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 752H

2. Name of Operator: LOGOS OPERATING LLC

9. API Well No.: 30-039-31460

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 / 2612 FSL / 952 FWL / LAT 36.856045 / LONG -107.373405

At proposed prod. zone: LOT 4 / 1101 FSL / 167 FWL / LAT 36.851877 / LONG -107.407217

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): 167 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: 7054 feet / 16782 feet

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

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

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

23. Estimated duration: 45 days

24. Attachments

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

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

25. Signature: (Electronic Submission)

Name *(Printed/Typed)*: ETTA TRUJILLO / Ph: (505) 324-4145

Date: 01/17/2023

Title: Regulatory Specialist

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

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

Date: 03/28/2024

Title: AFM-Minerals

Office: Farmington Field Office

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

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

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 03/28/2024

Confidential

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

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

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

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

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

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

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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

(Continued on page 3)

Approval Date: 03/28/2024

Confidential

Additional Operator Remarks

Location of Well

0. SHL: NWSW / 2612 FSL / 952 FWL / TWSP: 31N / RANGE: 5W / SECTION: 33 / LAT: 36.856045 / LONG: -107.373405 (TVD: 0 feet, MD: 0 feet)

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

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

PPP: SESW / 1100 FSL / 330 FWL / TWSP: 31N / RANGE: 5W / SECTION: 31 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: SWSW / 1053 FSL / 182 FWL / TWSP: 31N / RANGE: 5W / SECTION: 33 / LAT: 36.851761 / LONG: -107.37603 (TVD: 7084 feet, MD: 7604 feet)

BHL: LOT 4 / 1101 FSL / 167 FWL / TWSP: 31N / RANGE: 5W / SECTION: 31 / LAT: 36.851877 / LONG: -107.407217 (TVD: 7054 feet, MD: 16782 feet)

BLM Point of Contact

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

CONFIDENTIAL

Review and Appeal Rights

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

CONFIDENTIAL

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
30-039-31460	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	752H

[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		2612	SOUTH	952	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
N	31	31N	5W	4	1101	SOUTH	167	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 — Signature — 12/19/2022 — Date

Etta Trujillo — Printed Name

etrujillo@logosresourcesllc.com — E-mail Address

[18] SURVEYOR CERTIFICATION

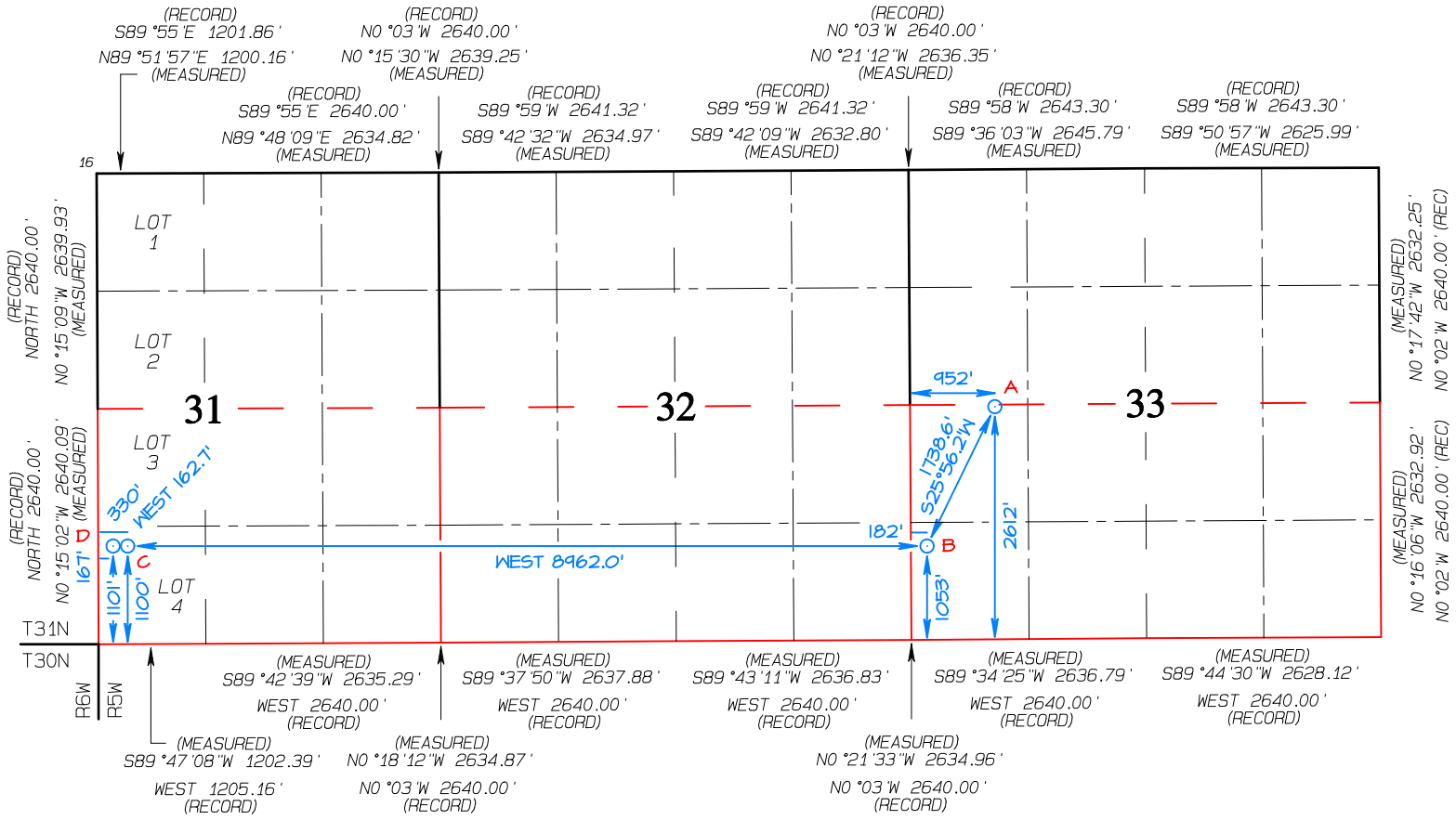
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

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)
1101' FSL 167' FWL
SECTION 31, T31N, R5W
LAT: 36.851871 °N
LONG: 107.406614 °W
DATUM: NAD1927

LAT: 36.851877 °N
LONG: 107.407217 °W
DATUM: NAD1983

FIRST PERFORATION (C)
1100' FSL 330' FWL
SECTION 31, T31N, R5W
LAT: 36.851869 °N
LONG: 107.406058 °W
DATUM: NAD1927

LAT: 36.851875 °N
LONG: 107.406661 °W
DATUM: NAD1983

FIRST TAKE POINT (B)
1053' FSL 182' FWL
SECTION 33, T31N, R5W
LAT: 36.851754 °N
LONG: 107.375428 °W
DATUM: NAD1927

LAT: 36.851761 °N
LONG: 107.376030 °W
DATUM: NAD1983

SURFACE LOCATION (A)
2612' FSL 952' FWL
SECTION 33, T31N, R5W
LAT: 36.856039 °N
LONG: 107.372803 °W
DATUM: NAD1927

LAT: 36.856045 °N
LONG: 107.373405 °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	0	15,080	481
ROSA UNIT 752H	30-039-	L-33-T31N-R5W	2612 FSL 952 FWL	0	15,080	485
ROSA UNIT 754H	30-039-	E-33-T31N-R5W	2616 FNL 950 FWL	0	11,245	357
ROSA UNIT 756H	30-039-	E-33-T31N-R5W	2631 FNL 951 FWL	0	10,862	352

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

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

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
ROSA UNIT 750H	30-039-	2023	Pending	Pending	Pending	Pending
ROSA UNIT 752H	30-039-	2023	Pending	Pending	Pending	Pending
ROSA UNIT 754H	30-039-	2023	Pending	Pending	Pending	Pending
ROSA UNIT 756H	30-039-	2023	Pending	Pending	Pending	Pending

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

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

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

Section 2 – Enhanced Plan
EFFECTIVE APRIL 1, 2022

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

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

IX. Anticipated Natural Gas Production:

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

X. Natural Gas Gathering System (NGGS):

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

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

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

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

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

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

Section 3 - Certifications

Effective May 25, 2021

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

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

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

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

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

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

Section 4 - Notices

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

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

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

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

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

Signature:	Etta Trujillo
Printed Name:	Etta Trujillo
Title:	Regulatory Specialist
E-mail Address:	etrujillo@logosresourcesllc.com
Date:	1/11/2023
Phone:	(505) 324-4154

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

VI. Separation Equipment

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

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

VII. Operational Practices 19.15.27.8 NMAC A through F

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

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

D. Venting and flaring during production operations:

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

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

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

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

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

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

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

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

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

LOGOS Operating, LLC
Operations Plan

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

Date:	December 20 2022	Pool:	Basin Mancos
Well Name:	**Rosa Unit 752H**	GL Elevation:	6,534’
Surface Location:	Sec 33, T31N, R5W 2612 FSL, 952 FWL (36.856045º N, 107.373405º W – NAD83)	Measured Depth:	16,782’ (KB)
Bottom Hole Location:	Sec 31, T31N, R5W 1101 FSL, 167 FWL (36.851877º N, 107.407217º W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078773 CA Serial #NMNM78407E

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,736'	2,682'	*POINT LOOKOUT	5,950'	5,799'
KIRTLAND	2,885'	2,827'	*MANCOS	6,436'	6,270'
*FRUITLAND	3,298'	3,227'	KICKOFF POINT	6,715'	6,541'
*PICTURED CLIFFS	3,630'	3,549'	LANDING POINT	7,604'	7,084'
LEWIS	3,742'	3,658'			
CHACRA	4,843'	4,726'			
*CLIFF HOUSE	5,701'	5,558'			
MENEFEE	5,730'	5,586'	TD	16,782'	7,054'

* 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:** 7084' TVD x 0.43 = 3046 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"	6,511'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	16,782'	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	5,375	1,111	0.3132	1.3	470	84	1.15	409	15.8
Stage 1 Lead	4,802	573	0.31318	1.3	233	42	2.30	101	12.3
					703	**125**		**510**	
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					**2,644**	**471**		**1,441**	

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	**5,486**	**100**	**0.2531**	**1**	**25**	**5**	**1.56**	**16**	13
Open Hole Lead	**6,486**	**10,296**	**0.2291**	**1.15**	**2,723**	**485**	**1.56**	**1,746**	13
					2,748	**490**		**1,762**	

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 * 7054 TVD=1552 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.

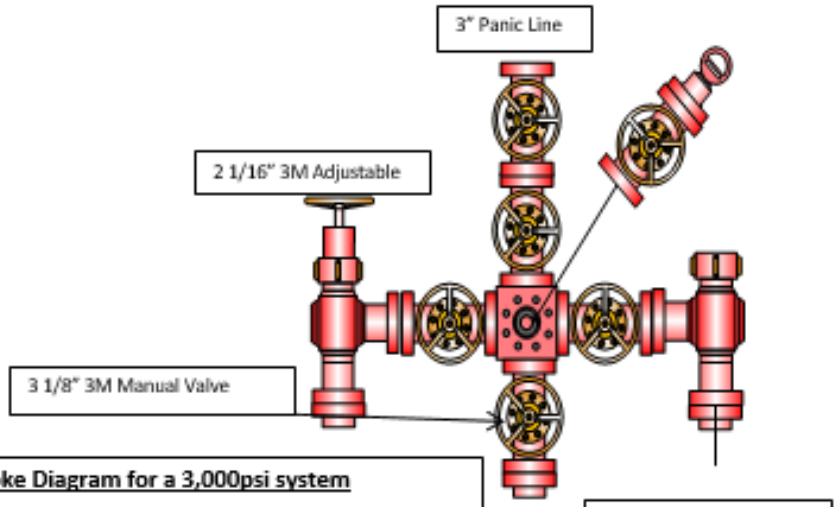
E. PRODUCTION TUBING

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.

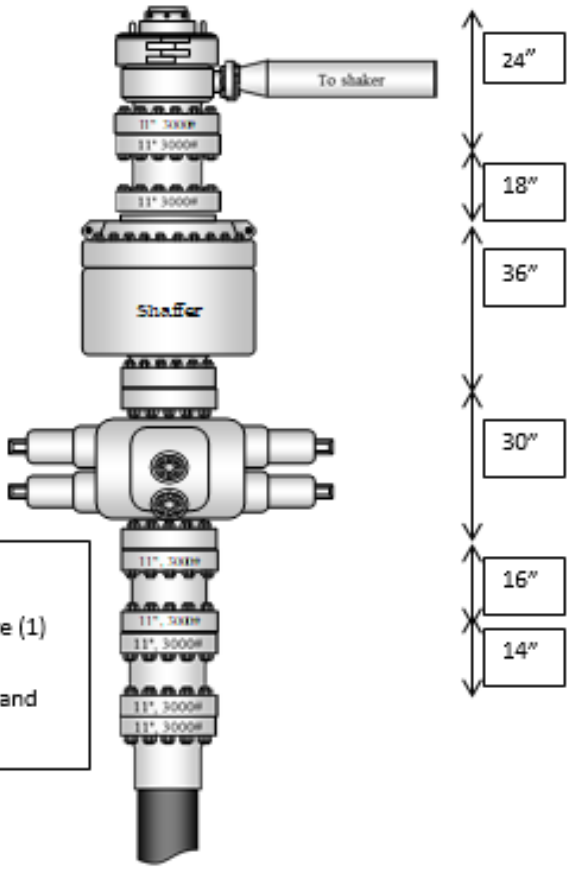
LOGOS RESOURCES II, LLC

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 752H

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 32
Rosa Unit 752H - Slot B06

OH

Plan: Plan #3

Standard Planning Report

08 December, 2022

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
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 752H	**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 752H - Slot B06					
Well Position	**+N/-S**	-71.57 usft	**Northing:**	2,131,247.92 usft	**Latitude:**	36.856045
	+E/-W	-148.04 usft	**Easting:**	2,857,647.56 usft	**Longitude:**	-107.373406
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	49,565.09987049

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	270.28

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

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,782.16	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	
1,207.25	14.15	185.58	1,200.09	-86.45	-8.45	2.00	2.00	0.00	185.58	
6,715.28	14.15	185.58	6,541.12	-1,426.10	-139.38	0.00	0.00	0.00	0.00	
7,604.16	90.19	270.28	7,084.18	-1,560.06	-714.67	10.00	8.55	9.53	84.81	
16,619.57	90.19	270.28	7,054.53	-1,516.46	-9,729.93	0.00	0.00	0.00	0.00	Rosa Unit 752H FPP
16,782.16	90.19	270.28	7,054.00	-1,515.68	-9,892.51	0.00	0.00	0.00	0.00	Rosa Unit 752H PBHl

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
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 752H	**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	185.58	599.98	-1.74	-0.17	0.16	2.00	2.00	0.00
700.00	4.00	185.58	699.84	-6.95	-0.68	0.64	2.00	2.00	0.00
800.00	6.00	185.58	799.45	-15.62	-1.53	1.45	2.00	2.00	0.00
900.00	8.00	185.58	898.70	-27.75	-2.71	2.58	2.00	2.00	0.00
1,000.00	10.00	185.58	997.47	-43.32	-4.23	4.02	2.00	2.00	0.00
1,100.00	12.00	185.58	1,095.62	-62.31	-6.09	5.78	2.00	2.00	0.00
1,207.25	14.15	185.58	1,200.09	-86.45	-8.45	8.03	2.00	2.00	0.00
1,300.00	14.15	185.58	1,290.03	-109.01	-10.65	10.12	0.00	0.00	0.00
1,400.00	14.15	185.58	1,386.99	-133.33	-13.03	12.38	0.00	0.00	0.00
1,500.00	14.15	185.58	1,483.96	-157.65	-15.41	14.64	0.00	0.00	0.00
1,600.00	14.15	185.58	1,580.93	-181.97	-17.78	16.90	0.00	0.00	0.00
1,700.00	14.15	185.58	1,677.90	-206.29	-20.16	19.15	0.00	0.00	0.00
1,800.00	14.15	185.58	1,774.87	-230.62	-22.54	21.41	0.00	0.00	0.00
1,900.00	14.15	185.58	1,871.83	-254.94	-24.92	23.67	0.00	0.00	0.00
2,000.00	14.15	185.58	1,968.80	-279.26	-27.29	25.93	0.00	0.00	0.00
2,100.00	14.15	185.58	2,065.77	-303.58	-29.67	28.19	0.00	0.00	0.00
2,200.00	14.15	185.58	2,162.74	-327.90	-32.05	30.44	0.00	0.00	0.00
2,300.00	14.15	185.58	2,259.71	-352.22	-34.42	32.70	0.00	0.00	0.00
2,400.00	14.15	185.58	2,356.67	-376.55	-36.80	34.96	0.00	0.00	0.00
2,500.00	14.15	185.58	2,453.64	-400.87	-39.18	37.22	0.00	0.00	0.00
2,600.00	14.15	185.58	2,550.61	-425.19	-41.56	39.48	0.00	0.00	0.00
2,700.00	14.15	185.58	2,647.58	-449.51	-43.93	41.73	0.00	0.00	0.00
2,800.00	14.15	185.58	2,744.55	-473.83	-46.31	43.99	0.00	0.00	0.00
2,900.00	14.15	185.58	2,841.51	-498.16	-48.69	46.25	0.00	0.00	0.00
3,000.00	14.15	185.58	2,938.48	-522.48	-51.06	48.51	0.00	0.00	0.00
3,100.00	14.15	185.58	3,035.45	-546.80	-53.44	50.77	0.00	0.00	0.00
3,200.00	14.15	185.58	3,132.42	-571.12	-55.82	53.03	0.00	0.00	0.00
3,300.00	14.15	185.58	3,229.39	-595.44	-58.19	55.28	0.00	0.00	0.00
3,400.00	14.15	185.58	3,326.35	-619.76	-60.57	57.54	0.00	0.00	0.00
3,500.00	14.15	185.58	3,423.32	-644.09	-62.95	59.80	0.00	0.00	0.00
3,600.00	14.15	185.58	3,520.29	-668.41	-65.33	62.06	0.00	0.00	0.00
3,700.00	14.15	185.58	3,617.26	-692.73	-67.70	64.32	0.00	0.00	0.00
3,800.00	14.15	185.58	3,714.23	-717.05	-70.08	66.57	0.00	0.00	0.00
3,900.00	14.15	185.58	3,811.19	-741.37	-72.46	68.83	0.00	0.00	0.00
4,000.00	14.15	185.58	3,908.16	-765.70	-74.83	71.09	0.00	0.00	0.00
4,100.00	14.15	185.58	4,005.13	-790.02	-77.21	73.35	0.00	0.00	0.00
4,200.00	14.15	185.58	4,102.10	-814.34	-79.59	75.61	0.00	0.00	0.00
4,300.00	14.15	185.58	4,199.07	-838.66	-81.96	77.87	0.00	0.00	0.00
4,400.00	14.15	185.58	4,296.03	-862.98	-84.34	80.12	0.00	0.00	0.00
4,500.00	14.15	185.58	4,393.00	-887.30	-86.72	82.38	0.00	0.00	0.00
4,600.00	14.15	185.58	4,489.97	-911.63	-89.10	84.64	0.00	0.00	0.00
4,700.00	14.15	185.58	4,586.94	-935.95	-91.47	86.90	0.00	0.00	0.00
4,800.00	14.15	185.58	4,683.91	-960.27	-93.85	89.16	0.00	0.00	0.00
4,900.00	14.15	185.58	4,780.87	-984.59	-96.23	91.41	0.00	0.00	0.00
5,000.00	14.15	185.58	4,877.84	-1,008.91	-98.60	93.67	0.00	0.00	0.00
5,100.00	14.15	185.58	4,974.81	-1,033.24	-100.98	95.93	0.00	0.00	0.00
5,200.00	14.15	185.58	5,071.78	-1,057.56	-103.36	98.19	0.00	0.00	0.00
5,300.00	14.15	185.58	5,168.75	-1,081.88	-105.74	100.45	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
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 752H	**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	14.15	185.58	5,265.71	-1,106.20	-108.11	102.71	0.00	0.00	0.00
5,500.00	14.15	185.58	5,362.68	-1,130.52	-110.49	104.96	0.00	0.00	0.00
5,600.00	14.15	185.58	5,459.65	-1,154.85	-112.87	107.22	0.00	0.00	0.00
5,700.00	14.15	185.58	5,556.62	-1,179.17	-115.24	109.48	0.00	0.00	0.00
5,800.00	14.15	185.58	5,653.59	-1,203.49	-117.62	111.74	0.00	0.00	0.00
5,900.00	14.15	185.58	5,750.55	-1,227.81	-120.00	114.00	0.00	0.00	0.00
6,000.00	14.15	185.58	5,847.52	-1,252.13	-122.37	116.25	0.00	0.00	0.00
6,100.00	14.15	185.58	5,944.49	-1,276.45	-124.75	118.51	0.00	0.00	0.00
6,200.00	14.15	185.58	6,041.46	-1,300.78	-127.13	120.77	0.00	0.00	0.00
6,300.00	14.15	185.58	6,138.43	-1,325.10	-129.51	123.03	0.00	0.00	0.00
6,400.00	14.15	185.58	6,235.39	-1,349.42	-131.88	125.29	0.00	0.00	0.00
6,500.00	14.15	185.58	6,332.36	-1,373.74	-134.26	127.55	0.00	0.00	0.00
6,600.00	14.15	185.58	6,429.33	-1,398.06	-136.64	129.80	0.00	0.00	0.00
6,700.00	14.15	185.58	6,526.30	-1,422.39	-139.01	132.06	0.00	0.00	0.00
6,715.28	14.15	185.58	6,541.12	-1,426.10	-139.38	132.41	0.00	0.00	0.00
6,750.00	14.86	199.18	6,574.74	-1,434.53	-141.25	134.24	10.00	2.06	39.18
6,800.00	17.09	215.53	6,622.83	-1,446.57	-147.63	140.56	10.00	4.46	32.70
6,850.00	20.31	227.54	6,670.20	-1,458.42	-158.31	151.18	10.00	6.43	24.01
6,900.00	24.12	236.14	6,716.50	-1,469.97	-173.20	166.02	10.00	7.62	17.21
6,950.00	28.28	242.43	6,761.36	-1,481.15	-192.20	184.96	10.00	8.33	12.58
7,000.00	32.66	247.19	6,804.45	-1,491.87	-215.15	207.86	10.00	8.77	9.52
7,050.00	37.19	250.92	6,845.44	-1,502.05	-241.88	234.54	10.00	9.05	7.46
7,100.00	41.80	253.93	6,884.01	-1,511.61	-272.20	264.81	10.00	9.24	6.04
7,150.00	46.49	256.45	6,919.88	-1,520.48	-305.86	298.42	10.00	9.37	5.03
7,200.00	51.22	258.60	6,952.78	-1,528.58	-342.61	335.14	10.00	9.46	4.30
7,250.00	55.99	260.48	6,982.44	-1,535.87	-382.18	374.67	10.00	9.53	3.76
7,300.00	60.78	262.16	7,008.65	-1,542.27	-424.26	416.71	10.00	9.58	3.36
7,350.00	65.59	263.69	7,031.20	-1,547.75	-468.53	460.96	10.00	9.62	3.06
7,400.00	70.41	265.11	7,049.92	-1,552.27	-514.65	507.06	10.00	9.65	2.83
7,450.00	75.25	266.44	7,064.68	-1,555.78	-562.28	554.67	10.00	9.67	2.67
7,500.00	80.09	267.72	7,075.36	-1,558.26	-611.04	603.42	10.00	9.68	2.55
7,550.00	84.94	268.96	7,081.87	-1,559.70	-660.58	652.95	10.00	9.69	2.48
7,604.16	90.19	270.28	7,084.18	-1,560.06	-714.67	707.04	10.00	9.70	2.44
7,700.00	90.19	270.28	7,083.86	-1,559.60	-810.51	802.88	0.00	0.00	0.00
7,800.00	90.19	270.28	7,083.53	-1,559.11	-910.51	902.88	0.00	0.00	0.00
7,900.00	90.19	270.28	7,083.20	-1,558.63	-1,010.50	1,002.88	0.00	0.00	0.00
8,000.00	90.19	270.28	7,082.87	-1,558.15	-1,110.50	1,102.87	0.00	0.00	0.00
8,100.00	90.19	270.28	7,082.54	-1,557.66	-1,210.50	1,202.87	0.00	0.00	0.00
8,200.00	90.19	270.28	7,082.22	-1,557.18	-1,310.50	1,302.87	0.00	0.00	0.00
8,300.00	90.19	270.28	7,081.89	-1,556.69	-1,410.50	1,402.87	0.00	0.00	0.00
8,400.00	90.19	270.28	7,081.56	-1,556.21	-1,510.50	1,502.87	0.00	0.00	0.00
8,500.00	90.19	270.28	7,081.23	-1,555.73	-1,610.49	1,602.87	0.00	0.00	0.00
8,600.00	90.19	270.28	7,080.90	-1,555.24	-1,710.49	1,702.87	0.00	0.00	0.00
8,700.00	90.19	270.28	7,080.57	-1,554.76	-1,810.49	1,802.87	0.00	0.00	0.00
8,800.00	90.19	270.28	7,080.24	-1,554.28	-1,910.49	1,902.87	0.00	0.00	0.00
8,900.00	90.19	270.28	7,079.91	-1,553.79	-2,010.49	2,002.87	0.00	0.00	0.00
9,000.00	90.19	270.28	7,079.59	-1,553.31	-2,110.49	2,102.87	0.00	0.00	0.00
9,100.00	90.19	270.28	7,079.26	-1,552.83	-2,210.48	2,202.87	0.00	0.00	0.00
9,200.00	90.19	270.28	7,078.93	-1,552.34	-2,310.48	2,302.87	0.00	0.00	0.00
9,300.00	90.19	270.28	7,078.60	-1,551.86	-2,410.48	2,402.87	0.00	0.00	0.00
9,400.00	90.19	270.28	7,078.27	-1,551.38	-2,510.48	2,502.87	0.00	0.00	0.00
9,500.00	90.19	270.28	7,077.94	-1,550.89	-2,610.48	2,602.87	0.00	0.00	0.00
9,600.00	90.19	270.28	7,077.61	-1,550.41	-2,710.48	2,702.87	0.00	0.00	0.00
9,700.00	90.19	270.28	7,077.28	-1,549.92	-2,810.47	2,802.87	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
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 752H	**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	270.28	7,076.95	-1,549.44	-2,910.47	2,902.87	0.00	0.00	0.00
9,900.00	90.19	270.28	7,076.63	-1,548.96	-3,010.47	3,002.86	0.00	0.00	0.00
10,000.00	90.19	270.28	7,076.30	-1,548.47	-3,110.47	3,102.86	0.00	0.00	0.00
10,100.00	90.19	270.28	7,075.97	-1,547.99	-3,210.47	3,202.86	0.00	0.00	0.00
10,200.00	90.19	270.28	7,075.64	-1,547.51	-3,310.47	3,302.86	0.00	0.00	0.00
10,300.00	90.19	270.28	7,075.31	-1,547.02	-3,410.46	3,402.86	0.00	0.00	0.00
10,400.00	90.19	270.28	7,074.98	-1,546.54	-3,510.46	3,502.86	0.00	0.00	0.00
10,500.00	90.19	270.28	7,074.65	-1,546.06	-3,610.46	3,602.86	0.00	0.00	0.00
10,600.00	90.19	270.28	7,074.32	-1,545.57	-3,710.46	3,702.86	0.00	0.00	0.00
10,700.00	90.19	270.28	7,074.00	-1,545.09	-3,810.46	3,802.86	0.00	0.00	0.00
10,800.00	90.19	270.28	7,073.67	-1,544.61	-3,910.45	3,902.86	0.00	0.00	0.00
10,900.00	90.19	270.28	7,073.34	-1,544.12	-4,010.45	4,002.86	0.00	0.00	0.00
11,000.00	90.19	270.28	7,073.01	-1,543.64	-4,110.45	4,102.86	0.00	0.00	0.00
11,100.00	90.19	270.28	7,072.68	-1,543.15	-4,210.45	4,202.86	0.00	0.00	0.00
11,200.00	90.19	270.28	7,072.35	-1,542.67	-4,310.45	4,302.86	0.00	0.00	0.00
11,300.00	90.19	270.28	7,072.02	-1,542.19	-4,410.45	4,402.86	0.00	0.00	0.00
11,400.00	90.19	270.28	7,071.69	-1,541.70	-4,510.44	4,502.86	0.00	0.00	0.00
11,500.00	90.19	270.28	7,071.36	-1,541.22	-4,610.44	4,602.86	0.00	0.00	0.00
11,600.00	90.19	270.28	7,071.04	-1,540.74	-4,710.44	4,702.86	0.00	0.00	0.00
11,700.00	90.19	270.28	7,070.71	-1,540.25	-4,810.44	4,802.85	0.00	0.00	0.00
11,800.00	90.19	270.28	7,070.38	-1,539.77	-4,910.44	4,902.85	0.00	0.00	0.00
11,900.00	90.19	270.28	7,070.05	-1,539.29	-5,010.44	5,002.85	0.00	0.00	0.00
12,000.00	90.19	270.28	7,069.72	-1,538.80	-5,110.43	5,102.85	0.00	0.00	0.00
12,100.00	90.19	270.28	7,069.39	-1,538.32	-5,210.43	5,202.85	0.00	0.00	0.00
12,200.00	90.19	270.28	7,069.06	-1,537.84	-5,310.43	5,302.85	0.00	0.00	0.00
12,300.00	90.19	270.28	7,068.73	-1,537.35	-5,410.43	5,402.85	0.00	0.00	0.00
12,400.00	90.19	270.28	7,068.41	-1,536.87	-5,510.43	5,502.85	0.00	0.00	0.00
12,500.00	90.19	270.28	7,068.08	-1,536.38	-5,610.43	5,602.85	0.00	0.00	0.00
12,600.00	90.19	270.28	7,067.75	-1,535.90	-5,710.42	5,702.85	0.00	0.00	0.00
12,700.00	90.19	270.28	7,067.42	-1,535.42	-5,810.42	5,802.85	0.00	0.00	0.00
12,800.00	90.19	270.28	7,067.09	-1,534.93	-5,910.42	5,902.85	0.00	0.00	0.00
12,900.00	90.19	270.28	7,066.76	-1,534.45	-6,010.42	6,002.85	0.00	0.00	0.00
13,000.00	90.19	270.28	7,066.43	-1,533.97	-6,110.42	6,102.85	0.00	0.00	0.00
13,100.00	90.19	270.28	7,066.10	-1,533.48	-6,210.42	6,202.85	0.00	0.00	0.00
13,200.00	90.19	270.28	7,065.77	-1,533.00	-6,310.41	6,302.85	0.00	0.00	0.00
13,300.00	90.19	270.28	7,065.45	-1,532.52	-6,410.41	6,402.85	0.00	0.00	0.00
13,400.00	90.19	270.28	7,065.12	-1,532.03	-6,510.41	6,502.85	0.00	0.00	0.00
13,500.00	90.19	270.28	7,064.79	-1,531.55	-6,610.41	6,602.85	0.00	0.00	0.00
13,600.00	90.19	270.28	7,064.46	-1,531.07	-6,710.41	6,702.84	0.00	0.00	0.00
13,700.00	90.19	270.28	7,064.13	-1,530.58	-6,810.41	6,802.84	0.00	0.00	0.00
13,800.00	90.19	270.28	7,063.80	-1,530.10	-6,910.40	6,902.84	0.00	0.00	0.00
13,900.00	90.19	270.28	7,063.47	-1,529.61	-7,010.40	7,002.84	0.00	0.00	0.00
14,000.00	90.19	270.28	7,063.14	-1,529.13	-7,110.40	7,102.84	0.00	0.00	0.00
14,100.00	90.19	270.28	7,062.82	-1,528.65	-7,210.40	7,202.84	0.00	0.00	0.00
14,200.00	90.19	270.28	7,062.49	-1,528.16	-7,310.40	7,302.84	0.00	0.00	0.00
14,300.00	90.19	270.28	7,062.16	-1,527.68	-7,410.40	7,402.84	0.00	0.00	0.00
14,400.00	90.19	270.28	7,061.83	-1,527.20	-7,510.39	7,502.84	0.00	0.00	0.00
14,500.00	90.19	270.28	7,061.50	-1,526.71	-7,610.39	7,602.84	0.00	0.00	0.00
14,600.00	90.19	270.28	7,061.17	-1,526.23	-7,710.39	7,702.84	0.00	0.00	0.00
14,700.00	90.19	270.28	7,060.84	-1,525.75	-7,810.39	7,802.84	0.00	0.00	0.00
14,800.00	90.19	270.28	7,060.51	-1,525.26	-7,910.39	7,902.84	0.00	0.00	0.00
14,900.00	90.19	270.28	7,060.18	-1,524.78	-8,010.38	8,002.84	0.00	0.00	0.00
15,000.00	90.19	270.28	7,059.86	-1,524.30	-8,110.38	8,102.84	0.00	0.00	0.00
15,100.00	90.19	270.28	7,059.53	-1,523.81	-8,210.38	8,202.84	0.00	0.00	0.00

