074.55	3,414.00	3,413.67	44.67	66.59	-8.98	-1,021.76	3,212.68	11,995.70	11,887.46	108.24	110.824	
15,000.00	7,074.22	3,414.00	3,413.67	44.97	66.59	-8.98	-1,021.76	3,212.68	12,090.87	11,982.28	108.59	111.345	
15,100.00	7,073.89	3,414.00	3,413.67	45.27	66.59	-8.98	-1,021.76	3,212.68	12,186.12	12,077.18	108.94	111.863	
15,200.00	7,073.56	3,414.00	3,413.67	45.57	66.59	-8.98	-1,021.76	3,212.68	12,281.45	12,172.16	109.28	112.381	
15,300.00	7,073.23	3,414.00	3,413.67	45.87	66.59	-8.98	-1,021.76	3,212.68	12,376.85	12,267.22	109.63	112.896	
15,400.00	7,072.91	3,414.00	3,413.67	46.17	66.59	-8.98	-1,021.76	3,212.68	12,472.32	12,362.35	109.97	113.411	
15,500.00	7,072.58	3,414.00	3,413.67	46.47	66.59	-8.98	-1,021.76	3,212.68	12,567.86	12,457.55	110.32	113.923	
15,600.00	7,072.25	3,414.00	3,413.67	46.77	66.59	-8.98	-1,021.76	3,212.68	12,663.48	12,552.81	110.66	114.434	
15,700.00	7,071.92	3,414.00	3,413.67	47.07	66.59	-8.98	-1,021.76	3,212.68	12,759.15	12,648.15	111.00	114.944	
15,800.00	7,071.59	3,414.00	3,413.67	47.37	66.59	-8.98	-1,021.76	3,212.68	12,854.90	12,743.56	111.34	115.452	
15,900.00	7,071.27	3,414.00	3,413.67	47.67	66.59	-8.98	-1,021.76	3,212.68	12,950.71	12,839.02	111.68	115.959	
16,000.00	7,070.94	3,414.00	3,413.67	47.97	66.59	-8.98	-1,021.76	3,212.68	13,046.58	12,934.56	112.02	116.463	
16,100.00	7,070.61	3,414.00	3,413.67	48.27	66.59	-8.98	-1,021.76	3,212.68	13,142.51	13,030.15	112.36	116.967	
16,200.00	7,070.28	3,414.00	3,413.67	48.57	66.59	-8.98	-1,021.76	3,212.68	13,238.51	13,125.81	112.70	117.468	
16,300.00	7,069.95	3,414.00	3,413.67	48.87	66.59	-8.98	-1,021.76	3,212.68	13,334.56	13,221.53	113.04	117.968	
16,400.00	7,069.63	3,414.00	3,413.67	49.17	66.59	-8.98	-1,021.76	3,212.68	13,430.67	13,317.30	113.37	118.467	
16,419.92	7,069.56	3,414.00	3,413.67	49.23	66.59	-8.98	-1,021.76	3,212.68	13,449.82	13,336.39	113.44	118.566	
16,500.00	7,069.30	3,414.00	3,413.67	49.47	66.59	-8.98	-1,021.76	3,212.68	13,526.84	13,413.13	113.71	118.963	
16,591.83	7,069.00	3,414.00	3,413.67	49.75	66.59	-8.98	-1,021.76	3,212.68	13,615.19	13,501.18	114.01	119.418	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	52.51	0.00	0.00	97.93	-1,160.67	8,335.40	8,415.88				
100.00	100.00	217.67	217.66	0.23	0.65	97.92	-1,159.21	8,334.15	8,414.93	8,414.05	0.88	9,567.747	
200.00	200.00	303.65	303.63	0.53	0.91	97.92	-1,158.81	8,333.20	8,413.78	8,412.35	1.44	5,853.313	
300.00	300.00	377.42	377.40	0.83	1.13	97.92	-1,158.87	8,332.58	8,412.97	8,411.01	1.96	4,295.029	
400.00	400.00	431.19	431.16	1.13	1.29	97.92	-1,159.50	8,332.24	8,412.54	8,410.12	2.42	3,476.129	
419.46	419.46	441.00	440.97	1.18	1.32	97.92	-1,159.70	8,332.21	8,412.53	8,410.02	2.51	3,354.433	CC
500.00	500.00	472.00	471.96	1.43	1.42	97.93	-1,160.53	8,332.15	8,412.73	8,409.88	2.84	2,959.602	ES
600.00	599.98	513.33	513.27	1.73	1.54	-106.49	-1,161.99	8,332.28	8,414.10	8,410.83	3.27	2,575.842	
707.91	707.73	551.87	551.76	2.05	1.66	-106.43	-1,163.79	8,332.68	8,417.58	8,413.87	3.71	2,271.373	
800.00	799.58	592.00	591.81	2.33	1.78	-106.43	-1,166.13	8,333.39	8,421.75	8,417.65	4.10	2,052.778	
900.00	899.31	620.00	619.74	2.63	1.86	-106.43	-1,168.00	8,334.03	8,426.98	8,422.49	4.49	1,878.238	
1,000.00	999.05	651.00	650.65	2.93	1.95	-106.44	-1,170.24	8,334.93	8,432.98	8,428.10	4.88	1,728.192	
1,100.00	1,098.79	681.00	680.53	3.23	2.04	-106.43	-1,172.68	8,335.96	8,439.76	8,434.49	5.27	1,601.573	
1,200.00	1,198.52	713.00	712.38	3.53	2.14	-106.43	-1,175.54	8,337.28	8,447.34	8,441.67	5.67	1,490.970	
1,300.00	1,298.26	744.00	743.18	3.83	2.23	-106.43	-1,178.60	8,338.85	8,455.81	8,449.76	6.06	1,395.658	
1,400.00	1,398.00	775.00	773.96	4.13	2.33	-106.42	-1,181.91	8,340.64	8,465.08	8,458.63	6.45	1,312.077	
1,500.00	1,497.73	806.00	804.70	4.43	2.42	-106.41	-1,185.40	8,342.58	8,475.09	8,468.25	6.84	1,238.206	
1,600.00	1,597.47	836.00	834.39	4.73	2.51	-106.40	-1,189.09	8,344.74	8,485.99	8,478.76	7.23	1,172.969	
1,700.00	1,697.21	867.00	865.01	5.03	2.60	-106.39	-1,193.19	8,347.27	8,497.79	8,490.16	7.63	1,114.084	
1,800.00	1,796.94	898.00	895.60	5.33	2.69	-106.38	-1,197.47	8,349.98	8,510.34	8,502.31	8.02	1,061.060	
1,900.00	1,896.68	930.00	927.12	5.63	2.79	-106.37	-1,202.14	8,352.93	8,523.61	8,515.19	8.42	1,012.717	
2,000.00	1,996.42	972.22	968.61	5.93	2.92	-106.35	-1,208.77	8,357.04	8,537.58	8,528.74	8.84	965.439	
2,100.00	2,096.15	1,021.13	1,016.52	6.23	3.06	-106.32	-1,217.20	8,362.14	8,552.31	8,543.02	9.29	920.600	
2,200.00	2,195.89	1,056.00	1,050.57	6.53	3.17	-106.30	-1,223.68	8,365.87	8,567.61	8,557.91	9.69	883.759	
2,300.00	2,295.63	1,091.46	1,085.13	6.83	3.28	-106.27	-1,230.58	8,369.88	8,583.65	8,573.55	10.10	849.796	
2,400.00	2,395.36	1,118.00	1,110.92	7.13	3.35	-106.25	-1,236.00	8,373.01	8,600.42	8,589.94	10.48	820.621	
2,500.00	2,495.10	1,159.04	1,150.73	7.43	3.48	-106.21	-1,244.54	8,378.12	8,617.92	8,607.01	10.90	790.386	
2,600.00	2,594.84	1,212.31	1,202.34	7.73	3.64	-106.17	-1,255.67	8,385.21	8,636.14	8,624.77	11.36	760.010	
2,700.00	2,694.57	1,268.68	1,256.88	8.03	3.81	-106.12	-1,267.70	8,392.82	8,654.73	8,642.90	11.83	731.452	
2,800.00	2,794.31	1,321.07	1,307.46	8.33	3.96	-106.08	-1,279.17	8,400.21	8,673.93	8,661.64	12.29	705.807	
2,900.00	2,894.05	1,392.05	1,375.95	8.63	4.18	-106.02	-1,294.86	8,410.34	8,693.42	8,680.62	12.80	679.050	
3,000.00	2,993.78	1,448.38	1,430.13	8.93	4.35	-105.96	-1,307.85	8,418.61	8,713.42	8,700.15	13.27	656.562	
3,100.00	3,093.52	3,100.00	1,564.39	9.23	9.30	-105.82	-1,341.45	8,438.97	8,733.59	8,715.07	18.53	471.408	
3,200.00	3,193.26	1,677.00	1,649.62	9.53	5.03	-105.74	-1,362.68	8,451.49	8,753.28	8,738.72	14.56	601.298	
3,300.00	3,292.99	2,050.00	2,009.88	9.83	6.15	-105.40	-1,447.15	8,498.12	8,770.01	8,754.03	15.98	548.923	
3,400.00	3,392.73	2,114.00	2,071.94	10.13	6.34	-105.35	-1,460.80	8,505.74	8,787.10	8,770.63	16.47	533.563	
3,500.00	3,492.47	2,177.00	2,133.11	10.43	6.53	-105.30	-1,473.68	8,513.57	8,804.57	8,787.61	16.96	519.208	
3,600.00	3,592.20	2,384.67	2,334.40	10.73	7.16	-105.13	-1,518.45	8,538.13	8,821.82	8,803.94	17.88	493.368	
3,700.00	3,691.94	3,512.00	3,448.77	11.03	10.54	-104.95	-1,638.13	8,613.46	8,827.64	8,806.08	21.56	409.398	
3,800.00	3,791.68	3,512.00	3,448.77	11.33	10.54	-104.95	-1,638.13	8,613.46	8,833.09	8,811.22	21.86	404.028	
3,900.00	3,891.41	3,512.00	3,448.77	11.63	10.54	-104.95	-1,638.13	8,613.46	8,839.66	8,817.49	22.16	398.854	
4,000.00	3,991.15	3,512.00	3,448.77	11.93	10.54	-104.95	-1,638.13	8,613.46	8,847.35	8,824.89	22.46	393.869	
4,100.00	4,090.89	3,512.00	3,448.77	12.23	10.54	-104.95	-1,638.13	8,613.46	8,856.17	8,833.41	22.76	389.065	
4,200.00	4,190.62	3,512.00	3,448.77	12.53	10.54	-104.95	-1,638.13	8,613.46	8,866.11	8,843.05	23.06	384.434	
4,300.00	4,290.36	3,512.00	3,448.77	12.83	10.54	-104.95	-1,638.13	8,613.46	8,877.17	8,853.81	23.36	379.970	
4,400.00	4,390.10	3,512.00	3,448.77	13.13	10.54	-104.95	-1,638.13	8,613.46	8,889.33	8,865.67	23.66	375.666	
4,500.00	4,489.84	3,512.00	3,448.77	13.43	10.54	-104.95	-1,638.13	8,613.46	8,902.61	8,878.64	23.96	371.516	
4,600.00	4,589.57	3,512.00	3,448.77	13.73	10.54	-104.95	-1,638.13	8,613.46	8,916.98	8,892.72	24.26	367.514	
4,700.00	4,689.31	3,512.00	3,448.77	14.03	10.54	-104.95	-1,638.13	8,613.46	8,932.45	8,907.89	24.56	363.654	
4,800.00	4,789.05	3,512.00	3,448.77	14.33	10.54	-104.95	-1,638.13	8,613.46	8,949.01	8,924.15	24.86	359.932	
4,900.00	4,888.78	3,512.00	3,448.77	14.63	10.54	-104.95	-1,638.13	8,613.46	8,966.66	8,941.50	25.16	356.341	
5,000.00	4,988.52	3,512.00	3,448.77	14.93	10.54	-104.95	-1,638.13	8,613.46	8,985.38	8,959.92	25.46	352.877	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	3,512.00	3,448.77	15.23	10.54	-104.95	-1,638.13	8,613.46	9,005.18	8,979.42	25.76	349.536	
5,200.00	5,187.99	3,512.00	3,448.77	15.53	10.54	-104.95	-1,638.13	8,613.46	9,026.04	8,999.98	26.06	346.312	
5,300.00	5,287.73	3,512.00	3,448.77	15.83	10.54	-104.95	-1,638.13	8,613.46	9,047.96	9,021.60	26.36	343.202	
5,400.00	5,387.47	3,512.00	3,448.77	16.13	10.54	-104.95	-1,638.13	8,613.46	9,070.93	9,044.26	26.66	340.202	
5,500.00	5,487.20	3,512.00	3,448.77	16.43	10.54	-104.95	-1,638.13	8,613.46	9,094.93	9,067.97	26.96	337.306	
5,600.00	5,586.94	3,512.00	3,448.77	16.73	10.54	-104.95	-1,638.13	8,613.46	9,119.98	9,092.71	27.26	334.513	
5,700.00	5,686.68	3,512.00	3,448.77	17.03	10.54	-104.95	-1,638.13	8,613.46	9,146.04	9,118.48	27.56	331.817	
5,800.00	5,786.41	3,512.00	3,448.77	17.33	10.54	-104.95	-1,638.13	8,613.46	9,173.13	9,145.26	27.86	329.216	
5,900.00	5,886.15	3,512.00	3,448.77	17.63	10.54	-104.95	-1,638.13	8,613.46	9,201.22	9,173.05	28.16	326.706	
6,000.00	5,985.89	3,512.00	3,448.77	17.93	10.54	-104.95	-1,638.13	8,613.46	9,230.31	9,201.84	28.46	324.284	
6,100.00	6,085.62	3,512.00	3,448.77	18.23	10.54	-104.95	-1,638.13	8,613.46	9,260.38	9,231.62	28.76	321.947	
6,200.00	6,185.36	3,512.00	3,448.77	18.53	10.54	-104.95	-1,638.13	8,613.46	9,291.44	9,262.38	29.06	319.692	
6,300.00	6,285.10	3,512.00	3,448.77	18.83	10.54	-104.95	-1,638.13	8,613.46	9,323.46	9,294.10	29.36	317.516	
6,400.00	6,384.83	3,512.00	3,448.77	19.13	10.54	-104.95	-1,638.13	8,613.46	9,356.45	9,326.78	29.66	315.416	
6,500.00	6,484.57	3,512.00	3,448.77	19.43	10.54	-104.95	-1,638.13	8,613.46	9,390.38	9,360.42	29.96	313.390	
6,559.90	6,544.31	3,512.00	3,448.77	19.61	10.54	-104.95	-1,638.13	8,613.46	9,411.16	9,381.01	30.14	312.211	
6,600.00	6,584.23	3,512.00	3,448.77	19.73	10.54	-136.86	-1,638.13	8,613.46	9,426.54	9,396.27	30.27	311.464	
6,650.00	6,633.60	3,512.00	3,448.77	19.88	10.54	-150.45	-1,638.13	8,613.46	9,449.42	9,419.01	30.42	310.659	
6,700.00	6,682.15	3,512.00	3,448.77	20.03	10.54	-155.76	-1,638.13	8,613.46	9,476.23	9,445.66	30.57	309.992	
6,750.00	6,729.52	3,512.00	3,448.77	20.18	10.54	-158.17	-1,638.13	8,613.46	9,506.73	9,476.01	30.72	309.451	
6,800.00	6,775.36	3,512.00	3,448.77	20.33	10.54	-159.16	-1,638.13	8,613.46	9,540.65	9,509.78	30.87	309.028	
6,850.00	6,819.31	3,512.00	3,448.77	20.48	10.54	-159.24	-1,638.13	8,613.46	9,577.70	9,546.67	31.02	308.710	
6,900.00	6,861.04	3,512.00	3,448.77	20.63	10.54	-158.53	-1,638.13	8,613.46	9,617.56	9,586.38	31.18	308.487	
6,950.00	6,900.22	3,512.00	3,448.77	20.78	10.54	-157.00	-1,638.13	8,613.46	9,659.89	9,628.57	31.33	308.347	
7,000.00	6,936.57	3,512.00	3,448.77	20.93	10.54	-154.38	-1,638.13	8,613.46	9,704.35	9,672.87	31.48	308.278	
7,050.00	6,969.80	3,512.00	3,448.77	21.08	10.54	-150.10	-1,638.13	8,613.46	9,750.57	9,718.94	31.63	308.266 SF	
7,100.00	6,999.67	3,512.00	3,448.77	21.23	10.54	-142.90	-1,638.13	8,613.46	9,798.17	9,766.39	31.78	308.301	
7,150.00	7,025.94	3,512.00	3,448.77	21.38	10.54	-130.04	-1,638.13	8,613.46	9,846.78	9,814.85	31.93	308.368	
7,200.00	7,048.41	3,512.00	3,448.77	21.53	10.54	-106.55	-1,638.13	8,613.46	9,896.01	9,863.93	32.08	308.457	
7,250.00	7,066.92	3,512.00	3,448.77	21.68	10.54	-73.12	-1,638.13	8,613.46	9,945.48	9,913.25	32.23	308.555	
7,300.00	7,081.33	3,512.00	3,448.77	21.83	10.54	-46.18	-1,638.13	8,613.46	9,994.82	9,962.44	32.38	308.650	
7,350.00	7,091.51	3,512.00	3,448.77	21.98	10.54	-30.92	-1,638.13	8,613.46	10,043.65	10,011.12	32.53	308.730	
7,400.00	7,097.41	3,512.00	3,448.77	22.13	10.54	-22.34	-1,638.13	8,613.46	10,091.61	10,058.93	32.68	308.786	
7,444.73	7,099.00	3,512.00	3,448.77	22.27	10.54	-17.54	-1,638.13	8,613.46	10,133.50	10,100.68	32.82	308.806	
7,500.00	7,098.82	3,512.00	3,448.77	22.44	10.54	-17.54	-1,638.13	8,613.46	10,184.57	10,151.59	32.98	308.800	
7,600.00	7,098.49	3,512.00	3,448.77	22.74	10.54	-17.54	-1,638.13	8,613.46	10,277.09	10,243.81	33.28	308.794	
7,700.00	7,098.16	3,512.00	3,448.77	23.04	10.54	-17.54	-1,638.13	8,613.46	10,369.75	10,336.16	33.58	308.791	
7,800.00	7,097.83	3,512.00	3,448.77	23.34	10.54	-17.54	-1,638.13	8,613.46	10,462.54	10,428.66	33.88	308.793	
7,900.00	7,097.51	3,512.00	3,448.77	23.64	10.54	-17.54	-1,638.13	8,613.46	10,555.46	10,521.28	34.18	308.799	
8,000.00	7,097.18	3,512.00	3,448.77	23.94	10.54	-17.54	-1,638.13	8,613.46	10,648.51	10,614.03	34.48	308.808	
8,100.00	7,096.85	3,512.00	3,448.77	24.24	10.54	-17.54	-1,638.13	8,613.46	10,741.69	10,706.91	34.78	308.821	
8,200.00	7,096.52	3,512.00	3,448.77	24.54	10.54	-17.54	-1,638.13	8,613.46	10,834.99	10,799.90	35.08	308.837	
8,300.00	7,096.19	3,512.00	3,448.77	24.84	10.54	-17.54	-1,638.13	8,613.46	10,928.40	10,893.02	35.38	308.856	
8,400.00	7,095.87	3,512.00	3,448.77	25.14	10.54	-17.54	-1,638.13	8,613.46	11,021.94	10,986.25	35.68	308.878	
8,500.00	7,095.54	3,512.00	3,448.77	25.44	10.54	-17.54	-1,638.13	8,613.46	11,115.58	11,079.60	35.98	308.903	
8,600.00	7,095.21	3,512.00	3,448.77	25.74	10.54	-17.54	-1,638.13	8,613.46	11,209.34	11,173.05	36.28	308.930	
8,700.00	7,094.88	3,512.00	3,448.77	26.04	10.54	-17.54	-1,638.13	8,613.46	11,303.20	11,266.61	36.58	308.960	
8,800.00	7,094.55	3,512.00	3,448.77	26.35	10.54	-17.54	-1,638.13	8,613.46	11,397.16	11,360.28	36.88	308.992	
8,900.00	7,094.23	3,512.00	3,448.77	26.65	10.54	-17.54	-1,638.13	8,613.46	11,491.23	11,454.05	37.19	309.027	
9,000.00	7,093.90	3,512.00	3,448.77	26.95	10.54	-17.54	-1,638.13	8,613.46	11,585.40	11,547.91	37.49	309.063	
9,100.00	7,093.57	3,512.00	3,448.77	27.25	10.54	-17.54	-1,638.13	8,613.46	11,679.66	11,641.88	37.79	309.102	
9,200.00	7,093.24	3,512.00	3,448.77	27.55	10.54	-17.54	-1,638.13	8,613.46	11,774.02	11,735.94	38.09	309.142	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	3,512.00	3,448.77	27.85	10.54	-17.54	-1,638.13	8,613.46	11,868.47	11,830.09	38.39	309.184	
9,400.00	7,092.59	3,512.00	3,448.77	28.15	10.54	-17.54	-1,638.13	8,613.46	11,963.02	11,924.33	38.69	309.228	
9,500.00	7,092.26	3,512.00	3,448.77	28.45	10.54	-17.54	-1,638.13	8,613.46	12,057.65	12,018.66	38.99	309.274	
9,600.00	7,091.93	3,512.00	3,448.77	28.75	10.54	-17.54	-1,638.13	8,613.46	12,152.36	12,113.07	39.29	309.321	
9,700.00	7,091.60	3,512.00	3,448.77	29.05	10.54	-17.54	-1,638.13	8,613.46	12,247.16	12,207.57	39.59	309.369	
9,800.00	7,091.27	3,512.00	3,448.77	29.35	10.54	-17.54	-1,638.13	8,613.46	12,342.04	12,302.15	39.89	309.419	
9,900.00	7,090.95	3,512.00	3,448.77	29.65	10.54	-17.54	-1,638.13	8,613.46	12,437.00	12,396.82	40.19	309.470	
10,000.00	7,090.62	3,512.00	3,448.77	29.95	10.54	-17.54	-1,638.13	8,613.46	12,532.04	12,491.56	40.49	309.523	
10,100.00	7,090.29	3,512.00	3,448.77	30.25	10.54	-17.54	-1,638.13	8,613.46	12,627.16	12,586.37	40.79	309.576	
10,200.00	7,089.96	3,512.00	3,448.77	30.55	10.54	-17.54	-1,638.13	8,613.46	12,722.35	12,681.26	41.09	309.631	
10,300.00	7,089.63	3,512.00	3,448.77	30.85	10.54	-17.54	-1,638.13	8,613.46	12,817.62	12,776.23	41.39	309.686	
10,400.00	7,089.31	3,512.00	3,448.77	31.15	10.54	-17.54	-1,638.13	8,613.46	12,912.95	12,871.27	41.69	309.742	
10,500.00	7,088.98	3,512.00	3,448.77	31.45	10.54	-17.54	-1,638.13	8,613.46	13,008.36	12,966.37	41.99	309.800	
10,600.00	7,088.65	3,512.00	3,448.77	31.75	10.54	-17.54	-1,638.13	8,613.46	13,103.84	13,061.55	42.29	309.858	
10,700.00	7,088.32	3,512.00	3,448.77	32.06	10.54	-17.54	-1,638.13	8,613.46	13,199.38	13,156.79	42.59	309.917	
10,800.00	7,087.99	3,512.00	3,448.77	32.36	10.54	-17.54	-1,638.13	8,613.46	13,294.99	13,252.10	42.89	309.976	
10,900.00	7,087.67	3,512.00	3,448.77	32.66	10.54	-17.54	-1,638.13	8,613.46	13,390.66	13,347.47	43.19	310.036	
11,000.00	7,087.34	3,512.00	3,448.77	32.96	10.54	-17.54	-1,638.13	8,613.46	13,486.39	13,442.90	43.49	310.097	
11,100.00	7,087.01	3,512.00	3,448.77	33.26	10.54	-17.54	-1,638.13	8,613.46	13,582.19	13,538.40	43.79	310.159	
11,200.00	7,086.68	3,512.00	3,448.77	33.56	10.54	-17.54	-1,638.13	8,613.46	13,678.05	13,633.95	44.09	310.221	
11,300.00	7,086.35	3,512.00	3,448.77	33.86	10.54	-17.54	-1,638.13	8,613.46	13,773.96	13,729.57	44.39	310.283	
11,400.00	7,086.03	3,512.00	3,448.77	34.16	10.54	-17.54	-1,638.13	8,613.46	13,869.93	13,825.24	44.69	310.346	
11,500.00	7,085.70	3,512.00	3,448.77	34.46	10.54	-17.54	-1,638.13	8,613.46	13,965.96	13,920.97	44.99	310.410	
11,600.00	7,085.37	3,512.00	3,448.77	34.76	10.54	-17.54	-1,638.13	8,613.46	14,062.05	14,016.76	45.29	310.473	
11,700.00	7,085.04	3,512.00	3,448.77	35.06	10.54	-17.54	-1,638.13	8,613.46	14,158.19	14,112.59	45.59	310.538	
11,800.00	7,084.71	3,512.00	3,448.77	35.36	10.54	-17.54	-1,638.13	8,613.46	14,254.38	14,208.49	45.89	310.602	
11,900.00	7,084.39	3,512.00	3,448.77	35.66	10.54	-17.54	-1,638.13	8,613.46	14,350.62	14,304.43	46.19	310.667	
12,000.00	7,084.06	3,512.00	3,448.77	35.96	10.54	-17.54	-1,638.13	8,613.46	14,446.92	14,400.43	46.49	310.732	
12,100.00	7,083.73	3,512.00	3,448.77	36.26	10.54	-17.54	-1,638.13	8,613.46	14,543.26	14,496.47	46.79	310.797	
12,200.00	7,083.40	3,512.00	3,448.77	36.56	10.54	-17.54	-1,638.13	8,613.46	14,639.66	14,592.56	47.09	310.863	
12,300.00	7,083.07	3,512.00	3,448.77	36.86	10.54	-17.54	-1,638.13	8,613.46	14,736.10	14,688.71	47.39	310.928	
12,400.00	7,082.75	3,512.00	3,448.77	37.16	10.54	-17.54	-1,638.13	8,613.46	14,832.59	14,784.90	47.69	310.994	
12,500.00	7,082.42	3,512.00	3,448.77	37.46	10.54	-17.54	-1,638.13	8,613.46	14,929.13	14,881.13	47.99	311.060	
12,600.00	7,082.09	3,512.00	3,448.77	37.76	10.54	-17.54	-1,638.13	8,613.46	15,025.71	14,977.41	48.29	311.127	
12,700.00	7,081.76	3,512.00	3,448.77	38.06	10.54	-17.54	-1,638.13	8,613.46	15,122.33	15,073.74	48.59	311.193	
12,800.00	7,081.43	3,512.00	3,448.77	38.36	10.54	-17.54	-1,638.13	8,613.46	15,219.00	15,170.11	48.89	311.259	
12,900.00	7,081.11	3,512.00	3,448.77	38.66	10.54	-17.54	-1,638.13	8,613.46	15,315.71	15,266.52	49.20	311.326	
13,000.00	7,080.78	3,512.00	3,448.77	38.96	10.54	-17.54	-1,638.13	8,613.46	15,412.47	15,362.97	49.50	311.392	
13,100.00	7,080.45	3,512.00	3,448.77	39.26	10.54	-17.54	-1,638.13	8,613.46	15,509.26	15,459.47	49.80	311.459	
13,200.00	7,080.12	3,512.00	3,448.77	39.56	10.54	-17.54	-1,638.13	8,613.46	15,606.10	15,556.00	50.10	311.525	
13,300.00	7,079.79	3,512.00	3,448.77	39.86	10.54	-17.54	-1,638.13	8,613.46	15,702.97	15,652.58	50.40	311.592	
13,400.00	7,079.47	3,512.00	3,448.77	40.16	10.54	-17.54	-1,638.13	8,613.46	15,799.89	15,749.19	50.70	311.658	
13,500.00	7,079.14	3,512.00	3,448.77	40.46	10.54	-17.54	-1,638.13	8,613.46	15,896.84	15,845.84	51.00	311.725	
13,600.00	7,078.81	3,512.00	3,448.77	40.77	10.54	-17.54	-1,638.13	8,613.46	15,993.83	15,942.53	51.30	311.791	
13,700.00	7,078.48	3,512.00	3,448.77	41.07	10.54	-17.54	-1,638.13	8,613.46	16,090.85	16,039.26	51.60	311.858	
13,800.00	7,078.15	3,512.00	3,448.77	41.37	10.54	-17.54	-1,638.13	8,613.46	16,187.92	16,136.02	51.90	311.924	
13,900.00	7,077.83	3,512.00	3,448.77	41.67	10.54	-17.54	-1,638.13	8,613.46	16,285.01	16,232.82	52.20	311.990	
14,000.00	7,077.50	3,512.00	3,448.77	41.97	10.54	-17.54	-1,638.13	8,613.46	16,382.15	16,329.65	52.50	312.057	
14,100.00	7,077.17	3,512.00	3,448.77	42.27	10.54	-17.54	-1,638.13	8,613.46	16,479.32	16,426.52	52.80	312.123	
14,200.00	7,076.84	3,512.00	3,448.77	42.57	10.54	-17.54	-1,638.13	8,613.46	16,576.52	16,523.42	53.10	312.189	
14,300.00	7,076.51	3,512.00	3,448.77	42.87	10.54	-17.54	-1,638.13	8,613.46	16,673.75	16,620.35	53.40	312.255	
14,400.00	7,076.19	3,512.00	3,448.77	43.17	10.54	-17.54	-1,638.13	8,613.46	16,771.02	16,717.32	53.70	312.320	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	3,512.00	3,448.77	43.47	10.54	-17.54	-1,638.13	8,613.46	16,868.32	16,814.32	54.00	312.386	
14,600.00	7,075.53	3,512.00	3,448.77	43.77	10.54	-17.54	-1,638.13	8,613.46	16,965.65	16,911.35	54.30	312.452	
14,700.00	7,075.20	3,512.00	3,448.77	44.07	10.54	-17.54	-1,638.13	8,613.46	17,063.01	17,008.41	54.60	312.517	
14,800.00	7,074.87	3,512.00	3,448.77	44.37	10.54	-17.54	-1,638.13	8,613.46	17,160.40	17,105.50	54.90	312.582	
14,900.00	7,074.55	3,512.00	3,448.77	44.67	10.54	-17.54	-1,638.13	8,613.46	17,257.82	17,202.62	55.20	312.647	
15,000.00	7,074.22	3,512.00	3,448.77	44.97	10.54	-17.54	-1,638.13	8,613.46	17,355.27	17,299.77	55.50	312.712	
15,100.00	7,073.89	3,512.00	3,448.77	45.27	10.54	-17.54	-1,638.13	8,613.46	17,452.75	17,396.95	55.80	312.777	
15,200.00	7,073.56	3,512.00	3,448.77	45.57	10.54	-17.54	-1,638.13	8,613.46	17,550.26	17,494.16	56.10	312.841	
15,300.00	7,073.23	3,512.00	3,448.77	45.87	10.54	-17.54	-1,638.13	8,613.46	17,647.79	17,591.39	56.40	312.906	
15,400.00	7,072.91	3,512.00	3,448.77	46.17	10.54	-17.54	-1,638.13	8,613.46	17,745.36	17,688.66	56.70	312.970	
15,500.00	7,072.58	3,512.00	3,448.77	46.47	10.54	-17.54	-1,638.13	8,613.46	17,842.95	17,785.95	57.00	313.034	
15,600.00	7,072.25	3,512.00	3,448.77	46.77	10.54	-17.54	-1,638.13	8,613.46	17,940.56	17,883.26	57.30	313.098	
15,700.00	7,071.92	3,512.00	3,448.77	47.07	10.54	-17.54	-1,638.13	8,613.46	18,038.21	17,980.61	57.60	313.161	
15,800.00	7,071.59	3,512.00	3,448.77	47.37	10.54	-17.54	-1,638.13	8,613.46	18,135.87	18,077.97	57.90	313.224	
15,900.00	7,071.27	3,512.00	3,448.77	47.67	10.54	-17.54	-1,638.13	8,613.46	18,233.57	18,175.37	58.20	313.288	
16,000.00	7,070.94	3,512.00	3,448.77	47.97	10.54	-17.54	-1,638.13	8,613.46	18,331.29	18,272.79	58.50	313.350	
16,100.00	7,070.61	3,512.00	3,448.77	48.27	10.54	-17.54	-1,638.13	8,613.46	18,429.03	18,370.23	58.80	313.413	
16,200.00	7,070.28	3,512.00	3,448.77	48.57	10.54	-17.54	-1,638.13	8,613.46	18,526.80	18,467.70	59.10	313.476	
16,300.00	7,069.95	3,512.00	3,448.77	48.87	10.54	-17.54	-1,638.13	8,613.46	18,624.59	18,565.19	59.40	313.538	
16,400.00	7,069.63	3,512.00	3,448.77	49.17	10.54	-17.54	-1,638.13	8,613.46	18,722.40	18,662.70	59.70	313.600	
16,419.92	7,069.56	3,512.00	3,448.77	49.23	10.54	-17.54	-1,638.13	8,613.46	18,741.89	18,682.13	59.76	313.612	
16,500.00	7,069.30	3,512.00	3,448.77	49.47	10.54	-17.54	-1,638.13	8,613.46	18,820.24	18,760.24	60.00	313.662	
16,591.83	7,069.00	3,512.00	3,448.77	49.75	10.54	-17.54	-1,638.13	8,613.46	18,910.10	18,849.82	60.28	313.718	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	95.49	-571.32	5,942.54	5,969.94				
100.00	100.00	268.53	268.51	0.23	3.16	95.49	-571.32	5,942.54	5,969.94	5,966.55	3.39	1,762.802	
200.00	200.00	368.53	368.51	0.53	5.13	95.49	-571.32	5,942.54	5,969.94	5,964.28	5.65	1,056.007	
300.00	300.00	468.53	468.51	0.83	7.09	95.49	-571.32	5,942.54	5,969.94	5,962.02	7.92	753.779	
339.99	339.99	508.01	507.99	0.95	7.87	95.48	-570.25	5,942.54	5,969.83	5,961.02	8.82	677.111	CC
400.00	400.00	566.85	566.83	1.13	9.03	95.48	-570.37	5,942.54	5,969.85	5,959.69	10.15	587.943	
500.00	500.00	664.90	664.87	1.43	10.96	95.49	-570.83	5,942.54	5,969.89	5,957.51	12.38	482.137	
600.00	599.98	768.55	768.49	1.73	12.97	-108.97	-571.32	5,942.54	5,970.50	5,955.81	14.70	406.290	
707.91	707.73	876.30	876.24	2.05	15.02	-108.99	-571.32	5,942.54	5,972.39	5,955.33	17.07	349.974	ES
800.00	799.58	968.14	968.09	2.33	16.76	-109.05	-571.32	5,942.54	5,974.57	5,955.49	19.09	313.039	
900.00	899.31	1,067.04	1,066.98	2.63	18.64	-109.12	-570.85	5,942.54	5,976.90	5,955.64	21.26	281.084	
1,000.00	999.05	1,165.84	1,165.78	2.93	20.51	-109.18	-571.09	5,942.54	5,979.31	5,955.87	23.44	255.088	
1,100.00	1,098.79	1,267.38	1,267.30	3.23	22.47	-109.24	-571.32	5,942.54	5,981.72	5,956.03	25.70	232.784	
1,200.00	1,198.52	1,367.12	1,367.04	3.53	24.43	-109.31	-571.32	5,942.54	5,984.12	5,956.16	27.96	214.016	
1,300.00	1,298.26	1,466.86	1,466.77	3.83	26.40	-109.37	-571.32	5,942.54	5,986.53	5,956.30	30.23	198.061	
1,400.00	1,398.00	1,565.65	1,565.56	4.13	28.35	-109.45	-570.53	5,942.54	5,988.88	5,956.40	32.47	184.434	
1,500.00	1,497.73	1,664.16	1,664.06	4.43	30.29	-109.51	-570.83	5,942.54	5,991.33	5,956.61	34.71	172.601	
1,600.00	1,597.47	1,766.11	1,765.98	4.73	32.29	-109.57	-571.32	5,942.54	5,993.80	5,956.78	37.02	161.906	
1,700.00	1,697.21	1,865.85	1,865.72	5.03	34.26	-109.64	-571.32	5,942.54	5,996.24	5,956.95	39.29	152.634	
1,800.00	1,796.94	1,965.59	1,965.46	5.33	36.22	-109.70	-571.32	5,942.54	5,998.68	5,957.13	41.55	144.374	
1,900.00	1,896.68	2,064.56	2,064.42	5.63	38.17	-109.77	-570.56	5,942.54	6,001.08	5,957.28	43.80	137.013	
2,000.00	1,996.42	2,163.07	2,162.93	5.93	40.11	-109.83	-570.84	5,942.54	6,003.56	5,957.52	46.04	130.399	
2,100.00	2,096.15	2,264.84	2,264.67	6.23	42.12	-109.90	-571.32	5,942.54	6,006.07	5,957.72	48.34	124.235	
2,200.00	2,195.89	2,364.58	2,364.40	6.53	44.08	-109.96	-571.32	5,942.54	6,008.55	5,957.94	50.61	118.724	
2,300.00	2,295.63	2,464.18	2,464.00	6.83	46.04	-110.03	-570.67	5,942.54	6,010.98	5,958.11	52.87	113.691	
2,400.00	2,395.36	2,562.48	2,562.30	7.13	47.98	-110.09	-570.85	5,942.54	6,013.49	5,958.38	55.11	109.122	
2,500.00	2,495.10	2,663.82	2,663.61	7.43	49.98	-110.15	-571.32	5,942.54	6,016.02	5,958.61	57.41	104.792	
2,600.00	2,594.84	2,763.56	2,763.35	7.73	52.02	-110.22	-571.32	5,942.54	6,018.53	5,958.79	59.74	100.739	
2,700.00	2,694.57	2,863.24	2,863.02	8.03	54.05	-110.29	-570.66	5,942.54	6,021.00	5,958.92	62.08	96.991	
2,800.00	2,794.31	2,961.62	2,961.41	8.33	56.06	-110.35	-570.83	5,942.54	6,023.54	5,959.15	64.39	93.555	
2,900.00	2,894.05	3,062.82	3,062.56	8.63	58.12	-110.41	-571.32	5,942.54	6,026.10	5,959.35	66.75	90.277	
3,000.00	2,993.78	3,162.55	3,162.30	8.93	60.23	-110.48	-571.32	5,942.54	6,028.64	5,959.48	69.16	87.170	
3,100.00	3,093.52	3,261.80	3,261.54	9.23	62.33	-110.55	-570.57	5,942.54	6,031.14	5,959.58	71.56	84.284	
3,200.00	3,193.26	3,359.63	3,359.36	9.53	64.40	-110.61	-570.92	5,942.54	6,033.72	5,959.79	73.93	81.619	
3,300.00	3,292.99	3,461.82	3,461.51	9.83	66.56	-110.67	-571.32	5,942.54	6,036.30	5,959.92	76.39	79.023	
3,400.00	3,392.73	3,561.55	3,561.24	10.13	68.67	-110.73	-571.32	5,942.54	6,038.87	5,960.07	78.80	76.638	
3,500.00	3,492.47	3,597.00	3,596.66	10.43	69.42	-110.76	-571.32	5,942.54	6,041.79	5,961.95	79.84	75.670	
3,600.00	3,592.20	3,597.00	3,596.66	10.73	69.42	-110.76	-571.32	5,942.54	6,046.26	5,966.14	80.12	75.463	
3,700.00	3,691.94	3,597.00	3,596.66	11.03	69.42	-110.76	-571.32	5,942.54	6,052.38	5,971.99	80.38	75.294	
3,800.00	3,791.68	3,597.00	3,596.66	11.33	69.42	-110.76	-571.32	5,942.54	6,060.14	5,979.51	80.63	75.164	
3,900.00	3,891.41	3,597.00	3,596.66	11.63	69.42	-110.76	-571.32	5,942.54	6,069.54	5,988.69	80.85	75.071	
4,000.00	3,991.15	3,597.00	3,596.66	11.93	69.42	-110.76	-571.32	5,942.54	6,080.57	5,999.51	81.06	75.016	
4,100.00	4,090.89	3,597.00	3,596.66	12.23	69.42	-110.76	-571.32	5,942.54	6,093.22	6,011.97	81.25	74.996	SF
4,200.00	4,190.62	3,597.00	3,596.66	12.53	69.42	-110.76	-571.32	5,942.54	6,107.48	6,026.06	81.42	75.013	
4,300.00	4,290.36	3,597.00	3,596.66	12.83	69.42	-110.76	-571.32	5,942.54	6,123.34	6,041.77	81.57	75.064	
4,400.00	4,390.10	3,597.00	3,596.66	13.13	69.42	-110.76	-571.32	5,942.54	6,140.79	6,059.08	81.71	75.150	
4,500.00	4,489.84	3,597.00	3,596.66	13.43	69.42	-110.76	-571.32	5,942.54	6,159.82	6,077.98	81.84	75.270	
4,600.00	4,589.57	3,597.00	3,596.66	13.73	69.42	-110.76	-571.32	5,942.54	6,180.40	6,098.46	81.94	75.422	
4,700.00	4,689.31	3,597.00	3,596.66	14.03	69.42	-110.76	-571.32	5,942.54	6,202.53	6,120.49	82.04	75.607	
4,800.00	4,789.05	3,597.00	3,596.66	14.33	69.42	-110.76	-571.32	5,942.54	6,226.19	6,144.07	82.11	75.824	
4,900.00	4,888.78	3,597.00	3,596.66	14.63	69.42	-110.76	-571.32	5,942.54	6,251.35	6,169.18	82.18	76.071	
5,000.00	4,988.52	3,597.00	3,596.66	14.93	69.42	-110.76	-571.32	5,942.54	6,278.01	6,195.78	82.23	76.349	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	3,597.00	3,596.66	15.23	69.42	-110.76	-571.32	5,942.54	6,306.14	6,223.88	82.26	76.656	
5,200.00	5,187.99	3,597.00	3,596.66	15.53	69.42	-110.76	-571.32	5,942.54	6,335.73	6,253.44	82.29	76.993	
5,300.00	5,287.73	3,597.00	3,596.66	15.83	69.42	-110.76	-571.32	5,942.54	6,366.75	6,284.44	82.30	77.358	
5,400.00	5,387.47	3,597.00	3,596.66	16.13	69.42	-110.76	-571.32	5,942.54	6,399.18	6,316.87	82.30	77.751	
5,500.00	5,487.20	3,597.00	3,596.66	16.43	69.42	-110.76	-571.32	5,942.54	6,433.00	6,350.71	82.29	78.170	
5,600.00	5,586.94	3,597.00	3,596.66	16.73	69.42	-110.76	-571.32	5,942.54	6,468.19	6,385.92	82.28	78.617	
5,700.00	5,686.68	3,597.00	3,596.66	17.03	69.42	-110.76	-571.32	5,942.54	6,504.73	6,422.48	82.25	79.088	
5,800.00	5,786.41	3,597.00	3,596.66	17.33	69.42	-110.76	-571.32	5,942.54	6,542.59	6,460.38	82.21	79.585	
5,900.00	5,886.15	3,597.00	3,596.66	17.63	69.42	-110.76	-571.32	5,942.54	6,581.76	6,499.60	82.16	80.107	
6,000.00	5,985.89	3,597.00	3,596.66	17.93	69.42	-110.76	-571.32	5,942.54	6,622.20	6,540.09	82.11	80.652	
6,100.00	6,085.62	3,597.00	3,596.66	18.23	69.42	-110.76	-571.32	5,942.54	6,663.90	6,581.85	82.05	81.221	
6,200.00	6,185.36	3,597.00	3,596.66	18.53	69.42	-110.76	-571.32	5,942.54	6,706.83	6,624.85	81.98	81.811	
6,300.00	6,285.10	3,597.00	3,596.66	18.83	69.42	-110.76	-571.32	5,942.54	6,750.97	6,669.06	81.91	82.424	
6,400.00	6,384.83	3,597.00	3,596.66	19.13	69.42	-110.76	-571.32	5,942.54	6,796.29	6,714.47	81.83	83.058	
6,500.00	6,484.57	3,597.00	3,596.66	19.43	69.42	-110.76	-571.32	5,942.54	6,842.78	6,761.04	81.74	83.713	
6,559.90	6,544.31	3,597.00	3,596.66	19.61	69.42	-110.76	-571.32	5,942.54	6,871.17	6,789.48	81.69	84.115	
6,600.00	6,584.23	3,597.00	3,596.66	19.73	69.42	-142.79	-571.32	5,942.54	6,891.61	6,809.96	81.66	84.398	
6,650.00	6,633.60	3,597.00	3,596.66	19.88	69.42	-156.59	-571.32	5,942.54	6,920.61	6,838.99	81.63	84.784	
6,700.00	6,682.15	3,597.00	3,596.66	20.03	69.42	-162.17	-571.32	5,942.54	6,953.26	6,871.65	81.61	85.202	
6,750.00	6,729.52	3,597.00	3,596.66	20.18	69.42	-164.92	-571.32	5,942.54	6,989.26	6,907.65	81.60	85.648	
6,800.00	6,775.36	3,597.00	3,596.66	20.33	69.42	-166.34	-571.32	5,942.54	7,028.28	6,946.67	81.62	86.115	
6,850.00	6,819.31	3,597.00	3,596.66	20.48	69.42	-166.93	-571.32	5,942.54	7,069.98	6,988.34	81.64	86.597	
6,900.00	6,861.04	3,597.00	3,596.66	20.63	69.42	-166.84	-571.32	5,942.54	7,114.00	7,032.32	81.69	87.089	
6,950.00	6,900.22	3,597.00	3,596.66	20.78	69.42	-166.00	-571.32	5,942.54	7,159.97	7,078.22	81.75	87.584	
7,000.00	6,936.57	3,597.00	3,596.66	20.93	69.42	-163.99	-571.32	5,942.54	7,207.49	7,125.66	81.83	88.077	
7,050.00	6,969.80	3,597.00	3,596.66	21.08	69.42	-159.45	-571.32	5,942.54	7,256.19	7,174.26	81.93	88.562	
7,100.00	6,999.67	3,597.00	3,596.66	21.23	69.42	-146.57	-571.32	5,942.54	7,305.67	7,223.62	82.05	89.035	
7,150.00	7,025.94	3,597.00	3,596.66	21.38	69.42	-87.81	-571.32	5,942.54	7,355.54	7,273.35	82.19	89.489	
7,200.00	7,048.41	3,597.00	3,596.66	21.53	69.42	-25.54	-571.32	5,942.54	7,405.42	7,323.07	82.35	89.921	
7,250.00	7,066.92	3,597.00	3,596.66	21.68	69.42	-11.74	-571.32	5,942.54	7,454.94	7,372.41	82.53	90.327	
7,300.00	7,081.33	3,597.00	3,596.66	21.83	69.42	-6.74	-571.32	5,942.54	7,503.72	7,420.99	82.73	90.702	
7,350.00	7,091.51	3,597.00	3,596.66	21.98	69.42	-4.21	-571.32	5,942.54	7,551.42	7,468.48	82.94	91.043	
7,400.00	7,097.41	3,597.00	3,596.66	22.13	69.42	-2.70	-571.32	5,942.54	7,597.69	7,514.52	83.17	91.348	
7,444.73	7,099.00	3,597.00	3,596.66	22.27	69.42	-1.78	-571.32	5,942.54	7,637.61	7,554.22	83.39	91.587	
7,500.00	7,098.82	3,597.00	3,596.66	22.44	69.42	-1.78	-571.32	5,942.54	7,686.03	7,602.36	83.67	91.861	
7,600.00	7,098.49	3,597.00	3,596.66	22.74	69.42	-1.78	-571.32	5,942.54	7,773.87	7,689.70	84.17	92.362	
7,700.00	7,098.16	3,597.00	3,596.66	23.04	69.42	-1.78	-571.32	5,942.54	7,862.00	7,777.34	84.66	92.866	
7,800.00	7,097.83	3,597.00	3,596.66	23.34	69.42	-1.78	-571.32	5,942.54	7,950.41	7,865.26	85.14	93.376	
7,900.00	7,097.51	3,597.00	3,596.66	23.64	69.42	-1.78	-571.32	5,942.54	8,039.09	7,953.47	85.62	93.889	
8,000.00	7,097.18	3,597.00	3,596.66	23.94	69.42	-1.78	-571.32	5,942.54	8,128.03	8,041.94	86.10	94.406	
8,100.00	7,096.85	3,597.00	3,596.66	24.24	69.42	-1.78	-571.32	5,942.54	8,217.23	8,130.67	86.56	94.927	
8,200.00	7,096.52	3,597.00	3,596.66	24.54	69.42	-1.78	-571.32	5,942.54	8,306.67	8,219.65	87.03	95.450	
8,300.00	7,096.19	3,597.00	3,596.66	24.84	69.42	-1.78	-571.32	5,942.54	8,396.36	8,308.87	87.48	95.977	
8,400.00	7,095.87	3,597.00	3,596.66	25.14	69.42	-1.78	-571.32	5,942.54	8,486.27	8,398.33	87.94	96.506	
8,500.00	7,095.54	3,597.00	3,596.66	25.44	69.42	-1.78	-571.32	5,942.54	8,576.41	8,488.02	88.38	97.037	
8,600.00	7,095.21	3,597.00	3,596.66	25.74	69.42	-1.78	-571.32	5,942.54	8,666.76	8,577.93	88.83	97.571	
8,700.00	7,094.88	3,597.00	3,596.66	26.04	69.42	-1.78	-571.32	5,942.54	8,757.32	8,668.06	89.26	98.106	
8,800.00	7,094.55	3,597.00	3,596.66	26.35	69.42	-1.78	-571.32	5,942.54	8,848.09	8,758.39	89.70	98.643	
8,900.00	7,094.23	3,597.00	3,596.66	26.65	69.42	-1.78	-571.32	5,942.54	8,939.05	8,848.92	90.13	99.182	
9,000.00	7,093.90	3,597.00	3,596.66	26.95	69.42	-1.78	-571.32	5,942.54	9,030.20	8,939.65	90.55	99.722	
9,100.00	7,093.57	3,597.00	3,596.66	27.25	69.42	-1.78	-571.32	5,942.54	9,121.54	9,030.56	90.98	100.263	
9,200.00	7,093.24	3,597.00	3,596.66	27.55	69.42	-1.78	-571.32	5,942.54	9,213.06	9,121.66	91.40	100.804	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	3,597.00	3,596.66	27.85	69.42	-1.78	-571.32	5,942.54	9,304.75	9,212.94	91.81	101.347	
9,400.00	7,092.59	3,597.00	3,596.66	28.15	69.42	-1.78	-571.32	5,942.54	9,396.62	9,304.39	92.22	101.891	
9,500.00	7,092.26	3,597.00	3,596.66	28.45	69.42	-1.78	-571.32	5,942.54	9,488.64	9,396.01	92.63	102.435	
9,600.00	7,091.93	3,597.00	3,596.66	28.75	69.42	-1.78	-571.32	5,942.54	9,580.83	9,487.79	93.04	102.979	
9,700.00	7,091.60	3,597.00	3,596.66	29.05	69.42	-1.78	-571.32	5,942.54	9,673.17	9,579.73	93.44	103.524	
9,800.00	7,091.27	3,597.00	3,596.66	29.35	69.42	-1.78	-571.32	5,942.54	9,765.67	9,671.83	93.84	104.068	
9,900.00	7,090.95	3,597.00	3,596.66	29.65	69.42	-1.78	-571.32	5,942.54	9,858.31	9,764.07	94.24	104.613	
10,000.00	7,090.62	3,597.00	3,596.66	29.95	69.42	-1.78	-571.32	5,942.54	9,951.09	9,856.46	94.63	105.158	
10,100.00	7,090.29	3,597.00	3,596.66	30.25	69.42	-1.78	-571.32	5,942.54	10,044.01	9,948.99	95.02	105.702	
10,200.00	7,089.96	3,597.00	3,596.66	30.55	69.42	-1.78	-571.32	5,942.54	10,137.07	10,041.66	95.41	106.247	
10,300.00	7,089.63	3,597.00	3,596.66	30.85	69.42	-1.78	-571.32	5,942.54	10,230.25	10,134.46	95.80	106.790	
10,400.00	7,089.31	3,597.00	3,596.66	31.15	69.42	-1.78	-571.32	5,942.54	10,323.57	10,227.39	96.18	107.334	
10,500.00	7,088.98	3,597.00	3,596.66	31.45	69.42	-1.78	-571.32	5,942.54	10,417.01	10,320.44	96.56	107.877	
10,600.00	7,088.65	3,597.00	3,596.66	31.75	69.42	-1.78	-571.32	5,942.54	10,510.56	10,413.62	96.94	108.419	
10,700.00	7,088.32	3,597.00	3,596.66	32.06	69.42	-1.78	-571.32	5,942.54	10,604.24	10,506.92	97.32	108.961	
10,800.00	7,087.99	3,597.00	3,596.66	32.36	69.42	-1.78	-571.32	5,942.54	10,698.03	10,600.34	97.70	109.502	
10,900.00	7,087.67	3,597.00	3,596.66	32.66	69.42	-1.78	-571.32	5,942.54	10,791.94	10,693.86	98.07	110.042	
11,000.00	7,087.34	3,597.00	3,596.66	32.96	69.42	-1.78	-571.32	5,942.54	10,885.95	10,787.50	98.44	110.581	
11,100.00	7,087.01	3,597.00	3,596.66	33.26	69.42	-1.78	-571.32	5,942.54	10,980.06	10,881.25	98.81	111.120	
11,200.00	7,086.68	3,597.00	3,596.66	33.56	69.42	-1.78	-571.32	5,942.54	11,074.28	10,975.10	99.18	111.657	
11,300.00	7,086.35	3,597.00	3,596.66	33.86	69.42	-1.78	-571.32	5,942.54	11,168.60	11,069.06	99.55	112.193	
11,400.00	7,086.03	3,597.00	3,596.66	34.16	69.42	-1.78	-571.32	5,942.54	11,263.02	11,163.11	99.91	112.729	
11,500.00	7,085.70	3,597.00	3,596.66	34.46	69.42	-1.78	-571.32	5,942.54	11,357.54	11,257.26	100.28	113.263	
11,600.00	7,085.37	3,597.00	3,596.66	34.76	69.42	-1.78	-571.32	5,942.54	11,452.14	11,351.51	100.64	113.796	
11,700.00	7,085.04	3,597.00	3,596.66	35.06	69.42	-1.78	-571.32	5,942.54	11,546.84	11,445.84	101.00	114.328	
11,800.00	7,084.71	3,597.00	3,596.66	35.36	69.42	-1.78	-571.32	5,942.54	11,641.63	11,540.27	101.36	114.858	
11,900.00	7,084.39	3,597.00	3,596.66	35.66	69.42	-1.78	-571.32	5,942.54	11,736.50	11,634.79	101.71	115.387	
12,000.00	7,084.06	3,597.00	3,596.66	35.96	69.42	-1.78	-571.32	5,942.54	11,831.46	11,729.39	102.07	115.915	
12,100.00	7,083.73	3,597.00	3,596.66	36.26	69.42	-1.78	-571.32	5,942.54	11,926.50	11,824.08	102.42	116.442	
12,200.00	7,083.40	3,597.00	3,596.66	36.56	69.42	-1.78	-571.32	5,942.54	12,021.62	11,918.84	102.78	116.967	
12,300.00	7,083.07	3,597.00	3,596.66	36.86	69.42	-1.78	-571.32	5,942.54	12,116.82	12,013.69	103.13	117.491	
12,400.00	7,082.75	3,597.00	3,596.66	37.16	69.42	-1.78	-571.32	5,942.54	12,212.10	12,108.62	103.48	118.013	
12,500.00	7,082.42	3,597.00	3,596.66	37.46	69.42	-1.78	-571.32	5,942.54	12,307.45	12,203.62	103.83	118.534	
12,600.00	7,082.09	3,597.00	3,596.66	37.76	69.42	-1.78	-571.32	5,942.54	12,402.87	12,298.69	104.18	119.053	
12,700.00	7,081.76	3,597.00	3,596.66	38.06	69.42	-1.78	-571.32	5,942.54	12,498.37	12,393.84	104.53	119.571	
12,800.00	7,081.43	3,597.00	3,596.66	38.36	69.42	-1.78	-571.32	5,942.54	12,593.93	12,489.06	104.87	120.088	
12,900.00	7,081.11	3,597.00	3,596.66	38.66	69.42	-1.78	-571.32	5,942.54	12,689.57	12,584.35	105.22	120.603	
13,000.00	7,080.78	3,597.00	3,596.66	38.96	69.42	-1.78	-571.32	5,942.54	12,785.27	12,679.71	105.56	121.116	
13,100.00	7,080.45	3,597.00	3,596.66	39.26	69.42	-1.78	-571.32	5,942.54	12,881.04	12,775.13	105.91	121.627	
13,200.00	7,080.12	3,597.00	3,596.66	39.56	69.42	-1.78	-571.32	5,942.54	12,976.87	12,870.62	106.25	122.137	
13,300.00	7,079.79	3,597.00	3,596.66	39.86	69.42	-1.78	-571.32	5,942.54	13,072.76	12,966.17	106.59	122.646	
13,400.00	7,079.47	3,597.00	3,596.66	40.16	69.42	-1.78	-571.32	5,942.54	13,168.71	13,061.78	106.93	123.153	
13,500.00	7,079.14	3,597.00	3,596.66	40.46	69.42	-1.78	-571.32	5,942.54	13,264.73	13,157.46	107.27	123.658	
13,600.00	7,078.81	3,597.00	3,596.66	40.77	69.42	-1.78	-571.32	5,942.54	13,360.80	13,253.19	107.61	124.161	
13,700.00	7,078.48	3,597.00	3,596.66	41.07	69.42	-1.78	-571.32	5,942.54	13,456.93	13,348.98	107.95	124.663	
13,800.00	7,078.15	3,597.00	3,596.66	41.37	69.42	-1.78	-571.32	5,942.54	13,553.11	13,444.83	108.28	125.163	
13,900.00	7,077.83	3,597.00	3,596.66	41.67	69.42	-1.78	-571.32	5,942.54	13,649.35	13,540.73	108.62	125.661	
14,000.00	7,077.50	3,597.00	3,596.66	41.97	69.42	-1.78	-571.32	5,942.54	13,745.64	13,636.69	108.96	126.158	
14,100.00	7,077.17	3,597.00	3,596.66	42.27	69.42	-1.78	-571.32	5,942.54	13,841.99	13,732.70	109.29	126.653	
14,200.00	7,076.84	3,597.00	3,596.66	42.57	69.42	-1.78	-571.32	5,942.54	13,938.39	13,828.76	109.62	127.146	
14,300.00	7,076.51	3,597.00	3,596.66	42.87	69.42	-1.78	-571.32	5,942.54	14,034.84	13,924.88	109.96	127.638	
14,400.00	7,076.19	3,597.00	3,596.66	43.17	69.42	-1.78	-571.32	5,942.54	14,131.33	14,021.04	110.29	128.128	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	3,597.00	3,596.66	43.47	69.42	-1.78	-571.32	5,942.54	14,227.88	14,117.26	110.62	128.616	
14,600.00	7,075.53	3,597.00	3,596.66	43.77	69.42	-1.78	-571.32	5,942.54	14,324.47	14,213.52	110.95	129.102	
14,700.00	7,075.20	3,597.00	3,596.66	44.07	69.42	-1.78	-571.32	5,942.54	14,421.11	14,309.83	111.29	129.587	
14,800.00	7,074.87	3,597.00	3,596.66	44.37	69.42	-1.78	-571.32	5,942.54	14,517.80	14,406.18	111.62	130.070	
14,900.00	7,074.55	3,597.00	3,596.66	44.67	69.42	-1.78	-571.32	5,942.54	14,614.53	14,502.58	111.95	130.551	
15,000.00	7,074.22	3,597.00	3,596.66	44.97	69.42	-1.78	-571.32	5,942.54	14,711.30	14,599.03	112.27	131.030	
15,100.00	7,073.89	3,597.00	3,596.66	45.27	69.42	-1.78	-571.32	5,942.54	14,808.12	14,695.52	112.60	131.508	
15,200.00	7,073.56	3,597.00	3,596.66	45.57	69.42	-1.78	-571.32	5,942.54	14,904.98	14,792.05	112.93	131.984	
15,300.00	7,073.23	3,597.00	3,596.66	45.87	69.42	-1.78	-571.32	5,942.54	15,001.88	14,888.62	113.26	132.458	
15,400.00	7,072.91	3,597.00	3,596.66	46.17	69.42	-1.78	-571.32	5,942.54	15,098.82	14,985.23	113.58	132.930	
15,500.00	7,072.58	3,597.00	3,596.66	46.47	69.42	-1.78	-571.32	5,942.54	15,195.80	15,081.88	113.91	133.400	
15,600.00	7,072.25	3,597.00	3,596.66	46.77	69.42	-1.78	-571.32	5,942.54	15,292.81	15,178.58	114.24	133.869	
15,700.00	7,071.92	3,597.00	3,596.66	47.07	69.42	-1.78	-571.32	5,942.54	15,389.87	15,275.31	114.56	134.336	
15,800.00	7,071.59	3,597.00	3,596.66	47.37	69.42	-1.78	-571.32	5,942.54	15,486.97	15,372.08	114.89	134.801	
15,900.00	7,071.27	3,597.00	3,596.66	47.67	69.42	-1.78	-571.32	5,942.54	15,584.10	15,468.89	115.21	135.265	
16,000.00	7,070.94	3,597.00	3,596.66	47.97	69.42	-1.78	-571.32	5,942.54	15,681.26	15,565.73	115.54	135.727	
16,100.00	7,070.61	3,597.00	3,596.66	48.27	69.42	-1.78	-571.32	5,942.54	15,778.47	15,662.61	115.86	136.187	
16,200.00	7,070.28	3,597.00	3,596.66	48.57	69.42	-1.78	-571.32	5,942.54	15,875.70	15,759.52	116.18	136.645	
16,300.00	7,069.95	3,597.00	3,596.66	48.87	69.42	-1.78	-571.32	5,942.54	15,972.97	15,856.47	116.50	137.101	
16,400.00	7,069.63	3,597.00	3,596.66	49.17	69.42	-1.78	-571.32	5,942.54	16,070.28	15,953.45	116.83	137.556	
16,419.92	7,069.56	3,597.00	3,596.66	49.23	69.42	-1.78	-571.32	5,942.54	16,089.67	15,972.78	116.89	137.646	
16,500.00	7,069.30	3,597.00	3,596.66	49.47	69.42	-1.78	-571.32	5,942.54	16,167.62	16,050.47	117.15	138.009	
16,591.83	7,069.00	3,597.00	3,596.66	49.75	69.42	-1.78	-571.32	5,942.54	16,257.03	16,139.59	117.44	138.423	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	618.58	617.88	0.00	1.81	90.83	-201.76	13,896.01	13,905.60				
100.00	100.00	669.88	668.80	0.23	1.97	90.86	-207.73	13,894.24	13,902.33	13,900.13	2.19	6,336.239	
200.00	200.00	706.00	704.59	0.53	2.08	90.88	-212.56	13,893.15	13,899.49	13,896.89	2.60	5,340.850	
300.00	300.00	734.98	733.24	0.83	2.16	90.89	-216.81	13,892.41	13,897.14	13,894.15	2.99	4,648.753	
400.00	400.00	767.00	764.85	1.13	2.26	90.92	-221.89	13,891.76	13,895.31	13,891.92	3.39	4,104.356	
500.00	500.00	795.94	793.36	1.43	2.35	90.94	-226.84	13,891.31	13,893.98	13,890.21	3.77	3,683.140	
562.16	562.15	828.00	824.88	1.61	2.44	-113.50	-232.71	13,890.94	13,893.68	13,889.62	4.05	3,426.339	CC, ES
600.00	599.98	831.96	828.76	1.73	2.46	-113.50	-233.46	13,890.90	13,893.83	13,889.65	4.18	3,323.595	
707.91	707.73	919.18	913.84	2.05	2.72	-113.41	-252.60	13,890.07	13,895.51	13,890.74	4.77	2,915.686	
800.00	799.58	970.58	963.45	2.33	2.87	-113.36	-266.04	13,889.67	13,897.88	13,892.68	5.20	2,674.587	
900.00	899.31	1,009.00	1,000.24	2.63	2.99	-113.33	-277.12	13,889.45	13,900.79	13,895.18	5.61	2,477.180	
1,000.00	999.05	1,068.00	1,056.35	2.93	3.17	-113.27	-295.35	13,889.32	13,904.08	13,897.99	6.09	2,283.645	
1,100.00	1,098.79	1,104.53	1,090.95	3.23	3.28	-113.23	-307.06	13,889.40	13,907.81	13,901.32	6.50	2,140.272	
1,200.00	1,198.52	1,156.85	1,140.40	3.53	3.43	-113.17	-324.15	13,889.71	13,911.96	13,905.01	6.96	2,000.247	
1,300.00	1,298.26	1,344.88	1,317.82	3.83	4.00	-112.97	-386.42	13,890.36	13,915.96	13,908.14	7.82	1,779.712	
1,400.00	1,398.00	1,376.00	1,347.16	4.13	4.09	-112.93	-396.79	13,890.45	13,919.95	13,911.73	8.21	1,694.954	
1,500.00	1,497.73	1,438.00	1,405.64	4.43	4.28	-112.86	-417.36	13,890.86	13,924.34	13,915.64	8.70	1,600.759	
1,600.00	1,597.47	1,479.25	1,444.54	4.73	4.40	-112.82	-431.09	13,891.25	13,929.07	13,919.95	9.12	1,526.919	
1,700.00	1,697.21	1,531.92	1,494.07	5.03	4.56	-112.76	-449.01	13,891.93	13,934.21	13,924.63	9.58	1,454.456	
1,800.00	1,796.94	1,800.00	1,587.36	5.33	5.37	-112.64	-483.39	13,893.31	13,939.54	13,928.85	10.68	1,304.635	
1,900.00	1,896.68	1,693.00	1,645.31	5.63	5.04	-112.57	-504.38	13,894.24	13,945.01	13,934.34	10.66	1,307.721	
2,000.00	1,996.42	1,844.50	1,787.35	5.93	5.50	-112.40	-557.03	13,896.24	13,950.33	13,938.91	11.42	1,221.772	
2,100.00	2,096.15	1,974.56	1,909.73	6.23	5.89	-112.25	-601.01	13,897.70	13,955.53	13,943.42	12.11	1,152.560	
2,200.00	2,195.89	2,048.79	1,979.81	6.53	6.11	-112.17	-625.52	13,898.50	13,960.72	13,948.09	12.63	1,105.274	
2,300.00	2,295.63	2,300.00	2,326.81	6.83	6.87	-111.77	-746.82	13,900.01	13,965.80	13,952.12	13.68	1,020.548	
2,400.00	2,395.36	2,568.60	2,470.74	7.13	7.67	-111.61	-796.28	13,898.46	13,968.99	13,954.20	14.79	944.462	
2,500.00	2,495.10	2,643.00	2,541.47	7.43	7.90	-111.53	-819.33	13,897.57	13,972.08	13,956.77	15.31	912.396	
2,600.00	2,594.84	2,706.00	2,601.32	7.73	8.09	-111.47	-838.99	13,897.13	13,975.62	13,959.82	15.80	884.386	
2,700.00	2,694.57	2,895.00	2,781.99	8.03	8.65	-111.29	-894.38	13,895.25	13,978.74	13,962.07	16.67	838.576	
2,800.00	2,794.31	2,895.00	2,781.99	8.33	8.65	-111.29	-894.38	13,895.25	13,982.13	13,965.16	16.97	823.950	
2,900.00	2,894.05	2,932.16	2,817.98	8.63	8.76	-111.26	-903.61	13,895.08	13,985.95	13,968.57	17.38	804.664	
3,000.00	2,993.78	2,958.00	2,843.12	8.93	8.84	-111.24	-909.57	13,895.27	13,990.47	13,972.71	17.76	787.812	
3,100.00	3,093.52	3,260.00	3,140.97	9.23	9.74	-111.13	-957.75	13,897.38	13,995.12	13,976.16	18.96	737.959	
3,200.00	3,193.26	3,527.00	3,407.78	9.53	10.54	-111.17	-966.15	13,896.75	13,997.45	13,977.38	20.07	697.585	
3,300.00	3,292.99	3,527.00	3,407.78	9.83	10.54	-111.17	-966.15	13,896.75	13,999.92	13,979.55	20.37	687.430	
3,400.00	3,392.73	3,527.00	3,407.78	10.13	10.54	-111.17	-966.15	13,896.75	14,003.10	13,982.43	20.67	677.603	
3,500.00	3,492.47	3,527.00	3,407.78	10.43	10.54	-111.17	-966.15	13,896.75	14,006.99	13,986.02	20.97	668.092	
3,600.00	3,592.20	3,527.00	3,407.78	10.73	10.54	-111.17	-966.15	13,896.75	14,011.59	13,990.33	21.27	658.883	
3,700.00	3,691.94	3,527.00	3,407.78	11.03	10.54	-111.17	-966.15	13,896.75	14,016.91	13,995.35	21.57	649.963	
3,800.00	3,791.68	3,527.00	3,407.78	11.33	10.54	-111.17	-966.15	13,896.75	14,022.94	14,001.08	21.87	641.320	
3,900.00	3,891.41	3,527.00	3,407.78	11.63	10.54	-111.17	-966.15	13,896.75	14,029.68	14,007.51	22.17	632.944	
4,000.00	3,991.15	3,527.00	3,407.78	11.93	10.54	-111.17	-966.15	13,896.75	14,037.13	14,014.66	22.47	624.822	
4,100.00	4,090.89	3,527.00	3,407.78	12.23	10.54	-111.17	-966.15	13,896.75	14,045.28	14,022.52	22.77	616.946	
4,200.00	4,190.62	3,527.00	3,407.78	12.53	10.54	-111.17	-966.15	13,896.75	14,054.15	14,031.08	23.07	609.305	
4,300.00	4,290.36	3,527.00	3,407.78	12.83	10.54	-111.17	-966.15	13,896.75	14,063.72	14,040.35	23.37	601.891	
4,400.00	4,390.10	3,527.00	3,407.78	13.13	10.54	-111.17	-966.15	13,896.75	14,073.99	14,050.32	23.67	594.695	
4,500.00	4,489.84	3,527.00	3,407.78	13.43	10.54	-111.17	-966.15	13,896.75	14,084.96	14,061.00	23.97	587.708	
4,600.00	4,589.57	3,527.00	3,407.78	13.73	10.54	-111.17	-966.15	13,896.75	14,096.64	14,072.37	24.27	580.923	
4,700.00	4,689.31	3,527.00	3,407.78	14.03	10.54	-111.17	-966.15	13,896.75	14,109.02	14,084.45	24.57	574.331	
4,800.00	4,789.05	3,527.00	3,407.78	14.33	10.54	-111.17	-966.15	13,896.75	14,122.09	14,097.22	24.87	567.927	
4,900.00	4,888.78	3,527.00	3,407.78	14.63	10.54	-111.17	-966.15	13,896.75	14,135.86	14,110.69	25.17	561.704	
5,000.00	4,988.52	3,527.00	3,407.78	14.93	10.54	-111.17	-966.15	13,896.75	14,150.32	14,124.85	25.47	555.654	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	3,527.00	3,407.78	15.23	10.54	-111.17	-966.15	13,896.75	14,165.47	14,139.70	25.77	549.772	
5,200.00	5,187.99	3,527.00	3,407.78	15.53	10.54	-111.17	-966.15	13,896.75	14,181.31	14,155.24	26.07	544.052	
5,300.00	5,287.73	3,527.00	3,407.78	15.83	10.54	-111.17	-966.15	13,896.75	14,197.84	14,171.47	26.37	538.488	
5,400.00	5,387.47	3,527.00	3,407.78	16.13	10.54	-111.17	-966.15	13,896.75	14,215.05	14,188.38	26.67	533.075	
5,500.00	5,487.20	3,527.00	3,407.78	16.43	10.54	-111.17	-966.15	13,896.75	14,232.94	14,205.98	26.97	527.807	
5,600.00	5,586.94	3,527.00	3,407.78	16.73	10.54	-111.17	-966.15	13,896.75	14,251.52	14,224.25	27.27	522.681	
5,700.00	5,686.68	3,527.00	3,407.78	17.03	10.54	-111.17	-966.15	13,896.75	14,270.77	14,243.20	27.57	517.690	
5,800.00	5,786.41	3,527.00	3,407.78	17.33	10.54	-111.17	-966.15	13,896.75	14,290.69	14,262.82	27.87	512.832	
5,900.00	5,886.15	3,527.00	3,407.78	17.63	10.54	-111.17	-966.15	13,896.75	14,311.29	14,283.12	28.17	508.100	
6,000.00	5,985.89	3,527.00	3,407.78	17.93	10.54	-111.17	-966.15	13,896.75	14,332.55	14,304.08	28.47	503.492	
6,100.00	6,085.62	3,527.00	3,407.78	18.23	10.54	-111.17	-966.15	13,896.75	14,354.48	14,325.71	28.77	499.003	
6,200.00	6,185.36	3,527.00	3,407.78	18.53	10.54	-111.17	-966.15	13,896.75	14,377.07	14,348.00	29.07	494.630	
6,300.00	6,285.10	3,527.00	3,407.78	18.83	10.54	-111.17	-966.15	13,896.75	14,400.32	14,370.95	29.37	490.368	
6,400.00	6,384.83	3,527.00	3,407.78	19.13	10.54	-111.17	-966.15	13,896.75	14,424.22	14,394.55	29.67	486.215	
6,500.00	6,484.57	3,527.00	3,407.78	19.43	10.54	-111.17	-966.15	13,896.75	14,448.78	14,418.81	29.97	482.166	
6,559.90	6,544.31	3,527.00	3,407.78	19.61	10.54	-111.17	-966.15	13,896.75	14,463.80	14,433.65	30.15	479.790	
6,600.00	6,584.23	3,527.00	3,407.78	19.73	10.54	-143.29	-966.15	13,896.75	14,475.33	14,445.06	30.27	478.248	
6,650.00	6,633.60	3,527.00	3,407.78	19.88	10.54	-157.21	-966.15	13,896.75	14,493.56	14,463.14	30.42	476.464	
6,700.00	6,682.15	3,527.00	3,407.78	20.03	10.54	-162.94	-966.15	13,896.75	14,515.90	14,485.33	30.57	474.832	
6,750.00	6,729.52	3,527.00	3,407.78	20.18	10.54	-165.90	-966.15	13,896.75	14,542.18	14,511.46	30.72	473.345	
6,800.00	6,775.36	3,527.00	3,407.78	20.33	10.54	-167.59	-966.15	13,896.75	14,572.18	14,541.30	30.87	471.994	
6,850.00	6,819.31	3,527.00	3,407.78	20.48	10.54	-168.58	-966.15	13,896.75	14,605.63	14,574.61	31.03	470.768	
6,900.00	6,861.04	3,527.00	3,407.78	20.63	10.54	-169.09	-966.15	13,896.75	14,642.27	14,611.09	31.18	469.656	
6,950.00	6,900.22	3,527.00	3,407.78	20.78	10.54	-169.24	-966.15	13,896.75	14,681.79	14,650.47	31.33	468.649	
7,000.00	6,936.57	3,527.00	3,407.78	20.93	10.54	-169.03	-966.15	13,896.75	14,723.88	14,692.40	31.48	467.734	
7,050.00	6,969.80	3,527.00	3,407.78	21.08	10.54	-168.39	-966.15	13,896.75	14,768.18	14,736.55	31.63	466.900	
7,100.00	6,999.67	3,527.00	3,407.78	21.23	10.54	-167.13	-966.15	13,896.75	14,814.35	14,782.57	31.78	466.135	
7,150.00	7,025.94	3,527.00	3,407.78	21.38	10.54	-164.72	-966.15	13,896.75	14,862.02	14,830.08	31.93	465.425	
7,200.00	7,048.41	3,527.00	3,407.78	21.53	10.54	-159.65	-966.15	13,896.75	14,910.80	14,878.72	32.08	464.760	
7,250.00	7,066.92	3,527.00	3,407.78	21.68	10.54	-145.17	-966.15	13,896.75	14,960.33	14,928.10	32.23	464.126	
7,300.00	7,081.33	3,527.00	3,407.78	21.83	10.54	-79.90	-966.15	13,896.75	15,010.22	14,977.84	32.38	463.513	
7,350.00	7,091.51	3,527.00	3,407.78	21.98	10.54	-23.93	-966.15	13,896.75	15,060.08	15,027.55	32.53	462.907	
7,400.00	7,097.41	3,527.00	3,407.78	22.13	10.54	-11.40	-966.15	13,896.75	15,109.55	15,076.87	32.68	462.297	
7,444.73	7,099.00	3,527.00	3,407.78	22.27	10.54	-6.98	-966.15	13,896.75	15,153.16	15,120.34	32.82	461.738	
7,500.00	7,098.82	3,527.00	3,407.78	22.44	10.54	-6.98	-966.15	13,896.75	15,206.56	15,173.58	32.98	461.033	
7,600.00	7,098.49	3,527.00	3,407.78	22.74	10.54	-6.98	-966.15	13,896.75	15,303.22	15,269.94	33.28	459.776	
7,700.00	7,098.16	3,527.00	3,407.78	23.04	10.54	-6.98	-966.15	13,896.75	15,399.92	15,366.34	33.58	458.542	
7,800.00	7,097.83	3,527.00	3,407.78	23.34	10.54	-6.98	-966.15	13,896.75	15,496.67	15,462.78	33.88	457.332	
7,900.00	7,097.51	3,527.00	3,407.78	23.64	10.54	-6.98	-966.15	13,896.75	15,593.45	15,559.26	34.19	456.145	
8,000.00	7,097.18	3,527.00	3,407.78	23.94	10.54	-6.98	-966.15	13,896.75	15,690.27	15,655.79	34.49	454.979	
8,100.00	7,096.85	3,527.00	3,407.78	24.24	10.54	-6.98	-966.15	13,896.75	15,787.14	15,752.35	34.79	453.835	
8,200.00	7,096.52	3,527.00	3,407.78	24.54	10.54	-6.98	-966.15	13,896.75	15,884.04	15,848.95	35.09	452.711	
8,300.00	7,096.19	3,527.00	3,407.78	24.84	10.54	-6.98	-966.15	13,896.75	15,980.98	15,945.59	35.39	451.608	
8,400.00	7,095.87	3,527.00	3,407.78	25.14	10.54	-6.98	-966.15	13,896.75	16,077.96	16,042.27	35.69	450.524	
8,500.00	7,095.54	3,527.00	3,407.78	25.44	10.54	-6.98	-966.15	13,896.75	16,174.97	16,138.99	35.99	449.460	
8,600.00	7,095.21	3,527.00	3,407.78	25.74	10.54	-6.98	-966.15	13,896.75	16,272.03	16,235.74	36.29	448.414	
8,700.00	7,094.88	3,527.00	3,407.78	26.04	10.54	-6.98	-966.15	13,896.75	16,369.11	16,332.52	36.59	447.386	
8,800.00	7,094.55	3,527.00	3,407.78	26.35	10.54	-6.98	-966.15	13,896.75	16,466.23	16,429.35	36.89	446.377	
8,900.00	7,094.23	3,527.00	3,407.78	26.65	10.54	-6.98	-966.15	13,896.75	16,563.39	16,526.20	37.19	445.384	
9,000.00	7,093.90	3,527.00	3,407.78	26.95	10.54	-6.98	-966.15	13,896.75	16,660.58	16,623.09	37.49	444.408	
9,100.00	7,093.57	3,527.00	3,407.78	27.25	10.54	-6.98	-966.15	13,896.75	16,757.80	16,720.01	37.79	443.449	
9,200.00	7,093.24	3,527.00	3,407.78	27.55	10.54	-6.98	-966.15	13,896.75	16,855.06	16,816.97	38.09	442.506	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	3,527.00	3,407.78	27.85	10.54	-6.98	-966.15	13,896.75	16,952.34	16,913.95	38.39	441.578	
9,400.00	7,092.59	3,527.00	3,407.78	28.15	10.54	-6.98	-966.15	13,896.75	17,049.66	17,010.97	38.69	440.666	
9,500.00	7,092.26	3,527.00	3,407.78	28.45	10.54	-6.98	-966.15	13,896.75	17,147.01	17,108.02	38.99	439.769	
9,600.00	7,091.93	3,527.00	3,407.78	28.75	10.54	-6.98	-966.15	13,896.75	17,244.39	17,205.10	39.29	438.886	
9,700.00	7,091.60	3,527.00	3,407.78	29.05	10.54	-6.98	-966.15	13,896.75	17,341.80	17,302.21	39.59	438.017	
9,800.00	7,091.27	3,527.00	3,407.78	29.35	10.54	-6.98	-966.15	13,896.75	17,439.24	17,399.35	39.89	437.162	
9,900.00	7,090.95	3,527.00	3,407.78	29.65	10.54	-6.98	-966.15	13,896.75	17,536.71	17,496.51	40.19	436.321	
10,000.00	7,090.62	3,527.00	3,407.78	29.95	10.54	-6.98	-966.15	13,896.75	17,634.20	17,593.71	40.49	435.493	
10,100.00	7,090.29	3,527.00	3,407.78	30.25	10.54	-6.98	-966.15	13,896.75	17,731.73	17,690.93	40.79	434.678	
10,200.00	7,089.96	3,527.00	3,407.78	30.55	10.54	-6.98	-966.15	13,896.75	17,829.28	17,788.18	41.09	433.875	
10,300.00	7,089.63	3,527.00	3,407.78	30.85	10.54	-6.98	-966.15	13,896.75	17,926.85	17,885.46	41.39	433.085	
10,400.00	7,089.31	3,527.00	3,407.78	31.15	10.54	-6.98	-966.15	13,896.75	18,024.46	17,982.77	41.69	432.307	
10,500.00	7,088.98	3,527.00	3,407.78	31.45	10.54	-6.98	-966.15	13,896.75	18,122.09	18,080.10	41.99	431.541	
10,600.00	7,088.65	3,527.00	3,407.78	31.75	10.54	-6.98	-966.15	13,896.75	18,219.75	18,177.45	42.29	430.786	
10,700.00	7,088.32	3,527.00	3,407.78	32.06	10.54	-6.98	-966.15	13,896.75	18,317.43	18,274.83	42.59	430.042	
10,800.00	7,087.99	3,527.00	3,407.78	32.36	10.54	-6.98	-966.15	13,896.75	18,415.14	18,372.24	42.89	429.310	
10,900.00	7,087.67	3,527.00	3,407.78	32.66	10.54	-6.98	-966.15	13,896.75	18,512.87	18,469.67	43.20	428.588	
11,000.00	7,087.34	3,527.00	3,407.78	32.96	10.54	-6.98	-966.15	13,896.75	18,610.62	18,567.13	43.50	427.877	
11,100.00	7,087.01	3,527.00	3,407.78	33.26	10.54	-6.98	-966.15	13,896.75	18,708.40	18,664.61	43.80	427.176	
11,200.00	7,086.68	3,527.00	3,407.78	33.56	10.54	-6.98	-966.15	13,896.75	18,806.20	18,762.11	44.10	426.485	
11,300.00	7,086.35	3,527.00	3,407.78	33.86	10.54	-6.98	-966.15	13,896.75	18,904.03	18,859.63	44.40	425.804	
11,400.00	7,086.03	3,527.00	3,407.78	34.16	10.54	-6.98	-966.15	13,896.75	19,001.88	18,957.18	44.70	425.133	
11,500.00	7,085.70	3,527.00	3,407.78	34.46	10.54	-6.98	-966.15	13,896.75	19,099.75	19,054.75	45.00	424.471	
11,600.00	7,085.37	3,527.00	3,407.78	34.76	10.54	-6.98	-966.15	13,896.75	19,197.64	19,152.34	45.30	423.819	
11,700.00	7,085.04	3,527.00	3,407.78	35.06	10.54	-6.98	-966.15	13,896.75	19,295.55	19,249.96	45.60	423.175	
11,800.00	7,084.71	3,527.00	3,407.78	35.36	10.54	-6.98	-966.15	13,896.75	19,393.49	19,347.59	45.90	422.541	
11,900.00	7,084.39	3,527.00	3,407.78	35.66	10.54	-6.98	-966.15	13,896.75	19,491.44	19,445.25	46.20	421.915	
12,000.00	7,084.06	3,527.00	3,407.78	35.96	10.54	-6.98	-966.15	13,896.75	19,589.42	19,542.92	46.50	421.298	
12,100.00	7,083.73	3,527.00	3,407.78	36.26	10.54	-6.98	-966.15	13,896.75	19,687.42	19,640.62	46.80	420.689	
12,200.00	7,083.40	3,527.00	3,407.78	36.56	10.54	-6.98	-966.15	13,896.75	19,785.44	19,738.34	47.10	420.089	
12,300.00	7,083.07	3,527.00	3,407.78	36.86	10.54	-6.98	-966.15	13,896.75	19,883.47	19,836.07	47.40	419.496	
12,400.00	7,082.75	3,527.00	3,407.78	37.16	10.54	-6.98	-966.15	13,896.75	19,981.53	19,933.83	47.70	418.912 SF	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	90.69	-125.61	10,399.94	10,400.70				
100.00	100.00	259.52	259.51	0.23	2.63	90.69	-125.61	10,399.94	10,400.70	10,397.85	2.85	3,647.161	
200.00	200.00	359.52	359.51	0.53	4.47	90.69	-125.61	10,399.94	10,400.70	10,395.70	5.00	2,080.030	
300.00	300.00	459.52	459.51	0.83	6.32	90.69	-125.61	10,399.94	10,400.70	10,393.55	7.15	1,454.887	
340.68	340.68	500.16	500.16	0.95	7.07	90.69	-125.06	10,399.94	10,400.69	10,392.67	8.02	1,296.489	CC
400.00	400.00	559.35	559.35	1.13	8.17	90.69	-125.10	10,399.94	10,400.70	10,391.40	9.29	1,119.033	
500.00	500.00	659.14	659.13	1.43	10.01	90.69	-125.32	10,399.94	10,400.70	10,389.26	11.44	909.242	
600.00	599.98	759.51	759.49	1.73	11.88	-113.76	-125.61	10,399.94	10,401.40	10,387.80	13.61	764.463	
707.91	707.73	867.27	867.24	2.05	13.93	-113.75	-125.61	10,399.94	10,403.74	10,387.76	15.98	651.128	ES
800.00	799.58	959.01	958.99	2.33	15.67	-113.78	-125.22	10,399.94	10,406.43	10,388.44	18.00	578.194	
900.00	899.31	1,058.50	1,058.48	2.63	17.56	-113.82	-125.42	10,399.94	10,409.37	10,389.18	20.19	515.589	
1,000.00	999.05	1,158.61	1,158.56	2.93	19.47	-113.85	-125.61	10,399.94	10,412.31	10,389.92	22.39	464.980	
1,100.00	1,098.79	1,258.34	1,258.30	3.23	21.36	-113.89	-125.61	10,399.94	10,415.25	10,390.66	24.59	423.543	
1,200.00	1,198.52	1,358.07	1,358.02	3.53	23.26	-113.93	-124.80	10,399.94	10,418.19	10,391.40	26.79	388.908	
1,300.00	1,298.26	1,457.59	1,457.54	3.83	25.16	-113.97	-124.95	10,399.94	10,421.14	10,392.16	28.98	359.572	
1,400.00	1,398.00	1,557.16	1,557.10	4.13	27.05	-114.00	-125.36	10,399.94	10,424.10	10,392.92	31.18	334.357	
1,500.00	1,497.73	1,657.32	1,657.25	4.43	28.96	-114.03	-125.61	10,399.94	10,427.06	10,393.67	33.38	312.349	
1,600.00	1,597.47	1,757.06	1,756.98	4.73	30.85	-114.07	-125.61	10,399.94	10,430.02	10,394.44	35.58	293.133	
1,700.00	1,697.21	1,856.76	1,856.69	5.03	32.75	-114.11	-125.11	10,399.94	10,432.98	10,395.20	37.78	276.158	
1,800.00	1,796.94	1,956.42	1,956.34	5.33	34.65	-114.15	-125.25	10,399.94	10,435.95	10,395.98	39.98	261.057	
1,900.00	1,896.68	2,056.09	2,056.01	5.63	36.55	-114.18	-125.58	10,399.94	10,438.93	10,396.76	42.17	247.526	
2,000.00	1,996.42	2,156.03	2,155.93	5.93	38.51	-114.22	-125.61	10,399.94	10,441.91	10,397.48	44.43	235.009	
2,100.00	2,096.15	2,255.77	2,255.67	6.23	40.46	-114.25	-125.61	10,399.94	10,444.89	10,398.20	46.69	223.709	
2,200.00	2,195.89	2,355.47	2,355.36	6.53	42.42	-114.29	-124.90	10,399.94	10,447.88	10,398.93	48.95	213.454	
2,300.00	2,295.63	2,455.18	2,455.07	6.83	44.38	-114.33	-125.22	10,399.94	10,450.87	10,399.66	51.20	204.103	
2,400.00	2,395.36	2,555.02	2,554.88	7.13	46.36	-114.36	-125.61	10,399.94	10,453.86	10,400.38	53.48	195.461	
2,500.00	2,495.10	2,654.75	2,654.61	7.43	48.38	-114.40	-125.61	10,399.94	10,456.86	10,401.06	55.81	187.381	
2,600.00	2,594.84	2,754.50	2,754.35	7.73	50.40	-114.44	-124.96	10,399.94	10,459.87	10,401.74	58.13	179.946	
2,700.00	2,694.57	2,854.28	2,854.13	8.03	52.42	-114.47	-125.22	10,399.94	10,462.88	10,402.42	60.45	173.080	
2,800.00	2,794.31	2,954.11	2,953.96	8.33	54.45	-114.50	-125.80	10,399.94	10,465.89	10,403.11	62.78	166.720	
2,900.00	2,894.05	3,053.75	3,053.56	8.63	56.48	-114.54	-125.61	10,399.94	10,468.90	10,403.80	65.10	160.808	
3,000.00	2,993.78	3,153.49	3,153.30	8.93	58.50	-114.58	-125.61	10,399.94	10,471.92	10,404.49	67.43	155.302	
3,100.00	3,093.52	3,253.32	3,253.11	9.23	60.53	-114.62	-124.55	10,399.94	10,474.95	10,405.19	69.76	150.160	
3,200.00	3,193.26	3,353.23	3,353.03	9.53	62.56	-114.65	-124.95	10,399.94	10,477.98	10,405.89	72.09	145.347	
3,300.00	3,292.99	3,453.20	3,452.98	9.83	64.59	-114.69	-125.68	10,399.94	10,481.01	10,406.59	74.42	140.833	
3,400.00	3,392.73	3,552.49	3,552.24	10.13	66.54	-114.72	-125.61	10,399.94	10,484.05	10,407.38	76.67	136.740	
3,500.00	3,492.47	3,569.00	3,568.74	10.43	66.87	-114.73	-125.61	10,399.94	10,487.42	10,410.12	77.29	135.682	
3,600.00	3,592.20	3,569.00	3,568.74	10.73	66.87	-114.73	-125.61	10,399.94	10,491.73	10,414.14	77.59	135.227	
3,700.00	3,691.94	3,569.00	3,568.74	11.03	66.87	-114.73	-125.61	10,399.94	10,496.99	10,419.12	77.87	134.797	
3,800.00	3,791.68	3,569.00	3,568.74	11.33	66.87	-114.73	-125.61	10,399.94	10,503.20	10,425.05	78.15	134.393	
3,900.00	3,891.41	3,569.00	3,568.74	11.63	66.87	-114.73	-125.61	10,399.94	10,510.36	10,431.93	78.43	134.013	
4,000.00	3,991.15	3,569.00	3,568.74	11.93	66.87	-114.73	-125.61	10,399.94	10,518.47	10,439.77	78.70	133.658	
4,100.00	4,090.89	3,569.00	3,568.74	12.23	66.87	-114.73	-125.61	10,399.94	10,527.51	10,448.55	78.96	133.327	
4,200.00	4,190.62	3,569.00	3,568.74	12.53	66.87	-114.73	-125.61	10,399.94	10,537.50	10,458.29	79.22	133.020	
4,300.00	4,290.36	3,569.00	3,568.74	12.83	66.87	-114.73	-125.61	10,399.94	10,548.43	10,468.96	79.47	132.736	
4,400.00	4,390.10	3,569.00	3,568.74	13.13	66.87	-114.73	-125.61	10,399.94	10,560.30	10,480.58	79.72	132.475	
4,500.00	4,489.84	3,569.00	3,568.74	13.43	66.87	-114.73	-125.61	10,399.94	10,573.09	10,493.14	79.96	132.236	
4,600.00	4,589.57	3,569.00	3,568.74	13.73	66.87	-114.73	-125.61	10,399.94	10,586.82	10,506.63	80.19	132.020	
4,700.00	4,689.31	3,569.00	3,568.74	14.03	66.87	-114.73	-125.61	10,399.94	10,601.47	10,521.05	80.42	131.825	
4,800.00	4,789.05	3,569.00	3,568.74	14.33	66.87	-114.73	-125.61	10,399.94	10,617.04	10,536.40	80.65	131.651	
4,900.00	4,888.78	3,569.00	3,568.74	14.63	66.87	-114.73	-125.61	10,399.94	10,633.53	10,552.67	80.86	131.498	
5,000.00	4,988.52	3,569.00	3,568.74	14.93	66.87	-114.73	-125.61	10,399.94	10,650.94	10,569.86	81.08	131.366	