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
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 752H	**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	270.28	7,059.20	-1,523.33	-8,310.38	8,302.84	0.00	0.00	0.00
15,300.00	90.19	270.28	7,058.87	-1,522.84	-8,410.38	8,402.84	0.00	0.00	0.00
15,400.00	90.19	270.28	7,058.54	-1,522.36	-8,510.38	8,502.84	0.00	0.00	0.00
15,500.00	90.19	270.28	7,058.21	-1,521.88	-8,610.37	8,602.83	0.00	0.00	0.00
15,600.00	90.19	270.28	7,057.88	-1,521.39	-8,710.37	8,702.83	0.00	0.00	0.00
15,700.00	90.19	270.28	7,057.55	-1,520.91	-8,810.37	8,802.83	0.00	0.00	0.00
15,800.00	90.19	270.28	7,057.23	-1,520.43	-8,910.37	8,902.83	0.00	0.00	0.00
15,900.00	90.19	270.28	7,056.90	-1,519.94	-9,010.37	9,002.83	0.00	0.00	0.00
16,000.00	90.19	270.28	7,056.57	-1,519.46	-9,110.37	9,102.83	0.00	0.00	0.00
16,100.00	90.19	270.28	7,056.24	-1,518.98	-9,210.36	9,202.83	0.00	0.00	0.00
16,200.00	90.19	270.28	7,055.91	-1,518.49	-9,310.36	9,302.83	0.00	0.00	0.00
16,300.00	90.19	270.28	7,055.58	-1,518.01	-9,410.36	9,402.83	0.00	0.00	0.00
16,400.00	90.19	270.28	7,055.25	-1,517.53	-9,510.36	9,502.83	0.00	0.00	0.00
16,500.00	90.19	270.28	7,054.92	-1,517.04	-9,610.36	9,602.83	0.00	0.00	0.00
16,600.00	90.19	270.28	7,054.59	-1,516.56	-9,710.36	9,702.83	0.00	0.00	0.00
16,619.57	90.19	270.28	7,054.53	-1,516.46	-9,729.93	9,722.40	0.00	0.00	0.00
16,700.00	90.19	270.28	7,054.27	-1,516.07	-9,810.35	9,802.83	0.00	0.00	0.00
16,782.16	90.19	270.28	7,054.00	-1,515.68	-9,892.51	9,884.99	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 752H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,131,247.92	2,857,647.56	36.856045	-107.373406
Rosa Unit 752H PBHL - plan misses target center by 0.07usft at 16782.16usft MD (7054.00 TVD, -1515.68 N, -9892.51 E) - Point	0.00	0.00	7,054.00	-1,515.75	-9,892.51	2,129,684.55	2,847,762.46	36.851877	-107.407217
Rosa Unit 752H FPP - plan hits target center - Point	0.00	0.00	7,054.53	-1,516.46	-9,729.93	2,129,684.62	2,847,925.05	36.851875	-107.406661
Rosa Unit 752H POE - plan hits target center - Point	0.00	0.00	7,084.00	-1,559.80	-767.94	2,129,684.44	2,856,887.15	36.851761	-107.376030

Planning Report

Database:	Well Planning	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
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 752H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,735.50	2,682.00	Ojo Alamo		0.00	270.28
2,885.03	2,827.00	Kirtland		0.00	270.28
3,297.54	3,227.00	Fruitland		0.00	270.28
3,629.61	3,549.00	Pictured Cliffs		0.00	270.28
3,742.02	3,658.00	Lewis		0.00	270.28
4,843.41	4,726.00	Chacra		0.00	270.28
5,701.42	5,558.00	Cliff House		0.00	270.28
5,730.30	5,586.00	Menefee		0.00	270.28
5,949.96	5,799.00	Point Lookout		0.00	270.28
6,435.69	6,270.00	Mancos		0.00	270.28

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
1,207.25	1,200.09	-86.45	-8.45	Start 5508.03 hold at 1207.25 MD
6,715.28	6,541.12	-1,426.10	-139.38	Start DLS 10.00 TFO 84.81
7,604.16	7,084.18	-1,560.06	-714.67	Start 9015.41 hold at 7604.16 MD
16,619.57	7,054.53	-1,516.46	-9,729.93	Start 162.59 hold at 16619.57 MD
16,782.16	7,054.00	-1,515.68	-9,892.51	TD at 16782.16

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 32
Rosa Unit 752H

OH
Plan #3

Anticollision Report

08 December, 2022

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 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	16,782.16	Plan #3 (OH)	MWD-SDI	

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Rosa Unit 32						
Rosa Unit 750H - OH - Plan #3	500.00	500.00	14.98	12.12	5.250	CC
Rosa Unit 750H - OH - Plan #3	600.00	600.46	15.15	11.70	4.387	ES
Rosa Unit 750H - OH - Plan #3	700.00	700.91	15.79	11.74	3.894	SF
Rosa Unit 754H - OH - Plan #3	500.00	500.00	45.00	42.15	15.772	CC
Rosa Unit 754H - OH - Plan #3	600.00	601.47	45.09	41.64	13.044	ES
Rosa Unit 754H - OH - Plan #3	800.00	801.92	50.29	45.64	10.797	SF
Rosa Unit 756H - OH - Plan #3	793.13	796.19	29.84	25.22	6.461	CC
Rosa Unit 756H - OH - Plan #3	1,000.00	1,005.11	30.35	24.49	5.177	ES
Rosa Unit 756H - OH - Plan #3	1,207.25	1,213.70	33.41	26.30	4.700	SF
RU #024 (Offset) - OH - OH	12,127.29	5,952.00	1,090.58	1,031.04	18.318	CC
RU #024 (Offset) - OH - OH	12,400.00	5,952.00	1,124.16	1,019.48	10.739	ES
RU #024 (Offset) - OH - OH	13,100.00	5,952.00	1,461.34	1,248.05	6.851	SF
RU #024B (Offset) - OH - OH	11,136.48	7,033.15	216.21	35.83	1.199	Level 2, CC, ES, SF
RU #026A (Offset) - OH - OH	9,299.38	7,013.31	207.39	30.08	1.170	Level 2, CC
RU #026A (Offset) - OH - OH	9,300.00	7,013.31	207.39	30.08	1.170	Level 2, ES, SF
RU #026C (Offset) - OH - OH	1,344.65	1,346.03	1,060.29	1,029.97	34.963	CC
RU #026C (Offset) - OH - OH	1,600.00	1,626.35	1,062.13	1,026.37	29.705	ES
RU #026C (Offset) - OH - OH	8,000.00	7,097.24	1,542.03	1,360.08	8.475	SF
RU #055 (Offset) - OH - OH	1,733.94	1,724.03	8,509.92	8,502.75	1,187.917	CC
RU #055 (Offset) - OH - OH	2,200.00	2,171.82	8,510.79	8,501.67	933.239	ES
RU #055 (Offset) - OH - OH	7,350.00	7,350.00	8,921.75	8,893.57	316.643	SF
RU #077 (Offset) - OH - OH	4,291.59	4,178.64	50.77	35.09	3.238	CC
RU #077 (Offset) - OH - OH	4,300.00	4,186.83	50.81	35.09	3.233	ES, SF
RU #077A (Offset) - OH - OH	3,832.47	3,689.15	3,249.74	3,166.50	39.041	CC
RU #077A (Offset) - OH - OH	5,300.00	5,162.33	3,268.86	3,154.27	28.526	ES
RU #077A (Offset) - OH - OH	6,950.00	6,706.57	3,383.10	3,230.07	22.107	SF
RU #077B (Offset) - OH - OH	6,551.66	6,326.46	1,741.58	1,597.33	12.073	CC, ES, SF
RU #077C (Offset) - OH - OH	6,720.10	6,711.08	3,954.86	3,930.08	159.614	CC, ES
RU #077C (Offset) - OH - OH	7,050.00	7,008.99	4,047.41	4,021.44	155.870	SF
RU #097 (Offset) - OH - OH	16,170.10	7,043.65	752.08	553.86	3.794	CC, ES, SF
RU #137 (Offset) - OH - OH	16,139.36	6,170.00	906.28	815.17	9.947	CC, ES
RU #137 (Offset) - OH - OH	16,782.16	6,170.00	1,111.10	963.59	7.532	SF
RU #137A (Offset) - OH - OH	14,123.61	6,210.00	1,100.47	962.70	7.988	CC, ES
RU #137A (Offset) - OH - OH	14,200.00	6,210.00	1,103.12	964.84	7.978	SF
RU #137B (Offset) - OH - OH	13,379.32	6,165.00	905.67	804.47	8.949	CC, ES
RU #137B (Offset) - OH - OH	13,900.00	6,165.00	1,044.68	921.08	8.452	SF
RU #137C (Offset) - OH - OH	15,346.73	6,961.36	482.61	428.89	8.983	CC, ES, 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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 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 #184 (Offset) - OH - OH	2,140.74	2,125.97	8,426.76	8,380.92	183.847	CC
RU #184 (Offset) - OH - OH	5,300.00	5,190.04	8,465.20	8,342.99	69.271	ES
RU #184 (Offset) - OH - OH	6,500.00	6,356.42	8,498.09	8,348.46	56.792	SF
RU #184B (Offset) - OH - OH	5,112.42	5,007.37	9,506.11	9,291.51	44.297	CC
RU #184B (Offset) - OH - OH	6,500.00	6,342.27	9,512.25	9,263.13	38.184	ES, SF
RU #188 (Offset) - OH - OH	357.29	532.81	6,086.27	6,077.71	711.392	CC
RU #188 (Offset) - OH - OH	3,100.00	3,210.97	6,111.53	6,040.65	86.233	ES
RU #188 (Offset) - OH - OH	6,500.00	6,508.51	6,242.01	6,092.51	41.751	SF
RU #188C (Offset) - OH - OH	2,289.91	2,248.68	6,963.88	6,955.09	792.559	CC
RU #188C (Offset) - OH - OH	2,500.00	2,425.00	6,964.35	6,954.73	723.474	ES
RU #188C (Offset) - OH - OH	7,300.00	7,185.66	7,296.75	7,268.89	261.920	SF
RU #231 (Offset) - OH - OH	14,300.00	3,337.00	4,184.66	4,111.31	57.052	SF
RU #231 (Offset) - OH - OH	16,239.96	3,337.00	3,707.82	3,648.39	62.389	CC, ES
RU #231A (Offset) - OH - OH	13,293.57	3,384.00	3,590.46	3,539.57	70.547	CC
RU #231A (Offset) - OH - OH	13,300.00	3,384.00	3,590.47	3,539.55	70.516	ES
RU #231A (Offset) - OH - OH	16,000.00	3,384.00	4,496.24	4,406.87	50.313	SF
RU #259 (Offset) - OH - OH	3,600.00	3,402.00	657.82	581.55	8.625	SF
RU #259 (Offset) - OH - OH	3,680.36	3,402.00	652.89	577.82	8.697	CC, ES
RU #259A (Offset) - OH - OH	3,563.65	3,437.87	3,294.84	3,217.19	42.434	CC, ES, SF
RU #269A (Offset) - OH - OH	419.65	441.00	8,409.84	8,407.33	3,352.591	CC
RU #269A (Offset) - OH - OH	500.00	472.00	8,410.03	8,407.19	2,958.654	ES
RU #269A (Offset) - OH - OH	7,150.00	3,512.00	9,578.71	9,546.78	300.005	SF
RU #270 (Offset) - OH - OH	339.99	508.03	5,967.78	5,958.96	676.862	CC
RU #270 (Offset) - OH - OH	3,300.00	3,429.79	6,000.21	5,924.50	79.254	ES
RU #270 (Offset) - OH - OH	4,200.00	3,597.00	6,064.56	5,983.03	74.385	SF
RU #271A (Offset) - OH - OH	689.03	910.69	13,892.19	13,887.51	2,966.097	CC
RU #271A (Offset) - OH - OH	800.00	973.29	13,892.56	13,887.36	2,669.413	ES
RU #271A (Offset) - OH - OH	12,600.00	3,527.00	19,980.40	19,932.11	413.690	SF
RU #272 (Offset) - OH - OH	340.68	500.16	10,399.88	10,391.86	1,296.380	CC
RU #272 (Offset) - OH - OH	1,207.25	1,359.64	10,407.77	10,380.93	387.771	ES
RU #272 (Offset) - OH - OH	5,700.00	3,569.00	10,784.64	10,702.05	130.572	SF
RU #334A (Offset) - OH - OH	2,410.91	2,348.63	2,846.21	2,791.90	52.407	CC
RU #334A (Offset) - OH - OH	3,500.00	3,401.36	2,857.99	2,777.10	35.330	ES
RU #334A (Offset) - OH - OH	3,700.00	3,468.00	2,865.67	2,782.58	34.491	SF
RU #337 (Offset) - OH - OH	11,680.91	3,351.00	3,811.10	3,756.38	69.652	CC
RU #337 (Offset) - OH - OH	11,700.00	3,351.00	3,811.15	3,756.37	69.572	ES
RU #337 (Offset) - OH - OH	14,500.00	3,351.00	4,740.43	4,653.83	54.738	SF

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-2.48	14.96	-0.65	14.98				
100.00	100.00	100.00	100.00	0.23	0.23	-2.48	14.96	-0.65	14.98	14.52	0.45	33.062	
200.00	200.00	200.00	200.00	0.53	0.53	-2.48	14.96	-0.65	14.98	13.92	1.05	14.223	
300.00	300.00	300.00	300.00	0.83	0.83	-2.48	14.96	-0.65	14.98	13.32	1.65	9.061	
400.00	400.00	400.00	400.00	1.13	1.13	-2.48	14.96	-0.65	14.98	12.72	2.25	6.648	
500.00	500.00	500.00	500.00	1.43	1.43	-2.48	14.96	-0.65	14.98	12.12	2.85	5.250	CC
600.00	599.98	600.46	600.44	1.73	1.73	169.85	13.36	-1.38	15.15	11.70	3.45	4.387	ES