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 750H - Slot B05
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 750H	**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
5,100.00	5,088.26	3,569.00	3,568.74	15.23	66.87	-114.73	-125.61	10,399.94	10,669.25	10,587.96	81.29	131.254	
5,200.00	5,187.99	3,569.00	3,568.74	15.53	66.87	-114.73	-125.61	10,399.94	10,688.47	10,606.98	81.49	131.162	
5,300.00	5,287.73	3,569.00	3,568.74	15.83	66.87	-114.73	-125.61	10,399.94	10,708.58	10,626.89	81.69	131.090	
5,400.00	5,387.47	3,569.00	3,568.74	16.13	66.87	-114.73	-125.61	10,399.94	10,729.59	10,647.71	81.88	131.036	
5,500.00	5,487.20	3,569.00	3,568.74	16.43	66.87	-114.73	-125.61	10,399.94	10,751.49	10,669.42	82.07	131.002	
5,600.00	5,586.94	3,569.00	3,568.74	16.73	66.87	-114.73	-125.61	10,399.94	10,774.28	10,692.02	82.26	130.986	SF
5,700.00	5,686.68	3,569.00	3,568.74	17.03	66.87	-114.73	-125.61	10,399.94	10,797.94	10,715.50	82.43	130.988	
5,800.00	5,786.41	3,569.00	3,568.74	17.33	66.87	-114.73	-125.61	10,399.94	10,822.47	10,739.86	82.61	131.007	
5,900.00	5,886.15	3,569.00	3,568.74	17.63	66.87	-114.73	-125.61	10,399.94	10,847.87	10,765.09	82.78	131.044	
6,000.00	5,985.89	3,569.00	3,568.74	17.93	66.87	-114.73	-125.61	10,399.94	10,874.13	10,791.19	82.95	131.099	
6,100.00	6,085.62	3,569.00	3,568.74	18.23	66.87	-114.73	-125.61	10,399.94	10,901.25	10,818.14	83.11	131.170	
6,200.00	6,185.36	3,569.00	3,568.74	18.53	66.87	-114.73	-125.61	10,399.94	10,929.21	10,845.94	83.27	131.257	
6,300.00	6,285.10	3,569.00	3,568.74	18.83	66.87	-114.73	-125.61	10,399.94	10,958.01	10,874.59	83.42	131.361	
6,400.00	6,384.83	3,569.00	3,568.74	19.13	66.87	-114.73	-125.61	10,399.94	10,987.65	10,904.08	83.57	131.480	
6,500.00	6,484.57	3,569.00	3,568.74	19.43	66.87	-114.73	-125.61	10,399.94	11,018.12	10,934.40	83.71	131.615	
6,559.90	6,544.31	3,569.00	3,568.74	19.61	66.87	-114.73	-125.61	10,399.94	11,036.76	10,952.96	83.80	131.703	
6,600.00	6,584.23	3,569.00	3,568.74	19.73	66.87	-146.92	-125.61	10,399.94	11,050.73	10,966.87	83.86	131.778	
6,650.00	6,633.60	3,569.00	3,568.74	19.88	66.87	-160.98	-125.61	10,399.94	11,071.93	10,988.00	83.93	131.912	
6,700.00	6,682.15	3,569.00	3,568.74	20.03	66.87	-166.88	-125.61	10,399.94	11,097.17	11,013.16	84.01	132.090	
6,750.00	6,729.52	3,569.00	3,568.74	20.18	66.87	-170.06	-125.61	10,399.94	11,126.24	11,042.14	84.09	132.308	
6,800.00	6,775.36	3,569.00	3,568.74	20.33	66.87	-172.04	-125.61	10,399.94	11,158.86	11,074.68	84.18	132.561	
6,850.00	6,819.31	3,569.00	3,568.74	20.48	66.87	-173.40	-125.61	10,399.94	11,194.78	11,110.51	84.27	132.845	
6,900.00	6,861.04	3,569.00	3,568.74	20.63	66.87	-174.41	-125.61	10,399.94	11,233.68	11,149.32	84.37	133.154	
6,950.00	6,900.22	3,569.00	3,568.74	20.78	66.87	-175.21	-125.61	10,399.94	11,275.25	11,190.78	84.47	133.486	
7,000.00	6,936.57	3,569.00	3,568.74	20.93	66.87	-175.90	-125.61	10,399.94	11,319.12	11,234.55	84.58	133.833	
7,050.00	6,969.80	3,569.00	3,568.74	21.08	66.87	-176.56	-125.61	10,399.94	11,364.96	11,280.27	84.69	134.192	
7,100.00	6,999.67	3,569.00	3,568.74	21.23	66.87	-177.30	-125.61	10,399.94	11,412.39	11,327.57	84.81	134.556	
7,150.00	7,025.94	3,569.00	3,568.74	21.38	66.87	-178.40	-125.61	10,399.94	11,461.02	11,376.07	84.94	134.923	
7,200.00	7,048.41	3,569.00	3,568.74	21.53	66.87	179.08	-125.61	10,399.94	11,510.48	11,425.40	85.08	135.286	
7,250.00	7,066.92	3,569.00	3,568.74	21.68	66.87	150.16	-125.61	10,399.94	11,560.38	11,475.15	85.23	135.641	
7,300.00	7,081.33	3,569.00	3,568.74	21.83	66.87	10.77	-125.61	10,399.94	11,610.34	11,524.96	85.38	135.983	
7,350.00	7,091.51	3,569.00	3,568.74	21.98	66.87	7.01	-125.61	10,399.94	11,659.98	11,574.44	85.54	136.309	
7,400.00	7,097.41	3,569.00	3,568.74	22.13	66.87	5.86	-125.61	10,399.94	11,708.93	11,623.22	85.71	136.614	
7,444.73	7,099.00	3,569.00	3,568.74	22.27	66.87	5.37	-125.61	10,399.94	11,751.83	11,665.97	85.86	136.867	
7,500.00	7,098.82	3,569.00	3,568.74	22.44	66.87	5.37	-125.61	10,399.94	11,804.24	11,718.18	86.06	137.163	
7,600.00	7,098.49	3,569.00	3,568.74	22.74	66.87	5.37	-125.61	10,399.94	11,899.12	11,812.71	86.41	137.700	
7,700.00	7,098.16	3,569.00	3,568.74	23.04	66.87	5.37	-125.61	10,399.94	11,994.09	11,907.32	86.77	138.234	
7,800.00	7,097.83	3,569.00	3,568.74	23.34	66.87	5.37	-125.61	10,399.94	12,089.13	12,002.01	87.12	138.768	
7,900.00	7,097.51	3,569.00	3,568.74	23.64	66.87	5.37	-125.61	10,399.94	12,184.26	12,096.79	87.47	139.300	
8,000.00	7,097.18	3,569.00	3,568.74	23.94	66.87	5.37	-125.61	10,399.94	12,279.46	12,191.65	87.82	139.830	
8,100.00	7,096.85	3,569.00	3,568.74	24.24	66.87	5.37	-125.61	10,399.94	12,374.74	12,286.58	88.16	140.359	
8,200.00	7,096.52	3,569.00	3,568.74	24.54	66.87	5.37	-125.61	10,399.94	12,470.09	12,381.58	88.51	140.886	
8,300.00	7,096.19	3,569.00	3,568.74	24.84	66.87	5.37	-125.61	10,399.94	12,565.52	12,476.66	88.86	141.412	
8,400.00	7,095.87	3,569.00	3,568.74	25.14	66.87	5.37	-125.61	10,399.94	12,661.02	12,571.81	89.20	141.936	
8,500.00	7,095.54	3,569.00	3,568.74	25.44	66.87	5.37	-125.61	10,399.94	12,756.58	12,667.03	89.55	142.458	
8,600.00	7,095.21	3,569.00	3,568.74	25.74	66.87	5.37	-125.61	10,399.94	12,852.21	12,762.32	89.89	142.979	
8,700.00	7,094.88	3,569.00	3,568.74	26.04	66.87	5.37	-125.61	10,399.94	12,947.91	12,857.68	90.23	143.498	
8,800.00	7,094.55	3,569.00	3,568.74	26.35	66.87	5.37	-125.61	10,399.94	13,043.68	12,953.10	90.57	144.015	
8,900.00	7,094.23	3,569.00	3,568.74	26.65	66.87	5.37	-125.61	10,399.94	13,139.50	13,048.59	90.91	144.530	
9,000.00	7,093.90	3,569.00	3,568.74	26.95	66.87	5.37	-125.61	10,399.94	13,235.39	13,144.14	91.25	145.044	
9,100.00	7,093.57	3,569.00	3,568.74	27.25	66.87	5.37	-125.61	10,399.94	13,331.34	13,239.75	91.59	145.556	
9,200.00	7,093.24	3,569.00	3,568.74	27.55	66.87	5.37	-125.61	10,399.94	13,427.34	13,335.42	91.93	146.066	