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
700.00	699.84	700.91	700.74	2.03	2.03	163.90	8.55	-3.56	15.79	11.74	4.05	3.894	SF
800.00	799.45	800.89	800.46	2.33	2.33	158.45	1.96	-6.56	18.32	13.66	4.65	3.935	
900.00	898.70	900.72	900.03	2.63	2.63	157.89	-4.63	-9.56	24.15	18.89	5.25	4.596	
1,000.00	997.47	1,000.29	999.34	2.93	2.93	159.82	-11.20	-12.55	33.23	27.37	5.85	5.677	
1,100.00	1,095.62	1,100.50	1,098.29	3.23	3.23	162.31	-17.75	-15.53	45.62	39.17	6.45	7.069	
1,207.25	1,200.09	1,205.36	1,203.86	3.55	3.54	164.76	-24.74	-18.70	62.67	55.58	7.09	8.838	
1,300.00	1,290.03	1,303.39	1,294.88	3.83	3.84	166.37	-30.76	-21.44	79.14	71.47	7.66	10.326	
1,400.00	1,386.99	1,405.00	1,393.01	4.13	4.14	167.49	-37.25	-24.40	96.93	88.66	8.27	11.722	
1,500.00	1,483.96	1,506.61	1,491.14	4.43	4.45	168.26	-43.75	-27.35	114.75	105.88	8.87	12.931	
1,600.00	1,580.93	1,608.22	1,589.27	4.73	4.75	168.83	-50.24	-30.30	132.59	123.11	9.48	13.987	
1,700.00	1,677.90	1,709.83	1,687.40	5.03	5.06	169.26	-56.74	-33.26	150.43	140.35	10.08	14.917	
1,800.00	1,774.87	1,788.56	1,785.53	5.33	5.29	169.60	-63.23	-36.21	168.28	157.66	10.62	15.844	
1,900.00	1,871.83	1,886.95	1,883.66	5.63	5.59	169.87	-69.72	-39.16	186.14	174.92	11.22	16.595	
2,000.00	1,968.80	1,985.34	1,981.79	5.93	5.88	170.10	-76.22	-42.12	203.99	192.18	11.81	17.270	
2,100.00	2,065.77	2,083.73	2,079.92	6.23	6.18	170.29	-82.71	-45.07	221.86	209.45	12.41	17.881	
2,200.00	2,162.74	2,182.12	2,178.05	6.53	6.47	170.45	-89.21	-48.03	239.72	226.72	13.00	18.436	
2,300.00	2,259.71	2,280.51	2,276.18	6.83	6.77	170.59	-95.70	-50.98	257.58	243.99	13.60	18.943	
2,400.00	2,356.67	2,378.90	2,374.31	7.13	7.06	170.71	-102.20	-53.93	275.45	261.26	14.19	19.407	
2,500.00	2,453.64	2,477.29	2,472.45	7.43	7.36	170.82	-108.69	-56.89	293.32	278.53	14.79	19.834	
2,600.00	2,550.61	2,575.67	2,570.58	7.73	7.65	170.91	-115.18	-59.84	311.19	295.80	15.38	20.228	
2,700.00	2,647.58	2,674.06	2,668.71	8.03	7.95	171.00	-121.68	-62.79	329.05	313.08	15.98	20.593	
2,800.00	2,744.55	2,772.45	2,766.84	8.33	8.24	171.07	-128.17	-65.75	346.92	330.35	16.57	20.932	
2,900.00	2,841.51	2,870.84	2,864.97	8.63	8.54	171.14	-134.67	-68.70	364.79	347.62	17.17	21.247	
3,000.00	2,938.48	2,969.23	2,963.10	8.93	8.83	171.20	-141.16	-71.65	382.66	364.90	17.76	21.541	
3,100.00	3,035.45	3,067.62	3,061.23	9.23	9.13	171.26	-147.66	-74.61	400.53	382.17	18.36	21.816	
3,200.00	3,132.42	3,166.01	3,159.36	9.53	9.43	171.31	-154.15	-77.56	418.41	399.45	18.96	22.073	
3,300.00	3,229.39	3,264.40	3,257.49	9.83	9.72	171.36	-160.64	-80.52	436.28	416.73	19.55	22.315	
3,400.00	3,326.35	3,362.79	3,355.62	10.13	10.02	171.40	-167.14	-83.47	454.15	434.00	20.15	22.543	
3,500.00	3,423.32	3,461.18	3,453.75	10.43	10.31	171.44	-173.63	-86.42	472.02	451.28	20.74	22.758	
3,600.00	3,520.29	3,559.57	3,551.88	10.73	10.61	171.48	-180.13	-89.38	489.89	468.56	21.34	22.961	
3,700.00	3,617.26	3,657.96	3,650.01	11.03	10.90	171.51	-186.62	-92.33	507.77	485.83	21.93	23.152	
3,800.00	3,714.23	3,756.35	3,748.14	11.33	11.20	171.54	-193.12	-95.28	525.64	503.11	22.53	23.334	
3,900.00	3,811.19	3,854.74	3,846.27	11.63	11.49	171.57	-199.61	-98.24	543.51	520.39	23.12	23.506	
4,000.00	3,908.16	3,953.13	3,944.40	11.93	11.79	171.60	-206.10	-101.19	561.38	537.67	23.72	23.670	
4,100.00	4,005.13	4,051.52	4,042.53	12.23	12.08	171.63	-212.60	-104.14	579.26	554.94	24.31	23.826	
4,200.00	4,102.10	4,149.91	4,140.66	12.53	12.38	171.65	-219.09	-107.10	597.13	572.22	24.91	23.974	
4,300.00	4,199.07	4,248.30	4,238.79	12.83	12.67	171.68	-225.59	-110.05	615.00	589.50	25.50	24.115	
4,400.00	4,296.03	4,346.69	4,336.92	13.13	12.97	171.70	-232.08	-113.01	632.87	606.78	26.10	24.250	
4,500.00	4,393.00	4,445.08	4,435.06	13.43	13.26	171.72	-238.58	-115.96	650.75	624.06	26.69	24.379	
4,600.00	4,489.97	4,543.46	4,533.19	13.73	13.56	171.74	-245.07	-118.91	668.62	641.33	27.29	24.502	
4,700.00	4,586.94	4,641.85	4,631.32	14.03	13.85	171.76	-251.56	-121.87	686.49	658.61	27.88	24.620	
4,800.00	4,683.91	4,740.24	4,729.45	14.33	14.15	171.78	-258.06	-124.82	704.37	675.89	28.48	24.733	
4,900.00	4,780.87	4,838.63	4,827.58	14.63	14.44	171.79	-264.55	-127.77	722.24	693.17	29.07	24.842	
5,000.00	4,877.84	4,937.02	4,925.71	14.93	14.74	171.81	-271.05	-130.73	740.12	710.45	29.67	24.946	
5,100.00	4,974.81	5,035.41	5,023.84	15.23	15.03	171.82	-277.54	-133.68	757.99	727.72	30.26	25.046	
5,200.00	5,071.78	5,133.80	5,121.97	15.53	15.33	171.84	-284.04	-136.63	775.86	745.00	30.86	25.142	
5,300.00	5,168.75	5,232.19	5,220.10	15.83	15.62	171.85	-290.53	-139.59	793.74	762.28	31.45	25.234	
5,400.00	5,265.71	5,330.58	5,318.23	16.13	15.92	171.87	-297.02	-142.54	811.61	779.56	32.05	25.323	
5,500.00	5,362.68	5,428.97	5,416.36	16.43	16.21	171.88	-303.52	-145.50	829.48	796.84	32.65	25.409	
5,600.00	5,459.65	5,527.36	5,514.49	16.73	16.51	171.89	-310.01	-148.45	847.36	814.12	33.24	25.492	
5,700.00	5,556.62	5,625.75	5,612.62	17.03	16.80	171.90	-316.51	-151.40	865.23	831.40	33.84	25.572	
5,800.00	5,653.59	5,724.14	5,710.75	17.33	17.10	171.91	-323.00	-154.36	883.11	848.68	34.43	25.649	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,900.00	5,750.55	5,822.53	5,808.88	17.63	17.39	171.93	-329.50	-157.31	900.98	865.95	35.03	25.723	
6,000.00	5,847.52	5,920.92	5,907.01	17.93	17.69	171.94	-335.99	-160.26	918.85	883.23	35.62	25.795	
6,100.00	5,944.49	6,019.31	6,005.14	18.23	17.99	171.95	-342.48	-163.22	936.73	900.51	36.22	25.865	
6,200.00	6,041.46	6,117.70	6,103.27	18.53	18.28	171.96	-348.98	-166.17	954.60	917.79	36.81	25.932	
6,300.00	6,138.43	6,216.09	6,201.40	18.83	18.58	171.96	-355.47	-169.12	972.48	935.07	37.41	25.997	
6,400.00	6,235.39	6,314.48	6,299.53	19.13	18.87	171.97	-361.97	-172.08	990.35	952.35	38.00	26.061	
6,500.00	6,332.36	6,412.87	6,397.67	19.43	19.17	171.98	-368.46	-175.03	1,008.22	969.63	38.60	26.122	
6,600.00	6,429.33	6,511.25	6,495.80	19.73	19.46	171.99	-374.96	-177.99	1,026.10	986.91	39.19	26.181	
6,700.00	6,526.30	6,605.83	6,590.02	20.03	19.74	171.90	-381.18	-182.66	1,044.06	1,004.29	39.78	26.248	
6,715.28	6,541.12	6,619.61	6,603.67	20.08	19.79	171.83	-382.08	-184.34	1,046.86	1,007.00	39.86	26.261	
6,750.00	6,574.74	6,650.78	6,634.36	20.18	19.88	157.84	-384.10	-189.35	1,053.22	1,013.16	40.06	26.290	
6,800.00	6,622.83	6,695.40	6,677.73	20.33	20.01	140.97	-386.93	-199.42	1,062.33	1,021.98	40.35	26.331	
6,850.00	6,670.20	6,739.77	6,719.94	20.49	20.15	128.50	-389.67	-212.75	1,071.28	1,030.66	40.63	26.368	
6,900.00	6,716.50	6,783.93	6,760.82	20.64	20.28	119.49	-392.32	-229.23	1,080.02	1,039.11	40.91	26.399	
6,950.00	6,761.36	6,827.92	6,800.16	20.79	20.41	112.86	-394.84	-248.73	1,088.47	1,047.28	41.19	26.424	
7,000.00	6,804.45	6,871.80	6,837.79	20.94	20.54	107.85	-397.25	-271.14	1,096.56	1,055.09	41.47	26.439	
7,050.00	6,845.44	6,915.59	6,873.54	21.09	20.68	103.95	-399.51	-296.31	1,104.24	1,062.48	41.76	26.445	
7,100.00	6,884.01	6,959.34	6,907.24	21.24	20.81	100.85	-401.63	-324.12	1,111.43	1,069.40	42.04	26.439	
7,150.00	6,919.88	7,003.08	6,938.71	21.39	20.94	98.36	-403.60	-354.42	1,118.09	1,075.78	42.32	26.421	
7,200.00	6,952.78	7,046.85	6,967.80	21.54	21.07	96.35	-405.39	-387.04	1,124.17	1,081.57	42.60	26.389	
7,250.00	6,982.44	7,090.66	6,994.36	21.69	21.20	94.72	-407.01	-421.85	1,129.62	1,086.74	42.88	26.343	
7,300.00	7,008.65	7,134.56	7,018.22	21.84	21.34	93.41	-408.44	-458.65	1,134.40	1,091.23	43.16	26.282	
7,350.00	7,031.20	7,178.56	7,039.25	21.99	21.47	92.38	-409.67	-497.26	1,138.47	1,095.03	43.44	26.206	
7,400.00	7,049.92	7,222.68	7,057.31	22.14	21.60	91.61	-410.71	-537.50	1,141.82	1,098.09	43.73	26.113	
7,450.00	7,064.68	7,266.96	7,072.28	22.29	21.73	91.06	-411.53	-579.16	1,144.40	1,100.39	44.01	26.004	
7,500.00	7,075.36	7,311.41	7,084.03	22.44	21.87	90.73	-412.13	-622.01	1,146.22	1,101.93	44.29	25.879	
7,550.00	7,081.87	7,356.05	7,092.46	22.59	22.00	90.60	-412.51	-665.83	1,147.25	1,102.68	44.58	25.737	
7,604.16	7,084.18	7,404.63	7,097.73	22.75	22.15	90.68	-412.66	-714.11	1,147.48	1,102.60	44.88	25.566	
7,700.00	7,083.86	7,503.87	7,098.83	23.04	22.45	90.75	-412.35	-805.58	1,147.35	1,101.88	45.47	25.234	
7,800.00	7,083.53	7,603.87	7,098.50	23.34	22.75	90.75	-411.92	-905.58	1,147.30	1,101.23	46.07	24.904	
7,900.00	7,083.20	7,703.87	7,098.18	23.64	23.05	90.75	-411.49	-1,005.58	1,147.25	1,100.58	46.67	24.583	
8,000.00	7,082.87	7,803.87	7,097.85	23.94	23.35	90.75	-411.05	-1,105.58	1,147.20	1,099.93	47.27	24.270	
8,100.00	7,082.54	7,903.87	7,097.52	24.24	23.65	90.75	-410.62	-1,205.58	1,147.15	1,099.28	47.87	23.965	
8,200.00	7,082.22	8,003.87	7,097.19	24.54	23.95	90.75	-410.19	-1,305.57	1,147.10	1,098.63	48.47	23.667	
8,300.00	7,081.89	8,103.87	7,096.86	24.84	24.25	90.75	-409.75	-1,405.57	1,147.05	1,097.98	49.07	23.377	
8,400.00	7,081.56	8,203.87	7,096.54	25.14	24.55	90.75	-409.32	-1,505.57	1,147.00	1,097.33	49.67	23.093	
8,500.00	7,081.23	8,303.87	7,096.21	25.45	24.85	90.75	-408.88	-1,605.57	1,146.95	1,096.68	50.27	22.817	
8,600.00	7,080.90	8,403.87	7,095.88	25.75	25.15	90.75	-408.45	-1,705.57	1,146.90	1,096.03	50.87	22.547	
8,700.00	7,080.57	8,503.87	7,095.55	26.05	25.45	90.75	-408.02	-1,805.57	1,146.85	1,095.38	51.47	22.283	
8,800.00	7,080.24	8,603.87	7,095.22	26.35	25.76	90.75	-407.58	-1,905.57	1,146.80	1,094.73	52.07	22.025	
8,900.00	7,079.91	8,703.87	7,094.90	26.65	26.06	90.75	-407.15	-2,005.56	1,146.75	1,094.08	52.67	21.773	
9,000.00	7,079.59	8,803.87	7,094.57	26.95	26.36	90.75	-406.72	-2,105.56	1,146.70	1,093.43	53.27	21.527	
9,100.00	7,079.26	8,903.87	7,094.24	27.25	26.66	90.75	-406.28	-2,205.56	1,146.65	1,092.78	53.87	21.286	
9,200.00	7,078.93	9,003.87	7,093.91	27.55	26.96	90.75	-405.85	-2,305.56	1,146.60	1,092.13	54.47	21.051	
9,300.00	7,078.60	9,103.87	7,093.58	27.85	27.26	90.75	-405.42	-2,405.56	1,146.55	1,091.48	55.07	20.821	
9,400.00	7,078.27	9,203.87	7,093.26	28.15	27.56	90.75	-404.98	-2,505.56	1,146.50	1,090.83	55.67	20.595	
9,500.00	7,077.94	9,296.13	7,092.93	28.45	27.84	90.75	-404.55	-2,605.56	1,146.45	1,090.21	56.24	20.383	
9,600.00	7,077.61	9,403.87	7,092.60	28.75	28.16	90.75	-404.12	-2,705.55	1,146.40	1,089.53	56.87	20.159	
9,700.00	7,077.28	9,503.87	7,092.27	29.05	28.46	90.75	-403.68	-2,805.55	1,146.35	1,088.88	57.47	19.948	
9,800.00	7,076.95	9,603.87	7,091.94	29.35	28.76	90.75	-403.25	-2,905.55	1,146.30	1,088.23	58.07	19.741	
9,900.00	7,076.63	9,703.87	7,091.62	29.65	29.06	90.75	-402.81	-3,005.55	1,146.25	1,087.58	58.67	19.538	
10,000.00	7,076.30	9,803.87	7,091.29	29.95	29.36	90.75	-402.38	-3,105.55	1,146.20	1,086.93	59.27	19.339	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	7,075.97	9,903.87	7,090.96	30.25	29.66	90.75	-401.95	-3,205.55	1,146.15	1,086.28	59.87	19.145	
10,200.00	7,075.64	10,003.87	7,090.63	30.55	29.96	90.75	-401.51	-3,305.55	1,146.10	1,085.63	60.47	18.954	
10,300.00	7,075.31	10,103.87	7,090.30	30.85	30.26	90.75	-401.08	-3,405.54	1,146.05	1,084.98	61.07	18.767	
10,400.00	7,074.98	10,203.87	7,089.98	31.15	30.56	90.75	-400.65	-3,505.54	1,146.00	1,084.33	61.67	18.584	
10,500.00	7,074.65	10,303.87	7,089.65	31.46	30.86	90.75	-400.21	-3,605.54	1,145.95	1,083.68	62.27	18.404	
10,600.00	7,074.32	10,403.87	7,089.32	31.76	31.17	90.75	-399.78	-3,705.54	1,145.90	1,083.03	62.87	18.227	
10,700.00	7,074.00	10,503.87	7,088.99	32.06	31.47	90.75	-399.35	-3,805.54	1,145.85	1,082.38	63.47	18.054	
10,800.00	7,073.67	10,603.87	7,088.66	32.36	31.77	90.75	-398.91	-3,905.54	1,145.80	1,081.73	64.07	17.884	
10,900.00	7,073.34	10,703.87	7,088.34	32.66	32.07	90.75	-398.48	-4,005.53	1,145.75	1,081.08	64.67	17.718	
11,000.00	7,073.01	10,803.87	7,088.01	32.96	32.37	90.75	-398.04	-4,105.53	1,145.70	1,080.43	65.27	17.554	
11,100.00	7,072.68	10,903.87	7,087.68	33.26	32.67	90.75	-397.61	-4,205.53	1,145.65	1,079.79	65.87	17.393	
11,200.00	7,072.35	11,003.87	7,087.35	33.56	32.97	90.75	-397.18	-4,305.53	1,145.60	1,079.14	66.47	17.236	
11,300.00	7,072.02	11,103.87	7,087.02	33.86	33.27	90.75	-396.74	-4,405.53	1,145.55	1,078.49	67.07	17.081	
11,400.00	7,071.69	11,203.87	7,086.69	34.16	33.57	90.75	-396.31	-4,505.53	1,145.50	1,077.84	67.67	16.928	
11,500.00	7,071.36	11,303.87	7,086.37	34.46	33.87	90.75	-395.88	-4,605.53	1,145.45	1,077.19	68.27	16.779	
11,600.00	7,071.04	11,403.87	7,086.04	34.76	34.17	90.75	-395.44	-4,705.52	1,145.40	1,076.54	68.87	16.632	
11,700.00	7,070.71	11,496.13	7,085.71	35.06	34.45	90.75	-395.01	-4,805.52	1,145.35	1,075.91	69.44	16.493	
11,800.00	7,070.38	11,603.87	7,085.38	35.36	34.77	90.75	-394.58	-4,905.52	1,145.30	1,075.24	70.07	16.346	
11,900.00	7,070.05	11,703.87	7,085.05	35.66	35.07	90.75	-394.14	-5,005.52	1,145.25	1,074.59	70.67	16.206	
12,000.00	7,069.72	11,803.87	7,084.73	35.96	35.37	90.75	-393.71	-5,105.52	1,145.20	1,073.94	71.27	16.069	
12,100.00	7,069.39	11,903.87	7,084.40	36.26	35.67	90.75	-393.27	-5,205.52	1,145.15	1,073.29	71.87	15.934	
12,200.00	7,069.06	12,003.87	7,084.07	36.56	35.97	90.75	-392.84	-5,305.52	1,145.10	1,072.64	72.47	15.802	
12,300.00	7,068.73	12,103.87	7,083.74	36.86	36.27	90.75	-392.41	-5,405.51	1,145.05	1,071.99	73.07	15.671	
12,400.00	7,068.41	12,203.87	7,083.41	37.16	36.57	90.75	-391.97	-5,505.51	1,145.00	1,071.34	73.67	15.543	
12,500.00	7,068.08	12,303.87	7,083.09	37.46	36.87	90.75	-391.54	-5,605.51	1,144.95	1,070.69	74.27	15.417	
12,600.00	7,067.75	12,403.87	7,082.76	37.76	37.17	90.75	-391.11	-5,705.51	1,144.90	1,070.04	74.87	15.292	
12,700.00	7,067.42	12,503.87	7,082.43	38.06	37.47	90.75	-390.67	-5,805.51	1,144.85	1,069.39	75.47	15.170	
12,800.00	7,067.09	12,603.87	7,082.10	38.36	37.77	90.75	-390.24	-5,905.51	1,144.80	1,068.74	76.07	15.050	
12,900.00	7,066.76	12,703.87	7,081.77	38.66	38.07	90.75	-389.81	-6,005.50	1,144.75	1,068.09	76.67	14.932	
13,000.00	7,066.43	12,803.87	7,081.45	38.96	38.37	90.75	-389.37	-6,105.50	1,144.70	1,067.44	77.27	14.815	
13,100.00	7,066.10	12,903.87	7,081.12	39.26	38.67	90.75	-388.94	-6,205.50	1,144.65	1,066.79	77.87	14.700	
13,200.00	7,065.77	13,003.87	7,080.79	39.56	38.97	90.75	-388.51	-6,305.50	1,144.60	1,066.14	78.47	14.587	
13,300.00	7,065.45	13,103.87	7,080.46	39.86	39.28	90.75	-388.07	-6,405.50	1,144.55	1,065.49	79.07	14.476	
13,400.00	7,065.12	13,203.87	7,080.13	40.16	39.58	90.75	-387.64	-6,505.50	1,144.50	1,064.84	79.67	14.366	
13,500.00	7,064.79	13,303.87	7,079.81	40.47	39.88	90.75	-387.20	-6,605.50	1,144.45	1,064.19	80.27	14.258	
13,600.00	7,064.46	13,403.87	7,079.48	40.77	40.18	90.75	-386.77	-6,705.49	1,144.40	1,063.54	80.87	14.152	
13,700.00	7,064.13	13,503.87	7,079.15	41.07	40.48	90.75	-386.34	-6,805.49	1,144.35	1,062.89	81.47	14.047	
13,800.00	7,063.80	13,603.87	7,078.82	41.37	40.78	90.75	-385.90	-6,905.49	1,144.30	1,062.24	82.07	13.944	
13,900.00	7,063.47	13,703.87	7,078.49	41.67	41.08	90.75	-385.47	-7,005.49	1,144.25	1,061.59	82.67	13.842	
14,000.00	7,063.14	13,803.87	7,078.17	41.97	41.38	90.75	-385.04	-7,105.49	1,144.20	1,060.94	83.27	13.741	
14,100.00	7,062.82	13,903.87	7,077.84	42.27	41.68	90.75	-384.60	-7,205.49	1,144.15	1,060.29	83.87	13.643	
14,200.00	7,062.49	14,003.87	7,077.51	42.57	41.98	90.75	-384.17	-7,305.49	1,144.10	1,059.64	84.47	13.545	
14,300.00	7,062.16	14,103.87	7,077.18	42.87	42.28	90.75	-383.74	-7,405.48	1,144.05	1,058.99	85.07	13.449	
14,400.00	7,061.83	14,203.87	7,076.85	43.17	42.58	90.75	-383.30	-7,505.48	1,144.00	1,058.34	85.67	13.354	
14,500.00	7,061.50	14,303.87	7,076.53	43.47	42.88	90.75	-382.87	-7,605.48	1,143.95	1,057.69	86.27	13.261	
14,600.00	7,061.17	14,403.87	7,076.20	43.77	43.18	90.75	-382.43	-7,705.48	1,143.90	1,057.04	86.87	13.168	
14,700.00	7,060.84	14,503.87	7,075.87	44.07	43.48	90.75	-382.00	-7,805.48	1,143.85	1,056.39	87.47	13.078	
14,800.00	7,060.51	14,603.87	7,075.54	44.37	43.78	90.75	-381.57	-7,905.48	1,143.80	1,055.74	88.07	12.988	
14,900.00	7,060.18	14,703.87	7,075.21	44.67	44.08	90.75	-381.13	-8,005.48	1,143.75	1,055.09	88.67	12.899	
15,000.00	7,059.86	14,803.87	7,074.89	44.97	44.38	90.75	-380.70	-8,105.47	1,143.70	1,054.44	89.27	12.812	
15,100.00	7,059.53	14,903.87	7,074.56	45.27	44.68	90.75	-380.27	-8,205.47	1,143.65	1,053.79	89.87	12.726	
15,200.00	7,059.20	15,003.87	7,074.23	45.57	44.98	90.75	-379.83	-8,305.47	1,143.60	1,053.14	90.47	12.641	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,300.00	7,058.87	15,103.87	7,073.90	45.87	45.28	90.75	-379.40	-8,405.47	1,143.55	1,052.49	91.07	12.557	
15,400.00	7,058.54	15,203.87	7,073.57	46.17	45.58	90.75	-378.97	-8,505.47	1,143.50	1,051.84	91.67	12.475	
15,500.00	7,058.21	15,303.87	7,073.25	46.47	45.88	90.75	-378.53	-8,605.47	1,143.45	1,051.19	92.27	12.393	
15,600.00	7,057.88	15,403.87	7,072.92	46.77	46.18	90.75	-378.10	-8,705.46	1,143.40	1,050.54	92.87	12.312	
15,700.00	7,057.55	15,503.87	7,072.59	47.07	46.48	90.75	-377.66	-8,805.46	1,143.35	1,049.89	93.47	12.233	
15,800.00	7,057.23	15,603.87	7,072.26	47.37	46.78	90.75	-377.23	-8,905.46	1,143.30	1,049.24	94.07	12.154	
15,900.00	7,056.90	15,703.87	7,071.93	47.67	47.08	90.75	-376.80	-9,005.46	1,143.25	1,048.59	94.67	12.077	
16,000.00	7,056.57	15,803.87	7,071.61	47.97	47.38	90.75	-376.36	-9,105.46	1,143.20	1,047.94	95.27	12.000	
16,100.00	7,056.24	15,903.87	7,071.28	48.27	47.68	90.75	-375.93	-9,205.46	1,143.15	1,047.29	95.87	11.924	
16,200.00	7,055.91	16,003.87	7,070.95	48.57	47.98	90.75	-375.50	-9,305.46	1,143.10	1,046.64	96.47	11.850	
16,300.00	7,055.58	16,103.87	7,070.62	48.87	48.28	90.75	-375.06	-9,405.45	1,143.05	1,045.99	97.07	11.776	
16,400.00	7,055.25	16,203.87	7,070.29	49.17	48.58	90.75	-374.63	-9,505.45	1,143.00	1,045.34	97.67	11.703	
16,500.00	7,054.92	16,303.87	7,069.97	49.47	48.88	90.75	-374.20	-9,605.45	1,142.95	1,044.69	98.27	11.631	
16,600.00	7,054.59	16,396.13	7,069.64	49.77	49.16	90.75	-373.76	-9,705.45	1,142.90	1,044.06	98.84	11.563	
16,619.57	7,054.53	16,415.71	7,069.57	49.83	49.22	90.75	-373.68	-9,725.02	1,142.90	1,043.93	98.96	11.549	
16,700.00	7,054.27	16,503.87	7,069.31	50.07	49.48	90.75	-373.33	-9,805.45	1,142.86	1,043.39	99.47	11.490	
16,782.16	7,054.00	16,578.29	7,069.04	50.32	49.71	90.75	-372.97	-9,887.61	1,142.81	1,042.88	99.94	11.435	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-2.39	44.96	-1.87	45.00				
100.00	100.00	100.00	100.00	0.23	0.23	-2.39	44.96	-1.87	45.00	44.55	0.45	99.334	
200.00	200.00	200.00	200.00	0.53	0.53	-2.39	44.96	-1.87	45.00	43.95	1.05	42.734	
300.00	300.00	300.00	300.00	0.83	0.83	-2.39	44.96	-1.87	45.00	43.35	1.65	27.222	
400.00	400.00	400.00	400.00	1.13	1.13	-2.39	44.96	-1.87	45.00	42.75	2.25	19.973	
500.00	500.00	500.00	500.00	1.43	1.43	-2.39	44.96	-1.87	45.00	42.15	2.85	15.772	CC
600.00	599.98	601.47	601.45	1.73	1.73	173.20	43.32	-1.13	45.09	41.64	3.46	13.044	ES
700.00	699.84	702.05	701.91	2.03	2.03	176.30	39.01	0.83	46.02	41.96	4.06	11.339	
800.00	799.45	801.92	801.66	2.33	2.33	179.47	34.43	2.90	50.29	45.64	4.66	10.797	SF
900.00	898.70	901.57	901.18	2.63	2.63	-177.98	29.87	4.97	58.18	52.92	5.26	11.066	
1,000.00	997.47	1,000.89	1,000.38	2.93	2.93	-176.23	25.32	7.03	69.62	63.76	5.86	11.888	
1,100.00	1,095.62	1,100.24	1,099.12	3.23	3.23	-175.17	20.79	9.09	84.54	78.09	6.45	13.099	
1,207.25	1,200.09	1,205.15	1,204.38	3.55	3.54	-174.57	15.96	11.27	104.38	97.29	7.09	14.719	
1,300.00	1,290.03	1,304.04	1,295.07	3.83	3.84	-174.32	11.81	13.16	123.24	115.57	7.67	16.074	
1,400.00	1,386.99	1,406.13	1,392.86	4.13	4.15	-174.12	7.32	15.19	143.57	135.30	8.27	17.353	
1,500.00	1,483.96	1,508.22	1,490.64	4.43	4.45	-173.97	2.84	17.23	163.91	155.03	8.88	18.458	
1,600.00	1,580.93	1,589.69	1,588.43	4.73	4.70	-173.85	-1.65	19.26	184.24	174.82	9.42	19.549	
1,700.00	1,677.90	1,687.60	1,686.21	5.03	4.99	-173.76	-6.13	21.29	204.58	194.56	10.02	20.419	
1,800.00	1,774.87	1,785.51	1,784.00	5.33	5.28	-173.68	-10.61	23.33	224.92	214.30	10.61	21.193	
1,900.00	1,871.83	1,883.41	1,881.79	5.63	5.58	-173.61	-15.10	25.36	245.25	234.05	11.21	21.884	
2,000.00	1,968.80	1,981.32	1,979.57	5.93	5.87	-173.56	-19.58	27.39	265.59	253.79	11.80	22.506	
2,100.00	2,065.77	2,079.23	2,077.36	6.23	6.16	-173.51	-24.07	29.43	285.93	273.53	12.39	23.069	
2,200.00	2,162.74	2,177.14	2,175.14	6.53	6.46	-173.47	-28.55	31.46	306.27	293.28	12.99	23.580	
2,300.00	2,259.71	2,275.05	2,272.93	6.83	6.75	-173.44	-33.03	33.49	326.60	313.02	13.58	24.046	
2,400.00	2,356.67	2,372.96	2,370.72	7.13	7.05	-173.41	-37.52	35.53	346.94	332.77	14.18	24.473	
2,500.00	2,453.64	2,470.87	2,468.50	7.43	7.34	-173.38	-42.00	37.56	367.28	352.51	14.77	24.866	
2,600.00	2,550.61	2,568.78	2,566.29	7.73	7.63	-173.35	-46.49	39.59	387.62	372.25	15.36	25.229	
2,700.00	2,647.58	2,666.69	2,664.07	8.03	7.93	-173.33	-50.97	41.63	407.96	392.00	15.96	25.565	
2,800.00	2,744.55	2,764.60	2,761.86	8.33	8.22	-173.31	-55.45	43.66	428.29	411.74	16.55	25.876	
2,900.00	2,841.51	2,862.51	2,859.65	8.63	8.51	-173.29	-59.94	45.69	448.63	431.49	17.15	26.166	
3,000.00	2,938.48	2,960.42	2,957.43	8.93	8.81	-173.28	-64.42	47.73	468.97	451.23	17.74	26.437	
3,100.00	3,035.45	3,058.33	3,055.22	9.23	9.10	-173.26	-68.91	49.76	489.31	470.97	18.33	26.690	
3,200.00	3,132.42	3,156.24	3,153.00	9.53	9.40	-173.25	-73.39	51.79	509.65	490.72	18.93	26.927	
3,300.00	3,229.39	3,254.15	3,250.79	9.83	9.69	-173.23	-77.87	53.83	529.98	510.46	19.52	27.150	
3,400.00	3,326.35	3,352.06	3,348.58	10.13	9.98	-173.22	-82.36	55.86	550.32	530.21	20.11	27.359	
3,500.00	3,423.32	3,449.97	3,446.36	10.43	10.28	-173.21	-86.84	57.89	570.66	549.95	20.71	27.557	
3,600.00	3,520.29	3,547.88	3,544.15	10.73	10.57	-173.20	-91.33	59.93	591.00	569.70	21.30	27.744	
3,700.00	3,617.26	3,645.79	3,641.93	11.03	10.86	-173.19	-95.81	61.96	611.34	589.44	21.90	27.920	
3,800.00	3,714.23	3,743.70	3,739.72	11.33	11.16	-173.18	-100.30	63.99	631.68	609.19	22.49	28.087	
3,900.00	3,811.19	3,841.61	3,837.51	11.63	11.45	-173.17	-104.78	66.03	652.01	628.93	23.08	28.246	
4,000.00	3,908.16	3,939.52	3,935.29	11.93	11.75	-173.16	-109.26	68.06	672.35	648.68	23.68	28.397	
4,100.00	4,005.13	4,037.43	4,033.08	12.23	12.04	-173.16	-113.75	70.09	692.69	668.42	24.27	28.540	
4,200.00	4,102.10	4,135.34	4,130.86	12.53	12.33	-173.15	-118.23	72.13	713.03	688.16	24.86	28.676	
4,300.00	4,199.07	4,233.25	4,228.65	12.83	12.63	-173.14	-122.72	74.16	733.37	707.91	25.46	28.806	
4,400.00	4,296.03	4,331.16	4,326.44	13.13	12.92	-173.14	-127.20	76.19	753.71	727.65	26.05	28.930	
4,500.00	4,393.00	4,429.07	4,424.22	13.43	13.21	-173.13	-131.68	78.23	774.04	747.40	26.65	29.049	
4,600.00	4,489.97	4,526.98	4,522.01	13.73	13.51	-173.12	-136.17	80.26	794.38	767.14	27.24	29.163	
4,700.00	4,586.94	4,624.89	4,619.79	14.03	13.80	-173.12	-140.65	82.29	814.72	786.89	27.83	29.271	
4,800.00	4,683.91	4,722.80	4,717.58	14.33	14.10	-173.11	-145.14	84.33	835.06	806.63	28.43	29.375	
4,900.00	4,780.87	4,820.71	4,815.37	14.63	14.39	-173.11	-149.62	86.36	855.40	826.38	29.02	29.475	
5,000.00	4,877.84	4,918.62	4,913.15	14.93	14.68	-173.10	-154.10	88.39	875.74	846.12	29.61	29.571	
5,100.00	4,974.81	5,016.53	5,010.94	15.23	14.98	-173.10	-158.59	90.43	896.08	865.87	30.21	29.663	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
5,200.00	5,071.78	5,114.44	5,108.72	15.53	15.27	-173.09	-163.07	92.46	916.41	885.61	30.80	29.751	
5,300.00	5,168.75	5,212.35	5,206.51	15.83	15.56	-173.09	-167.56	94.49	936.75	905.36	31.40	29.837	
5,400.00	5,265.71	5,310.26	5,304.30	16.13	15.86	-173.09	-172.04	96.53	957.09	925.10	31.99	29.919	
5,500.00	5,362.68	5,408.17	5,402.08	16.43	16.15	-173.08	-176.52	98.56	977.43	944.85	32.58	29.998	
5,600.00	5,459.65	5,506.08	5,499.87	16.73	16.45	-173.08	-181.01	100.59	997.77	964.59	33.18	30.074	
5,700.00	5,556.62	5,603.99	5,597.65	17.03	16.74	-173.08	-185.49	102.63	1,018.11	984.34	33.77	30.147	
5,800.00	5,653.59	5,701.90	5,695.44	17.33	17.03	-173.07	-189.98	104.66	1,038.45	1,004.08	34.36	30.218	
5,900.00	5,750.55	5,800.19	5,793.23	17.63	17.33	-173.07	-194.46	106.69	1,058.78	1,023.82	34.96	30.286	
6,000.00	5,847.52	5,902.28	5,891.01	17.93	17.63	-173.07	-198.94	108.73	1,079.12	1,043.56	35.57	30.341	
6,100.00	5,944.49	6,004.37	5,988.80	18.23	17.94	-173.06	-203.43	110.76	1,099.46	1,063.29	36.17	30.395	
6,200.00	6,041.46	6,106.46	6,086.58	18.53	18.25	-173.06	-207.91	112.79	1,119.80	1,083.02	36.78	30.447	
6,300.00	6,138.43	6,191.45	6,184.37	18.83	18.50	-173.06	-212.40	114.83	1,140.14	1,102.80	37.33	30.539	
6,400.00	6,235.39	6,289.36	6,282.16	19.13	18.79	-173.05	-216.88	116.86	1,160.48	1,122.55	37.93	30.597	
6,500.00	6,332.36	6,387.27	6,379.94	19.43	19.09	-173.05	-221.36	118.89	1,180.81	1,142.29	38.52	30.654	
6,600.00	6,429.33	6,485.18	6,477.73	19.73	19.38	-173.05	-225.85	120.93	1,201.15	1,162.04	39.11	30.708	
6,700.00	6,526.30	6,573.24	6,565.67	20.03	19.65	-173.03	-229.88	123.18	1,221.62	1,181.94	39.68	30.787	
6,715.28	6,541.12	6,583.54	6,575.93	20.08	19.68	-173.00	-230.36	123.88	1,224.88	1,185.12	39.76	30.810	
6,750.00	6,574.74	6,606.67	6,598.93	20.18	19.75	173.15	-231.42	126.13	1,232.70	1,192.77	39.93	30.871	
6,800.00	6,622.83	6,638.76	6,630.63	20.33	19.84	156.50	-232.90	130.78	1,245.23	1,205.05	40.18	30.993	
6,850.00	6,670.20	6,668.65	6,659.89	20.49	19.93	144.19	-234.27	136.71	1,259.24	1,218.82	40.42	31.156	
6,900.00	6,716.50	6,700.00	6,690.21	20.64	20.03	135.33	-235.70	144.56	1,274.80	1,234.13	40.66	31.351	
6,950.00	6,761.36	6,719.57	6,708.90	20.79	20.09	128.44	-236.58	150.30	1,291.90	1,251.03	40.87	31.608	
7,000.00	6,804.45	6,740.01	6,728.20	20.94	20.15	122.99	-237.50	156.97	1,310.62	1,269.54	41.08	31.901	
7,050.00	6,845.44	6,750.00	6,737.54	21.09	20.18	118.07	-237.95	160.48	1,330.98	1,289.71	41.27	32.254	
7,100.00	6,884.01	6,770.72	6,756.71	21.24	20.24	114.13	-238.87	168.28	1,352.81	1,311.33	41.48	32.615	
7,150.00	6,919.88	6,781.30	6,766.39	21.39	20.27	110.13	-239.33	172.52	1,376.13	1,334.47	41.66	33.032	
7,200.00	6,952.78	6,788.98	6,773.37	21.54	20.29	106.23	-239.67	175.72	1,400.77	1,358.93	41.83	33.484	
7,250.00	6,982.44	6,800.00	6,783.30	21.69	20.33	102.62	-240.15	180.47	1,426.57	1,384.55	42.02	33.952	
7,300.00	7,008.65	6,800.00	6,783.30	21.84	20.33	98.60	-240.15	180.47	1,453.27	1,411.10	42.17	34.464	
7,350.00	7,031.20	6,800.00	6,783.30	21.99	20.33	94.67	-240.15	180.47	1,480.70	1,438.38	42.32	34.990	
7,400.00	7,049.92	6,800.00	6,783.30	22.14	20.33	90.85	-240.15	180.47	1,508.62	1,466.15	42.47	35.524	
7,450.00	7,064.68	6,800.00	6,783.30	22.29	20.33	87.17	-240.15	180.47	1,536.79	1,494.17	42.62	36.060	
7,500.00	7,075.36	6,800.00	6,783.30	22.44	20.33	83.67	-240.15	180.47	1,564.99	1,522.23	42.77	36.594	
7,550.00	7,081.87	6,782.81	6,767.76	22.59	20.28	79.70	-239.40	173.14	1,592.78	1,549.92	42.87	37.158	
7,604.16	7,084.18	6,775.25	6,760.86	22.75	20.25	76.17	-239.07	170.07	1,622.44	1,579.44	43.00	37.728	
7,700.00	7,083.86	6,750.00	6,737.54	23.04	20.18	75.24	-237.95	160.48	1,676.16	1,632.94	43.22	38.785	
7,800.00	7,083.53	6,750.00	6,737.54	23.34	20.18	75.24	-237.95	160.48	1,735.57	1,692.05	43.52	39.882	
7,900.00	7,083.20	6,750.00	6,737.54	23.64	20.18	75.24	-237.95	160.48	1,798.58	1,754.76	43.82	41.046	
8,000.00	7,082.87	6,727.02	6,715.96	23.94	20.11	74.38	-236.92	152.65	1,864.36	1,820.31	44.05	42.323	
8,100.00	7,082.54	6,717.68	6,707.10	24.24	20.08	74.03	-236.50	149.72	1,933.04	1,888.71	44.32	43.612	
8,200.00	7,082.22	6,700.00	6,690.21	24.54	20.03	73.37	-235.70	144.56	2,004.29	1,959.72	44.57	44.968	
8,300.00	7,081.89	6,700.00	6,690.21	24.84	20.03	73.37	-235.70	144.56	2,077.66	2,032.78	44.87	46.302	
8,400.00	7,081.56	6,700.00	6,690.21	25.14	20.03	73.37	-235.70	144.56	2,153.17	2,107.99	45.17	47.666	
8,500.00	7,081.23	6,700.00	6,690.21	25.45	20.03	73.37	-235.70	144.56	2,230.61	2,185.13	45.47	49.054	
8,600.00	7,080.90	6,681.81	6,672.67	25.75	19.97	72.69	-234.87	139.80	2,309.47	2,263.75	45.72	50.514	
8,700.00	7,080.57	6,676.25	6,667.28	26.05	19.96	72.48	-234.61	138.46	2,389.98	2,343.98	46.00	51.953	
8,800.00	7,080.24	6,671.09	6,662.27	26.35	19.94	72.29	-234.38	137.26	2,471.87	2,425.58	46.29	53.402	
8,900.00	7,079.91	6,650.00	6,641.67	26.65	19.88	71.50	-233.41	132.83	2,555.25	2,508.72	46.53	54.921	
9,000.00	7,079.59	6,650.00	6,641.67	26.95	19.88	71.50	-233.41	132.83	2,639.39	2,592.56	46.83	56.366	
9,100.00	7,079.26	6,650.00	6,641.67	27.25	19.88	71.50	-233.41	132.83	2,724.60	2,677.48	47.13	57.815	
9,200.00	7,078.93	6,650.00	6,641.67	27.55	19.88	71.50	-233.41	132.83	2,810.79	2,763.37	47.43	59.266	
9,300.00	7,078.60	6,650.00	6,641.67	27.85	19.88	71.50	-233.41	132.83	2,897.87	2,850.14	47.73	60.717	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
9,400.00	7,078.27	6,650.00	6,641.67	28.15	19.88	71.50	-233.41	132.83	2,985.76	2,937.73	48.03	62.168	
9,500.00	7,077.94	6,650.00	6,641.67	28.45	19.88	71.50	-233.41	132.83	3,074.38	3,026.06	48.33	63.615	
9,600.00	7,077.61	6,650.00	6,641.67	28.75	19.88	71.50	-233.41	132.83	3,163.69	3,115.06	48.63	65.059	
9,700.00	7,077.28	6,650.00	6,641.67	29.05	19.88	71.50	-233.41	132.83	3,253.62	3,204.69	48.93	66.497	
9,800.00	7,076.95	6,650.00	6,641.67	29.35	19.88	71.50	-233.41	132.83	3,344.12	3,294.89	49.23	67.930	
9,900.00	7,076.63	6,650.00	6,641.67	29.65	19.88	71.50	-233.41	132.83	3,435.14	3,385.61	49.53	69.356	
10,000.00	7,076.30	6,650.00	6,641.67	29.95	19.88	71.50	-233.41	132.83	3,526.65	3,476.82	49.83	70.774	
10,100.00	7,075.97	6,627.36	6,619.40	30.25	19.81	70.66	-232.37	128.93	3,618.13	3,568.07	50.06	72.272	
10,200.00	7,075.64	6,625.14	6,617.21	30.55	19.80	70.57	-232.27	128.59	3,710.41	3,660.05	50.36	73.683	
10,300.00	7,075.31	6,623.03	6,615.12	30.85	19.80	70.49	-232.17	128.28	3,803.07	3,752.42	50.65	75.085	
10,400.00	7,074.98	6,621.02	6,613.13	31.15	19.79	70.42	-232.08	127.99	3,896.08	3,845.14	50.94	76.477	
10,500.00	7,074.65	6,600.00	6,592.30	31.46	19.73	69.64	-231.11	125.39	3,989.77	3,938.59	51.18	77.952	
10,600.00	7,074.32	6,600.00	6,592.30	31.76	19.73	69.64	-231.11	125.39	4,083.36	4,031.88	51.48	79.316	
10,700.00	7,074.00	6,600.00	6,592.30	32.06	19.73	69.64	-231.11	125.39	4,177.25	4,125.47	51.78	80.669	
10,800.00	7,073.67	6,600.00	6,592.30	32.36	19.73	69.64	-231.11	125.39	4,271.41	4,219.33	52.08	82.011	
10,900.00	7,073.34	6,600.00	6,592.30	32.66	19.73	69.64	-231.11	125.39	4,365.84	4,313.46	52.38	83.344	
11,000.00	7,073.01	6,600.00	6,592.30	32.96	19.73	69.64	-231.11	125.39	4,460.51	4,407.82	52.68	84.666	
11,100.00	7,072.68	6,600.00	6,592.30	33.26	19.73	69.64	-231.11	125.39	4,555.40	4,502.42	52.98	85.977	
11,200.00	7,072.35	6,600.00	6,592.30	33.56	19.73	69.64	-231.11	125.39	4,650.51	4,597.23	53.28	87.277	
11,300.00	7,072.02	6,600.00	6,592.30	33.86	19.73	69.64	-231.11	125.39	4,745.82	4,692.24	53.58	88.567	
11,400.00	7,071.69	6,600.00	6,592.30	34.16	19.73	69.64	-231.11	125.39	4,841.32	4,787.44	53.88	89.845	
11,500.00	7,071.36	6,600.00	6,592.30	34.46	19.73	69.64	-231.11	125.39	4,937.00	4,882.81	54.19	91.113	
11,600.00	7,071.04	6,600.00	6,592.30	34.76	19.73	69.64	-231.11	125.39	5,032.84	4,978.36	54.49	92.370	
11,700.00	7,070.71	6,600.00	6,592.30	35.06	19.73	69.64	-231.11	125.39	5,128.85	5,074.06	54.79	93.616	
11,800.00	7,070.38	6,600.00	6,592.30	35.36	19.73	69.64	-231.11	125.39	5,225.00	5,169.92	55.09	94.851	
11,900.00	7,070.05	6,600.00	6,592.30	35.66	19.73	69.64	-231.11	125.39	5,321.30	5,265.91	55.39	96.076	
12,000.00	7,069.72	6,600.00	6,592.30	35.96	19.73	69.64	-231.11	125.39	5,417.73	5,362.04	55.69	97.289	
12,100.00	7,069.39	6,600.00	6,592.30	36.26	19.73	69.64	-231.11	125.39	5,514.29	5,458.30	55.99	98.492	
12,200.00	7,069.06	6,600.00	6,592.30	36.56	19.73	69.64	-231.11	125.39	5,610.96	5,554.68	56.29	99.684	
12,300.00	7,068.73	6,600.00	6,592.30	36.86	19.73	69.64	-231.11	125.39	5,707.76	5,651.17	56.59	100.866	
12,400.00	7,068.41	6,600.00	6,592.30	37.16	19.73	69.64	-231.11	125.39	5,804.66	5,747.77	56.89	102.037	
12,500.00	7,068.08	6,600.00	6,592.30	37.46	19.73	69.64	-231.11	125.39	5,901.66	5,844.47	57.19	103.197	
12,600.00	7,067.75	6,600.00	6,592.30	37.76	19.73	69.64	-231.11	125.39	5,998.77	5,941.28	57.49	104.347	
12,700.00	7,067.42	6,600.00	6,592.30	38.06	19.73	69.64	-231.11	125.39	6,095.96	6,038.17	57.79	105.487	
12,800.00	7,067.09	6,600.00	6,592.30	38.36	19.73	69.64	-231.11	125.39	6,193.25	6,135.16	58.09	106.617	
12,900.00	7,066.76	6,600.00	6,592.30	38.66	19.73	69.64	-231.11	125.39	6,290.62	6,232.23	58.39	107.736	
13,000.00	7,066.43	6,600.00	6,592.30	38.96	19.73	69.64	-231.11	125.39	6,388.07	6,329.38	58.69	108.845	
13,100.00	7,066.10	6,600.00	6,592.30	39.26	19.73	69.64	-231.11	125.39	6,485.60	6,426.61	58.99	109.945	
13,200.00	7,065.77	6,600.00	6,592.30	39.56	19.73	69.64	-231.11	125.39	6,583.21	6,523.92	59.29	111.034	
13,300.00	7,065.45	6,600.00	6,592.30	39.86	19.73	69.64	-231.11	125.39	6,680.88	6,621.29	59.59	112.114	
13,400.00	7,065.12	6,600.00	6,592.30	40.16	19.73	69.64	-231.11	125.39	6,778.62	6,718.73	59.89	113.184	
13,500.00	7,064.79	6,600.00	6,592.30	40.47	19.73	69.64	-231.11	125.39	6,876.43	6,816.24	60.19	114.244	
13,600.00	7,064.46	6,600.00	6,592.30	40.77	19.73	69.64	-231.11	125.39	6,974.30	6,913.81	60.49	115.295	
13,700.00	7,064.13	6,600.00	6,592.30	41.07	19.73	69.64	-231.11	125.39	7,072.23	7,011.44	60.79	116.337	
13,800.00	7,063.80	6,600.00	6,592.30	41.37	19.73	69.64	-231.11	125.39	7,170.22	7,109.13	61.09	117.369	
13,900.00	7,063.47	6,600.00	6,592.30	41.67	19.73	69.64	-231.11	125.39	7,268.26	7,206.87	61.39	118.392	
14,000.00	7,063.14	6,600.00	6,592.30	41.97	19.73	69.64	-231.11	125.39	7,366.35	7,304.66	61.69	119.406	
14,100.00	7,062.82	6,600.00	6,592.30	42.27	19.73	69.64	-231.11	125.39	7,464.50	7,402.50	61.99	120.411	
14,200.00	7,062.49	6,600.00	6,592.30	42.57	19.73	69.64	-231.11	125.39	7,562.69	7,500.40	62.29	121.407	
14,300.00	7,062.16	6,600.00	6,592.30	42.87	19.73	69.64	-231.11	125.39	7,660.93	7,598.34	62.59	122.394	
14,400.00	7,061.83	6,600.00	6,592.30	43.17	19.73	69.64	-231.11	125.39	7,759.21	7,696.32	62.89	123.372	
14,500.00	7,061.50	6,600.00	6,592.30	43.47	19.73	69.64	-231.11	125.39	7,857.54	7,794.35	63.19	124.342	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
14,600.00	7,061.17	6,600.00	6,592.30	43.77	19.73	69.64	-231.11	125.39	7,955.91	7,892.42	63.49	125.303	
14,700.00	7,060.84	6,600.00	6,592.30	44.07	19.73	69.64	-231.11	125.39	8,054.32	7,990.53	63.79	126.256	
14,800.00	7,060.51	6,600.00	6,592.30	44.37	19.73	69.64	-231.11	125.39	8,152.77	8,088.68	64.09	127.201	
14,900.00	7,060.18	6,600.00	6,592.30	44.67	19.73	69.64	-231.11	125.39	8,251.26	8,186.86	64.39	128.137	
15,000.00	7,059.86	6,577.46	6,569.87	44.97	19.66	68.81	-230.08	123.44	8,349.31	8,284.68	64.63	129.193	
15,100.00	7,059.53	6,577.01	6,569.42	45.27	19.66	68.80	-230.06	123.41	8,447.85	8,382.92	64.93	130.116	
15,200.00	7,059.20	6,576.57	6,568.98	45.57	19.66	68.78	-230.04	123.38	8,546.42	8,481.20	65.22	131.031	
15,300.00	7,058.87	6,576.14	6,568.55	45.87	19.66	68.77	-230.02	123.36	8,645.02	8,579.50	65.52	131.939	
15,400.00	7,058.54	6,575.71	6,568.13	46.17	19.65	68.75	-230.00	123.33	8,743.66	8,677.84	65.82	132.838	
15,500.00	7,058.21	6,575.30	6,567.72	46.47	19.65	68.74	-229.98	123.30	8,842.33	8,776.21	66.12	133.730	
15,600.00	7,057.88	6,574.90	6,567.32	46.77	19.65	68.72	-229.96	123.28	8,941.02	8,874.60	66.42	134.613	
15,700.00	7,057.55	6,574.50	6,566.92	47.07	19.65	68.71	-229.94	123.25	9,039.75	8,973.03	66.72	135.490	
15,800.00	7,057.23	6,574.12	6,566.54	47.37	19.65	68.69	-229.92	123.23	9,138.50	9,071.48	67.02	136.359	
15,900.00	7,056.90	6,551.20	6,543.67	47.67	19.58	67.86	-228.87	122.30	9,237.74	9,170.49	67.25	137.365	
16,000.00	7,056.57	6,551.20	6,543.67	47.97	19.58	67.86	-228.87	122.30	9,336.53	9,268.98	67.55	138.217	
16,100.00	7,056.24	6,551.20	6,543.67	48.27	19.58	67.86	-228.87	122.30	9,435.34	9,367.49	67.85	139.062	
16,200.00	7,055.91	6,551.20	6,543.67	48.57	19.58	67.86	-228.87	122.30	9,534.18	9,466.03	68.15	139.900	
16,300.00	7,055.58	6,551.20	6,543.67	48.87	19.58	67.86	-228.87	122.30	9,633.04	9,564.59	68.45	140.731	
16,400.00	7,055.25	6,551.20	6,543.67	49.17	19.58	67.86	-228.87	122.30	9,731.93	9,663.18	68.75	141.555	
16,500.00	7,054.92	6,551.20	6,543.67	49.47	19.58	67.86	-228.87	122.30	9,830.84	9,761.79	69.05	142.372	
16,600.00	7,054.59	6,551.20	6,543.67	49.77	19.58	67.86	-228.87	122.30	9,929.77	9,860.42	69.35	143.182	
16,619.57	7,054.53	6,551.20	6,543.67	49.83	19.58	67.86	-228.87	122.30	9,949.13	9,879.72	69.41	143.340	
16,700.00	7,054.27	6,551.20	6,543.67	50.07	19.58	67.86	-228.87	122.30	10,028.72	9,959.07	69.65	143.986	
16,782.16	7,054.00	6,551.20	6,543.67	50.32	19.58	67.86	-228.87	122.30	10,110.03	10,040.13	69.90	144.641	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-2.40	29.96	-1.26	29.98				
100.00	100.00	100.00	100.00	0.23	0.23	-2.40	29.96	-1.26	29.98	29.53	0.45	66.187	
200.00	200.00	200.00	200.00	0.53	0.53	-2.40	29.96	-1.26	29.98	28.93	1.05	28.474	
300.00	300.00	300.00	300.00	0.83	0.83	-2.40	29.96	-1.26	29.98	28.33	1.65	18.138	
400.00	400.00	400.00	400.00	1.13	1.13	-2.40	29.96	-1.26	29.98	27.73	2.25	13.308	
500.00	500.00	500.00	500.00	1.43	1.43	-2.40	29.96	-1.26	29.98	27.13	2.85	10.509	
600.00	599.98	601.05	601.03	1.73	1.73	172.67	28.18	-1.09	29.95	26.50	3.46	8.667	
700.00	699.84	702.10	701.93	2.03	2.03	174.62	22.86	-0.58	29.88	25.82	4.06	7.363	
793.13	792.61	796.19	795.66	2.31	2.32	177.61	14.73	0.19	29.84	25.22	4.62	6.461	CC
800.00	799.45	803.13	802.57	2.33	2.34	177.88	14.01	0.26	29.84	25.18	4.66	6.404	
900.00	898.70	904.14	902.80	2.63	2.64	-177.57	1.63	1.44	29.95	24.68	5.26	5.692	
1,000.00	997.47	1,005.11	1,002.50	2.93	2.94	-171.82	-14.26	2.95	30.35	24.49	5.86	5.177	ES
1,100.00	1,095.62	1,106.04	1,101.53	3.23	3.25	-165.10	-33.62	4.79	31.24	24.78	6.46	4.833	
1,207.25	1,200.09	1,213.70	1,206.47	3.55	3.57	-157.78	-57.55	7.06	33.41	26.30	7.11	4.700	SF
1,300.00	1,290.03	1,306.33	1,296.68	3.83	3.85	-153.16	-78.53	9.05	36.90	29.23	7.67	4.813	
1,400.00	1,386.99	1,406.22	1,393.94	4.13	4.15	-149.08	-101.14	11.20	40.88	32.62	8.27	4.945	
1,500.00	1,483.96	1,506.10	1,491.21	4.43	4.45	-145.75	-123.76	13.35	45.03	36.17	8.87	5.079	
1,600.00	1,580.93	1,605.98	1,588.47	4.73	4.75	-142.98	-146.38	15.50	49.31	39.85	9.47	5.209	
1,700.00	1,677.90	1,705.86	1,685.74	5.03	5.05	-140.66	-168.99	17.65	53.69	43.62	10.07	5.333	
1,800.00	1,774.87	1,805.75	1,783.00	5.33	5.35	-138.69	-191.61	19.80	58.14	47.47	10.67	5.450	
1,900.00	1,871.83	1,905.63	1,880.26	5.63	5.65	-137.00	-214.22	21.95	62.65	51.38	11.27	5.560	
2,000.00	1,968.80	2,005.51	1,977.53	5.93	5.95	-135.54	-236.84	24.10	67.21	55.34	11.87	5.663	
2,100.00	2,065.77	2,105.39	2,074.79	6.23	6.25	-134.27	-259.45	26.25	71.80	59.33	12.47	5.759	
2,200.00	2,162.74	2,205.28	2,172.06	6.53	6.55	-133.15	-282.07	28.40	76.42	63.36	13.07	5.848	
2,300.00	2,259.71	2,305.16	2,269.32	6.83	6.85	-132.16	-304.69	30.54	81.08	67.41	13.67	5.932	
2,400.00	2,356.67	2,405.04	2,366.59	7.13	7.15	-131.27	-327.30	32.69	85.75	71.48	14.27	6.010	
2,500.00	2,453.64	2,504.92	2,463.85	7.43	7.45	-130.48	-349.92	34.84	90.44	75.57	14.87	6.083	
2,600.00	2,550.61	2,604.81	2,561.12	7.73	7.75	-129.77	-372.53	36.99	95.15	79.68	15.47	6.152	
2,700.00	2,647.58	2,704.69	2,658.38	8.03	8.05	-129.12	-395.15	39.14	99.87	83.80	16.07	6.216	
2,800.00	2,744.55	2,804.57	2,755.65	8.33	8.35	-128.53	-417.77	41.29	104.60	87.93	16.67	6.276	
2,900.00	2,841.51	2,904.45	2,852.91	8.63	8.65	-127.99	-440.38	43.44	109.34	92.07	17.27	6.333	
3,000.00	2,938.48	3,004.34	2,950.18	8.93	8.95	-127.50	-463.00	45.59	114.09	96.22	17.87	6.386	
3,100.00	3,035.45	3,104.22	3,047.44	9.23	9.24	-127.05	-485.61	47.74	118.85	100.38	18.47	6.436	
3,200.00	3,132.42	3,204.10	3,144.71	9.53	9.54	-126.63	-508.23	49.89	123.61	104.55	19.07	6.484	
3,300.00	3,229.39	3,303.98	3,241.97	9.83	9.84	-126.24	-530.85	52.04	128.38	108.72	19.66	6.528	
3,400.00	3,326.35	3,403.87	3,339.24	10.13	10.14	-125.88	-553.46	54.19	133.16	112.89	20.26	6.571	
3,500.00	3,423.32	3,503.75	3,436.50	10.43	10.44	-125.55	-576.08	56.33	137.94	117.08	20.86	6.611	
3,600.00	3,520.29	3,603.63	3,533.76	10.73	10.74	-125.24	-598.69	58.48	142.72	121.26	21.46	6.650	
3,700.00	3,617.26	3,703.52	3,631.03	11.03	11.04	-124.94	-621.31	60.63	147.51	125.45	22.06	6.686	
3,800.00	3,714.23	3,803.40	3,728.29	11.33	11.34	-124.67	-643.93	62.78	152.31	129.64	22.66	6.720	
3,900.00	3,811.19	3,903.28	3,825.56	11.63	11.64	-124.41	-666.54	64.93	157.10	133.84	23.26	6.753	
4,000.00	3,908.16	4,003.16	3,922.82	11.93	11.94	-124.17	-689.16	67.08	161.90	138.04	23.86	6.785	
4,100.00	4,005.13	4,103.05	4,020.09	12.23	12.24	-123.94	-711.77	69.23	166.71	142.24	24.46	6.815	
4,200.00	4,102.10	4,202.93	4,117.35	12.53	12.54	-123.73	-734.39	71.38	171.51	146.45	25.06	6.843	
4,300.00	4,199.07	4,302.81	4,214.62	12.83	12.84	-123.53	-757.00	73.53	176.32	150.65	25.66	6.871	
4,400.00	4,296.03	4,402.69	4,311.88	13.13	13.14	-123.33	-779.62	75.68	181.13	154.86	26.26	6.897	
4,500.00	4,393.00	4,502.58	4,409.15	13.43	13.44	-123.15	-802.24	77.83	185.94	159.07	26.86	6.922	
4,600.00	4,489.97	4,602.46	4,506.41	13.73	13.74	-122.98	-824.85	79.97	190.75	163.29	27.46	6.946	
4,700.00	4,586.94	4,702.34	4,603.68	14.03	14.04	-122.81	-847.47	82.12	195.56	167.50	28.06	6.969	
4,800.00	4,683.91	4,802.22	4,700.94	14.33	14.34	-122.66	-870.08	84.27	200.38	171.72	28.66	6.992	
4,900.00	4,780.87	4,902.11	4,798.21	14.63	14.64	-122.51	-892.70	86.42	205.20	175.94	29.26	7.013	
5,000.00	4,877.84	5,001.99	4,895.47	14.93	14.94	-122.36	-915.32	88.57	210.01	180.15	29.86	7.033	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	4,974.81	5,101.87	4,992.73	15.23	15.24	-122.23	-937.93	90.72	214.83	184.38	30.46	7.053	
5,200.00	5,071.78	5,201.75	5,090.00	15.53	15.54	-122.10	-960.55	92.87	219.65	188.60	31.06	7.072	
5,300.00	5,168.75	5,301.64	5,187.26	15.83	15.84	-121.97	-983.16	95.02	224.48	192.82	31.66	7.091	
5,400.00	5,265.71	5,401.52	5,284.53	16.13	16.14	-121.85	-1,005.78	97.17	229.30	197.04	32.26	7.108	
5,500.00	5,362.68	5,501.40	5,381.79	16.43	16.44	-121.74	-1,028.40	99.32	234.12	201.27	32.86	7.125	
5,600.00	5,459.65	5,601.28	5,479.06	16.73	16.74	-121.63	-1,051.01	101.47	238.95	205.49	33.46	7.142	
5,700.00	5,556.62	5,701.17	5,576.32	17.03	17.04	-121.52	-1,073.63	103.62	243.77	209.72	34.06	7.158	
5,800.00	5,653.59	5,801.05	5,673.59	17.33	17.34	-121.42	-1,096.24	105.76	248.60	213.94	34.66	7.173	
5,900.00	5,750.55	5,900.93	5,770.85	17.63	17.64	-121.33	-1,118.86	107.91	253.43	218.17	35.26	7.188	
6,000.00	5,847.52	6,000.81	5,868.12	17.93	17.94	-121.23	-1,141.48	110.06	258.26	222.40	35.86	7.203	
6,100.00	5,944.49	6,100.70	5,965.38	18.23	18.24	-121.14	-1,164.09	112.21	263.08	226.63	36.46	7.217	