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 750H - Slot B05
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 750H	**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
9,300.00	7,092.91	3,569.00	3,568.74	27.85	66.87	5.37	-125.61	10,399.94	13,523.41	13,431.15	92.26	146.574	
9,400.00	7,092.59	3,569.00	3,568.74	28.15	66.87	5.37	-125.61	10,399.94	13,619.53	13,526.93	92.60	147.080	
9,500.00	7,092.26	3,569.00	3,568.74	28.45	66.87	5.37	-125.61	10,399.94	13,715.71	13,622.78	92.93	147.585	
9,600.00	7,091.93	3,569.00	3,568.74	28.75	66.87	5.37	-125.61	10,399.94	13,811.94	13,718.67	93.27	148.087	
9,700.00	7,091.60	3,569.00	3,568.74	29.05	66.87	5.37	-125.61	10,399.94	13,908.23	13,814.62	93.60	148.588	
9,800.00	7,091.27	3,569.00	3,568.74	29.35	66.87	5.37	-125.61	10,399.94	14,004.56	13,910.63	93.94	149.087	
9,900.00	7,090.95	3,569.00	3,568.74	29.65	66.87	5.37	-125.61	10,399.94	14,100.95	14,006.68	94.27	149.583	
10,000.00	7,090.62	3,569.00	3,568.74	29.95	66.87	5.37	-125.61	10,399.94	14,197.39	14,102.79	94.60	150.078	
10,100.00	7,090.29	3,569.00	3,568.74	30.25	66.87	5.37	-125.61	10,399.94	14,293.88	14,198.95	94.93	150.571	
10,200.00	7,089.96	3,569.00	3,568.74	30.55	66.87	5.37	-125.61	10,399.94	14,390.41	14,295.15	95.26	151.062	
10,300.00	7,089.63	3,569.00	3,568.74	30.85	66.87	5.37	-125.61	10,399.94	14,486.99	14,391.40	95.59	151.551	
10,400.00	7,089.31	3,569.00	3,568.74	31.15	66.87	5.37	-125.61	10,399.94	14,583.62	14,487.70	95.92	152.038	
10,500.00	7,088.98	3,569.00	3,568.74	31.45	66.87	5.37	-125.61	10,399.94	14,680.29	14,584.04	96.25	152.524	
10,600.00	7,088.65	3,569.00	3,568.74	31.75	66.87	5.37	-125.61	10,399.94	14,777.01	14,680.43	96.58	153.007	
10,700.00	7,088.32	3,569.00	3,568.74	32.06	66.87	5.37	-125.61	10,399.94	14,873.77	14,776.87	96.90	153.488	
10,800.00	7,087.99	3,569.00	3,568.74	32.36	66.87	5.37	-125.61	10,399.94	14,970.58	14,873.34	97.23	153.968	
10,900.00	7,087.67	3,569.00	3,568.74	32.66	66.87	5.37	-125.61	10,399.94	15,067.42	14,969.86	97.56	154.445	
11,000.00	7,087.34	3,569.00	3,568.74	32.96	66.87	5.37	-125.61	10,399.94	15,164.31	15,066.42	97.88	154.920	
11,100.00	7,087.01	3,569.00	3,568.74	33.26	66.87	5.37	-125.61	10,399.94	15,261.23	15,163.02	98.21	155.394	
11,200.00	7,086.68	3,569.00	3,568.74	33.56	66.87	5.37	-125.61	10,399.94	15,358.20	15,259.66	98.54	155.865	
11,300.00	7,086.35	3,569.00	3,568.74	33.86	66.87	5.37	-125.61	10,399.94	15,455.20	15,356.34	98.86	156.335	
11,400.00	7,086.03	3,569.00	3,568.74	34.16	66.87	5.37	-125.61	10,399.94	15,552.25	15,453.06	99.18	156.802	
11,500.00	7,085.70	3,569.00	3,568.74	34.46	66.87	5.37	-125.61	10,399.94	15,649.32	15,549.82	99.51	157.268	
11,600.00	7,085.37	3,569.00	3,568.74	34.76	66.87	5.37	-125.61	10,399.94	15,746.44	15,646.61	99.83	157.731	
11,700.00	7,085.04	3,569.00	3,568.74	35.06	66.87	5.37	-125.61	10,399.94	15,843.59	15,743.44	100.15	158.193	
11,800.00	7,084.71	3,569.00	3,568.74	35.36	66.87	5.37	-125.61	10,399.94	15,940.78	15,840.30	100.48	158.653	
11,900.00	7,084.39	3,569.00	3,568.74	35.66	66.87	5.37	-125.61	10,399.94	16,038.00	15,937.20	100.80	159.110	
12,000.00	7,084.06	3,569.00	3,568.74	35.96	66.87	5.37	-125.61	10,399.94	16,135.26	16,034.14	101.12	159.566	
12,100.00	7,083.73	3,569.00	3,568.74	36.26	66.87	5.37	-125.61	10,399.94	16,232.55	16,131.11	101.44	160.020	
12,200.00	7,083.40	3,569.00	3,568.74	36.56	66.87	5.37	-125.61	10,399.94	16,329.87	16,228.11	101.76	160.472	
12,300.00	7,083.07	3,569.00	3,568.74	36.86	66.87	5.37	-125.61	10,399.94	16,427.22	16,325.14	102.08	160.922	
12,400.00	7,082.75	3,569.00	3,568.74	37.16	66.87	5.37	-125.61	10,399.94	16,524.61	16,422.21	102.40	161.370	
12,500.00	7,082.42	3,569.00	3,568.74	37.46	66.87	5.37	-125.61	10,399.94	16,622.02	16,519.30	102.72	161.816	
12,600.00	7,082.09	3,569.00	3,568.74	37.76	66.87	5.37	-125.61	10,399.94	16,719.47	16,616.43	103.04	162.260	
12,700.00	7,081.76	3,569.00	3,568.74	38.06	66.87	5.37	-125.61	10,399.94	16,816.95	16,713.59	103.36	162.702	
12,800.00	7,081.43	3,569.00	3,568.74	38.36	66.87	5.37	-125.61	10,399.94	16,914.46	16,810.78	103.68	163.142	
12,900.00	7,081.11	3,569.00	3,568.74	38.66	66.87	5.37	-125.61	10,399.94	17,011.99	16,907.99	104.00	163.581	
13,000.00	7,080.78	3,569.00	3,568.74	38.96	66.87	5.37	-125.61	10,399.94	17,109.55	17,005.24	104.32	164.017	
13,100.00	7,080.45	3,569.00	3,568.74	39.26	66.87	5.37	-125.61	10,399.94	17,207.15	17,102.51	104.63	164.452	
13,200.00	7,080.12	3,569.00	3,568.74	39.56	66.87	5.37	-125.61	10,399.94	17,304.77	17,199.82	104.95	164.884	
13,300.00	7,079.79	3,569.00	3,568.74	39.86	66.87	5.37	-125.61	10,399.94	17,402.41	17,297.14	105.27	165.315	
13,400.00	7,079.47	3,569.00	3,568.74	40.16	66.87	5.37	-125.61	10,399.94	17,500.09	17,394.50	105.59	165.744	
13,500.00	7,079.14	3,569.00	3,568.74	40.46	66.87	5.37	-125.61	10,399.94	17,597.78	17,491.88	105.90	166.171	
13,600.00	7,078.81	3,569.00	3,568.74	40.77	66.87	5.37	-125.61	10,399.94	17,695.51	17,589.29	106.22	166.596	
13,700.00	7,078.48	3,569.00	3,568.74	41.07	66.87	5.37	-125.61	10,399.94	17,793.26	17,686.73	106.53	167.019	
13,800.00	7,078.15	3,569.00	3,568.74	41.37	66.87	5.37	-125.61	10,399.94	17,891.03	17,784.18	106.85	167.441	
13,900.00	7,077.83	3,569.00	3,568.74	41.67	66.87	5.37	-125.61	10,399.94	17,988.83	17,881.67	107.17	167.860	
14,000.00	7,077.50	3,569.00	3,568.74	41.97	66.87	5.37	-125.61	10,399.94	18,086.66	17,979.18	107.48	168.278	
14,100.00	7,077.17	3,569.00	3,568.74	42.27	66.87	5.37	-125.61	10,399.94	18,184.51	18,076.71	107.80	168.694	
14,200.00	7,076.84	3,569.00	3,568.74	42.57	66.87	5.37	-125.61	10,399.94	18,282.38	18,174.26	108.11	169.108	
14,300.00	7,076.51	3,569.00	3,568.74	42.87	66.87	5.37	-125.61	10,399.94	18,380.27	18,271.84	108.43	169.520	
14,400.00	7,076.19	3,569.00	3,568.74	43.17	66.87	5.37	-125.61	10,399.94	18,478.19	18,369.45	108.74	169.930	