6,200.00	6,041.46	6,200.58	6,062.65	18.53	18.53	-121.05	-1,186.71	114.36	267.91	230.86	37.06	7.230	
6,300.00	6,138.43	6,300.46	6,159.91	18.83	18.83	-120.97	-1,209.32	116.51	272.74	235.09	37.65	7.243	
6,400.00	6,235.39	6,400.34	6,257.18	19.13	19.13	-120.89	-1,231.94	118.66	277.57	239.32	38.25	7.256	
6,500.00	6,332.36	6,500.23	6,354.44	19.43	19.43	-120.81	-1,254.55	120.81	282.41	243.55	38.85	7.268	
6,600.00	6,429.33	6,600.11	6,451.70	19.73	19.73	-120.73	-1,277.17	122.96	287.24	247.78	39.45	7.280	
6,700.00	6,526.30	6,698.19	6,547.21	20.03	20.03	-120.66	-1,299.38	125.08	292.09	252.04	40.05	7.293	
6,715.28	6,541.12	6,708.62	6,557.37	20.08	20.06	-120.64	-1,301.74	125.47	293.04	252.92	40.13	7.303	
6,750.00	6,574.74	6,732.13	6,580.22	20.18	20.13	-133.82	-1,307.06	127.05	297.10	256.79	40.30	7.372	
6,800.00	6,622.83	6,764.91	6,611.92	20.33	20.23	-149.49	-1,314.44	130.85	308.43	267.88	40.55	7.606	
6,850.00	6,670.20	6,800.00	6,645.56	20.49	20.33	-160.67	-1,322.28	136.97	326.08	285.28	40.81	7.991	
6,900.00	6,716.50	6,823.61	6,667.97	20.64	20.40	-168.85	-1,327.51	142.28	349.54	308.51	41.03	8.519	
6,950.00	6,761.36	6,850.00	6,692.73	20.79	20.48	-174.76	-1,333.29	149.32	378.43	337.17	41.26	9.171	
7,000.00	6,804.45	6,869.80	6,711.08	20.94	20.54	-179.72	-1,337.58	155.37	412.08	370.61	41.47	9.936	
7,050.00	6,845.44	6,887.71	6,727.51	21.09	20.60	175.84	-1,341.42	161.41	449.84	408.16	41.68	10.793	
7,100.00	6,884.01	6,900.00	6,738.66	21.24	20.63	171.00	-1,344.03	165.85	491.01	449.15	41.87	11.728	
7,150.00	6,919.88	6,913.61	6,750.91	21.39	20.68	165.76	-1,346.90	171.06	534.91	492.85	42.06	12.719	
7,200.00	6,952.78	6,922.01	6,758.40	21.54	20.70	158.49	-1,348.65	174.41	580.92	538.69	42.23	13.755	
7,250.00	6,982.44	6,927.71	6,763.46	21.69	20.72	147.71	-1,349.83	176.76	628.47	586.07	42.40	14.822	
7,300.00	7,008.65	6,930.97	6,766.34	21.84	20.73	130.67	-1,350.51	178.12	677.01	634.45	42.56	15.907	
7,350.00	7,031.20	6,932.04	6,767.29	21.99	20.73	105.45	-1,350.73	178.57	726.09	683.38	42.71	16.999	
7,400.00	7,049.92	6,931.16	6,766.52	22.14	20.73	78.14	-1,350.55	178.21	775.28	732.42	42.86	18.089	
7,450.00	7,064.68	6,928.55	6,764.21	22.29	20.72	58.07	-1,350.01	177.11	824.21	781.21	43.00	19.167	
7,500.00	7,075.36	6,924.41	6,760.53	22.44	20.71	45.68	-1,349.15	175.39	872.54	829.40	43.14	20.226	
7,550.00	7,081.87	6,918.90	6,755.63	22.59	20.69	38.05	-1,348.00	173.16	919.98	876.71	43.27	21.260	
7,604.16	7,084.18	6,900.00	6,738.66	22.75	20.63	32.30	-1,344.03	165.85	970.24	926.86	43.38	22.367	
7,700.00	7,083.86	6,900.00	6,738.66	23.04	20.63	32.30	-1,344.03	165.85	1,057.78	1,014.12	43.67	24.225	
7,800.00	7,083.53	6,900.00	6,738.66	23.34	20.63	32.30	-1,344.03	165.85	1,150.54	1,106.57	43.97	26.169	
7,900.00	7,083.20	6,874.62	6,715.52	23.64	20.56	31.27	-1,338.62	156.95	1,243.60	1,199.40	44.19	28.141	
8,000.00	7,082.87	6,850.00	6,692.73	23.94	20.48	30.36	-1,333.29	149.32	1,337.88	1,293.46	44.42	30.120	
8,100.00	7,082.54	6,850.00	6,692.73	24.24	20.48	30.36	-1,333.29	149.32	1,432.28	1,387.56	44.72	32.028	
8,200.00	7,082.22	6,850.00	6,692.73	24.54	20.48	30.36	-1,333.29	149.32	1,527.39	1,482.37	45.02	33.927	
8,300.00	7,081.89	6,850.00	6,692.73	24.84	20.48	30.36	-1,333.29	149.32	1,623.08	1,577.76	45.32	35.814	
8,400.00	7,081.56	6,850.00	6,692.73	25.14	20.48	30.36	-1,333.29	149.32	1,719.27	1,673.65	45.62	37.686	
8,500.00	7,081.23	6,826.38	6,670.58	25.45	20.41	29.55	-1,328.12	142.96	1,815.23	1,769.38	45.85	39.590	
8,600.00	7,080.90	6,820.52	6,665.04	25.75	20.40	29.36	-1,326.83	141.53	1,911.83	1,865.70	46.13	41.441	
8,700.00	7,080.57	6,800.00	6,645.56	26.05	20.33	28.72	-1,322.28	136.97	2,008.95	1,962.58	46.37	43.322	
8,800.00	7,080.24	6,800.00	6,645.56	26.35	20.33	28.72	-1,322.28	136.97	2,105.91	2,059.24	46.67	45.120	
8,900.00	7,079.91	6,800.00	6,645.56	26.65	20.33	28.72	-1,322.28	136.97	2,203.14	2,156.17	46.97	46.902	
9,000.00	7,079.59	6,800.00	6,645.56	26.95	20.33	28.72	-1,322.28	136.97	2,300.61	2,253.34	47.27	48.665	
9,100.00	7,079.26	6,800.00	6,645.56	27.25	20.33	28.72	-1,322.28	136.97	2,398.29	2,350.71	47.57	50.411	
9,200.00	7,078.93	6,800.00	6,645.56	27.55	20.33	28.72	-1,322.28	136.97	2,496.15	2,448.27	47.87	52.139	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,300.00	7,078.60	6,800.00	6,645.56	27.85	20.33	28.72	-1,322.28	136.97	2,594.17	2,546.00	48.18	53.849	
9,400.00	7,078.27	6,800.00	6,645.56	28.15	20.33	28.72	-1,322.28	136.97	2,692.34	2,643.87	48.48	55.540	
9,500.00	7,077.94	6,800.00	6,645.56	28.45	20.33	28.72	-1,322.28	136.97	2,790.64	2,741.87	48.78	57.214	
9,600.00	7,077.61	6,800.00	6,645.56	28.75	20.33	28.72	-1,322.28	136.97	2,889.06	2,839.98	49.08	58.869	
9,700.00	7,077.28	6,777.30	6,623.84	29.05	20.27	28.07	-1,317.22	132.77	2,987.05	2,937.74	49.31	60.578	
9,800.00	7,076.95	6,774.64	6,621.28	29.35	20.26	27.99	-1,316.62	132.33	3,085.53	3,035.93	49.60	62.207	
9,900.00	7,076.63	6,772.11	6,618.85	29.65	20.25	27.92	-1,316.06	131.93	3,184.10	3,134.21	49.89	63.817	
10,000.00	7,076.30	6,750.00	6,597.52	29.95	20.18	27.34	-1,311.09	128.89	3,283.14	3,233.01	50.13	65.494	
10,100.00	7,075.97	6,750.00	6,597.52	30.25	20.18	27.34	-1,311.09	128.89	3,381.76	3,331.33	50.43	67.060	
10,200.00	7,075.64	6,750.00	6,597.52	30.55	20.18	27.34	-1,311.09	128.89	3,480.47	3,429.74	50.73	68.609	
10,300.00	7,075.31	6,750.00	6,597.52	30.85	20.18	27.34	-1,311.09	128.89	3,579.24	3,528.21	51.03	70.140	
10,400.00	7,074.98	6,750.00	6,597.52	31.15	20.18	27.34	-1,311.09	128.89	3,678.08	3,626.75	51.33	71.656	
10,500.00	7,074.65	6,750.00	6,597.52	31.46	20.18	27.34	-1,311.09	128.89	3,776.98	3,725.35	51.63	73.154	
10,600.00	7,074.32	6,750.00	6,597.52	31.76	20.18	27.34	-1,311.09	128.89	3,875.94	3,824.01	51.93	74.637	
10,700.00	7,074.00	6,750.00	6,597.52	32.06	20.18	27.34	-1,311.09	128.89	3,974.95	3,922.72	52.23	76.103	
10,800.00	7,073.67	6,750.00	6,597.52	32.36	20.18	27.34	-1,311.09	128.89	4,074.01	4,021.48	52.53	77.554	
10,900.00	7,073.34	6,750.00	6,597.52	32.66	20.18	27.34	-1,311.09	128.89	4,173.11	4,120.28	52.83	78.989	
11,000.00	7,073.01	6,750.00	6,597.52	32.96	20.18	27.34	-1,311.09	128.89	4,272.26	4,219.12	53.13	80.408	
11,100.00	7,072.68	6,750.00	6,597.52	33.26	20.18	27.34	-1,311.09	128.89	4,371.44	4,318.01	53.43	81.813	
11,200.00	7,072.35	6,750.00	6,597.52	33.56	20.18	27.34	-1,311.09	128.89	4,470.66	4,416.93	53.73	83.202	
11,300.00	7,072.02	6,750.00	6,597.52	33.86	20.18	27.34	-1,311.09	128.89	4,569.91	4,515.88	54.03	84.577	
11,400.00	7,071.69	6,750.00	6,597.52	34.16	20.18	27.34	-1,311.09	128.89	4,669.20	4,614.87	54.33	85.936	
11,500.00	7,071.36	6,750.00	6,597.52	34.46	20.18	27.34	-1,311.09	128.89	4,768.52	4,713.88	54.63	87.282	
11,600.00	7,071.04	6,750.00	6,597.52	34.76	20.18	27.34	-1,311.09	128.89	4,867.86	4,812.93	54.93	88.613	
11,700.00	7,070.71	6,750.00	6,597.52	35.06	20.18	27.34	-1,311.09	128.89	4,967.23	4,912.00	55.23	89.930	
11,800.00	7,070.38	6,750.00	6,597.52	35.36	20.18	27.34	-1,311.09	128.89	5,066.63	5,011.09	55.53	91.234	
11,900.00	7,070.05	6,750.00	6,597.52	35.66	20.18	27.34	-1,311.09	128.89	5,166.04	5,110.21	55.83	92.524	
12,000.00	7,069.72	6,750.00	6,597.52	35.96	20.18	27.34	-1,311.09	128.89	5,265.48	5,209.35	56.14	93.800	
12,100.00	7,069.39	6,750.00	6,597.52	36.26	20.18	27.34	-1,311.09	128.89	5,364.95	5,308.51	56.44	95.064	
12,200.00	7,069.06	6,750.00	6,597.52	36.56	20.18	27.34	-1,311.09	128.89	5,464.43	5,407.69	56.74	96.314	
12,300.00	7,068.73	6,750.00	6,597.52	36.86	20.18	27.34	-1,311.09	128.89	5,563.93	5,506.89	57.04	97.551	
12,400.00	7,068.41	6,750.00	6,597.52	37.16	20.18	27.34	-1,311.09	128.89	5,663.44	5,606.11	57.34	98.776	
12,500.00	7,068.08	6,750.00	6,597.52	37.46	20.18	27.34	-1,311.09	128.89	5,762.98	5,705.34	57.64	99.988	
12,600.00	7,067.75	6,750.00	6,597.52	37.76	20.18	27.34	-1,311.09	128.89	5,862.53	5,804.59	57.94	101.188	
12,700.00	7,067.42	6,750.00	6,597.52	38.06	20.18	27.34	-1,311.09	128.89	5,962.09	5,903.85	58.24	102.376	
12,800.00	7,067.09	6,750.00	6,597.52	38.36	20.18	27.34	-1,311.09	128.89	6,061.67	6,003.13	58.54	103.552	
12,900.00	7,066.76	6,750.00	6,597.52	38.66	20.18	27.34	-1,311.09	128.89	6,161.26	6,102.43	58.84	104.716	
13,000.00	7,066.43	6,750.00	6,597.52	38.96	20.18	27.34	-1,311.09	128.89	6,260.87	6,201.73	59.14	105.869	
13,100.00	7,066.10	6,750.00	6,597.52	39.26	20.18	27.34	-1,311.09	128.89	6,360.49	6,301.05	59.44	107.010	
13,200.00	7,065.77	6,750.00	6,597.52	39.56	20.18	27.34	-1,311.09	128.89	6,460.12	6,400.38	59.74	108.140	
13,300.00	7,065.45	6,750.00	6,597.52	39.86	20.18	27.34	-1,311.09	128.89	6,559.76	6,499.72	60.04	109.259	
13,400.00	7,065.12	6,750.00	6,597.52	40.16	20.18	27.34	-1,311.09	128.89	6,659.41	6,599.07	60.34	110.367	
13,500.00	7,064.79	6,726.77	6,575.01	40.47	20.11	26.77	-1,305.84	126.60	6,758.56	6,697.99	60.57	111.583	
13,600.00	7,064.46	6,726.13	6,574.39	40.77	20.11	26.76	-1,305.70	126.55	6,858.21	6,797.34	60.87	112.673	
13,700.00	7,064.13	6,725.51	6,573.79	41.07	20.11	26.74	-1,305.56	126.51	6,957.86	6,896.69	61.17	113.753	
13,800.00	7,063.80	6,724.91	6,573.20	41.37	20.11	26.73	-1,305.42	126.46	7,057.52	6,996.06	61.46	114.822	
13,900.00	7,063.47	6,724.32	6,572.63	41.67	20.11	26.71	-1,305.29	126.42	7,157.19	7,095.43	61.76	115.881	
14,000.00	7,063.14	6,723.75	6,572.08	41.97	20.10	26.70	-1,305.16	126.38	7,256.88	7,194.81	62.06	116.930	
14,100.00	7,062.82	6,723.19	6,571.54	42.27	20.10	26.69	-1,305.04	126.34	7,356.56	7,294.20	62.36	117.969	
14,200.00	7,062.49	6,700.00	6,548.98	42.57	20.03	26.17	-1,299.79	125.14	7,456.74	7,394.15	62.59	119.134	
14,300.00	7,062.16	6,700.00	6,548.98	42.87	20.03	26.17	-1,299.79	125.14	7,556.42	7,493.53	62.89	120.150	
14,400.00	7,061.83	6,700.00	6,548.98	43.17	20.03	26.17	-1,299.79	125.14	7,656.11	7,592.92	63.19	121.157	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 0-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,500.00	7,061.50	6,700.00	6,548.98	43.47	20.03	26.17	-1,299.79	125.14	7,755.81	7,692.32	63.49	122.155	
14,600.00	7,061.17	6,700.00	6,548.98	43.77	20.03	26.17	-1,299.79	125.14	7,855.51	7,791.72	63.79	123.143	
14,700.00	7,060.84	6,700.00	6,548.98	44.07	20.03	26.17	-1,299.79	125.14	7,955.22	7,891.13	64.09	124.122	
14,800.00	7,060.51	6,700.00	6,548.98	44.37	20.03	26.17	-1,299.79	125.14	8,054.94	7,990.55	64.39	125.092	
14,900.00	7,060.18	6,700.00	6,548.98	44.67	20.03	26.17	-1,299.79	125.14	8,154.67	8,089.98	64.69	126.053	
15,000.00	7,059.86	6,700.00	6,548.98	44.97	20.03	26.17	-1,299.79	125.14	8,254.40	8,189.41	64.99	127.005	
15,100.00	7,059.53	6,700.00	6,548.98	45.27	20.03	26.17	-1,299.79	125.14	8,354.14	8,288.85	65.29	127.948	
15,200.00	7,059.20	6,700.00	6,548.98	45.57	20.03	26.17	-1,299.79	125.14	8,453.89	8,388.29	65.59	128.884	
15,300.00	7,058.87	6,700.00	6,548.98	45.87	20.03	26.17	-1,299.79	125.14	8,553.64	8,487.75	65.89	129.810	
15,400.00	7,058.54	6,700.00	6,548.98	46.17	20.03	26.17	-1,299.79	125.14	8,653.40	8,587.20	66.19	130.728	
15,500.00	7,058.21	6,700.00	6,548.98	46.47	20.03	26.17	-1,299.79	125.14	8,753.16	8,686.66	66.49	131.639	
15,600.00	7,057.88	6,700.00	6,548.98	46.77	20.03	26.17	-1,299.79	125.14	8,852.93	8,786.13	66.79	132.541	
15,700.00	7,057.55	6,700.00	6,548.98	47.07	20.03	26.17	-1,299.79	125.14	8,952.70	8,885.60	67.09	133.435	
15,800.00	7,057.23	6,700.00	6,548.98	47.37	20.03	26.17	-1,299.79	125.14	9,052.48	8,985.08	67.39	134.321	
15,900.00	7,056.90	6,700.00	6,548.98	47.67	20.03	26.17	-1,299.79	125.14	9,152.26	9,084.57	67.69	135.199	
16,000.00	7,056.57	6,700.00	6,548.98	47.97	20.03	26.17	-1,299.79	125.14	9,252.05	9,184.05	67.99	136.070	
16,100.00	7,056.24	6,700.00	6,548.98	48.27	20.03	26.17	-1,299.79	125.14	9,351.84	9,283.55	68.29	136.933	
16,200.00	7,055.91	6,700.00	6,548.98	48.57	20.03	26.17	-1,299.79	125.14	9,451.64	9,383.04	68.60	137.789	
16,300.00	7,055.58	6,700.00	6,548.98	48.87	20.03	26.17	-1,299.79	125.14	9,551.44	9,482.54	68.90	138.637	
16,400.00	7,055.25	6,700.00	6,548.98	49.17	20.03	26.17	-1,299.79	125.14	9,651.24	9,582.05	69.20	139.478	
16,500.00	7,054.92	6,700.00	6,548.98	49.47	20.03	26.17	-1,299.79	125.14	9,751.05	9,681.56	69.50	140.312	
16,600.00	7,054.59	6,700.00	6,548.98	49.77	20.03	26.17	-1,299.79	125.14	9,850.86	9,781.07	69.80	141.138	
16,619.57	7,054.53	6,700.00	6,548.98	49.83	20.03	26.17	-1,299.79	125.14	9,870.40	9,800.55	69.85	141.299	
16,700.00	7,054.27	6,700.00	6,548.98	50.07	20.03	26.17	-1,299.79	125.14	9,950.68	9,880.58	70.10	141.958	
16,782.16	7,054.00	6,700.00	6,548.98	50.32	20.03	26.17	-1,299.79	125.14	10,032.69	9,962.35	70.34	142.626	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-107.28	-1,628.67	-5,234.59	5,482.11				
100.00	100.00	69.51	69.51	0.23	3.03	-107.28	-1,628.67	-5,234.59	5,482.11	5,478.85	3.25	1,684.477	
200.00	200.00	169.51	169.51	0.53	7.38	-107.28	-1,628.67	-5,234.59	5,482.11	5,474.20	7.91	693.019	
300.00	300.00	269.51	269.51	0.83	11.74	-107.28	-1,628.67	-5,234.59	5,482.11	5,469.54	12.57	436.249	
400.00	400.00	369.51	369.51	1.13	16.10	-107.28	-1,628.67	-5,234.59	5,482.11	5,464.89	17.22	318.312	
500.00	500.00	469.51	469.51	1.43	20.45	-107.28	-1,628.67	-5,234.59	5,482.11	5,460.23	21.88	250.571	
600.00	599.98	569.49	569.49	1.73	24.81	67.16	-1,628.67	-5,234.59	5,481.43	5,454.90	26.53	206.585	
700.00	699.84	669.35	669.35	2.03	29.16	67.25	-1,628.67	-5,234.59	5,479.40	5,448.22	31.18	175.715	
800.00	799.45	768.97	768.97	2.33	33.50	67.40	-1,628.67	-5,234.59	5,476.03	5,440.21	35.82	152.865	
900.00	898.70	868.21	868.21	2.63	37.82	67.60	-1,628.67	-5,234.59	5,471.34	5,430.89	40.45	135.275	
1,000.00	997.47	966.98	966.98	2.93	42.12	67.86	-1,628.67	-5,234.59	5,465.34	5,420.30	45.05	121.322	
1,100.00	1,095.62	1,065.14	1,065.14	3.23	46.40	68.18	-1,628.67	-5,234.59	5,458.09	5,408.46	49.62	109.989	
1,207.25	1,200.09	1,169.60	1,169.60	3.55	50.95	68.58	-1,628.67	-5,234.59	5,448.95	5,394.45	54.50	99.987	
1,300.00	1,290.03	1,259.54	1,259.54	3.83	54.87	68.80	-1,628.67	-5,234.59	5,440.49	5,381.80	58.69	92.695	
1,400.00	1,386.99	1,356.51	1,356.51	4.13	59.09	69.03	-1,628.67	-5,234.59	5,431.46	5,368.24	63.22	85.919	
1,500.00	1,483.96	1,453.47	1,453.47	4.43	63.31	69.27	-1,628.67	-5,234.59	5,422.53	5,354.79	67.74	80.049	
1,600.00	1,580.93	1,550.44	1,550.44	4.73	67.54	69.50	-1,628.67	-5,234.59	5,413.69	5,341.42	72.26	74.915	
1,700.00	1,677.90	1,647.41	1,647.41	5.03	71.76	69.74	-1,628.67	-5,234.59	5,404.95	5,328.16	76.79	70.388	
1,800.00	1,774.87	1,744.38	1,744.38	5.33	75.99	69.98	-1,628.67	-5,234.59	5,396.30	5,314.99	81.31	66.365	
1,900.00	1,871.83	1,841.35	1,841.35	5.63	80.21	70.21	-1,628.67	-5,234.59	5,387.75	5,301.92	85.84	62.768	
2,000.00	1,968.80	1,938.31	1,938.31	5.93	84.43	70.45	-1,628.67	-5,234.59	5,379.30	5,288.94	90.36	59.532	
2,100.00	2,065.77	2,035.28	2,035.28	6.23	88.66	70.69	-1,628.67	-5,234.59	5,370.95	5,276.06	94.88	56.605	
2,200.00	2,162.74	2,132.25	2,132.25	6.53	92.88	70.93	-1,628.67	-5,234.59	5,362.69	5,263.28	99.41	53.946	
2,300.00	2,259.71	2,229.22	2,229.22	6.83	97.10	71.17	-1,628.67	-5,234.59	5,354.54	5,250.60	103.93	51.520	
2,400.00	2,356.67	2,326.19	2,326.19	7.13	101.33	71.41	-1,628.67	-5,234.59	5,346.48	5,238.02	108.46	49.296	
2,500.00	2,453.64	2,423.15	2,423.15	7.43	105.55	71.66	-1,628.67	-5,234.59	5,338.52	5,225.54	112.98	47.252	
2,600.00	2,550.61	2,520.12	2,520.12	7.73	109.78	71.90	-1,628.67	-5,234.59	5,330.66	5,213.16	117.50	45.366	
2,700.00	2,647.58	2,617.09	2,617.09	8.03	114.00	72.14	-1,628.67	-5,234.59	5,322.91	5,200.88	122.03	43.621	
2,800.00	2,744.55	2,714.06	2,714.06	8.33	118.22	72.38	-1,628.67	-5,234.59	5,315.25	5,188.70	126.55	42.001	
2,900.00	2,841.51	2,811.03	2,811.03	8.63	122.45	72.63	-1,628.67	-5,234.59	5,307.70	5,176.62	131.08	40.494	
3,000.00	2,938.48	2,908.00	2,908.00	8.93	126.67	72.87	-1,628.67	-5,234.59	5,300.25	5,164.65	135.60	39.088	
3,100.00	3,035.45	3,004.96	3,004.96	9.23	130.90	73.12	-1,628.67	-5,234.59	5,292.90	5,152.77	140.12	37.773	
3,200.00	3,132.42	3,101.93	3,101.93	9.53	135.12	73.37	-1,628.67	-5,234.59	5,285.65	5,141.00	144.65	36.542	
3,300.00	3,229.39	3,198.90	3,198.90	9.83	139.34	73.61	-1,628.67	-5,234.59	5,278.51	5,129.34	149.17	35.386	
3,400.00	3,326.35	3,295.87	3,295.87	10.13	143.57	73.86	-1,628.67	-5,234.59	5,271.47	5,117.77	153.69	34.298	
3,500.00	3,423.32	3,392.84	3,392.84	10.43	147.79	74.11	-1,628.67	-5,234.59	5,264.53	5,106.31	158.22	33.274	
3,600.00	3,520.29	3,489.80	3,489.80	10.73	152.02	74.36	-1,628.67	-5,234.59	5,257.70	5,094.96	162.74	32.307	
3,700.00	3,617.26	3,586.77	3,586.77	11.03	156.24	74.61	-1,628.67	-5,234.59	5,250.97	5,083.71	167.27	31.393	
3,800.00	3,714.23	3,683.74	3,683.74	11.33	160.46	74.86	-1,628.67	-5,234.59	5,244.35	5,072.56	171.79	30.528	
3,900.00	3,811.19	3,780.71	3,780.71	11.63	164.69	75.11	-1,628.67	-5,234.59	5,237.84	5,061.52	176.31	29.707	
4,000.00	3,908.16	3,877.68	3,877.68	11.93	168.91	75.36	-1,628.67	-5,234.59	5,231.43	5,050.59	180.84	28.929	
4,100.00	4,005.13	3,974.64	3,974.64	12.23	173.14	75.61	-1,628.67	-5,234.59	5,225.12	5,039.76	185.36	28.189	
4,200.00	4,102.10	4,071.61	4,071.61	12.53	177.36	75.86	-1,628.67	-5,234.59	5,218.93	5,029.04	189.89	27.485	
4,300.00	4,199.07	4,168.58	4,168.58	12.83	181.58	76.12	-1,628.67	-5,234.59	5,212.84	5,018.43	194.41	26.814	
4,400.00	4,296.03	4,265.55	4,265.55	13.13	185.81	76.37	-1,628.67	-5,234.59	5,206.86	5,007.92	198.93	26.174	
4,500.00	4,393.00	4,362.52	4,362.52	13.43	190.03	76.63	-1,628.67	-5,234.59	5,200.98	4,997.52	203.46	25.563	
4,600.00	4,489.97	4,459.48	4,459.48	13.73	194.25	76.88	-1,628.67	-5,234.59	5,195.22	4,987.23	207.98	24.979	
4,700.00	4,586.94	4,556.45	4,556.45	14.03	198.48	77.14	-1,628.67	-5,234.59	5,189.56	4,977.05	212.51	24.421	
4,800.00	4,683.91	4,653.42	4,653.42	14.33	202.70	77.39	-1,628.67	-5,234.59	5,184.01	4,966.98	217.03	23.886	
4,900.00	4,780.87	4,750.39	4,750.39	14.63	206.93	77.65	-1,628.67	-5,234.59	5,178.57	4,957.02	221.55	23.374	
5,000.00	4,877.84	4,847.36	4,847.36	14.93	211.15	77.90	-1,628.67	-5,234.59	5,173.24	4,947.17	226.08	22.883	
5,100.00	4,974.81	4,944.32	4,944.32	15.23	215.37	78.16	-1,628.67	-5,234.59	5,168.03	4,937.42	230.60	22.411	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	5,071.78	5,041.29	5,041.29	15.53	219.60	78.42	-1,628.67	-5,234.59	5,162.92	4,927.79	235.13	21.958	
5,300.00	5,168.75	5,138.26	5,138.26	15.83	223.82	78.68	-1,628.67	-5,234.59	5,157.92	4,918.27	239.65	21.523	
5,400.00	5,265.71	5,235.23	5,235.23	16.13	228.05	78.94	-1,628.67	-5,234.59	5,153.03	4,908.86	244.17	21.104	
5,500.00	5,362.68	5,332.20	5,332.20	16.43	232.27	79.19	-1,628.67	-5,234.59	5,148.26	4,899.56	248.70	20.701	
5,600.00	5,459.65	5,429.16	5,429.16	16.73	236.49	79.45	-1,628.67	-5,234.59	5,143.59	4,890.37	253.22	20.313	
5,700.00	5,556.62	5,526.13	5,526.13	17.03	240.72	79.71	-1,628.67	-5,234.59	5,139.04	4,881.30	257.74	19.939	
5,800.00	5,653.59	5,623.10	5,623.10	17.33	244.94	79.97	-1,628.67	-5,234.59	5,134.60	4,872.34	262.27	19.578	
5,900.00	5,750.55	5,720.07	5,720.07	17.63	249.17	80.24	-1,628.67	-5,234.59	5,130.28	4,863.49	266.79	19.229	
6,000.00	5,847.52	5,817.04	5,817.04	17.93	253.39	80.50	-1,628.67	-5,234.59	5,126.06	4,854.75	271.32	18.893	
6,100.00	5,944.49	5,914.00	5,914.00	18.23	257.61	80.76	-1,628.67	-5,234.59	5,121.96	4,846.12	275.84	18.569	
6,200.00	6,041.46	6,010.97	6,010.97	18.53	261.84	81.02	-1,628.67	-5,234.59	5,117.98	4,837.61	280.36	18.255	
6,300.00	6,138.43	6,107.94	6,107.94	18.83	266.06	81.28	-1,628.67	-5,234.59	5,114.10	4,829.21	284.89	17.951	
6,400.00	6,235.39	6,204.91	6,204.91	19.13	270.29	81.55	-1,628.67	-5,234.59	5,110.34	4,820.93	289.41	17.658	
6,500.00	6,332.36	6,301.88	6,301.88	19.43	274.51	81.81	-1,628.67	-5,234.59	5,106.70	4,812.76	293.94	17.374	
6,600.00	6,429.33	6,398.84	6,398.84	19.73	278.73	82.07	-1,628.67	-5,234.59	5,103.17	4,804.71	298.46	17.098	
6,700.00	6,526.30	6,495.81	6,495.81	20.03	282.96	82.34	-1,628.67	-5,234.59	5,099.75	4,796.77	302.98	16.832	
6,715.28	6,541.12	6,510.63	6,510.63	20.08	283.60	82.38	-1,628.67	-5,234.59	5,099.24	4,795.56	303.67	16.792	
6,750.00	6,574.74	6,544.25	6,544.25	20.18	285.07	69.29	-1,628.67	-5,234.59	5,097.04	4,791.79	305.24	16.698	
6,752.82	6,577.46	6,546.97	6,546.97	20.19	285.19	68.29	-1,628.67	-5,234.59	5,096.77	4,791.39	305.37	16.690	
6,800.00	6,622.83	5,952.00	5,952.00	20.33	259.27	51.96	-1,628.67	-5,234.59	5,130.33	4,852.76	277.57	18.483	
6,850.00	6,670.20	5,952.00	5,952.00	20.49	259.27	40.55	-1,628.67	-5,234.59	5,125.48	4,848.08	277.40	18.477	
6,900.00	6,716.50	5,952.00	5,952.00	20.64	259.27	32.52	-1,628.67	-5,234.59	5,116.80	4,839.58	277.21	18.458	
6,950.00	6,761.36	5,952.00	5,952.00	20.79	259.27	26.78	-1,628.67	-5,234.59	5,104.32	4,827.32	277.01	18.427	
7,000.00	6,804.45	5,952.00	5,952.00	20.94	259.27	22.55	-1,628.67	-5,234.59	5,088.14	4,811.35	276.79	18.383	
7,050.00	6,845.44	5,952.00	5,952.00	21.09	259.27	19.33	-1,628.67	-5,234.59	5,068.32	4,791.76	276.56	18.326	
7,100.00	6,884.01	5,952.00	5,952.00	21.24	259.27	16.79	-1,628.67	-5,234.59	5,044.98	4,768.66	276.32	18.258	
7,150.00	6,919.88	5,952.00	5,952.00	21.39	259.27	14.72	-1,628.67	-5,234.59	5,018.25	4,742.17	276.08	18.177	
7,200.00	6,952.78	5,952.00	5,952.00	21.54	259.27	12.97	-1,628.67	-5,234.59	4,988.28	4,712.44	275.84	18.084	