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 750H - Slot B05
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 750H	**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
14,500.00	7,075.86	3,569.00	3,568.74	43.47	66.87	5.37	-125.61	10,399.94	18,576.12	18,467.07	109.05	170.339	
14,600.00	7,075.53	3,569.00	3,568.74	43.77	66.87	5.37	-125.61	10,399.94	18,674.08	18,564.72	109.37	170.746	
14,700.00	7,075.20	3,569.00	3,568.74	44.07	66.87	5.37	-125.61	10,399.94	18,772.07	18,662.38	109.68	171.151	
14,800.00	7,074.87	3,569.00	3,568.74	44.37	66.87	5.37	-125.61	10,399.94	18,870.07	18,760.07	110.00	171.554	
14,900.00	7,074.55	3,569.00	3,568.74	44.67	66.87	5.37	-125.61	10,399.94	18,968.09	18,857.78	110.31	171.955	
15,000.00	7,074.22	3,569.00	3,568.74	44.97	66.87	5.37	-125.61	10,399.94	19,066.14	18,955.51	110.62	172.355	
15,100.00	7,073.89	3,569.00	3,568.74	45.27	66.87	5.37	-125.61	10,399.94	19,164.20	19,053.27	110.93	172.753	
15,200.00	7,073.56	3,569.00	3,568.74	45.57	66.87	5.37	-125.61	10,399.94	19,262.28	19,151.04	111.25	173.149	
15,300.00	7,073.23	3,569.00	3,568.74	45.87	66.87	5.37	-125.61	10,399.94	19,360.39	19,248.83	111.56	173.543	
15,400.00	7,072.91	3,569.00	3,568.74	46.17	66.87	5.37	-125.61	10,399.94	19,458.51	19,346.64	111.87	173.936	
15,500.00	7,072.58	3,569.00	3,568.74	46.47	66.87	5.37	-125.61	10,399.94	19,556.65	19,444.47	112.18	174.327	
15,600.00	7,072.25	3,569.00	3,568.74	46.77	66.87	5.37	-125.61	10,399.94	19,654.81	19,542.32	112.50	174.716	
15,700.00	7,071.92	3,569.00	3,568.74	47.07	66.87	5.37	-125.61	10,399.94	19,752.99	19,640.19	112.81	175.103	
15,800.00	7,071.59	3,569.00	3,568.74	47.37	66.87	5.37	-125.61	10,399.94	19,851.19	19,738.07	113.12	175.489	
15,900.00	7,071.27	3,569.00	3,568.74	47.67	66.87	5.37	-125.61	10,399.94	19,949.41	19,835.98	113.43	175.873	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-92.49	-124.62	-2,869.88	2,872.59				
100.00	100.00	77.51	77.51	0.23	0.76	-92.49	-124.62	-2,869.88	2,872.59	2,871.60	0.99	2,901.187	
200.00	200.00	177.51	177.51	0.53	1.75	-92.49	-124.62	-2,869.88	2,872.59	2,870.31	2.28	1,262.642	
300.00	300.00	277.51	277.51	0.83	2.73	-92.49	-124.62	-2,869.88	2,872.59	2,869.03	3.56	806.911	
400.00	400.00	377.52	377.51	1.13	4.18	-92.49	-124.62	-2,869.88	2,872.59	2,867.28	5.31	541.398	
500.00	500.00	477.52	477.51	1.43	6.22	-92.49	-124.62	-2,869.88	2,872.59	2,864.94	7.65	375.515	
600.00	599.98	577.46	577.45	1.73	8.27	63.12	-123.87	-2,869.88	2,871.76	2,861.77	9.99	287.398	
707.91	707.73	684.87	684.85	2.05	10.46	63.26	-124.07	-2,869.88	2,869.15	2,856.64	12.51	229.325	
800.00	799.58	776.46	776.43	2.33	12.33	63.37	-124.50	-2,869.88	2,866.17	2,851.51	14.66	195.515	
900.00	899.31	876.89	876.83	2.63	14.45	63.50	-124.62	-2,869.88	2,862.92	2,845.84	17.08	167.641	
1,000.00	999.05	976.63	976.56	2.93	16.57	63.63	-124.62	-2,869.88	2,859.69	2,840.19	19.50	146.674	
1,100.00	1,098.79	1,076.27	1,076.19	3.23	18.69	63.78	-123.55	-2,869.88	2,856.43	2,834.52	21.91	130.347	
1,200.00	1,198.52	1,175.74	1,175.66	3.53	20.80	63.91	-123.83	-2,869.88	2,853.24	2,828.91	24.33	117.284	
1,300.00	1,298.26	1,275.26	1,275.17	3.83	22.92	64.02	-124.46	-2,869.88	2,850.07	2,823.32	26.74	106.576	
1,400.00	1,398.00	1,375.65	1,375.51	4.13	25.12	64.15	-124.62	-2,869.88	2,846.90	2,817.65	29.25	97.345	
1,500.00	1,497.73	1,475.39	1,475.25	4.43	27.32	64.28	-124.62	-2,869.88	2,843.74	2,811.98	31.75	89.563	
1,600.00	1,597.47	1,575.06	1,574.91	4.73	29.53	64.44	-123.55	-2,869.88	2,840.57	2,806.31	34.26	82.923	
1,700.00	1,697.21	1,674.64	1,674.49	5.03	31.73	64.56	-123.84	-2,869.88	2,837.44	2,800.69	36.76	77.193	
1,800.00	1,796.94	1,774.28	1,774.12	5.33	33.93	64.68	-124.47	-2,869.88	2,834.34	2,795.08	39.26	72.192	
1,900.00	1,896.68	1,874.43	1,874.19	5.63	36.23	64.81	-124.62	-2,869.88	2,831.24	2,789.39	41.85	67.648	
2,000.00	1,996.42	1,974.17	1,973.93	5.93	38.52	64.94	-124.62	-2,869.88	2,828.16	2,783.71	44.45	63.625	
2,100.00	2,096.15	2,073.88	2,073.63	6.23	40.82	65.10	-123.25	-2,869.88	2,825.08	2,778.03	47.05	60.047	
2,200.00	2,195.89	2,173.57	2,173.31	6.53	43.12	65.23	-123.59	-2,869.88	2,822.03	2,772.38	49.64	56.845	
2,300.00	2,295.63	2,273.34	2,273.06	6.83	45.42	65.35	-124.35	-2,869.88	2,818.99	2,766.75	52.24	53.960	
2,400.00	2,395.36	2,373.23	2,372.88	7.13	47.59	65.48	-124.62	-2,869.88	2,815.97	2,761.25	54.72	51.466	
2,500.00	2,495.10	2,472.97	2,472.61	7.43	49.71	65.61	-124.62	-2,869.88	2,812.96	2,755.82	57.14	49.231	
2,600.00	2,594.84	2,572.72	2,572.35	7.73	51.83	65.77	-123.31	-2,869.88	2,809.97	2,750.41	59.56	47.179	
2,700.00	2,694.57	2,672.56	2,672.18	8.03	53.96	65.90	-123.67	-2,869.88	2,807.00	2,745.01	61.98	45.285	
2,800.00	2,794.31	2,801.74	2,771.82	8.33	56.72	66.02	-124.62	-2,869.88	2,804.03	2,738.98	65.05	43.108	
2,900.00	2,894.05	2,871.99	2,871.56	8.63	58.28	66.15	-124.62	-2,869.88	2,801.08	2,734.18	66.90	41.867	
3,000.00	2,993.78	2,971.73	2,971.30	8.93	60.49	66.29	-124.62	-2,869.88	2,798.15	2,728.74	69.42	40.310	
3,100.00	3,093.52	3,071.54	3,071.10	9.23	62.70	66.44	-123.94	-2,869.88	2,795.25	2,723.32	71.93	38.861	
3,200.00	3,193.26	3,171.44	3,171.00	9.53	64.92	66.57	-124.26	-2,869.88	2,792.34	2,717.90	74.44	37.509	
3,300.00	3,292.99	3,271.38	3,270.93	9.83	67.13	66.69	-124.87	-2,869.88	2,789.45	2,712.49	76.96	36.245	
3,400.00	3,392.73	3,370.77	3,370.24	10.13	69.71	66.83	-124.62	-2,869.88	2,786.59	2,706.76	79.83	34.906	
3,500.00	3,492.47	3,470.50	3,469.98	10.43	72.19	66.97	-124.62	-2,869.88	2,783.74	2,701.12	82.62	33.695	
3,576.58	3,568.84	3,468.00	3,467.40	10.66	72.13	66.96	-124.62	-2,869.88	2,782.68	2,699.93	82.75	33.626	CC, ES
3,600.00	3,592.20	3,468.00	3,467.40	10.73	72.13	66.96	-124.62	-2,869.88	2,782.78	2,699.98	82.81	33.606	
3,700.00	3,691.94	3,468.00	3,467.40	11.03	72.13	66.96	-124.62	-2,869.88	2,785.42	2,702.45	82.97	33.572	SF
3,800.00	3,791.68	3,468.00	3,467.40	11.33	72.13	66.96	-124.62	-2,869.88	2,791.64	2,708.60	83.04	33.618	
3,900.00	3,891.41	3,468.00	3,467.40	11.63	72.13	66.96	-124.62	-2,869.88	2,801.42	2,718.39	83.02	33.742	
4,000.00	3,991.15	3,468.00	3,467.40	11.93	72.13	66.96	-124.62	-2,869.88	2,814.71	2,731.79	82.93	33.943	
4,100.00	4,090.89	3,468.00	3,467.40	12.23	72.13	66.96	-124.62	-2,869.88	2,831.48	2,748.74	82.75	34.219	
4,200.00	4,190.62	3,468.00	3,467.40	12.53	72.13	66.96	-124.62	-2,869.88	2,851.66	2,769.17	82.49	34.569	
4,300.00	4,290.36	3,468.00	3,467.40	12.83	72.13	66.96	-124.62	-2,869.88	2,875.18	2,793.02	82.17	34.992	
4,400.00	4,390.10	3,468.00	3,467.40	13.13	72.13	66.96	-124.62	-2,869.88	2,901.96	2,820.18	81.78	35.487	
4,500.00	4,489.84	3,468.00	3,467.40	13.43	72.13	66.96	-124.62	-2,869.88	2,931.90	2,850.57	81.33	36.051	
4,600.00	4,589.57	3,468.00	3,467.40	13.73	72.13	66.96	-124.62	-2,869.88	2,964.92	2,884.09	80.83	36.682	
4,700.00	4,689.31	3,468.00	3,467.40	14.03	72.13	66.96	-124.62	-2,869.88	3,000.90	2,920.62	80.28	37.380	
4,800.00	4,789.05	3,468.00	3,467.40	14.33	72.13	66.96	-124.62	-2,869.88	3,039.75	2,960.06	79.70	38.142	
4,900.00	4,888.78	3,468.00	3,467.40	14.63	72.13	66.96	-124.62	-2,869.88	3,081.36	3,002.28	79.08	38.967	
5,000.00	4,988.52	3,468.00	3,467.40	14.93	72.13	66.96	-124.62	-2,869.88	3,125.61	3,047.18	78.43	39.852	