7,250.00	6,982.44	5,952.00	5,952.00	21.69	259.27	11.44	-1,628.67	-5,234.59	4,955.24	4,679.63	275.61	17.979	
7,300.00	7,008.65	5,952.00	5,952.00	21.84	259.27	10.02	-1,628.67	-5,234.59	4,919.33	4,643.94	275.39	17.863	
7,350.00	7,031.20	5,952.00	5,952.00	21.99	259.27	8.64	-1,628.67	-5,234.59	4,880.75	4,605.56	275.19	17.736	
7,400.00	7,049.92	5,952.00	5,952.00	22.14	259.27	7.20	-1,628.67	-5,234.59	4,839.74	4,564.74	275.01	17.599	
7,450.00	7,064.68	5,952.00	5,952.00	22.29	259.27	5.55	-1,628.67	-5,234.59	4,796.56	4,521.70	274.86	17.451	
7,500.00	7,075.36	5,952.00	5,952.00	22.44	259.27	3.48	-1,628.67	-5,234.59	4,751.48	4,476.73	274.74	17.294	
7,550.00	7,081.87	5,952.00	5,952.00	22.59	259.27	0.55	-1,628.67	-5,234.59	4,704.78	4,430.12	274.66	17.129	
7,604.16	7,084.18	5,952.00	5,952.00	22.75	259.27	-4.76	-1,628.67	-5,234.59	4,652.75	4,378.12	274.63	16.942	
7,700.00	7,083.86	5,952.00	5,952.00	23.04	259.27	-4.76	-1,628.67	-5,234.59	4,559.64	4,285.02	274.62	16.604	
7,800.00	7,083.53	5,952.00	5,952.00	23.34	259.27	-4.76	-1,628.67	-5,234.59	4,462.60	4,188.03	274.58	16.252	
7,900.00	7,083.20	5,952.00	5,952.00	23.64	259.27	-4.76	-1,628.67	-5,234.59	4,365.71	4,091.19	274.52	15.903	
8,000.00	7,082.87	5,952.00	5,952.00	23.94	259.27	-4.76	-1,628.67	-5,234.59	4,268.95	3,994.51	274.44	15.555	
8,100.00	7,082.54	5,952.00	5,952.00	24.24	259.27	-4.76	-1,628.67	-5,234.59	4,172.35	3,898.02	274.32	15.209	
8,200.00	7,082.22	5,952.00	5,952.00	24.54	259.27	-4.76	-1,628.67	-5,234.59	4,075.91	3,801.72	274.18	14.866	
8,300.00	7,081.89	5,952.00	5,952.00	24.84	259.27	-4.76	-1,628.67	-5,234.59	3,979.64	3,705.63	274.01	14.524	
8,400.00	7,081.56	5,952.00	5,952.00	25.14	259.27	-4.76	-1,628.67	-5,234.59	3,883.57	3,609.76	273.80	14.184	
8,500.00	7,081.23	5,952.00	5,952.00	25.45	259.27	-4.76	-1,628.67	-5,234.59	3,787.69	3,514.14	273.56	13.846	
8,600.00	7,080.90	5,952.00	5,952.00	25.75	259.27	-4.76	-1,628.67	-5,234.59	3,692.04	3,418.78	273.26	13.511	
8,700.00	7,080.57	5,952.00	5,952.00	26.05	259.27	-4.76	-1,628.67	-5,234.59	3,596.63	3,323.70	272.93	13.178	
8,800.00	7,080.24	5,952.00	5,952.00	26.35	259.27	-4.76	-1,628.67	-5,234.59	3,501.46	3,228.93	272.54	12.848	
8,900.00	7,079.91	5,952.00	5,952.00	26.65	259.27	-4.76	-1,628.67	-5,234.59	3,406.58	3,134.49	272.09	12.520	
9,000.00	7,079.59	5,952.00	5,952.00	26.95	259.27	-4.76	-1,628.67	-5,234.59	3,312.00	3,040.43	271.57	12.196	
9,100.00	7,079.26	5,952.00	5,952.00	27.25	259.27	-4.76	-1,628.67	-5,234.59	3,217.74	2,946.76	270.99	11.874	
9,200.00	7,078.93	5,952.00	5,952.00	27.55	259.27	-4.76	-1,628.67	-5,234.59	3,123.85	2,853.53	270.32	11.556	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	5,952.00	5,952.00	27.85	259.27	-4.76	-1,628.67	-5,234.59	3,030.34	2,760.78	269.56	11.242	
9,400.00	7,078.27	5,952.00	5,952.00	28.15	259.27	-4.76	-1,628.67	-5,234.59	2,937.26	2,668.56	268.70	10.931	
9,500.00	7,077.94	5,952.00	5,952.00	28.45	259.27	-4.76	-1,628.67	-5,234.59	2,844.65	2,576.93	267.72	10.625	
9,600.00	7,077.61	5,952.00	5,952.00	28.75	259.27	-4.76	-1,628.67	-5,234.59	2,752.56	2,485.94	266.62	10.324	
9,700.00	7,077.28	5,952.00	5,952.00	29.05	259.27	-4.76	-1,628.67	-5,234.59	2,661.04	2,395.68	265.36	10.028	
9,800.00	7,076.95	5,952.00	5,952.00	29.35	259.27	-4.76	-1,628.67	-5,234.59	2,570.15	2,306.21	263.94	9.738	
9,900.00	7,076.63	5,952.00	5,952.00	29.65	259.27	-4.76	-1,628.67	-5,234.59	2,479.96	2,217.63	262.33	9.454	
10,000.00	7,076.30	5,952.00	5,952.00	29.95	259.27	-4.76	-1,628.67	-5,234.59	2,390.55	2,130.06	260.50	9.177	
10,100.00	7,075.97	5,952.00	5,952.00	30.25	259.27	-4.76	-1,628.67	-5,234.59	2,302.02	2,043.61	258.41	8.908	
10,200.00	7,075.64	5,952.00	5,952.00	30.55	259.27	-4.76	-1,628.67	-5,234.59	2,214.46	1,958.42	256.04	8.649	
10,300.00	7,075.31	5,952.00	5,952.00	30.85	259.27	-4.76	-1,628.67	-5,234.59	2,128.00	1,874.66	253.34	8.400	
10,400.00	7,074.98	5,952.00	5,952.00	31.15	259.27	-4.76	-1,628.67	-5,234.59	2,042.77	1,792.52	250.25	8.163	
10,500.00	7,074.65	5,952.00	5,952.00	31.46	259.27	-4.76	-1,628.67	-5,234.59	1,958.94	1,712.23	246.71	7.940	
10,600.00	7,074.32	5,952.00	5,952.00	31.76	259.27	-4.76	-1,628.67	-5,234.59	1,876.70	1,634.04	242.65	7.734	
10,700.00	7,074.00	5,952.00	5,952.00	32.06	259.27	-4.76	-1,628.67	-5,234.59	1,796.26	1,558.26	238.00	7.547	
10,800.00	7,073.67	5,952.00	5,952.00	32.36	259.27	-4.76	-1,628.67	-5,234.59	1,717.87	1,485.23	232.64	7.384	
10,900.00	7,073.34	5,952.00	5,952.00	32.66	259.27	-4.76	-1,628.67	-5,234.59	1,641.83	1,415.36	226.47	7.250	
11,000.00	7,073.01	5,952.00	5,952.00	32.96	259.27	-4.76	-1,628.67	-5,234.59	1,568.49	1,349.13	219.36	7.150	
11,100.00	7,072.68	5,952.00	5,952.00	33.26	259.27	-4.76	-1,628.67	-5,234.59	1,498.23	1,287.06	211.17	7.095	
11,200.00	7,072.35	5,952.00	5,952.00	33.56	259.27	-4.76	-1,628.67	-5,234.59	1,431.52	1,229.78	201.74	7.096	
11,300.00	7,072.02	5,952.00	5,952.00	33.86	259.27	-4.76	-1,628.67	-5,234.59	1,368.86	1,177.95	190.91	7.170	
11,400.00	7,071.69	5,952.00	5,952.00	34.16	259.27	-4.76	-1,628.67	-5,234.59	1,310.85	1,132.31	178.54	7.342	
11,500.00	7,071.36	5,952.00	5,952.00	34.46	259.27	-4.76	-1,628.67	-5,234.59	1,258.12	1,093.62	164.50	7.648	
11,600.00	7,071.04	5,952.00	5,952.00	34.76	259.27	-4.76	-1,628.67	-5,234.59	1,211.36	1,062.64	148.72	8.145	
11,700.00	7,070.71	5,952.00	5,952.00	35.06	259.27	-4.76	-1,628.67	-5,234.59	1,171.30	1,040.06	131.24	8.925	
11,800.00	7,070.38	5,952.00	5,952.00	35.36	259.27	-4.76	-1,628.67	-5,234.59	1,138.63	1,026.35	112.29	10.140	
11,900.00	7,070.05	5,952.00	5,952.00	35.66	259.27	-4.76	-1,628.67	-5,234.59	1,114.01	1,021.60	92.41	12.055	
12,000.00	7,069.72	5,952.00	5,952.00	35.96	259.27	-4.76	-1,628.67	-5,234.59	1,097.98	1,024.86	73.13	15.015	
12,100.00	7,069.39	5,952.00	5,952.00	36.26	259.27	-4.76	-1,628.67	-5,234.59	1,090.92	1,030.82	60.10	18.150	
12,127.29	7,069.30	5,952.00	5,952.00	36.34	259.27	-4.76	-1,628.67	-5,234.59	1,090.58	1,031.04	59.54	18.318	CC
12,200.00	7,069.06	5,952.00	5,952.00	36.56	259.27	-4.76	-1,628.67	-5,234.59	1,093.00	1,027.09	65.91	16.584	
12,300.00	7,068.73	5,952.00	5,952.00	36.86	259.27	-4.76	-1,628.67	-5,234.59	1,104.17	1,020.05	84.12	13.126	
12,400.00	7,068.41	5,952.00	5,952.00	37.16	259.27	-4.76	-1,628.67	-5,234.59	1,124.16	1,019.48	104.68	10.739	ES
12,500.00	7,068.08	5,952.00	5,952.00	37.46	259.27	-4.76	-1,628.67	-5,234.59	1,152.51	1,027.66	124.85	9.231	
12,600.00	7,067.75	5,952.00	5,952.00	37.76	259.27	-4.76	-1,628.67	-5,234.59	1,188.62	1,044.87	143.75	8.268	
12,700.00	7,067.42	5,952.00	5,952.00	38.06	259.27	-4.76	-1,628.67	-5,234.59	1,231.81	1,070.78	161.03	7.650	
12,800.00	7,067.09	5,952.00	5,952.00	38.36	259.27	-4.76	-1,628.67	-5,234.59	1,281.37	1,104.80	176.57	7.257	
12,900.00	7,066.76	5,952.00	5,952.00	38.66	259.27	-4.76	-1,628.67	-5,234.59	1,336.58	1,146.19	190.38	7.020	
13,000.00	7,066.43	5,952.00	5,952.00	38.96	259.27	-4.76	-1,628.67	-5,234.59	1,396.77	1,194.20	202.58	6.895	
13,100.00	7,066.10	5,952.00	5,952.00	39.26	259.27	-4.76	-1,628.67	-5,234.59	1,461.34	1,248.05	213.29	6.851	SF
13,200.00	7,065.77	5,952.00	5,952.00	39.56	259.27	-4.76	-1,628.67	-5,234.59	1,529.73	1,307.04	222.69	6.869	
13,300.00	7,065.45	5,952.00	5,952.00	39.86	259.27	-4.76	-1,628.67	-5,234.59	1,601.44	1,370.52	230.92	6.935	
13,400.00	7,065.12	5,952.00	5,952.00	40.16	259.27	-4.76	-1,628.67	-5,234.59	1,676.05	1,437.92	238.14	7.038	
13,500.00	7,064.79	5,952.00	5,952.00	40.47	259.27	-4.76	-1,628.67	-5,234.59	1,753.19	1,508.72	244.47	7.171	
13,600.00	7,064.46	5,952.00	5,952.00	40.77	259.27	-4.76	-1,628.67	-5,234.59	1,832.55	1,582.49	250.06	7.329	
13,700.00	7,064.13	5,952.00	5,952.00	41.07	259.27	-4.76	-1,628.67	-5,234.59	1,913.84	1,658.85	254.99	7.506	
13,800.00	7,063.80	5,952.00	5,952.00	41.37	259.27	-4.76	-1,628.67	-5,234.59	1,996.82	1,737.47	259.36	7.699	
13,900.00	7,063.47	5,952.00	5,952.00	41.67	259.27	-4.76	-1,628.67	-5,234.59	2,081.31	1,818.06	263.25	7.906	
14,000.00	7,063.14	5,952.00	5,952.00	41.97	259.27	-4.76	-1,628.67	-5,234.59	2,167.12	1,900.40	266.72	8.125	
14,100.00	7,062.82	5,952.00	5,952.00	42.27	259.27	-4.76	-1,628.67	-5,234.59	2,254.09	1,984.26	269.84	8.354	
14,200.00	7,062.49	5,952.00	5,952.00	42.57	259.27	-4.76	-1,628.67	-5,234.59	2,342.11	2,069.47	272.64	8.590	
14,300.00	7,062.16	5,952.00	5,952.00	42.87	259.27	-4.76	-1,628.67	-5,234.59	2,431.05	2,155.87	275.18	8.834	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.83	5,952.00	5,952.00	43.17	259.27	-4.76	-1,628.67	-5,234.59	2,520.82	2,243.34	277.48	9.085	
14,500.00	7,061.50	5,952.00	5,952.00	43.47	259.27	-4.76	-1,628.67	-5,234.59	2,611.34	2,331.76	279.58	9.340	
14,600.00	7,061.17	5,952.00	5,952.00	43.77	259.27	-4.76	-1,628.67	-5,234.59	2,702.52	2,421.03	281.50	9.601	
14,700.00	7,060.84	5,952.00	5,952.00	44.07	259.27	-4.76	-1,628.67	-5,234.59	2,794.31	2,511.05	283.26	9.865	
14,800.00	7,060.51	5,952.00	5,952.00	44.37	259.27	-4.76	-1,628.67	-5,234.59	2,886.65	2,601.76	284.89	10.133	
14,900.00	7,060.18	5,952.00	5,952.00	44.67	259.27	-4.76	-1,628.67	-5,234.59	2,979.47	2,693.08	286.39	10.404	
15,000.00	7,059.86	5,952.00	5,952.00	44.97	259.27	-4.76	-1,628.67	-5,234.59	3,072.75	2,784.97	287.78	10.677	
15,100.00	7,059.53	5,952.00	5,952.00	45.27	259.27	-4.76	-1,628.67	-5,234.59	3,166.44	2,877.36	289.08	10.953	
15,200.00	7,059.20	5,952.00	5,952.00	45.57	259.27	-4.76	-1,628.67	-5,234.59	3,260.50	2,970.21	290.30	11.232	
15,300.00	7,058.87	5,952.00	5,952.00	45.87	259.27	-4.76	-1,628.67	-5,234.59	3,354.91	3,063.48	291.43	11.512	
15,400.00	7,058.54	5,952.00	5,952.00	46.17	259.27	-4.76	-1,628.67	-5,234.59	3,449.63	3,157.13	292.50	11.793	
15,500.00	7,058.21	5,952.00	5,952.00	46.47	259.27	-4.76	-1,628.67	-5,234.59	3,544.65	3,251.13	293.51	12.077	
15,600.00	7,057.88	5,952.00	5,952.00	46.77	259.27	-4.76	-1,628.67	-5,234.59	3,639.92	3,345.46	294.47	12.361	
15,700.00	7,057.55	5,952.00	5,952.00	47.07	259.27	-4.76	-1,628.67	-5,234.59	3,735.45	3,440.08	295.37	12.647	
15,800.00	7,057.23	5,952.00	5,952.00	47.37	259.27	-4.76	-1,628.67	-5,234.59	3,831.21	3,534.98	296.23	12.933	
15,900.00	7,056.90	5,952.00	5,952.00	47.67	259.27	-4.76	-1,628.67	-5,234.59	3,927.17	3,630.12	297.05	13.221	
16,000.00	7,056.57	5,952.00	5,952.00	47.97	259.27	-4.76	-1,628.67	-5,234.59	4,023.33	3,725.50	297.83	13.509	
16,100.00	7,056.24	5,952.00	5,952.00	48.27	259.27	-4.76	-1,628.67	-5,234.59	4,119.68	3,821.10	298.58	13.798	
16,200.00	7,055.91	5,952.00	5,952.00	48.57	259.27	-4.76	-1,628.67	-5,234.59	4,216.19	3,916.90	299.30	14.087	
16,300.00	7,055.58	5,952.00	5,952.00	48.87	259.27	-4.76	-1,628.67	-5,234.59	4,312.87	4,012.88	299.99	14.377	
16,400.00	7,055.25	5,952.00	5,952.00	49.17	259.27	-4.76	-1,628.67	-5,234.59	4,409.69	4,109.04	300.65	14.667	
16,500.00	7,054.92	5,952.00	5,952.00	49.47	259.27	-4.76	-1,628.67	-5,234.59	4,506.65	4,205.36	301.29	14.958	
16,600.00	7,054.59	5,952.00	5,952.00	49.77	259.27	-4.76	-1,628.67	-5,234.59	4,603.74	4,301.83	301.91	15.249	
16,619.57	7,054.53	5,952.00	5,952.00	49.83	259.27	-4.76	-1,628.67	-5,234.59	4,622.76	4,320.73	302.03	15.306	
16,700.00	7,054.27	5,952.00	5,952.00	50.07	259.27	-4.76	-1,628.67	-5,234.59	4,700.96	4,398.45	302.51	15.540	
16,782.16	7,054.00	5,952.00	5,952.00	50.32	259.27	-4.76	-1,628.67	-5,234.59	4,780.92	4,477.93	302.99	15.779	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-112.50	-1,759.40	-4,247.97	4,598.08				
100.00	100.00	59.51	59.51	0.23	0.59	-112.50	-1,759.40	-4,247.97	4,597.91	4,597.09	0.81	5,656.802	
200.00	200.00	159.52	159.51	0.53	1.77	-112.50	-1,759.40	-4,247.97	4,597.91	4,595.61	2.30	1,999.852	
240.98	240.98	200.50	200.49	0.65	2.53	-112.50	-1,759.19	-4,247.97	4,597.82	4,594.65	3.18	1,447.370	
300.00	300.00	250.58	250.57	0.83	3.45	-112.50	-1,759.31	-4,247.97	4,597.88	4,593.61	4.28	1,075.290	
400.00	400.00	359.52	359.51	1.13	5.46	-112.50	-1,759.40	-4,247.97	4,597.91	4,591.32	6.59	697.918	
500.00	500.00	459.52	459.51	1.43	7.31	-112.50	-1,759.40	-4,247.97	4,597.91	4,589.17	8.74	526.328	
600.00	599.98	558.75	558.74	1.73	9.14	61.96	-1,759.14	-4,247.97	4,596.99	4,586.12	10.87	422.933	
700.00	699.84	657.08	657.07	2.03	10.96	62.05	-1,759.22	-4,247.97	4,594.56	4,581.57	12.99	353.802	
800.00	799.45	758.99	758.97	2.33	12.85	62.22	-1,759.40	-4,247.97	4,590.54	4,575.37	15.17	302.550	
900.00	898.70	858.24	858.21	2.63	14.79	62.46	-1,759.40	-4,247.97	4,584.85	4,567.43	17.42	263.217	
1,000.00	997.47	957.01	956.98	2.93	16.73	62.76	-1,759.40	-4,247.97	4,577.58	4,557.93	19.65	232.899	
1,100.00	1,095.62	1,052.92	1,052.89	3.23	18.61	63.13	-1,758.62	-4,247.97	4,568.48	4,546.65	21.84	209.226	
1,207.25	1,200.09	1,153.00	1,152.96	3.55	20.57	63.58	-1,758.89	-4,247.97	4,557.48	4,533.36	24.12	188.959	
1,300.00	1,290.03	1,239.26	1,239.22	3.83	22.26	63.81	-1,759.33	-4,247.97	4,547.36	4,521.28	26.09	174.307	
1,400.00	1,386.99	1,346.58	1,346.51	4.13	24.43	64.11	-1,759.40	-4,247.97	4,536.39	4,507.83	28.56	158.835	
1,500.00	1,483.96	1,443.55	1,443.47	4.43	26.40	64.38	-1,759.40	-4,247.97	4,525.50	4,494.67	30.83	146.790	
1,600.00	1,580.93	1,538.56	1,538.48	4.73	28.33	64.66	-1,758.63	-4,247.97	4,514.46	4,481.40	33.06	136.556	
1,700.00	1,677.90	1,631.66	1,631.58	5.03	30.22	64.92	-1,758.86	-4,247.97	4,503.87	4,468.62	35.25	127.768	
1,800.00	1,774.87	1,724.89	1,724.80	5.33	32.12	65.18	-1,759.33	-4,247.97	4,493.48	4,456.03	37.44	120.006	
1,900.00	1,871.83	1,831.48	1,831.35	5.63	34.29	65.48	-1,759.40	-4,247.97	4,483.03	4,443.12	39.92	112.314	
2,000.00	1,968.80	1,928.44	1,928.31	5.93	36.26	65.76	-1,759.40	-4,247.97	4,472.69	4,430.50	42.19	106.011	
2,100.00	2,065.77	2,023.24	2,023.10	6.23	38.20	66.05	-1,758.36	-4,247.97	4,462.11	4,417.69	44.42	100.447	
2,200.00	2,162.74	2,115.57	2,115.43	6.53	40.08	66.31	-1,758.64	-4,247.97	4,452.09	4,405.48	46.60	95.531	
2,300.00	2,259.71	2,208.06	2,207.91	6.83	41.96	66.57	-1,759.24	-4,247.97	4,442.27	4,393.48	48.79	91.052	
2,400.00	2,356.67	2,316.37	2,316.19	7.13	44.11	66.88	-1,759.40	-4,247.97	4,432.41	4,381.17	51.23	86.511	
2,500.00	2,453.64	2,413.34	2,413.15	7.43	46.02	67.17	-1,759.40	-4,247.97	4,422.62	4,369.17	53.45	82.751	
2,600.00	2,550.61	2,508.95	2,508.76	7.73	47.90	67.46	-1,758.62	-4,247.97	4,412.70	4,357.08	55.63	79.324	
2,700.00	2,647.58	2,602.66	2,602.47	8.03	49.75	67.73	-1,758.83	-4,247.97	4,403.21	4,345.44	57.77	76.214	
2,800.00	2,744.55	2,696.50	2,696.30	8.33	51.60	68.00	-1,759.28	-4,247.97	4,393.90	4,333.98	59.92	73.326	
2,900.00	2,841.51	2,801.26	2,801.03	8.63	53.98	68.31	-1,759.40	-4,247.97	4,384.60	4,322.00	62.60	70.037	
3,000.00	2,938.48	2,898.22	2,898.00	8.93	56.24	68.60	-1,759.40	-4,247.97	4,375.39	4,310.21	65.17	67.136	
3,100.00	3,035.45	2,995.09	2,994.85	9.23	58.51	68.90	-1,758.49	-4,247.97	4,366.04	4,298.30	67.74	64.456	
3,200.00	3,132.42	3,089.41	3,089.17	9.53	60.72	69.19	-1,758.61	-4,247.97	4,357.09	4,286.85	70.24	62.029	
3,300.00	3,229.39	3,183.85	3,183.61	9.83	62.92	69.47	-1,758.93	-4,247.97	4,348.33	4,275.58	72.75	59.770	
3,400.00	3,326.35	3,286.27	3,285.87	10.13	65.34	69.77	-1,759.40	-4,247.97	4,339.71	4,264.24	75.47	57.506	
3,500.00	3,423.32	3,383.23	3,382.84	10.43	67.71	70.07	-1,759.40	-4,247.97	4,331.09	4,252.95	78.14	55.427	
3,600.00	3,520.29	3,480.20	3,479.80	10.73	70.09	70.36	-1,759.40	-4,247.97	4,322.59	4,241.78	80.81	53.488	
3,700.00	3,617.26	3,574.55	3,574.10	11.03	72.40	70.68	-1,757.10	-4,247.97	4,313.64	4,230.22	83.42	51.708	
3,800.00	3,714.23	3,665.49	3,665.03	11.33	74.62	70.96	-1,757.60	-4,247.97	4,305.53	4,219.58	85.95	50.093	
3,900.00	3,811.19	3,756.73	3,756.24	11.63	76.86	71.22	-1,758.63	-4,247.97	4,297.67	4,209.18	88.48	48.570	
4,000.00	3,908.16	3,868.26	3,867.68	11.93	79.38	71.56	-1,759.40	-4,247.97	4,289.82	4,198.50	91.31	46.980	
4,100.00	4,005.13	3,965.23	3,964.64	12.23	81.45	71.86	-1,759.40	-4,247.97	4,281.93	4,188.26	93.67	45.711	
4,200.00	4,102.10	4,061.97	4,061.37	12.53	83.51	72.18	-1,758.31	-4,247.97	4,273.93	4,177.90	96.03	44.505	
4,300.00	4,199.07	4,155.94	4,155.34	12.83	85.51	72.47	-1,758.48	-4,247.97	4,266.34	4,168.01	98.33	43.387	
4,400.00	4,296.03	4,250.07	4,249.46	13.13	87.51	72.76	-1,758.97	-4,247.97	4,258.95	4,158.31	100.63	42.321	
4,500.00	4,393.00	4,353.18	4,352.52	13.43	89.70	73.08	-1,759.40	-4,247.97	4,251.65	4,148.52	103.13	41.227	
4,600.00	4,489.97	4,450.15	4,449.48	13.73	91.77	73.39	-1,759.40	-4,247.97	4,244.40	4,138.91	105.49	40.234	
4,700.00	4,586.94	4,547.12	4,546.45	14.03	93.83	73.69	-1,759.40	-4,247.97	4,237.28	4,129.42	107.86	39.287	
4,800.00	4,683.91	4,641.68	4,641.00	14.33	95.84	74.01	-1,758.44	-4,247.97	4,230.11	4,119.94	110.17	38.397	
4,900.00	4,780.87	4,736.19	4,735.50	14.63	97.85	74.30	-1,758.88	-4,247.97	4,223.33	4,110.85	112.48	37.548	
5,000.00	4,877.84	4,838.10	4,837.36	14.93	100.02	74.62	-1,759.40	-4,247.97	4,216.69	4,101.74	114.95	36.684	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	4,935.07	4,934.32	15.23	102.08	74.93	-1,759.40	-4,247.97	4,210.09	4,092.78	117.31	35.889	
5,200.00	5,071.78	5,032.03	5,031.29	15.53	104.15	75.25	-1,759.40	-4,247.97	4,203.62	4,083.94	119.67	35.126	
5,300.00	5,168.75	5,127.30	5,126.55	15.83	106.17	75.57	-1,758.40	-4,247.97	4,197.12	4,075.12	122.00	34.403	
5,400.00	5,265.71	5,222.19	5,221.43	16.13	108.19	75.87	-1,758.79	-4,247.97	4,190.98	4,066.66	124.32	33.711	
5,500.00	5,362.68	5,323.01	5,322.20	16.43	110.38	76.19	-1,759.40	-4,247.97	4,185.00	4,058.19	126.81	33.002	
5,600.00	5,459.65	5,419.98	5,419.16	16.73	112.70	76.51	-1,759.40	-4,247.97	4,179.06	4,049.64	129.42	32.290	
5,700.00	5,556.62	5,516.95	5,516.13	17.03	115.01	76.82	-1,759.40	-4,247.97	4,173.26	4,041.22	132.04	31.607	
5,800.00	5,653.59	5,612.80	5,611.97	17.33	117.30	77.15	-1,758.36	-4,247.97	4,167.45	4,032.83	134.62	30.956	
5,900.00	5,750.55	5,708.07	5,707.24	17.63	119.57	77.46	-1,758.72	-4,247.97	4,161.97	4,024.78	137.20	30.336	
6,000.00	5,847.52	5,808.00	5,807.04	17.93	121.95	77.78	-1,759.40	-4,247.97	4,156.66	4,016.78	139.88	29.716	
6,100.00	5,944.49	5,904.97	5,904.00	18.23	124.27	78.10	-1,759.40	-4,247.97	4,151.41	4,008.91	142.50	29.133	
6,200.00	6,041.46	6,001.94	6,000.97	18.53	126.59	78.42	-1,759.40	-4,247.97	4,146.28	4,001.17	145.12	28.572	
6,300.00	6,138.43	6,097.79	6,096.79	18.83	128.88	78.76	-1,757.54	-4,247.97	4,141.11	3,993.40	147.71	28.035	
6,400.00	6,235.39	6,192.51	6,191.50	19.13	131.15	79.07	-1,758.07	-4,247.97	4,136.32	3,986.05	150.27	27.525	
6,500.00	6,332.36	6,287.53	6,286.49	19.43	133.42	79.37	-1,759.14	-4,247.97	4,131.73	3,978.88	152.85	27.032	
6,600.00	6,429.33	6,389.96	6,388.84	19.73	135.42	79.71	-1,759.40	-4,247.97	4,127.18	3,972.03	155.15	26.601	
6,700.00	6,526.30	6,486.92	6,485.81	20.03	137.23	80.03	-1,759.40	-4,247.97	4,122.75	3,965.50	157.26	26.217	
6,715.28	6,541.12	6,501.74	6,500.63	20.08	137.51	80.08	-1,759.40	-4,247.97	4,122.09	3,964.51	157.58	26.159	
6,750.00	6,574.74	6,535.37	6,534.25	20.18	138.13	67.00	-1,759.40	-4,247.97	4,119.55	3,961.24	158.31	26.022	
6,800.00	6,622.83	6,583.15	6,582.03	20.33	139.03	51.39	-1,758.32	-4,247.97	4,112.17	3,952.82	159.35	25.805	
6,850.00	6,670.20	6,630.05	6,628.93	20.49	139.90	40.07	-1,758.40	-4,247.97	4,100.65	3,940.27	160.38	25.569	
6,900.00	6,716.50	6,675.92	6,674.79	20.64	140.76	32.11	-1,758.56	-4,247.97	4,084.97	3,923.59	161.38	25.312	
6,950.00	6,761.36	6,720.41	6,719.28	20.79	141.59	26.44	-1,758.78	-4,247.97	4,065.26	3,902.90	162.36	25.038	
7,000.00	6,804.45	6,763.18	6,762.04	20.94	142.38	22.26	-1,759.06	-4,247.97	4,041.66	3,878.35	163.31	24.748	
7,050.00	6,845.44	6,803.88	6,802.75	21.09	143.14	19.07	-1,759.39	-4,247.97	4,014.34	3,850.12	164.22	24.445	
7,100.00	6,884.01	6,844.67	6,843.53	21.24	143.84	16.56	-1,759.40	-4,247.97	3,983.49	3,818.42	165.07	24.133	
7,150.00	6,919.88	6,880.54	6,879.40	21.39	144.45	14.48	-1,759.40	-4,247.97	3,949.35	3,783.52	165.83	23.816	
7,200.00	6,952.78	6,913.44	6,912.29	21.54	145.01	12.68	-1,759.40	-4,247.97	3,912.17	3,745.64	166.54	23.491	
7,250.00	6,982.44	6,943.10	6,941.95	21.69	145.51	11.01	-1,759.40	-4,247.97	3,872.25	3,705.06	167.19	23.161	
7,300.00	7,008.65	6,969.30	6,968.16	21.84	145.96	9.34	-1,759.40	-4,247.97	3,829.87	3,662.09	167.79	22.826	
7,350.00	7,031.20	6,991.86	6,990.71	21.99	146.34	7.48	-1,759.40	-4,247.97	3,785.37	3,617.05	168.32	22.489	
7,400.00	7,049.92	7,010.57	7,009.42	22.14	146.66	5.12	-1,759.18	-4,247.97	3,739.05	3,570.26	168.79	22.152	
7,450.00	7,064.68	7,025.30	7,024.15	22.29	146.91	1.57	-1,759.18	-4,247.97	3,691.30	3,522.11	169.19	21.818	
7,500.00	7,075.36	7,035.95	7,034.80	22.44	147.09	-5.09	-1,759.18	-4,247.97	3,642.47	3,472.95	169.52	21.487	
7,550.00	7,081.87	7,042.45	7,041.30	22.59	147.20	-22.92	-1,759.19	-4,247.97	3,592.93	3,423.15	169.78	21.162	
7,604.16	7,084.18	7,044.75	7,043.60	22.75	147.24	-93.05	-1,759.19	-4,247.97	3,538.91	3,368.92	169.98	20.819	
7,700.00	7,083.86	7,044.43	7,043.29	23.04	147.23	-92.97	-1,759.19	-4,247.97	3,443.25	3,272.99	170.27	20.223	
7,800.00	7,083.53	7,044.11	7,042.96	23.34	147.23	-92.88	-1,759.19	-4,247.97	3,343.46	3,172.89	170.56	19.603	
7,900.00	7,083.20	7,043.78	7,042.63	23.64	147.22	-92.80	-1,759.19	-4,247.97	3,243.67	3,072.81	170.86	18.985	
8,000.00	7,082.87	7,043.45	7,042.30	23.94	147.22	-92.71	-1,759.19	-4,247.97	3,143.90	2,972.75	171.15	18.369	
8,100.00	7,082.54	7,043.12	7,041.97	24.24	147.21	-92.62	-1,759.19	-4,247.97	3,044.15	2,872.70	171.45	17.756	
8,200.00	7,082.22	7,042.79	7,041.65	24.54	147.20	-92.53	-1,759.19	-4,247.97	2,944.41	2,772.67	171.74	17.144	
8,300.00	7,081.89	7,042.46	7,041.32	24.84	147.20	-92.45	-1,759.19	-4,247.97	2,844.69	2,672.65	172.04	16.535	
8,400.00	7,081.56	7,042.14	7,040.99	25.14	147.19	-92.36	-1,759.19	-4,247.97	2,744.99	2,572.66	172.33	15.928	
8,500.00	7,081.23	7,041.81	7,040.66	25.45	147.19	-92.27	-1,759.19	-4,247.97	2,645.31	2,472.68	172.63	15.324	
8,600.00	7,080.90	7,041.48	7,040.33	25.75	147.18	-92.19	-1,759.19	-4,247.97	2,545.66	2,372.74	172.92	14.721	
8,700.00	7,080.57	7,041.15	7,040.00	26.05	147.18	-92.10	-1,759.19	-4,247.97	2,446.04	2,272.82	173.22	14.121	
8,800.00	7,080.24	7,040.82	7,039.68	26.35	147.17	-92.01	-1,759.19	-4,247.97	2,346.45	2,172.93	173.51	13.523	
8,900.00	7,079.91	7,040.49	7,039.35	26.65	147.17	-91.93	-1,759.19	-4,247.97	2,246.89	2,073.08	173.81	12.927	
9,000.00	7,079.59	7,040.17	7,039.02	26.95	147.16	-91.84	-1,759.19	-4,247.97	2,147.38	1,973.27	174.10	12.334	
9,100.00	7,079.26	7,039.84	7,038.69	27.25	147.15	-91.75	-1,759.19	-4,247.97	2,047.91	1,873.51	174.40	11.743	
9,200.00	7,078.93	7,039.51	7,038.36	27.55	147.15	-91.67	-1,759.18	-4,247.97	1,948.50	1,773.80	174.69	11.154	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	7,039.18	7,038.03	27.85	147.14	-91.58	-1,759.18	-4,247.97	1,849.15	1,674.16	174.99	10.567	
9,400.00	7,078.27	7,038.85	7,037.71	28.15	147.14	-91.49	-1,759.18	-4,247.97	1,749.88	1,574.59	175.29	9.983	
9,500.00	7,077.94	7,038.52	7,037.38	28.45	147.13	-91.41	-1,759.18	-4,247.97	1,650.69	1,475.11	175.58	9.401	
9,600.00	7,077.61	7,038.20	7,037.05	28.75	147.13	-91.32	-1,759.18	-4,247.97	1,551.61	1,375.73	175.88	8.822	
9,700.00	7,077.28	7,037.87	7,036.72	29.05	147.12	-91.23	-1,759.18	-4,247.97	1,452.65	1,276.48	176.17	8.246	
9,800.00	7,076.95	7,037.54	7,036.39	29.35	147.11	-91.14	-1,759.18	-4,247.97	1,353.84	1,177.38	176.47	7.672	
9,900.00	7,076.63	7,037.21	7,036.06	29.65	147.11	-91.06	-1,759.18	-4,247.97	1,255.23	1,078.47	176.76	7.101	
10,000.00	7,076.30	7,036.88	7,035.74	29.95	147.10	-90.97	-1,759.18	-4,247.97	1,156.85	979.80	177.06	6.534	
10,100.00	7,075.97	7,036.56	7,035.41	30.25	147.10	-90.88	-1,759.18	-4,247.97	1,058.78	881.43	177.35	5.970	
10,200.00	7,075.64	7,036.23	7,035.08	30.55	147.09	-90.80	-1,759.18	-4,247.97	961.11	783.46	177.65	5.410	
10,300.00	7,075.31	7,035.90	7,034.75	30.85	147.09	-90.71	-1,759.18	-4,247.97	863.96	686.02	177.94	4.855	
10,400.00	7,074.98	7,035.57	7,034.42	31.15	147.08	-90.62	-1,759.18	-4,247.97	767.55	589.32	178.24	4.306	
10,500.00	7,074.65	7,035.24	7,034.10	31.46	147.08	-90.54	-1,759.18	-4,247.97	672.19	493.66	178.53	3.765	
10,600.00	7,074.32	7,034.91	7,033.77	31.76	147.07	-90.45	-1,759.18	-4,247.97	578.40	399.58	178.83	3.234	
10,700.00	7,074.00	7,034.59	7,033.44	32.06	147.06	-90.36	-1,759.18	-4,247.97	487.09	307.97	179.12	2.719	
10,800.00	7,073.67	7,034.26	7,033.11	32.36	147.06	-90.27	-1,759.18	-4,247.97	399.95	220.54	179.41	2.229	
10,900.00	7,073.34	7,033.93	7,032.78	32.66	147.05	-90.19	-1,759.18	-4,247.97	320.42	140.71	179.70	1.783	
11,000.00	7,073.01	7,033.60	7,032.45	32.96	147.05	-90.10	-1,759.18	-4,247.97	255.68	75.69	179.99	1.420	Level 3
11,100.00	7,072.68	7,033.27	7,032.13	33.26	147.04	-90.01	-1,759.18	-4,247.97	219.26	38.99	180.28	1.216	Level 2
11,136.48	7,072.56	7,033.15	7,032.01	33.37	147.04	-89.98	-1,759.18	-4,247.97	216.21	35.83	180.38	1.199	Level 2, CC, ES, SF
11,200.00	7,072.35	7,032.94	7,031.80	33.56	147.04	-89.93	-1,759.18	-4,247.97	225.35	44.78	180.56	1.248	Level 2
11,300.00	7,072.02	7,032.62	7,031.47	33.86	147.03	-89.84	-1,759.18	-4,247.97	271.08	90.22	180.86	1.499	Level 3
11,400.00	7,071.69	7,032.29	7,031.14	34.16	147.03	-89.75	-1,759.18	-4,247.97	340.87	159.70	181.16	1.882	
11,500.00	7,071.36	7,031.96	7,030.81	34.46	147.02	-89.67	-1,759.18	-4,247.97	422.96	241.50	181.46	2.331	
11,600.00	7,071.04	7,031.63	7,030.49	34.76	147.01	-89.58	-1,759.18	-4,247.97	511.47	329.71	181.76	2.814	
11,700.00	7,070.71	7,031.30	7,030.16	35.06	147.01	-89.49	-1,759.18	-4,247.97	603.57	421.52	182.06	3.315	
11,800.00	7,070.38	7,030.98	7,029.83	35.36	147.00	-89.41	-1,759.18	-4,247.97	697.86	515.50	182.35	3.827	
11,900.00	7,070.05	7,030.65	7,029.50	35.66	147.00	-89.32	-1,759.18	-4,247.97	793.54	610.89	182.65	4.345	
12,000.00	7,069.72	7,030.32	7,029.17	35.96	146.99	-89.23	-1,759.18	-4,247.97	890.17	707.23	182.94	4.866	
12,100.00	7,069.39	7,029.99	7,028.84	36.26	146.99	-89.14	-1,759.18	-4,247.97	987.48	804.24	183.24	5.389	
12,200.00	7,069.06	7,029.66	7,028.52	36.56	146.98	-89.06	-1,759.18	-4,247.97	1,085.27	901.74	183.53	5.913	
12,300.00	7,068.73	7,029.33	7,028.19	36.86	146.98	-88.97	-1,759.18	-4,247.97	1,183.44	999.60	183.83	6.438	
12,400.00	7,068.41	7,029.01	7,027.86	37.16	146.97	-88.88	-1,759.18	-4,247.97	1,281.88	1,097.76	184.13	6.962	
12,500.00	7,068.08	7,028.68	7,027.53	37.46	146.96	-88.80	-1,759.18	-4,247.97	1,380.55	1,196.13	184.42	7.486	
12,600.00	7,067.75	7,028.35	7,027.20	37.76	146.96	-88.71	-1,759.18	-4,247.97	1,479.40	1,294.68	184.72	8.009	
12,700.00	7,067.42	7,028.02	7,026.88	38.06	146.95	-88.62	-1,759.18	-4,247.97	1,578.39	1,393.38	185.01	8.531	
12,800.00	7,067.09	7,027.69	7,026.55	38.36	146.95	-88.54	-1,759.18	-4,247.97	1,677.51	1,492.20	185.31	9.053	
12,900.00	7,066.76	7,027.37	7,026.22	38.66	146.94	-88.45	-1,759.18	-4,247.97	1,776.72	1,591.12	185.60	9.573	
13,000.00	7,066.43	7,027.04	7,025.89	38.96	146.94	-88.36	-1,759.18	-4,247.97	1,876.01	1,690.12	185.90	10.092	
13,100.00	7,066.10	7,026.71	7,025.56	39.26	146.93	-88.28	-1,759.18	-4,247.97	1,975.38	1,789.19	186.19	10.609	
13,200.00	7,065.77	7,026.38	7,025.23	39.56	146.93	-88.19	-1,759.18	-4,247.97	2,074.81	1,888.32	186.48	11.126	
13,300.00	7,065.45	7,026.05	7,024.91	39.86	146.92	-88.10	-1,759.18	-4,247.97	2,174.29	1,987.51	186.78	11.641	
13,400.00	7,065.12	7,025.73	7,024.58	40.16	146.91	-88.01	-1,759.18	-4,247.97	2,273.81	2,086.74	187.07	12.155	
13,500.00	7,064.79	7,025.40	7,024.25	40.47	146.91	-87.93	-1,759.18	-4,247.97	2,373.38	2,186.01	187.37	12.667	
13,600.00	7,064.46	7,025.07	7,023.92	40.77	146.90	-87.84	-1,759.18	-4,247.97	2,472.98	2,285.32	187.66	13.178	
13,700.00	7,064.13	7,024.74	7,023.59	41.07	146.90	-87.75	-1,759.18	-4,247.97	2,572.61	2,384.65	187.96	13.687	
13,800.00	7,063.80	7,024.41	7,023.27	41.37	146.89	-87.67	-1,759.18	-4,247.97	2,672.27	2,484.02	188.25	14.195	
13,900.00	7,063.47	7,024.08	7,022.94	41.67	146.89	-87.58	-1,759.18	-4,247.97	2,771.95	2,583.41	188.55	14.702	
14,000.00	7,063.14	7,023.76	7,022.61	41.97	146.88	-87.49	-1,759.18	-4,247.97	2,871.66	2,682.82	188.84	15.207	
14,100.00	7,062.82	7,023.43	7,022.28	42.27	146.88	-87.41	-1,759.18	-4,247.97	2,971.38	2,782.25	189.14	15.710	
14,200.00	7,062.49	7,023.10	7,021.95	42.57	146.87	-87.32	-1,759.18	-4,247.97	3,071.13	2,881.69	189.43	16.212	
14,300.00	7,062.16	7,022.77	7,021.63	42.87	146.86	-87.23	-1,759.18	-4,247.97	3,170.89	2,981.16	189.73	16.713	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.83	7,022.44	7,021.30	43.17	146.86	-87.15	-1,759.18	-4,247.97	3,270.66	3,080.64	190.02	17.212	
14,500.00	7,061.50	7,022.12	7,020.97	43.47	146.85	-87.06	-1,759.18	-4,247.97	3,370.45	3,180.13	190.32	17.710	
14,600.00	7,061.17	7,021.79	7,020.64	43.77	146.85	-86.97	-1,759.18	-4,247.97	3,470.25	3,279.64	190.61	18.206	
14,700.00	7,060.84	7,021.46	7,020.31	44.07	146.84	-86.89	-1,759.18	-4,247.97	3,570.06	3,379.15	190.91	18.701	
14,800.00	7,060.51	7,021.13	7,019.99	44.37	146.84	-86.80	-1,759.18	-4,247.97	3,669.88	3,478.68	191.20	19.194	
14,900.00	7,060.18	7,020.80	7,019.66	44.67	146.83	-86.71	-1,759.18	-4,247.97	3,769.71	3,578.21	191.50	19.686	
15,000.00	7,059.86	7,020.48	7,019.33	44.97	146.83	-86.63	-1,759.18	-4,247.97	3,869.55	3,677.76	191.79	20.176	
15,100.00	7,059.53	7,020.15	7,019.00	45.27	146.82	-86.54	-1,759.18	-4,247.97	3,969.40	3,777.31	192.08	20.665	
15,200.00	7,059.20	7,019.82	7,018.67	45.57	146.81	-86.45	-1,759.18	-4,247.97	4,069.25	3,876.87	192.38	21.152	
15,300.00	7,058.87	7,019.49	7,018.34	45.87	146.81	-86.37	-1,759.18	-4,247.97	4,169.11	3,976.44	192.67	21.638	
15,400.00	7,058.54	7,019.16	7,018.02	46.17	146.80	-86.28	-1,759.18	-4,247.97	4,268.98	4,076.01	192.97	22.123	
15,500.00	7,058.21	7,018.84	7,017.69	46.47	146.80	-86.19	-1,759.18	-4,247.97	4,368.85	4,175.59	193.26	22.606	
15,600.00	7,057.88	7,018.51	7,017.36	46.77	146.79	-86.11	-1,759.18	-4,247.97	4,468.73	4,275.17	193.56	23.087	
15,700.00	7,057.55	7,018.18	7,017.03	47.07	146.79	-86.02	-1,759.18	-4,247.97	4,568.62	4,374.77	193.85	23.567	
15,800.00	7,057.23	7,017.85	7,016.70	47.37	146.78	-85.93	-1,759.18	-4,247.97	4,668.51	4,474.36	194.15	24.046	
15,900.00	7,056.90	7,017.52	7,016.38	47.67	146.77	-85.85	-1,759.18	-4,247.97	4,768.40	4,573.96	194.44	24.524	
16,000.00	7,056.57	7,017.20	7,016.05	47.97	146.77	-85.76	-1,759.18	-4,247.97	4,868.30	4,673.56	194.74	24.999	
16,100.00	7,056.24	7,016.87	7,015.72	48.27	146.76	-85.67	-1,759.18	-4,247.97	4,968.20	4,773.17	195.03	25.474	
16,200.00	7,055.91	7,016.54	7,015.39	48.57	146.76	-85.59	-1,759.18	-4,247.97	5,068.11	4,872.78	195.33	25.947	
16,300.00	7,055.58	7,016.21	7,015.06	48.87	146.75	-85.50	-1,759.18	-4,247.97	5,168.02	4,972.40	195.62	26.419	
16,400.00	7,055.25	7,015.88	7,014.74	49.17	146.75	-85.42	-1,759.18	-4,247.97	5,267.93	5,072.02	195.92	26.889	
16,500.00	7,054.92	7,015.55	7,014.41	49.47	146.74	-85.33	-1,759.18	-4,247.97	5,367.85	5,171.64	196.21	27.358	
16,600.00	7,054.59	7,015.23	7,014.08	49.77	146.74	-85.24	-1,759.18	-4,247.97	5,467.77	5,271.27	196.50	27.825	
16,619.57	7,054.53	7,015.16	7,014.02	49.83	146.73	-85.23	-1,759.18	-4,247.97	5,487.33	5,290.77	196.56	27.916	
16,700.00	7,054.27	7,014.90	7,013.75	50.07	146.73	-85.16	-1,759.18	-4,247.97	5,567.69	5,370.89	196.80	28.291	
16,782.16	7,054.00	7,014.63	7,013.48	50.32	146.73	-85.09	-1,759.18	-4,247.97	5,649.79	5,452.75	197.04	28.673	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-126.12	-1,759.62	-2,410.85	2,985.38				
100.00	100.00	36.51	36.51	0.23	0.32	-126.12	-1,759.62	-2,410.85	2,984.70	2,984.15	0.55	5,425.469	
200.00	200.00	136.51	136.51	0.53	1.21	-126.12	-1,759.62	-2,410.85	2,984.70	2,982.97	1.74	1,719.385	
300.00	300.00	236.51	236.51	0.83	2.10	-126.12	-1,759.62	-2,410.85	2,984.70	2,981.78	2.92	1,021.565	
400.00	400.00	336.51	336.51	1.13	3.22	-126.12	-1,759.62	-2,410.85	2,984.70	2,980.35	4.35	686.048	
500.00	500.00	436.51	436.51	1.43	5.03	-126.12	-1,759.62	-2,410.85	2,984.70	2,978.25	6.45	462.518	
600.00	599.98	536.49	536.49	1.73	6.83	48.34	-1,759.62	-2,410.85	2,983.54	2,974.99	8.56	348.733	
700.00	699.84	634.90	634.90	2.03	8.60	48.46	-1,759.40	-2,410.85	2,979.93	2,969.31	10.63	280.351	
800.00	799.45	732.94	732.94	2.33	10.37	48.67	-1,759.52	-2,410.85	2,974.23	2,961.53	12.70	234.254	
900.00	898.70	835.23	835.21	2.63	12.24	48.97	-1,759.62	-2,410.85	2,966.23	2,951.36	14.86	199.576	
1,000.00	997.47	933.99	933.98	2.93	14.06	49.36	-1,759.62	-2,410.85	2,955.92	2,938.94	16.98	174.048	
1,100.00	1,095.62	1,031.62	1,031.61	3.23	15.86	49.83	-1,759.11	-2,410.85	2,943.13	2,924.05	19.08	154.225	
1,207.25	1,200.09	1,132.94	1,132.92	3.55	17.72	50.42	-1,759.24	-2,410.85	2,927.42	2,906.14	21.27	137.611	
1,300.00	1,290.03	1,220.24	1,220.23	3.83	19.33	50.75	-1,759.50	-2,410.85	2,912.92	2,889.76	23.16	125.770	
1,400.00	1,386.99	1,323.54	1,323.51	4.13	21.27	51.14	-1,759.62	-2,410.85	2,897.30	2,871.90	25.40	114.059	
1,500.00	1,483.96	1,420.50	1,420.47	4.43	23.11	51.51	-1,759.62	-2,410.85	2,881.74	2,854.21	27.54	104.648	
1,600.00	1,580.93	1,516.88	1,516.84	4.73	24.93	51.89	-1,759.08	-2,410.85	2,866.01	2,836.35	29.66	96.623	
1,700.00	1,677.90	1,611.26	1,611.23	5.03	26.72	52.26	-1,759.20	-2,410.85	2,850.77	2,819.03	31.75	89.793	
1,800.00	1,774.87	1,705.73	1,705.69	5.33	28.51	52.62	-1,759.47	-2,410.85	2,835.75	2,801.91	33.84	83.807	
1,900.00	1,871.83	1,808.41	1,808.35	5.63	30.53	53.03	-1,759.62	-2,410.85	2,820.77	2,784.61	36.15	78.019	
2,000.00	1,968.80	1,905.37	1,905.31	5.93	32.47	53.42	-1,759.62	-2,410.85	2,805.85	2,767.45	38.40	73.070	
2,100.00	2,065.77	2,001.11	2,001.05	6.23	34.39	53.83	-1,758.88	-2,410.85	2,790.68	2,750.06	40.62	68.703	
2,200.00	2,162.74	2,094.31	2,094.24	6.53	36.26	54.21	-1,759.08	-2,410.85	2,776.15	2,733.36	42.79	64.881	
2,300.00	2,259.71	2,187.63	2,187.56	6.83	38.13	54.58	-1,759.53	-2,410.85	2,761.88	2,716.92	44.96	61.431	
2,400.00	2,356.67	2,293.30	2,293.19	7.13	40.32	55.03	-1,759.62	-2,410.85	2,747.54	2,700.09	47.45	57.905	
2,500.00	2,453.64	2,390.27	2,390.15	7.43	42.34	55.44	-1,759.62	-2,410.85	2,733.32	2,683.55	49.77	54.921	
2,600.00	2,550.61	2,483.98	2,483.86	7.73	44.29	55.86	-1,758.73	-2,410.85	2,718.80	2,666.78	52.02	52.265	
2,700.00	2,647.58	2,576.26	2,576.13	8.03	46.21	56.25	-1,759.12	-2,410.85	2,705.08	2,650.84	54.24	49.872	
2,800.00	2,744.55	2,681.24	2,681.06	8.33	48.46	56.70	-1,759.62	-2,410.85	2,691.52	2,634.74	56.78	47.399	
2,900.00	2,841.51	2,778.21	2,778.03	8.63	50.62	57.12	-1,759.62	-2,410.85	2,677.89	2,618.64	59.25	45.196	
3,000.00	2,938.48	2,875.18	2,875.00	8.93	52.79	57.56	-1,759.62	-2,410.85	2,664.41	2,602.70	61.72	43.171	
3,100.00	3,035.45	2,968.01	2,967.82	9.23	54.86	57.99	-1,758.76	-2,410.85	2,650.70	2,586.61	64.09	41.358	
3,200.00	3,132.42	3,060.96	3,060.76	9.53	56.94	58.40	-1,759.23	-2,410.85	2,637.77	2,571.31	66.47	39.685	
3,300.00	3,229.39	3,166.19	3,165.90	9.83	59.39	58.88	-1,759.62	-2,410.85	2,624.94	2,555.72	69.22	37.923	
3,400.00	3,326.35	3,263.16	3,262.87	10.13	61.72	59.32	-1,759.62	-2,410.85	2,612.10	2,540.25	71.85	36.354	
3,500.00	3,423.32	3,356.73	3,356.41	10.43	63.98	59.79	-1,758.38	-2,410.85	2,598.90	2,524.50	74.41	34.929	
3,600.00	3,520.29	3,447.35	3,447.02	10.73	66.16	60.20	-1,758.93	-2,410.85	2,586.66	2,509.77	76.89	33.642	
3,700.00	3,617.26	3,554.20	3,553.77	11.03	68.75	60.70	-1,759.62	-2,410.85	2,574.60	2,494.83	79.77	32.273	
3,800.00	3,714.23	3,651.17	3,650.74	11.33	71.11	61.16	-1,759.62	-2,410.85	2,562.45	2,480.01	82.44	31.084	
3,900.00	3,811.19	3,740.33	3,739.88	11.63	73.28	61.61	-1,759.00	-2,410.85	2,550.23	2,465.33	84.91	30.035	
4,000.00	3,908.16	3,845.20	3,844.68	11.93	75.81	62.11	-1,759.62	-2,410.85	2,538.67	2,450.94	87.73	28.936	
4,100.00	4,005.13	3,942.17	3,941.64	12.23	78.11	62.58	-1,759.62	-2,410.85	2,527.05	2,436.72	90.33	27.975	
4,200.00	4,102.10	4,039.14	4,038.61	12.53	80.41	63.07	-1,759.62	-2,410.85	2,515.62	2,422.68	92.93	27.069	
4,300.00	4,199.07	4,131.84	4,131.28	12.83	82.60	63.56	-1,758.22	-2,410.85	2,503.86	2,408.43	95.43	26.237	
4,400.00	4,296.03	4,224.52	4,223.95	13.13	84.80	64.01	-1,758.89	-2,410.85	2,493.06	2,395.13	97.93	25.458	
4,500.00	4,393.00	4,330.19	4,329.52	13.43	87.21	64.54	-1,759.62	-2,410.85	2,482.44	2,381.80	100.64	24.668	
4,600.00	4,489.97	4,427.15	4,426.48	13.73	89.27	65.04	-1,759.62	-2,410.85	2,471.77	2,368.77	103.00	23.998	
4,700.00	4,586.94	4,524.12	4,523.45	14.03	91.33	65.54	-1,759.62	-2,410.85	2,461.29	2,355.93	105.36	23.360	
4,800.00	4,683.91	4,618.14	4,617.45	14.33	93.33	66.06	-1,758.43	-2,410.85	2,450.62	2,342.96	107.66	22.762	
4,900.00	4,780.87	4,712.01	4,711.31	14.63	95.33	66.54	-1,758.98	-2,410.85	2,440.73	2,330.78	109.96	22.197	
5,000.00	4,877.84	4,815.10	4,814.36	14.93	97.41	67.07	-1,759.62	-2,410.85	2,431.06	2,318.72	112.34	21.641	
5,100.00	4,974.81	4,912.07	4,911.32	15.23	99.15	67.59	-1,759.62	-2,410.85	2,421.39	2,307.01	114.38	21.170	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	5,071.78	5,009.04	5,008.29	15.53	100.89	68.11	-1,759.62	-2,410.85	2,411.93	2,295.51	116.42	20.718	
5,300.00	5,168.75	5,104.43	5,103.68	15.83	102.61	68.65	-1,758.93	-2,410.85	2,402.49	2,284.06	118.43	20.286	
5,400.00	5,265.71	5,199.76	5,199.01	16.13	104.32	69.16	-1,759.28	-2,410.85	2,393.56	2,273.11	120.45	19.873	
5,500.00	5,362.68	5,299.96	5,299.20	16.43	106.22	69.70	-1,759.62	-2,410.85	2,384.83	2,262.18	122.65	19.444	
5,600.00	5,459.65	5,396.93	5,396.16	16.73	108.21	70.24	-1,759.62	-2,410.85	2,376.23	2,251.30	124.93	19.020	
5,700.00	5,556.62	5,493.81	5,493.04	17.03	110.19	70.79	-1,759.38	-2,410.85	2,367.79	2,240.58	127.21	18.613	
5,800.00	5,653.59	5,590.25	5,589.48	17.33	112.16	71.33	-1,759.44	-2,410.85	2,359.66	2,230.17	129.48	18.223	
5,900.00	5,750.55	5,686.74	5,685.97	17.63	114.13	71.87	-1,759.59	-2,410.85	2,351.76	2,220.01	131.76	17.849	
6,000.00	5,847.52	5,784.86	5,784.04	17.93	116.57	72.43	-1,759.62	-2,410.85	2,344.07	2,209.57	134.50	17.429	
6,100.00	5,944.49	5,881.83	5,881.00	18.23	119.03	72.98	-1,759.62	-2,410.85	2,336.60	2,199.34	137.26	17.023	
6,200.00	6,041.46	5,977.81	5,976.96	18.53	121.47	73.57	-1,758.09	-2,410.85	2,329.06	2,189.06	140.00	16.636	
6,300.00	6,138.43	6,072.64	6,071.78	18.83	123.89	74.11	-1,758.54	-2,410.85	2,322.16	2,179.44	142.71	16.272	
6,400.00	6,235.39	6,167.72	6,166.84	19.13	126.30	74.64	-1,759.49	-2,410.85	2,315.57	2,170.14	145.43	15.922	
6,500.00	6,332.36	6,269.90	6,268.88	19.43	129.08	75.24	-1,759.62	-2,410.85	2,309.06	2,160.56	148.50	15.549	
6,600.00	6,429.33	6,366.86	6,365.84	19.73	131.73	75.81	-1,759.62	-2,410.85	2,302.77	2,151.32	151.45	15.204	
6,700.00	6,526.30	6,462.04	6,460.99	20.03	134.33	76.41	-1,758.22	-2,410.85	2,296.52	2,142.17	154.36	14.878	
6,715.28	6,541.12	6,476.54	6,475.48	20.08	134.73	76.49	-1,758.31	-2,410.85	2,295.64	2,140.84	154.80	14.830	
6,750.00	6,574.74	6,509.46	6,508.40	20.18	135.63	63.46	-1,758.56	-2,410.85	2,292.61	2,136.81	155.80	14.715	
6,800.00	6,622.83	6,556.62	6,555.55	20.33	136.92	47.87	-1,759.06	-2,410.85	2,284.69	2,127.45	157.24	14.530	
6,850.00	6,670.20	6,607.96	6,606.72	20.49	138.32	36.59	-1,759.62	-2,410.85	2,272.59	2,113.79	158.80	14.311	
6,900.00	6,716.50	6,654.25	6,653.01	20.64	139.60	28.63	-1,759.62	-2,410.85	2,256.31	2,096.09	160.23	14.082	
6,950.00	6,761.36	6,699.12	6,697.87	20.79	140.84	22.91	-1,759.62	-2,410.85	2,236.06	2,074.45	161.61	13.836	
7,000.00	6,804.45	6,742.21	6,740.96	20.94	142.02	18.65	-1,759.62	-2,410.85	2,211.96	2,049.01	162.95	13.574	
7,050.00	6,845.44	6,783.19	6,781.95	21.09	143.15	15.32	-1,759.62	-2,410.85	2,184.21	2,019.97	164.23	13.300	
7,100.00	6,884.01	6,821.68	6,820.40	21.24	144.21	12.65	-1,757.70	-2,410.85	2,152.76	1,987.32	165.44	13.012	
7,150.00	6,919.88	6,856.91	6,855.63	21.39	145.18	10.28	-1,757.76	-2,410.85	2,118.32	1,951.76	166.56	12.718	
7,200.00	6,952.78	6,889.26	6,887.97	21.54	146.08	8.06	-1,757.91	-2,410.85	2,080.91	1,913.31	167.61	12.415	
7,250.00	6,982.44	6,918.47	6,917.18	21.69	146.88	5.82	-1,758.11	-2,410.85	2,040.81	1,872.25	168.56	12.107	
7,300.00	7,008.65	6,944.31	6,943.01	21.84	147.59	3.33	-1,758.34	-2,410.85	1,998.31	1,828.88	169.43	11.795	
7,350.00	7,031.20	6,966.57	6,965.26	21.99	148.21	0.28	-1,758.59	-2,410.85	1,953.73	1,783.54	170.19	11.480	
7,400.00	7,049.92	6,985.07	6,983.76	22.14	148.72	-3.93	-1,758.82	-2,410.85	1,907.42	1,736.57	170.85	11.164	
7,450.00	7,064.68	6,999.66	6,998.34	22.29	149.12	-10.49	-1,759.02	-2,410.85	1,859.72	1,688.31	171.40	10.850	
7,500.00	7,075.36	7,010.21	7,008.89	22.44	149.41	-22.35	-1,759.18	-2,410.85	1,810.99	1,639.14	171.84	10.539	
7,550.00	7,081.87	7,016.66	7,015.33	22.59	149.59	-46.72	-1,759.28	-2,410.85	1,761.61	1,589.44	172.17	10.232	
7,604.16	7,084.18	7,018.93	7,017.61	22.75	149.65	-90.69	-1,759.32	-2,410.85	1,707.84	1,535.45	172.40	9.906	
7,700.00	7,083.86	7,018.61	7,017.29	23.04	149.64	-90.60	-1,759.31	-2,410.85	1,612.76	1,440.08	172.68	9.340	
7,800.00	7,083.53	7,018.28	7,016.96	23.34	149.63	-90.51	-1,759.31	-2,410.85	1,513.64	1,340.67	172.97	8.751	
7,900.00	7,083.20	7,017.95	7,016.62	23.64	149.62	-90.42	-1,759.30	-2,410.85	1,414.65	1,241.39	173.26	8.165	
8,000.00	7,082.87	7,017.62	7,016.29	23.94	149.62	-90.33	-1,759.30	-2,410.85	1,315.82	1,142.26	173.55	7.582	
8,100.00	7,082.54	7,017.29	7,015.96	24.24	149.61	-90.23	-1,759.29	-2,410.85	1,217.17	1,043.32	173.85	7.001	
8,200.00	7,082.22	7,016.96	7,015.63	24.54	149.60	-90.14	-1,759.29	-2,410.85	1,118.76	944.62	174.14	6.425	
8,300.00	7,081.89	7,016.63	7,015.30	24.84	149.59	-90.05	-1,759.28	-2,410.85	1,020.66	846.23	174.43	5.851	
8,400.00	7,081.56	7,016.29	7,014.97	25.14	149.58	-89.96	-1,759.28	-2,410.85	922.97	748.25	174.72	5.283	
8,500.00	7,081.23	7,015.96	7,014.64	25.45	149.57	-89.87	-1,759.27	-2,410.85	825.84	650.83	175.01	4.719	
8,600.00	7,080.90	7,015.63	7,014.31	25.75	149.56	-89.78	-1,759.26	-2,410.85	729.47	554.17	175.30	4.161	
8,700.00	7,080.57	7,015.30	7,013.97	26.05	149.55	-89.69	-1,759.26	-2,410.85	634.24	458.64	175.59	3.612	
8,800.00	7,080.24	7,014.97	7,013.64	26.35	149.54	-89.59	-1,759.25	-2,410.85	540.73	364.84	175.89	3.074	
8,900.00	7,079.91	7,014.64	7,013.31	26.65	149.53	-89.50	-1,759.25	-2,410.85	450.01	273.84	176.18	2.554	
9,000.00	7,079.59	7,014.31	7,012.98	26.95	149.52	-89.41	-1,759.24	-2,410.85	364.19	187.73	176.47	2.064	
9,100.00	7,079.26	7,013.97	7,012.65	27.25	149.51	-89.32	-1,759.24	-2,410.85	287.68	110.93	176.75	1.628	
9,200.00	7,078.93	7,013.64	7,012.32	27.55	149.51	-89.23	-1,759.23	-2,410.85	229.97	52.94	177.03	1.299	Level 3
9,299.38	7,078.60	7,013.31	7,011.99	27.85	149.50	-89.14	-1,759.23	-2,410.85	207.39	30.08	177.31	1.170	Level 2, CC