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 750H - Slot B05
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 750H	**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	5,088.26	3,468.00	3,467.40	15.23	72.13	66.96	-124.62	-2,869.88	3,172.40	3,094.64	77.76	40.795	
5,200.00	5,187.99	3,468.00	3,467.40	15.53	72.13	66.96	-124.62	-2,869.88	3,221.62	3,144.54	77.08	41.795	
5,300.00	5,287.73	3,468.00	3,467.40	15.83	72.13	66.96	-124.62	-2,869.88	3,273.15	3,196.76	76.39	42.849	
5,400.00	5,387.47	3,468.00	3,467.40	16.13	72.13	66.96	-124.62	-2,869.88	3,326.89	3,251.20	75.69	43.956	
5,500.00	5,487.20	3,468.00	3,467.40	16.43	72.13	66.96	-124.62	-2,869.88	3,382.73	3,307.75	74.98	45.113	
5,600.00	5,586.94	3,468.00	3,467.40	16.73	72.13	66.96	-124.62	-2,869.88	3,440.58	3,366.30	74.28	46.318	
5,700.00	5,686.68	3,468.00	3,467.40	17.03	72.13	66.96	-124.62	-2,869.88	3,500.32	3,426.74	73.58	47.568	
5,800.00	5,786.41	3,468.00	3,467.40	17.33	72.13	66.96	-124.62	-2,869.88	3,561.87	3,488.98	72.89	48.863	
5,900.00	5,886.15	3,468.00	3,467.40	17.63	72.13	66.96	-124.62	-2,869.88	3,625.14	3,552.92	72.21	50.199	
6,000.00	5,985.89	3,468.00	3,467.40	17.93	72.13	66.96	-124.62	-2,869.88	3,690.03	3,618.48	71.55	51.575	
6,100.00	6,085.62	3,468.00	3,467.40	18.23	72.13	66.96	-124.62	-2,869.88	3,756.46	3,685.57	70.89	52.989	
6,200.00	6,185.36	3,468.00	3,467.40	18.53	72.13	66.96	-124.62	-2,869.88	3,824.35	3,754.10	70.25	54.437	
6,300.00	6,285.10	3,468.00	3,467.40	18.83	72.13	66.96	-124.62	-2,869.88	3,893.63	3,824.00	69.63	55.919	
6,400.00	6,384.83	3,468.00	3,467.40	19.13	72.13	66.96	-124.62	-2,869.88	3,964.22	3,895.20	69.02	57.432	
6,500.00	6,484.57	3,468.00	3,467.40	19.43	72.13	66.96	-124.62	-2,869.88	4,036.06	3,967.62	68.44	58.974	
6,559.90	6,544.31	3,468.00	3,467.40	19.61	72.13	66.96	-124.62	-2,869.88	4,079.65	4,011.55	68.10	59.910	
6,600.00	6,584.23	3,468.00	3,467.40	19.73	72.13	34.71	-124.62	-2,869.88	4,108.09	4,040.24	67.86	60.542	
6,650.00	6,633.60	3,468.00	3,467.40	19.88	72.13	20.60	-124.62	-2,869.88	4,140.98	4,073.45	67.52	61.325	
6,700.00	6,682.15	3,468.00	3,467.40	20.03	72.13	14.67	-124.62	-2,869.88	4,170.84	4,103.67	67.16	62.100	
6,750.00	6,729.52	3,468.00	3,467.40	20.18	72.13	11.48	-124.62	-2,869.88	4,197.50	4,130.73	66.77	62.862	
6,800.00	6,775.36	3,468.00	3,467.40	20.33	72.13	9.51	-124.62	-2,869.88	4,220.84	4,154.49	66.36	63.607	
6,850.00	6,819.31	3,468.00	3,467.40	20.48	72.13	8.19	-124.62	-2,869.88	4,240.73	4,174.81	65.92	64.331	
6,900.00	6,861.04	3,468.00	3,467.40	20.63	72.13	7.25	-124.62	-2,869.88	4,257.07	4,191.61	65.46	65.030	
6,950.00	6,900.22	3,468.00	3,467.40	20.78	72.13	6.56	-124.62	-2,869.88	4,269.77	4,204.78	64.99	65.700	
7,000.00	6,936.57	3,468.00	3,467.40	20.93	72.13	6.03	-124.62	-2,869.88	4,278.78	4,214.28	64.50	66.336	
7,050.00	6,969.80	3,468.00	3,467.40	21.08	72.13	5.63	-124.62	-2,869.88	4,284.04	4,220.03	64.00	66.934	
7,100.00	6,999.67	3,468.00	3,467.40	21.23	72.13	5.32	-124.62	-2,869.88	4,285.52	4,222.02	63.50	67.490	
7,150.00	7,025.94	3,468.00	3,467.40	21.38	72.13	5.08	-124.62	-2,869.88	4,283.23	4,220.24	62.99	68.000	
7,200.00	7,048.41	3,468.00	3,467.40	21.53	72.13	4.90	-124.62	-2,869.88	4,277.18	4,214.70	62.48	68.458	
7,250.00	7,066.92	3,468.00	3,467.40	21.68	72.13	4.77	-124.62	-2,869.88	4,267.38	4,205.41	61.97	68.859	
7,300.00	7,081.33	3,468.00	3,467.40	21.83	72.13	4.69	-124.62	-2,869.88	4,253.90	4,192.43	61.47	69.200	
7,350.00	7,091.51	3,468.00	3,467.40	21.98	72.13	4.64	-124.62	-2,869.88	4,236.80	4,175.82	60.98	69.476	
7,400.00	7,097.41	3,468.00	3,467.40	22.13	72.13	4.64	-124.62	-2,869.88	4,216.17	4,155.67	60.51	69.682	
7,444.73	7,099.00	3,468.00	3,467.40	22.27	72.13	4.66	-124.62	-2,869.88	4,194.81	4,134.71	60.10	69.802	
7,500.00	7,098.82	3,468.00	3,467.40	22.44	72.13	4.66	-124.62	-2,869.88	4,167.02	4,107.43	59.60	69.920	
7,600.00	7,098.49	3,468.00	3,467.40	22.74	72.13	4.66	-124.62	-2,869.88	4,118.16	4,059.49	58.66	70.198	
7,700.00	7,098.16	3,468.00	3,467.40	23.04	72.13	4.66	-124.62	-2,869.88	4,071.17	4,013.47	57.69	70.564	
7,800.00	7,097.83	3,468.00	3,467.40	23.34	72.13	4.66	-124.62	-2,869.88	4,026.11	3,969.42	56.69	71.022	
7,900.00	7,097.51	3,468.00	3,467.40	23.64	72.13	4.66	-124.62	-2,869.88	3,983.05	3,927.41	55.65	71.579	
8,000.00	7,097.18	3,468.00	3,467.40	23.94	72.13	4.66	-124.62	-2,869.88	3,942.06	3,887.49	54.57	72.238	
8,100.00	7,096.85	3,468.00	3,467.40	24.24	72.13	4.66	-124.62	-2,869.88	3,903.21	3,849.74	53.47	73.005	
8,200.00	7,096.52	3,468.00	3,467.40	24.54	72.13	4.66	-124.62	-2,869.88	3,866.55	3,814.21	52.33	73.883	
8,300.00	7,096.19	3,468.00	3,467.40	24.84	72.13	4.66	-124.62	-2,869.88	3,832.15	3,780.97	51.18	74.876	
8,400.00	7,095.87	3,468.00	3,467.40	25.14	72.13	4.66	-124.62	-2,869.88	3,800.07	3,750.06	50.01	75.985	
8,500.00	7,095.54	3,468.00	3,467.40	25.44	72.13	4.66	-124.62	-2,869.88	3,770.37	3,721.53	48.83	77.208	
8,600.00	7,095.21	3,468.00	3,467.40	25.74	72.13	4.66	-124.62	-2,869.88	3,743.10	3,695.45	47.66	78.541	
8,700.00	7,094.88	3,468.00	3,467.40	26.04	72.13	4.66	-124.62	-2,869.88	3,718.33	3,671.83	46.50	79.969	
8,800.00	7,094.55	3,468.00	3,467.40	26.35	72.13	4.66	-124.62	-2,869.88	3,696.10	3,650.73	45.37	81.474	
8,900.00	7,094.23	3,468.00	3,467.40	26.65	72.13	4.66	-124.62	-2,869.88	3,676.45	3,632.17	44.28	83.022	
9,000.00	7,093.90	3,468.00	3,467.40	26.95	72.13	4.66	-124.62	-2,869.88	3,659.44	3,616.16	43.28	84.562	
9,100.00	7,093.57	3,468.00	3,467.40	27.25	72.13	4.66	-124.62	-2,869.88	3,645.08	3,602.71	42.37	86.021	
9,200.00	7,093.24	3,468.00	3,467.40	27.55	72.13	4.66	-124.62	-2,869.88	3,633.43	3,591.81	41.62	87.303	

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 750H - Slot B05
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 750H	**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	7,092.91	3,468.00	3,467.40	27.85	72.13	4.66	-124.62	-2,869.88	3,624.49	3,583.44	41.05	88.287	
9,400.00	7,092.59	3,468.00	3,467.40	28.15	72.13	4.66	-124.62	-2,869.88	3,618.30	3,577.57	40.73	88.843	
9,500.00	7,092.26	3,468.00	3,467.40	28.45	72.13	4.66	-124.62	-2,869.88	3,614.87	3,574.19	40.68	88.858	
9,574.20	7,092.02	3,468.00	3,467.40	28.67	72.13	4.66	-124.62	-2,869.88	3,614.11	3,573.26	40.85	88.480	
9,600.00	7,091.93	3,468.00	3,467.40	28.75	72.13	4.66	-124.62	-2,869.88	3,614.20	3,573.25	40.94	88.271	
9,700.00	7,091.60	3,468.00	3,467.40	29.05	72.13	4.66	-124.62	-2,869.88	3,616.29	3,574.78	41.52	87.100	
9,800.00	7,091.27	3,468.00	3,467.40	29.35	72.13	4.66	-124.62	-2,869.88	3,621.15	3,578.77	42.38	85.438	
9,900.00	7,090.95	3,468.00	3,467.40	29.65	72.13	4.66	-124.62	-2,869.88	3,628.76	3,585.26	43.50	83.423	
10,000.00	7,090.62	3,468.00	3,467.40	29.95	72.13	4.66	-124.62	-2,869.88	3,639.10	3,594.29	44.82	81.200	
10,100.00	7,090.29	3,468.00	3,467.40	30.25	72.13	4.66	-124.62	-2,869.88	3,652.15	3,605.86	46.29	78.895	
10,200.00	7,089.96	3,468.00	3,467.40	30.55	72.13	4.66	-124.62	-2,869.88	3,667.89	3,620.00	47.88	76.603	
10,300.00	7,089.63	3,468.00	3,467.40	30.85	72.13	4.66	-124.62	-2,869.88	3,686.26	3,636.71	49.56	74.387	
10,400.00	7,089.31	3,468.00	3,467.40	31.15	72.13	4.66	-124.62	-2,869.88	3,707.25	3,655.97	51.28	72.288	
10,500.00	7,088.98	3,468.00	3,467.40	31.45	72.13	4.66	-124.62	-2,869.88	3,730.80	3,677.75	53.05	70.329	
10,600.00	7,088.65	3,468.00	3,467.40	31.75	72.13	4.66	-124.62	-2,869.88	3,756.86	3,702.03	54.83	68.519	
10,700.00	7,088.32	3,468.00	3,467.40	32.06	72.13	4.66	-124.62	-2,869.88	3,785.39	3,728.78	56.62	66.861	
10,800.00	7,087.99	3,468.00	3,467.40	32.36	72.13	4.66	-124.62	-2,869.88	3,816.33	3,757.93	58.40	65.352	
10,900.00	7,087.67	3,468.00	3,467.40	32.66	72.13	4.66	-124.62	-2,869.88	3,849.61	3,789.45	60.16	63.985	
11,000.00	7,087.34	3,468.00	3,467.40	32.96	72.13	4.66	-124.62	-2,869.88	3,885.19	3,823.27	61.91	62.755	
11,100.00	7,087.01	3,468.00	3,467.40	33.26	72.13	4.66	-124.62	-2,869.88	3,922.99	3,859.35	63.63	61.651	
11,200.00	7,086.68	3,468.00	3,467.40	33.56	72.13	4.66	-124.62	-2,869.88	3,962.95	3,897.63	65.32	60.666	
11,300.00	7,086.35	3,468.00	3,467.40	33.86	72.13	4.66	-124.62	-2,869.88	4,005.01	3,938.03	66.98	59.790	
11,400.00	7,086.03	3,468.00	3,467.40	34.16	72.13	4.66	-124.62	-2,869.88	4,049.11	3,980.50	68.61	59.017	
11,500.00	7,085.70	3,468.00	3,467.40	34.46	72.13	4.66	-124.62	-2,869.88	4,095.18	4,024.98	70.20	58.338	
11,600.00	7,085.37	3,468.00	3,467.40	34.76	72.13	4.66	-124.62	-2,869.88	4,143.14	4,071.39	71.75	57.746	
11,700.00	7,085.04	3,468.00	3,467.40	35.06	72.13	4.66	-124.62	-2,869.88	4,192.94	4,119.68	73.26	57.234	
11,800.00	7,084.71	3,468.00	3,467.40	35.36	72.13	4.66	-124.62	-2,869.88	4,244.52	4,169.79	74.73	56.796	
11,900.00	7,084.39	3,468.00	3,467.40	35.66	72.13	4.66	-124.62	-2,869.88	4,297.80	4,221.64	76.17	56.426	
12,000.00	7,084.06	3,468.00	3,467.40	35.96	72.13	4.66	-124.62	-2,869.88	4,352.73	4,275.17	77.56	56.120	
12,100.00	7,083.73	3,468.00	3,467.40	36.26	72.13	4.66	-124.62	-2,869.88	4,409.24	4,330.33	78.92	55.872	
12,200.00	7,083.40	3,468.00	3,467.40	36.56	72.13	4.66	-124.62	-2,869.88	4,467.28	4,387.04	80.23	55.678	
12,300.00	7,083.07	3,468.00	3,467.40	36.86	72.13	4.66	-124.62	-2,869.88	4,526.78	4,445.27	81.51	55.534	
12,400.00	7,082.75	3,468.00	3,467.40	37.16	72.13	4.66	-124.62	-2,869.88	4,587.69	4,504.93	82.76	55.435	
12,500.00	7,082.42	3,468.00	3,467.40	37.46	72.13	4.66	-124.62	-2,869.88	4,649.95	4,565.99	83.97	55.380	
12,600.00	7,082.09	3,468.00	3,467.40	37.76	72.13	4.66	-124.62	-2,869.88	4,713.51	4,628.38	85.14	55.364	
12,700.00	7,081.76	3,468.00	3,467.40	38.06	72.13	4.66	-124.62	-2,869.88	4,778.32	4,692.05	86.28	55.384	
12,800.00	7,081.43	3,468.00	3,467.40	38.36	72.13	4.66	-124.62	-2,869.88	4,844.33	4,756.95	87.38	55.439	
12,900.00	7,081.11	3,468.00	3,467.40	38.66	72.13	4.66	-124.62	-2,869.88	4,911.49	4,823.03	88.46	55.525	
13,000.00	7,080.78	3,468.00	3,467.40	38.96	72.13	4.66	-124.62	-2,869.88	4,979.74	4,890.25	89.50	55.640	
13,100.00	7,080.45	3,468.00	3,467.40	39.26	72.13	4.66	-124.62	-2,869.88	5,049.06	4,958.55	90.51	55.783	
13,200.00	7,080.12	3,468.00	3,467.40	39.56	72.13	4.66	-124.62	-2,869.88	5,119.39	5,027.89	91.50	55.951	
13,300.00	7,079.79	3,468.00	3,467.40	39.86	72.13	4.66	-124.62	-2,869.88	5,190.70	5,098.24	92.46	56.142	
13,400.00	7,079.47	3,468.00	3,467.40	40.16	72.13	4.66	-124.62	-2,869.88	5,262.94	5,169.55	93.39	56.356	
13,500.00	7,079.14	3,468.00	3,467.40	40.46	72.13	4.66	-124.62	-2,869.88	5,336.07	5,241.78	94.29	56.590	
13,600.00	7,078.81	3,468.00	3,467.40	40.77	72.13	4.66	-124.62	-2,869.88	5,410.07	5,314.89	95.18	56.843	
13,700.00	7,078.48	3,468.00	3,467.40	41.07	72.13	4.66	-124.62	-2,869.88	5,484.89	5,388.85	96.03	57.114	
13,800.00	7,078.15	3,468.00	3,467.40	41.37	72.13	4.66	-124.62	-2,869.88	5,560.50	5,463.63	96.87	57.401	
13,900.00	7,077.83	3,468.00	3,467.40	41.67	72.13	4.66	-124.62	-2,869.88	5,636.87	5,539.18	97.69	57.704	
14,000.00	7,077.50	3,468.00	3,467.40	41.97	72.13	4.66	-124.62	-2,869.88	5,713.97	5,615.49	98.48	58.022	
14,100.00	7,077.17	3,468.00	3,467.40	42.27	72.13	4.66	-124.62	-2,869.88	5,791.77	5,692.52	99.26	58.352	
14,200.00	7,076.84	3,468.00	3,467.40	42.57	72.13	4.66	-124.62	-2,869.88	5,870.24	5,770.23	100.01	58.696	
14,300.00	7,076.51	3,468.00	3,467.40	42.87	72.13	4.66	-124.62	-2,869.88	5,949.36	5,848.61	100.75	59.051	

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 750H - Slot B05
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 750H	**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
14,400.00	7,076.19	3,468.00	3,467.40	43.17	72.13	4.66	-124.62	-2,869.88	6,029.10	5,927.63	101.47	59.417	
14,500.00	7,075.86	3,468.00	3,467.40	43.47	72.13	4.66	-124.62	-2,869.88	6,109.44	6,007.26	102.18	59.793	
14,600.00	7,075.53	3,468.00	3,467.40	43.77	72.13	4.66	-124.62	-2,869.88	6,190.35	6,087.48	102.87	60.179	
14,700.00	7,075.20	3,468.00	3,467.40	44.07	72.13	4.66	-124.62	-2,869.88	6,271.81	6,168.27	103.54	60.573	
14,800.00	7,074.87	3,468.00	3,467.40	44.37	72.13	4.66	-124.62	-2,869.88	6,353.80	6,249.60	104.20	60.977	
14,900.00	7,074.55	3,468.00	3,467.40	44.67	72.13	4.66	-124.62	-2,869.88	6,436.30	6,331.45	104.85	61.387	
15,000.00	7,074.22	3,468.00	3,467.40	44.97	72.13	4.66	-124.62	-2,869.88	6,519.28	6,413.80	105.48	61.805	
15,100.00	7,073.89	3,468.00	3,467.40	45.27	72.13	4.66	-124.62	-2,869.88	6,602.74	6,496.64	106.10	62.230	
15,200.00	7,073.56	3,468.00	3,467.40	45.57	72.13	4.66	-124.62	-2,869.88	6,686.66	6,579.95	106.71	62.661	
15,300.00	7,073.23	3,468.00	3,467.40	45.87	72.13	4.66	-124.62	-2,869.88	6,771.01	6,663.70	107.31	63.099	
15,400.00	7,072.91	3,468.00	3,467.40	46.17	72.13	4.66	-124.62	-2,869.88	6,855.78	6,747.88	107.90	63.541	
15,500.00	7,072.58	3,468.00	3,467.40	46.47	72.13	4.66	-124.62	-2,869.88	6,940.95	6,832.48	108.47	63.989	
15,600.00	7,072.25	3,468.00	3,467.40	46.77	72.13	4.66	-124.62	-2,869.88	7,026.52	6,917.48	109.04	64.441	
15,700.00	7,071.92	3,468.00	3,467.40	47.07	72.13	4.66	-124.62	-2,869.88	7,112.47	7,002.87	109.59	64.898	
15,800.00	7,071.59	3,468.00	3,467.40	47.37	72.13	4.66	-124.62	-2,869.88	7,198.77	7,088.63	110.14	65.359	
15,900.00	7,071.27	3,468.00	3,467.40	47.67	72.13	4.66	-124.62	-2,869.88	7,285.43	7,174.75	110.68	65.823	
16,000.00	7,070.94	3,468.00	3,467.40	47.97	72.13	4.66	-124.62	-2,869.88	7,372.43	7,261.21	111.21	66.292	
16,100.00	7,070.61	3,468.00	3,467.40	48.27	72.13	4.66	-124.62	-2,869.88	7,459.75	7,348.01	111.73	66.763	
16,200.00	7,070.28	3,468.00	3,467.40	48.57	72.13	4.66	-124.62	-2,869.88	7,547.38	7,435.13	112.25	67.238	
16,300.00	7,069.95	3,468.00	3,467.40	48.87	72.13	4.66	-124.62	-2,869.88	7,635.32	7,522.56	112.76	67.715	
16,400.00	7,069.63	3,468.00	3,467.40	49.17	72.13	4.66	-124.62	-2,869.88	7,723.55	7,610.30	113.26	68.195	
16,419.92	7,069.56	3,468.00	3,467.40	49.23	72.13	4.66	-124.62	-2,869.88	7,741.17	7,627.81	113.36	68.291	
16,500.00	7,069.30	3,468.00	3,467.40	49.47	72.13	4.66	-124.62	-2,869.88	7,812.07	7,698.32	113.75	68.677	
16,591.83	7,069.00	3,468.00	3,467.40	49.75	72.13	4.66	-124.62	-2,869.88	7,893.60	7,779.40	114.20	69.122	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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	-97.04	-589.60	-4,773.91	4,810.30				
100.00	100.00	66.51	66.51	0.23	0.66	-97.04	-589.60	-4,773.91	4,810.18	4,809.30	0.88	5,455.229	
200.00	200.00	166.52	166.51	0.53	1.73	-97.04	-589.60	-4,773.91	4,810.18	4,807.93	2.26	2,131.348	
300.00	300.00	266.52	266.51	0.83	3.77	-97.04	-589.60	-4,773.91	4,810.18	4,805.58	4.60	1,045.476	
335.47	335.47	301.98	301.98	0.93	4.50	-97.04	-589.13	-4,773.91	4,810.13	4,804.69	5.43	885.463	
400.00	400.00	364.84	364.83	1.13	5.78	-97.04	-589.22	-4,773.91	4,810.14	4,803.23	6.91	696.043	
500.00	500.00	466.55	466.51	1.43	7.86	-97.04	-589.60	-4,773.91	4,810.18	4,800.89	9.29	517.782	
600.00	599.98	566.53	566.49	1.73	9.91	58.54	-589.60	-4,773.91	4,809.27	4,797.64	11.63	413.362	
707.91	707.73	674.28	674.24	2.05	12.11	58.65	-589.60	-4,773.91	4,806.25	4,792.09	14.16	339.382	
800.00	799.58	766.13	766.09	2.33	13.99	58.71	-589.60	-4,773.91	4,802.77	4,786.45	16.32	294.356	
900.00	899.31	865.86	865.83	2.63	16.03	58.79	-589.60	-4,773.91	4,799.00	4,780.35	18.66	257.239	
1,000.00	999.05	965.08	965.02	2.93	18.06	58.89	-587.58	-4,773.91	4,795.00	4,774.02	20.98	228.500	
1,100.00	1,098.79	1,063.81	1,063.75	3.23	20.08	58.96	-587.77	-4,773.91	4,791.28	4,767.97	23.30	205.601	
1,200.00	1,198.52	1,162.58	1,162.51	3.53	22.10	59.03	-588.13	-4,773.91	4,787.58	4,761.95	25.62	186.843	
1,300.00	1,298.26	1,261.37	1,261.30	3.83	24.12	59.09	-588.68	-4,773.91	4,783.90	4,755.96	27.94	171.197	
1,400.00	1,398.00	1,360.19	1,360.11	4.13	26.14	59.16	-589.41	-4,773.91	4,780.26	4,749.99	30.26	157.949	
1,500.00	1,497.73	1,464.39	1,464.25	4.43	28.27	59.23	-589.60	-4,773.91	4,776.56	4,743.86	32.70	146.092	
1,600.00	1,597.47	1,564.13	1,563.98	4.73	30.31	59.31	-589.60	-4,773.91	4,772.85	4,737.81	35.04	136.230	
1,700.00	1,697.21	1,663.15	1,663.00	5.03	32.33	59.39	-588.88	-4,773.91	4,769.06	4,731.70	37.36	127.651	
1,800.00	1,796.94	1,761.48	1,761.33	5.33	34.34	59.46	-589.15	-4,773.91	4,765.40	4,725.73	39.67	120.123	
1,900.00	1,896.68	1,863.40	1,863.19	5.63	36.43	59.53	-589.60	-4,773.91	4,761.76	4,719.70	42.06	113.227	
2,000.00	1,996.42	1,963.13	1,962.93	5.93	38.47	59.61	-589.60	-4,773.91	4,758.08	4,713.68	44.39	107.177	
2,100.00	2,096.15	2,062.87	2,062.67	6.23	40.51	59.68	-589.60	-4,773.91	4,754.41	4,707.67	46.73	101.733	
2,200.00	2,195.89	2,161.47	2,161.26	6.53	42.52	59.77	-588.59	-4,773.91	4,750.64	4,701.59	49.05	96.851	
2,300.00	2,295.63	2,259.60	2,259.38	6.83	44.53	59.84	-589.00	-4,773.91	4,747.03	4,695.67	51.36	92.431	
2,400.00	2,395.36	2,362.14	2,361.88	7.13	46.63	59.91	-589.60	-4,773.91	4,743.44	4,689.69	53.75	88.243	
2,500.00	2,495.10	2,461.87	2,461.61	7.43	48.67	59.99	-589.60	-4,773.91	4,739.80	4,683.71	56.09	84.497	
2,600.00	2,594.84	2,561.61	2,561.35	7.73	50.71	60.06	-589.60	-4,773.91	4,736.17	4,677.74	58.43	81.052	
2,700.00	2,694.57	2,660.78	2,660.51	8.03	52.74	60.15	-588.76	-4,773.91	4,732.47	4,671.71	60.76	77.886	
2,800.00	2,794.31	2,759.45	2,759.18	8.33	54.75	60.22	-589.01	-4,773.91	4,728.88	4,665.80	63.08	74.967	
2,900.00	2,894.05	2,858.17	2,857.89	8.63	56.77	60.29	-589.49	-4,773.91	4,725.32	4,659.92	65.40	72.255	
3,000.00	2,993.78	2,960.62	2,960.30	8.93	58.94	60.37	-589.60	-4,773.91	4,721.74	4,653.87	67.86	69.579	
3,100.00	3,093.52	3,060.08	3,059.75	9.23	61.05	60.45	-588.86	-4,773.91	4,718.08	4,647.81	70.27	67.138	
3,200.00	3,193.26	3,157.76	3,157.43	9.53	63.12	60.52	-589.16	-4,773.91	4,714.53	4,641.88	72.65	64.894	
3,300.00	3,292.99	3,259.88	3,259.51	9.83	65.29	60.60	-589.60	-4,773.91	4,711.00	4,635.88	75.12	62.713	
3,400.00	3,392.73	3,359.62	3,359.24	10.13	67.41	60.67	-589.60	-4,773.91	4,707.43	4,629.89	77.54	60.710	
3,500.00	3,492.47	3,351.00	3,350.60	10.43	67.23	60.67	-589.60	-4,773.91	4,705.13	4,627.49	77.64	60.603	
3,558.91	3,551.22	3,351.00	3,350.60	10.60	67.23	60.67	-589.60	-4,773.91	4,704.76	4,626.97	77.79	60.479	
3,600.00	3,592.20	3,351.00	3,350.60	10.73	67.23	60.67	-589.60	-4,773.91	4,704.94	4,627.05	77.89	60.403	
3,700.00	3,691.94	3,351.00	3,350.60	11.03	67.23	60.67	-589.60	-4,773.91	4,706.87	4,628.76	78.12	60.255	
3,800.00	3,791.68	3,351.00	3,350.60	11.33	67.23	60.67	-589.60	-4,773.91	4,710.93	4,632.62	78.31	60.157	
3,900.00	3,891.41	3,351.00	3,350.60	11.63	67.23	60.67	-589.60	-4,773.91	4,717.11	4,638.63	78.48	60.109	
4,000.00	3,991.15	3,351.00	3,350.60	11.93	67.23	60.67	-589.60	-4,773.91	4,725.39	4,646.78	78.61	60.110	
4,100.00	4,090.89	3,351.00	3,350.60	12.23	67.23	60.67	-589.60	-4,773.91	4,735.77	4,657.05	78.72	60.159	
4,200.00	4,190.62	3,351.00	3,350.60	12.53	67.23	60.67	-589.60	-4,773.91	4,748.24	4,669.43	78.80	60.255	
4,300.00	4,290.36	3,351.00	3,350.60	12.83	67.23	60.67	-589.60	-4,773.91	4,762.77	4,683.91	78.86	60.397	
4,400.00	4,390.10	3,351.00	3,350.60	13.13	67.23	60.67	-589.60	-4,773.91	4,779.35	4,700.46	78.89	60.585	
4,500.00	4,489.84	3,351.00	3,350.60	13.43	67.23	60.67	-589.60	-4,773.91	4,797.96	4,719.07	78.89	60.818	
4,600.00	4,589.57	3,351.00	3,350.60	13.73	67.23	60.67	-589.60	-4,773.91	4,818.57	4,739.70	78.87	61.095	
4,700.00	4,689.31	3,351.00	3,350.60	14.03	67.23	60.67	-589.60	-4,773.91	4,841.16	4,762.33	78.83	61.415	
4,800.00	4,789.05	3,351.00	3,350.60	14.33	67.23	60.67	-589.60	-4,773.91	4,865.70	4,786.94	78.76	61.777	
4,900.00	4,888.78	3,351.00	3,350.60	14.63	67.23	60.67	-589.60	-4,773.91	4,892.16	4,813.49	78.68	62.180	

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 750H - Slot B05
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 750H	**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	4,988.52	3,351.00	3,350.60	14.93	67.23	60.67	-589.60	-4,773.91	4,920.52	4,841.94	78.57	62.624	
5,100.00	5,088.26	3,351.00	3,350.60	15.23	67.23	60.67	-589.60	-4,773.91	4,950.73	4,872.28	78.45	63.108	
5,200.00	5,187.99	3,351.00	3,350.60	15.53	67.23	60.67	-589.60	-4,773.91	4,982.76	4,904.45	78.31	63.630	
5,300.00	5,287.73	3,351.00	3,350.60	15.83	67.23	60.67	-589.60	-4,773.91	5,016.59	4,938.43	78.15	64.190	
5,400.00	5,387.47	3,351.00	3,350.60	16.13	67.23	60.67	-589.60	-4,773.91	5,052.16	4,974.18	77.98	64.786	
5,500.00	5,487.20	3,351.00	3,350.60	16.43	67.23	60.67	-589.60	-4,773.91	5,089.46	5,011.66	77.80	65.419	
5,600.00	5,586.94	3,351.00	3,350.60	16.73	67.23	60.67	-589.60	-4,773.91	5,128.43	5,050.83	77.60	66.086	
5,700.00	5,686.68	3,351.00	3,350.60	17.03	67.23	60.67	-589.60	-4,773.91	5,169.04	5,091.65	77.40	66.787	
5,800.00	5,786.41	3,351.00	3,350.60	17.33	67.23	60.67	-589.60	-4,773.91	5,211.26	5,134.08	77.18	67.521	
5,900.00	5,886.15	3,351.00	3,350.60	17.63	67.23	60.67	-589.60	-4,773.91	5,255.04	5,178.09	76.95	68.288	
6,000.00	5,985.89	3,351.00	3,350.60	17.93	67.23	60.67	-589.60	-4,773.91	5,300.35	5,223.62	76.72	69.085	
6,100.00	6,085.62	3,351.00	3,350.60	18.23	67.23	60.67	-589.60	-4,773.91	5,347.14	5,270.65	76.48	69.913	
6,200.00	6,185.36	3,351.00	3,350.60	18.53	67.23	60.67	-589.60	-4,773.91	5,395.38	5,319.14	76.24	70.770	
6,300.00	6,285.10	3,351.00	3,350.60	18.83	67.23	60.67	-589.60	-4,773.91	5,445.03	5,369.04	75.99	71.655	
6,400.00	6,384.83	3,351.00	3,350.60	19.13	67.23	60.67	-589.60	-4,773.91	5,496.05	5,420.31	75.74	72.567	
6,500.00	6,484.57	3,351.00	3,350.60	19.43	67.23	60.67	-589.60	-4,773.91	5,548.40	5,472.92	75.48	73.505	
6,559.90	6,544.31	3,351.00	3,350.60	19.61	67.23	60.67	-589.60	-4,773.91	5,580.38	5,505.05	75.33	74.079	
6,600.00	6,584.23	3,351.00	3,350.60	19.73	67.23	28.70	-589.60	-4,773.91	5,600.86	5,525.64	75.22	74.460	
6,650.00	6,633.60	3,351.00	3,350.60	19.88	67.23	14.88	-589.60	-4,773.91	5,623.26	5,548.19	75.07	74.908	
6,700.00	6,682.15	3,351.00	3,350.60	20.03	67.23	9.17	-589.60	-4,773.91	5,642.07	5,567.17	74.90	75.324	
6,750.00	6,729.52	3,351.00	3,350.60	20.18	67.23	6.16	-589.60	-4,773.91	5,657.19	5,582.46	74.73	75.704	
6,800.00	6,775.36	3,351.00	3,350.60	20.33	67.23	4.32	-589.60	-4,773.91	5,668.52	5,593.98	74.54	76.045	
6,850.00	6,819.31	3,351.00	3,350.60	20.48	67.23	3.09	-589.60	-4,773.91	5,676.01	5,601.66	74.35	76.345	
6,900.00	6,861.04	3,351.00	3,350.60	20.63	67.23	2.20	-589.60	-4,773.91	5,679.61	5,605.47	74.14	76.602	
6,950.00	6,900.22	3,351.00	3,350.60	20.78	67.23	1.52	-589.60	-4,773.91	5,679.30	5,605.37	73.94	76.812	
7,000.00	6,936.57	3,351.00	3,350.60	20.93	67.23	0.97	-589.60	-4,773.91	5,675.09	5,601.36	73.73	76.973	
7,050.00	6,969.80	3,351.00	3,350.60	21.08	67.23	0.52	-589.60	-4,773.91	5,667.00	5,593.48	73.52	77.082	
7,100.00	6,999.67	3,351.00	3,350.60	21.23	67.23	0.11	-589.60	-4,773.91	5,655.07	5,581.76	73.31	77.139	
7,150.00	7,025.94	3,351.00	3,350.60	21.38	67.23	-0.26	-589.60	-4,773.91	5,639.36	5,566.26	73.11	77.140	
7,200.00	7,048.41	3,351.00	3,350.60	21.53	67.23	-0.62	-589.60	-4,773.91	5,619.98	5,547.07	72.91	77.085	
7,250.00	7,066.92	3,351.00	3,350.60	21.68	67.23	-0.98	-589.60	-4,773.91	5,597.02	5,524.31	72.72	76.971	
7,300.00	7,081.33	3,351.00	3,350.60	21.83	67.23	-1.36	-589.60	-4,773.91	5,570.63	5,498.09	72.54	76.797	
7,350.00	7,091.51	3,351.00	3,350.60	21.98	67.23	-1.78	-589.60	-4,773.91	5,540.95	5,468.58	72.37	76.563	
7,400.00	7,097.41	3,351.00	3,350.60	22.13	67.23	-2.27	-589.60	-4,773.91	5,508.15	5,435.93	72.22	76.268	
7,444.73	7,099.00	3,351.00	3,350.60	22.27	67.23	-2.78	-589.60	-4,773.91	5,476.34	5,404.24	72.10	75.952	
7,500.00	7,098.82	3,351.00	3,350.60	22.44	67.23	-2.78	-589.60	-4,773.91	5,435.78	5,363.81	71.97	75.533	
7,600.00	7,098.49	3,351.00	3,350.60	22.74	67.23	-2.78	-589.60	-4,773.91	5,363.06	5,291.36	71.70	74.799	
7,700.00	7,098.16	3,351.00	3,350.60	23.04	67.23	-2.78	-589.60	-4,773.91	5,291.22	5,219.81	71.41	74.095	
7,800.00	7,097.83	3,351.00	3,350.60	23.34	67.23	-2.78	-589.60	-4,773.91	5,220.32	5,149.22	71.10	73.424	
7,900.00	7,097.51	3,351.00	3,350.60	23.64	67.23	-2.78	-589.60	-4,773.91	5,150.38	5,079.62	70.76	72.785	
8,000.00	7,097.18	3,351.00	3,350.60	23.94	67.23	-2.78	-589.60	-4,773.91	5,081.45	5,011.05	70.40	72.182	
8,100.00	7,096.85	3,351.00	3,350.60	24.24	67.23	-2.78	-589.60	-4,773.91	5,013.56	4,943.56	70.01	71.614	
8,200.00	7,096.52	3,351.00	3,350.60	24.54	67.23	-2.78	-589.60	-4,773.91	4,946.77	4,877.18	69.59	71.084	
8,300.00	7,096.19	3,351.00	3,350.60	24.84	67.23	-2.78	-589.60	-4,773.91	4,881.11	4,811.96	69.14	70.593	
8,400.00	7,095.87	3,351.00	3,350.60	25.14	67.23	-2.78	-589.60	-4,773.91	4,816.63	4,747.96	68.67	70.144	
8,500.00	7,095.54	3,351.00	3,350.60	25.44	67.23	-2.78	-589.60	-4,773.91	4,753.38	4,685.22	68.16	69.737	
8,600.00	7,095.21	3,351.00	3,350.60	25.74	67.23	-2.78	-589.60	-4,773.91	4,691.41	4,623.78	67.62	69.375	
8,700.00	7,094.88	3,351.00	3,350.60	26.04	67.23	-2.78	-589.60	-4,773.91	4,630.76	4,563.71	67.05	69.060	
8,800.00	7,094.55	3,351.00	3,350.60	26.35	67.23	-2.78	-589.60	-4,773.91	4,571.51	4,505.06	66.45	68.795	
8,900.00	7,094.23	3,351.00	3,350.60	26.65	67.23	-2.78	-589.60	-4,773.91	4,513.69	4,447.87	65.81	68.581	
9,000.00	7,093.90	3,351.00	3,350.60	26.95	67.23	-2.78	-589.60	-4,773.91	4,457.36	4,392.22	65.14	68.423	
9,100.00	7,093.57	3,351.00	3,350.60	27.25	67.23	-2.78	-589.60	-4,773.91	4,402.58	4,338.15	64.44	68.322	

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 750H - Slot B05
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 750H	**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	7,093.24	3,351.00	3,350.60	27.55	67.23	-2.78	-589.60	-4,773.91	4,349.42	4,285.72	63.70	68.281	
9,300.00	7,092.91	3,351.00	3,350.60	27.85	67.23	-2.78	-589.60	-4,773.91	4,297.92	4,235.00	62.92	68.303	
9,400.00	7,092.59	3,351.00	3,350.60	28.15	67.23	-2.78	-589.60	-4,773.91	4,248.16	4,186.04	62.11	68.393	
9,500.00	7,092.26	3,351.00	3,350.60	28.45	67.23	-2.78	-589.60	-4,773.91	4,200.18	4,138.91	61.27	68.552	
9,600.00	7,091.93	3,351.00	3,350.60	28.75	67.23	-2.78	-589.60	-4,773.91	4,154.06	4,093.67	60.39	68.786	
9,700.00	7,091.60	3,351.00	3,350.60	29.05	67.23	-2.78	-589.60	-4,773.91	4,109.86	4,050.37	59.48	69.096	
9,800.00	7,091.27	3,351.00	3,350.60	29.35	67.23	-2.78	-589.60	-4,773.91	4,067.63	4,009.09	58.54	69.487	
9,900.00	7,090.95	3,351.00	3,350.60	29.65	67.23	-2.78	-589.60	-4,773.91	4,027.44	3,969.88	57.57	69.961	
10,000.00	7,090.62	3,351.00	3,350.60	29.95	67.23	-2.78	-589.60	-4,773.91	3,989.36	3,932.79	56.57	70.523	
10,100.00	7,090.29	3,351.00	3,350.60	30.25	67.23	-2.78	-589.60	-4,773.91	3,953.44	3,897.89	55.55	71.173	
10,200.00	7,089.96	3,351.00	3,350.60	30.55	67.23	-2.78	-589.60	-4,773.91	3,919.74	3,865.24	54.51	71.913	
10,300.00	7,089.63	3,351.00	3,350.60	30.85	67.23	-2.78	-589.60	-4,773.91	3,888.32	3,834.87	53.45	72.743	
10,400.00	7,089.31	3,351.00	3,350.60	31.15	67.23	-2.78	-589.60	-4,773.91	3,859.24	3,806.85	52.39	73.661	
10,500.00	7,088.98	3,351.00	3,350.60	31.45	67.23	-2.78	-589.60	-4,773.91	3,832.55	3,781.22	51.33	74.660	
10,600.00	7,088.65	3,351.00	3,350.60	31.75	67.23	-2.78	-589.60	-4,773.91	3,808.30	3,758.01	50.29	75.731	
10,700.00	7,088.32	3,351.00	3,350.60	32.06	67.23	-2.78	-589.60	-4,773.91	3,786.53	3,737.27	49.27	76.855	
10,800.00	7,087.99	3,351.00	3,350.60	32.36	67.23	-2.78	-589.60	-4,773.91	3,767.30	3,719.00	48.29	78.007	
10,900.00	7,087.67	3,351.00	3,350.60	32.66	67.23	-2.78	-589.60	-4,773.91	3,750.63	3,703.24	47.39	79.148	
11,000.00	7,087.34	3,351.00	3,350.60	32.96	67.23	-2.78	-589.60	-4,773.91	3,736.56	3,689.99	46.58	80.223	
11,100.00	7,087.01	3,351.00	3,350.60	33.26	67.23	-2.78	-589.60	-4,773.91	3,725.13	3,679.23	45.90	81.159	
11,200.00	7,086.68	3,351.00	3,350.60	33.56	67.23	-2.78	-589.60	-4,773.91	3,716.36	3,670.96	45.39	81.868	
11,300.00	7,086.35	3,351.00	3,350.60	33.86	67.23	-2.78	-589.60	-4,773.91	3,710.26	3,665.15	45.11	82.251	
11,400.00	7,086.03	3,351.00	3,350.60	34.16	67.23	-2.78	-589.60	-4,773.91	3,706.84	3,661.76	45.08	82.223	
11,476.54	7,085.78	3,351.00	3,350.60	34.39	67.23	-2.78	-589.60	-4,773.91	3,706.05	3,660.80	45.25	81.894	CC
11,500.00	7,085.70	3,351.00	3,350.60	34.46	67.23	-2.78	-589.60	-4,773.91	3,706.13	3,660.79	45.34	81.738	ES
11,600.00	7,085.37	3,351.00	3,350.60	34.76	67.23	-2.78	-589.60	-4,773.91	3,708.11	3,662.22	45.89	80.805	
11,700.00	7,085.04	3,351.00	3,350.60	35.06	67.23	-2.78	-589.60	-4,773.91	3,712.78	3,666.08	46.71	79.492	
11,800.00	7,084.71	3,351.00	3,350.60	35.36	67.23	-2.78	-589.60	-4,773.91	3,720.14	3,672.39	47.76	77.900	
11,900.00	7,084.39	3,351.00	3,350.60	35.66	67.23	-2.78	-589.60	-4,773.91	3,730.17	3,681.18	48.99	76.139	
12,000.00	7,084.06	3,351.00	3,350.60	35.96	67.23	-2.78	-589.60	-4,773.91	3,742.84	3,692.47	50.37	74.305	
12,100.00	7,083.73	3,351.00	3,350.60	36.26	67.23	-2.78	-589.60	-4,773.91	3,758.13	3,706.27	51.86	72.469	
12,200.00	7,083.40	3,351.00	3,350.60	36.56	67.23	-2.78	-589.60	-4,773.91	3,776.01	3,722.59	53.42	70.684	
12,300.00	7,083.07	3,351.00	3,350.60	36.86	67.23	-2.78	-589.60	-4,773.91	3,796.44	3,741.40	55.03	68.983	
12,400.00	7,082.75	3,351.00	3,350.60	37.16	67.23	-2.78	-589.60	-4,773.91	3,819.37	3,762.69	56.68	67.384	
12,500.00	7,082.42	3,351.00	3,350.60	37.46	67.23	-2.78	-589.60	-4,773.91	3,844.78	3,786.43	58.34	65.899	
12,600.00	7,082.09	3,351.00	3,350.60	37.76	67.23	-2.78	-589.60	-4,773.91	3,872.60	3,812.59	60.01	64.531	
12,700.00	7,081.76	3,351.00	3,350.60	38.06	67.23	-2.78	-589.60	-4,773.91	3,902.78	3,841.11	61.68	63.280	
12,800.00	7,081.43	3,351.00	3,350.60	38.36	67.23	-2.78	-589.60	-4,773.91	3,935.28	3,871.95	63.33	62.142	
12,900.00	7,081.11	3,351.00	3,350.60	38.66	67.23	-2.78	-589.60	-4,773.91	3,970.02	3,905.06	64.96	61.113	
13,000.00	7,080.78	3,351.00	3,350.60	38.96	67.23	-2.78	-589.60	-4,773.91	4,006.97	3,940.39	66.57	60.187	
13,100.00	7,080.45	3,351.00	3,350.60	39.26	67.23	-2.78	-589.60	-4,773.91	4,046.04	3,977.88	68.16	59.359	
13,200.00	7,080.12	3,351.00	3,350.60	39.56	67.23	-2.78	-589.60	-4,773.91	4,087.19	4,017.47	69.72	58.623	
13,300.00	7,079.79	3,351.00	3,350.60	39.86	67.23	-2.78	-589.60	-4,773.91	4,130.36	4,059.11	71.25	57.972	
13,400.00	7,079.47	3,351.00	3,350.60	40.16	67.23	-2.78	-589.60	-4,773.91	4,175.47	4,102.73	72.74	57.400	
13,500.00	7,079.14	3,351.00	3,350.60	40.46	67.23	-2.78	-589.60	-4,773.91	4,222.47	4,148.26	74.20	56.903	
13,600.00	7,078.81	3,351.00	3,350.60	40.77	67.23	-2.78	-589.60	-4,773.91	4,271.29	4,195.66	75.63	56.475	
13,700.00	7,078.48	3,351.00	3,350.60	41.07	67.23	-2.78	-589.60	-4,773.91	4,321.88	4,244.85	77.02	56.111	
13,800.00	7,078.15	3,351.00	3,350.60	41.37	67.23	-2.78	-589.60	-4,773.91	4,374.16	4,295.78	78.38	55.807	
13,900.00	7,077.83	3,351.00	3,350.60	41.67	67.23	-2.78	-589.60	-4,773.91	4,428.09	4,348.39	79.70	55.558	
14,000.00	7,077.50	3,351.00	3,350.60	41.97	67.23	-2.78	-589.60	-4,773.91	4,483.60	4,402.61	80.99	55.361	
14,100.00	7,077.17	3,351.00	3,350.60	42.27	67.23	-2.78	-589.60	-4,773.91	4,540.64	4,458.40	82.24	55.211	
14,200.00	7,076.84	3,351.00	3,350.60	42.57	67.23	-2.78	-589.60	-4,773.91	4,599.14	4,515.68	83.46	55.106	

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 750H - Slot B05
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 750H	**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

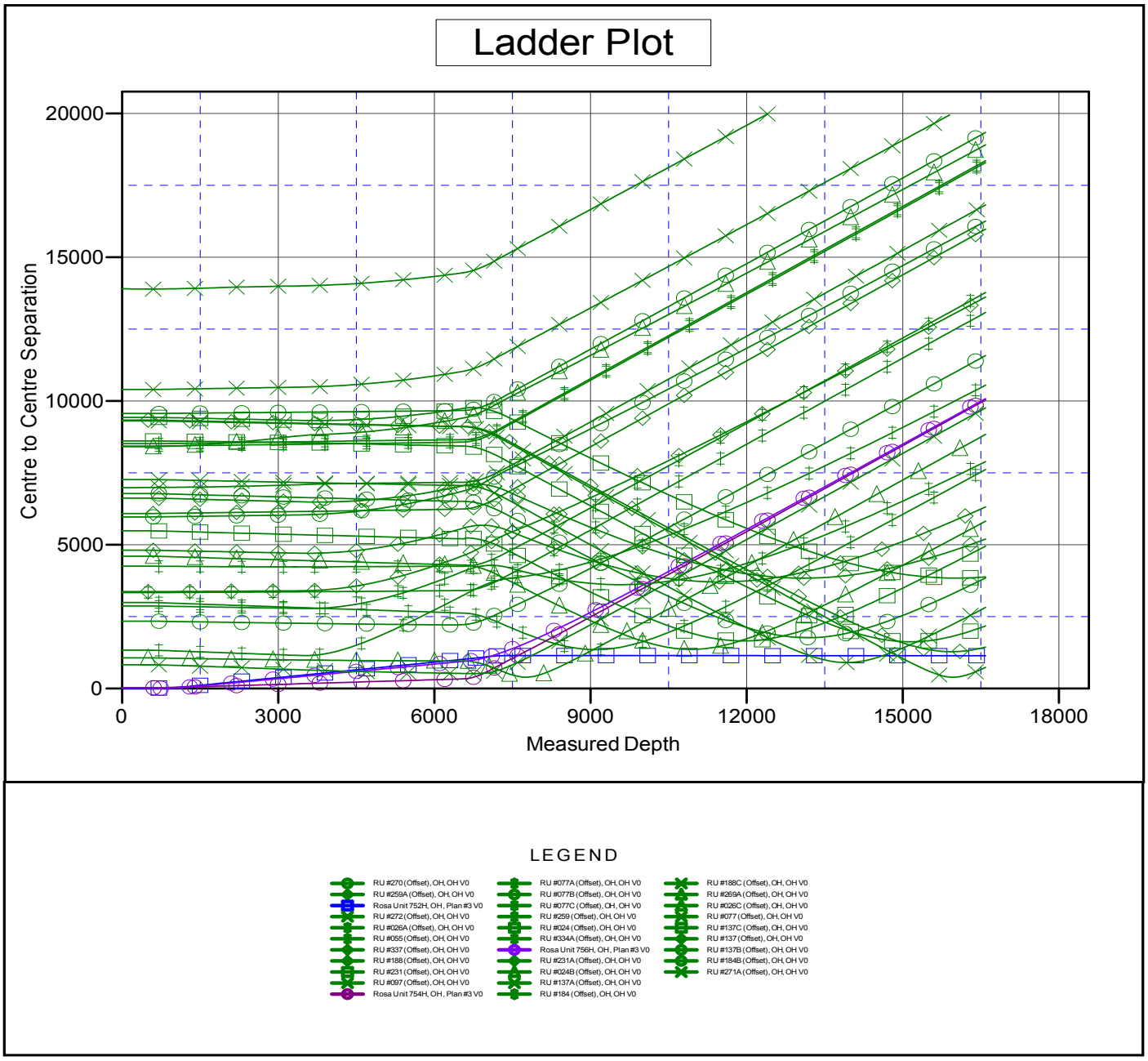
Offset Well Error: 0.00 usft

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
14,300.00	7,076.51	3,351.00	3,350.60	42.87	67.23	-2.78	-589.60	-4,773.91	4,659.05	4,574.41	84.64	55.042	
14,400.00	7,076.19	3,351.00	3,350.60	43.17	67.23	-2.78	-589.60	-4,773.91	4,720.33	4,634.53	85.80	55.017	SF
14,500.00	7,075.86	3,351.00	3,350.60	43.47	67.23	-2.78	-589.60	-4,773.91	4,782.90	4,695.99	86.92	55.028	
14,600.00	7,075.53	3,351.00	3,350.60	43.77	67.23	-2.78	-589.60	-4,773.91	4,846.74	4,758.73	88.01	55.072	
14,700.00	7,075.20	3,351.00	3,350.60	44.07	67.23	-2.78	-589.60	-4,773.91	4,911.78	4,822.71	89.07	55.147	
14,800.00	7,074.87	3,351.00	3,350.60	44.37	67.23	-2.78	-589.60	-4,773.91	4,977.98	4,887.88	90.10	55.251	
14,900.00	7,074.55	3,351.00	3,350.60	44.67	67.23	-2.78	-589.60	-4,773.91	5,045.29	4,954.19	91.10	55.382	
15,000.00	7,074.22	3,351.00	3,350.60	44.97	67.23	-2.78	-589.60	-4,773.91	5,113.67	5,021.60	92.07	55.538	
15,100.00	7,073.89	3,351.00	3,350.60	45.27	67.23	-2.78	-589.60	-4,773.91	5,183.08	5,090.06	93.02	55.718	
15,200.00	7,073.56	3,351.00	3,350.60	45.57	67.23	-2.78	-589.60	-4,773.91	5,253.48	5,159.53	93.95	55.920	
15,300.00	7,073.23	3,351.00	3,350.60	45.87	67.23	-2.78	-589.60	-4,773.91	5,324.82	5,229.97	94.85	56.142	
15,400.00	7,072.91	3,351.00	3,350.60	46.17	67.23	-2.78	-589.60	-4,773.91	5,397.07	5,301.35	95.72	56.383	
15,500.00	7,072.58	3,351.00	3,350.60	46.47	67.23	-2.78	-589.60	-4,773.91	5,470.20	5,373.63	96.58	56.642	
15,600.00	7,072.25	3,351.00	3,350.60	46.77	67.23	-2.78	-589.60	-4,773.91	5,544.17	5,446.76	97.41	56.918	
15,700.00	7,071.92	3,351.00	3,350.60	47.07	67.23	-2.78	-589.60	-4,773.91	5,618.94	5,520.72	98.22	57.209	
15,800.00	7,071.59	3,351.00	3,350.60	47.37	67.23	-2.78	-589.60	-4,773.91	5,694.49	5,595.48	99.01	57.515	
15,900.00	7,071.27	3,351.00	3,350.60	47.67	67.23	-2.78	-589.60	-4,773.91	5,770.78	5,671.00	99.78	57.835	
16,000.00	7,070.94	3,351.00	3,350.60	47.97	67.23	-2.78	-589.60	-4,773.91	5,847.78	5,747.25	100.53	58.167	
16,100.00	7,070.61	3,351.00	3,350.60	48.27	67.23	-2.78	-589.60	-4,773.91	5,925.48	5,824.21	101.27	58.512	
16,200.00	7,070.28	3,351.00	3,350.60	48.57	67.23	-2.78	-589.60	-4,773.91	6,003.83	5,901.84	101.99	58.867	
16,300.00	7,069.95	3,351.00	3,350.60	48.87	67.23	-2.78	-589.60	-4,773.91	6,082.82	5,980.12	102.69	59.233	
16,400.00	7,069.63	3,351.00	3,350.60	49.17	67.23	-2.78	-589.60	-4,773.91	6,162.41	6,059.03	103.38	59.609	
16,419.92	7,069.56	3,351.00	3,350.60	49.23	67.23	-2.78	-589.60	-4,773.91	6,178.34	6,074.83	103.52	59.685	
16,500.00	7,069.30	3,351.00	3,350.60	49.47	67.23	-2.78	-589.60	-4,773.91	6,242.60	6,138.54	104.05	59.994	
16,591.83	7,069.00	3,351.00	3,350.60	49.75	67.23	-2.78	-589.60	-4,773.91	6,316.73	6,212.07	104.66	60.355	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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 750H - Slot B05
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°



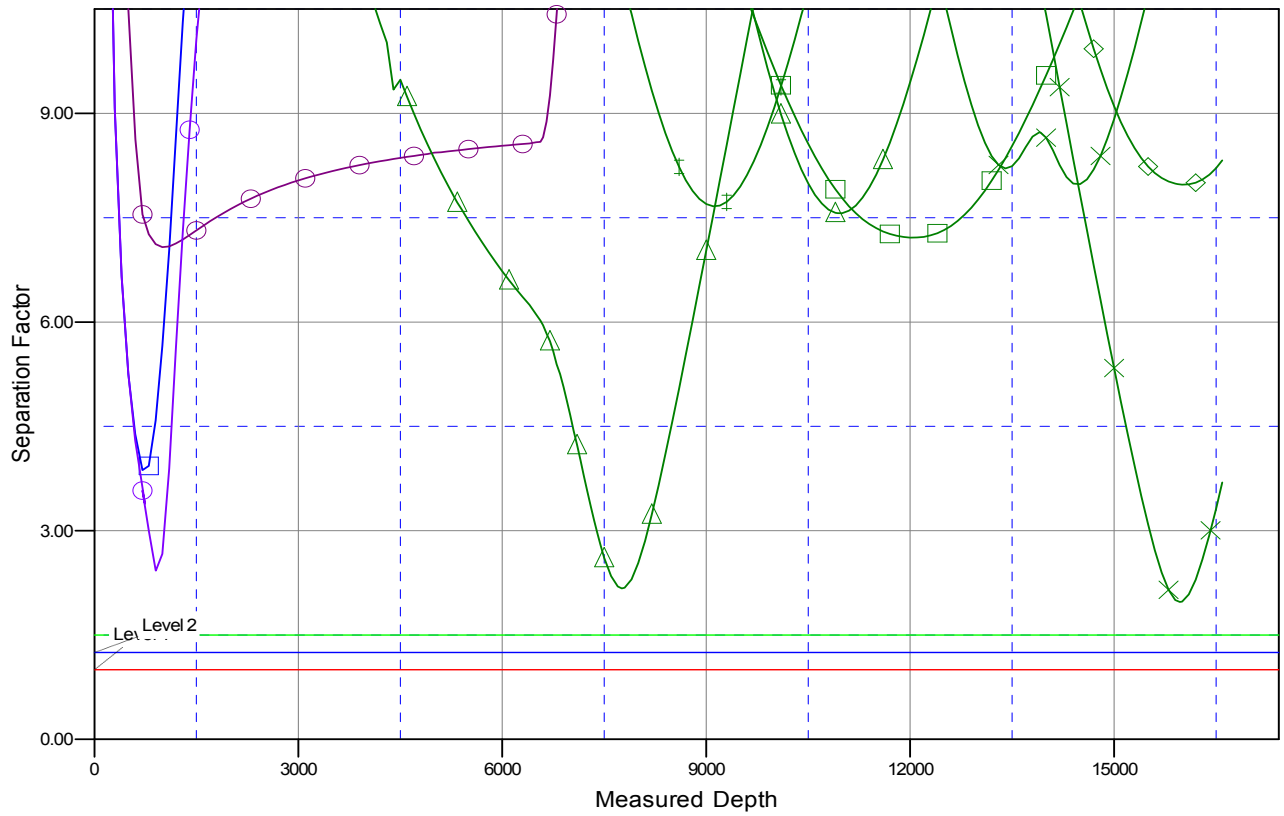
Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 750H - Slot B05
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 750H	**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 750H - Slot B05
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
Rosa Unit 754H, OH, Plan #3 V0
RU #077A (Offset), OH, OH 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

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

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

#750H ROSA UNIT

Lease: NMSF78773 Unit: NMNM78407E
SH: NW¼SW¼ Section 33, T.31 N., R.5 W.
Rio Arriba County, New Mexico
BH: Lot 3 Section 31, 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.

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.**

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 327978

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 327978
	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