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	7,013.31	7,011.99	27.85	149.50	-89.14	-1,759.23	-2,410.85	207.39	30.08	177.31	1.170	Level 2, ES, SF
9,400.00	7,078.27	7,012.98	7,011.66	28.15	149.49	-89.04	-1,759.22	-2,410.85	230.51	52.91	177.60	1.298	Level 3
9,500.00	7,077.94	7,012.65	7,011.33	28.45	149.48	-88.95	-1,759.22	-2,410.85	288.55	110.65	177.90	1.622	
9,600.00	7,077.61	7,012.32	7,010.99	28.75	149.47	-88.86	-1,759.21	-2,410.85	365.22	187.02	178.20	2.050	
9,700.00	7,077.28	7,011.99	7,010.66	29.05	149.46	-88.77	-1,759.21	-2,410.85	451.12	272.63	178.49	2.527	
9,800.00	7,076.95	7,011.66	7,010.33	29.35	149.45	-88.68	-1,759.20	-2,410.85	541.88	363.09	178.79	3.031	
9,900.00	7,076.63	7,011.33	7,010.00	29.65	149.44	-88.59	-1,759.20	-2,410.85	635.42	456.34	179.08	3.548	
10,000.00	7,076.30	7,010.99	7,009.67	29.95	149.43	-88.50	-1,759.19	-2,410.85	730.67	551.30	179.37	4.073	
10,100.00	7,075.97	7,010.66	7,009.34	30.25	149.42	-88.40	-1,759.19	-2,410.85	827.04	647.38	179.67	4.603	
10,200.00	7,075.64	7,010.33	7,009.01	30.55	149.41	-88.31	-1,759.18	-2,410.85	924.19	744.23	179.96	5.136	
10,300.00	7,075.31	7,010.00	7,008.68	30.85	149.41	-88.22	-1,759.18	-2,410.85	1,021.88	841.63	180.25	5.669	
10,400.00	7,074.98	7,009.67	7,008.35	31.15	149.40	-88.13	-1,759.17	-2,410.85	1,119.99	939.44	180.54	6.203	
10,500.00	7,074.65	7,009.34	7,008.02	31.46	149.39	-88.04	-1,759.17	-2,410.85	1,218.40	1,037.56	180.83	6.738	
10,600.00	7,074.32	7,009.01	7,007.69	31.76	149.38	-87.95	-1,759.16	-2,410.85	1,317.05	1,135.92	181.13	7.271	
10,700.00	7,074.00	7,008.68	7,007.35	32.06	149.37	-87.86	-1,759.16	-2,410.85	1,415.89	1,234.47	181.42	7.805	
10,800.00	7,073.67	7,008.35	7,007.02	32.36	149.36	-87.77	-1,759.15	-2,410.85	1,514.88	1,333.17	181.71	8.337	
10,900.00	7,073.34	7,008.02	7,006.69	32.66	149.35	-87.67	-1,759.15	-2,410.85	1,613.99	1,431.99	182.00	8.868	
11,000.00	7,073.01	7,007.69	7,006.36	32.96	149.34	-87.58	-1,759.14	-2,410.85	1,713.21	1,530.92	182.29	9.398	
11,100.00	7,072.68	7,007.35	7,006.03	33.26	149.33	-87.49	-1,759.14	-2,410.85	1,812.52	1,629.93	182.58	9.927	
11,200.00	7,072.35	7,007.02	7,005.70	33.56	149.32	-87.40	-1,759.13	-2,410.85	1,911.89	1,729.02	182.88	10.455	
11,300.00	7,072.02	7,006.69	7,005.37	33.86	149.31	-87.31	-1,759.13	-2,410.85	2,011.33	1,828.17	183.17	10.981	
11,400.00	7,071.69	7,006.36	7,005.04	34.16	149.30	-87.22	-1,759.12	-2,410.85	2,110.83	1,927.37	183.46	11.506	
11,500.00	7,071.36	7,006.03	7,004.71	34.46	149.30	-87.13	-1,759.12	-2,410.85	2,210.36	2,026.61	183.75	12.029	
11,600.00	7,071.04	7,005.70	7,004.38	34.76	149.29	-87.04	-1,759.11	-2,410.85	2,309.94	2,125.90	184.04	12.551	
11,700.00	7,070.71	7,005.37	7,004.05	35.06	149.28	-86.94	-1,759.11	-2,410.85	2,409.55	2,225.22	184.33	13.072	
11,800.00	7,070.38	7,005.04	7,003.72	35.36	149.27	-86.85	-1,759.10	-2,410.85	2,509.20	2,324.57	184.62	13.591	
11,900.00	7,070.05	7,004.71	7,003.39	35.66	149.26	-86.76	-1,759.10	-2,410.85	2,608.87	2,423.95	184.91	14.108	
12,000.00	7,069.72	7,004.38	7,003.06	35.96	149.25	-86.67	-1,759.09	-2,410.85	2,708.56	2,523.35	185.21	14.625	
12,100.00	7,069.39	7,004.05	7,002.73	36.26	149.24	-86.58	-1,759.09	-2,410.85	2,808.28	2,622.78	185.50	15.139	
12,200.00	7,069.06	7,003.72	7,002.40	36.56	149.23	-86.49	-1,759.08	-2,410.85	2,908.01	2,722.22	185.79	15.652	
12,300.00	7,068.73	7,003.39	7,002.07	36.86	149.22	-86.40	-1,759.08	-2,410.85	3,007.77	2,821.69	186.08	16.164	
12,400.00	7,068.41	7,003.06	7,001.74	37.16	149.21	-86.31	-1,759.07	-2,410.85	3,107.53	2,921.16	186.37	16.674	
12,500.00	7,068.08	7,002.73	7,001.41	37.46	149.20	-86.22	-1,759.07	-2,410.85	3,207.32	3,020.66	186.66	17.182	
12,600.00	7,067.75	7,002.40	7,001.08	37.76	149.20	-86.12	-1,759.06	-2,410.85	3,307.11	3,120.16	186.95	17.689	
12,700.00	7,067.42	7,002.07	7,000.75	38.06	149.19	-86.03	-1,759.06	-2,410.85	3,406.92	3,219.68	187.25	18.195	
12,800.00	7,067.09	7,001.74	7,000.42	38.36	149.18	-85.94	-1,759.05	-2,410.85	3,506.74	3,319.21	187.54	18.699	
12,900.00	7,066.76	7,001.41	7,000.08	38.66	149.17	-85.85	-1,759.05	-2,410.85	3,606.57	3,418.74	187.83	19.202	
13,000.00	7,066.43	7,001.08	6,999.75	38.96	149.16	-85.76	-1,759.04	-2,410.85	3,706.41	3,518.29	188.12	19.703	
13,100.00	7,066.10	7,000.75	6,999.42	39.26	149.15	-85.67	-1,759.04	-2,410.85	3,806.26	3,617.85	188.41	20.202	
13,200.00	7,065.77	7,000.41	6,999.09	39.56	149.14	-85.58	-1,759.03	-2,410.85	3,906.11	3,717.41	188.70	20.700	
13,300.00	7,065.45	7,000.08	6,998.76	39.86	149.13	-85.49	-1,759.03	-2,410.85	4,005.97	3,816.98	188.99	21.196	
13,400.00	7,065.12	6,999.75	6,998.43	40.16	149.12	-85.40	-1,759.02	-2,410.85	4,105.84	3,916.56	189.28	21.691	
13,500.00	7,064.79	6,999.42	6,998.10	40.47	149.11	-85.31	-1,759.02	-2,410.85	4,205.72	4,016.14	189.57	22.185	
13,600.00	7,064.46	6,999.09	6,997.77	40.77	149.10	-85.22	-1,759.02	-2,410.85	4,305.60	4,115.73	189.87	22.677	
13,700.00	7,064.13	6,998.76	6,997.44	41.07	149.10	-85.12	-1,759.01	-2,410.85	4,405.48	4,215.33	190.16	23.168	
13,800.00	7,063.80	6,998.43	6,997.11	41.37	149.09	-85.03	-1,759.01	-2,410.85	4,505.37	4,314.93	190.45	23.657	
13,900.00	7,063.47	6,998.10	6,996.78	41.67	149.08	-84.94	-1,759.00	-2,410.85	4,605.27	4,414.53	190.74	24.144	
14,000.00	7,063.14	6,997.77	6,996.45	41.97	149.07	-84.85	-1,759.00	-2,410.85	4,705.17	4,514.14	191.03	24.630	
14,100.00	7,062.82	6,997.44	6,996.12	42.27	149.06	-84.76	-1,758.99	-2,410.85	4,805.07	4,613.75	191.32	25.115	
14,200.00	7,062.49	6,997.11	6,995.79	42.57	149.05	-84.67	-1,758.99	-2,410.85	4,904.98	4,713.37	191.61	25.598	
14,300.00	7,062.16	6,996.78	6,995.46	42.87	149.04	-84.58	-1,758.98	-2,410.85	5,004.89	4,812.99	191.90	26.080	
14,400.00	7,061.83	6,996.45	6,995.13	43.17	149.03	-84.49	-1,758.98	-2,410.85	5,104.81	4,912.61	192.20	26.561	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.50	6,996.12	6,994.81	43.47	149.02	-84.40	-1,758.97	-2,410.85	5,204.73	5,012.24	192.49	27.039	
14,600.00	7,061.17	6,995.79	6,994.48	43.77	149.01	-84.31	-1,758.97	-2,410.85	5,304.65	5,111.87	192.78	27.517	
14,700.00	7,060.84	6,995.46	6,994.15	44.07	149.00	-84.22	-1,758.96	-2,410.85	5,404.57	5,211.51	193.07	27.993	
14,800.00	7,060.51	6,995.13	6,993.82	44.37	149.00	-84.13	-1,758.96	-2,410.85	5,504.50	5,311.14	193.36	28.468	
14,900.00	7,060.18	6,994.80	6,993.49	44.67	148.99	-84.04	-1,758.95	-2,410.85	5,604.43	5,410.78	193.65	28.941	
15,000.00	7,059.86	6,994.47	6,993.16	44.97	148.98	-83.95	-1,758.95	-2,410.85	5,704.36	5,510.42	193.94	29.413	
15,100.00	7,059.53	6,994.14	6,992.83	45.27	148.97	-83.86	-1,758.94	-2,410.85	5,804.30	5,610.06	194.23	29.883	
15,200.00	7,059.20	6,993.82	6,992.50	45.57	148.96	-83.77	-1,758.94	-2,410.85	5,904.23	5,709.71	194.52	30.352	
15,300.00	7,058.87	6,993.49	6,992.17	45.87	148.95	-83.68	-1,758.94	-2,410.85	6,004.17	5,809.36	194.82	30.820	
15,400.00	7,058.54	6,993.16	6,991.84	46.17	148.94	-83.59	-1,758.93	-2,410.85	6,104.11	5,909.01	195.11	31.286	
15,500.00	7,058.21	6,992.83	6,991.51	46.47	148.93	-83.50	-1,758.93	-2,410.85	6,204.06	6,008.66	195.40	31.751	
15,600.00	7,057.88	6,992.50	6,991.18	46.77	148.92	-83.41	-1,758.92	-2,410.85	6,304.00	6,108.31	195.69	32.214	
15,700.00	7,057.55	6,992.17	6,990.85	47.07	148.91	-83.32	-1,758.92	-2,410.85	6,403.95	6,207.97	195.98	32.676	
15,800.00	7,057.23	6,991.84	6,990.52	47.37	148.90	-83.23	-1,758.91	-2,410.85	6,503.90	6,307.62	196.27	33.137	
15,900.00	7,056.90	6,991.51	6,990.19	47.67	148.90	-83.14	-1,758.91	-2,410.85	6,603.84	6,407.28	196.56	33.597	
16,000.00	7,056.57	6,991.18	6,989.86	47.97	148.89	-83.05	-1,758.90	-2,410.85	6,703.80	6,506.94	196.85	34.055	
16,100.00	7,056.24	6,990.85	6,989.53	48.27	148.88	-82.96	-1,758.90	-2,410.85	6,803.75	6,606.60	197.14	34.511	
16,200.00	7,055.91	6,990.52	6,989.20	48.57	148.87	-82.87	-1,758.89	-2,410.85	6,903.70	6,706.27	197.44	34.967	
16,300.00	7,055.58	6,990.19	6,988.87	48.87	148.86	-82.78	-1,758.89	-2,410.85	7,003.66	6,805.93	197.73	35.421	
16,400.00	7,055.25	6,989.86	6,988.54	49.17	148.85	-82.69	-1,758.88	-2,410.85	7,103.61	6,905.59	198.02	35.874	
16,500.00	7,054.92	6,989.53	6,988.21	49.47	148.84	-82.60	-1,758.88	-2,410.85	7,203.57	7,005.26	198.31	36.325	
16,600.00	7,054.59	6,989.20	6,987.88	49.77	148.83	-82.51	-1,758.88	-2,410.85	7,303.53	7,104.93	198.60	36.775	
16,619.57	7,054.53	6,989.14	6,987.82	49.83	148.83	-82.49	-1,758.88	-2,410.85	7,323.09	7,124.44	198.66	36.863	
16,700.00	7,054.27	6,988.87	6,987.56	50.07	148.82	-82.42	-1,758.87	-2,410.85	7,403.49	7,204.60	198.89	37.224	
16,782.16	7,054.00	6,988.60	6,987.29	50.32	148.82	-82.34	-1,758.87	-2,410.85	7,485.62	7,286.49	199.13	37.591	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-90.90	-16.73	-1,066.98	1,067.11				
100.00	100.00	112.51	112.51	0.23	1.11	-90.90	-16.73	-1,066.98	1,067.11	1,065.78	1.33	799.905	
173.25	173.25	185.76	185.76	0.45	2.41	-90.89	-16.64	-1,066.98	1,067.11	1,064.26	2.85	374.232	
200.00	200.00	212.50	212.50	0.53	2.88	-90.89	-16.65	-1,066.98	1,067.11	1,063.71	3.41	313.348	
300.00	300.00	312.52	312.51	0.83	4.74	-90.90	-16.73	-1,066.98	1,067.11	1,061.54	5.57	191.583	
329.98	329.98	342.49	342.49	0.92	5.33	-90.89	-16.65	-1,066.98	1,067.11	1,060.86	6.25	170.756	
400.00	400.00	412.48	412.48	1.13	6.71	-90.90	-16.71	-1,066.98	1,067.11	1,059.28	7.84	136.185	
500.00	500.00	512.54	512.51	1.43	9.09	-90.90	-16.73	-1,066.98	1,067.11	1,056.60	10.52	101.474	
600.00	599.98	612.51	612.47	1.73	11.50	83.68	-15.50	-1,066.98	1,066.90	1,053.67	13.23	80.653	
700.00	699.84	712.35	712.30	2.03	13.91	83.95	-15.87	-1,066.98	1,066.34	1,050.40	15.94	66.910	
800.00	799.45	812.12	811.97	2.33	16.26	84.39	-16.73	-1,066.98	1,065.46	1,046.87	18.59	57.320	
900.00	898.70	911.37	911.21	2.63	18.29	85.06	-16.73	-1,066.98	1,064.33	1,043.41	20.91	50.890	
1,000.00	997.47	1,010.23	1,010.06	2.93	20.31	85.97	-15.68	-1,066.98	1,063.11	1,039.87	23.23	45.758	
1,100.00	1,095.62	1,169.66	1,108.14	3.23	23.44	86.95	-16.73	-1,066.98	1,061.87	1,035.20	26.67	39.815	
1,207.25	1,200.09	1,212.80	1,212.60	3.55	24.16	88.24	-16.73	-1,066.98	1,060.83	1,033.12	27.71	38.288	
1,300.00	1,290.03	1,302.74	1,302.54	3.83	25.65	89.43	-16.73	-1,066.98	1,060.35	1,030.88	29.48	35.974	
1,344.65	1,333.32	1,346.03	1,345.83	3.96	26.37	90.00	-16.73	-1,066.98	1,060.29	1,029.97	30.33	34.963	CC
1,400.00	1,386.99	1,399.73	1,399.53	4.13	27.26	90.72	-16.48	-1,066.98	1,060.41	1,029.03	31.38	33.790	
1,500.00	1,483.96	1,496.83	1,496.63	4.43	28.87	92.00	-16.54	-1,066.98	1,061.00	1,027.71	33.29	31.870	
1,600.00	1,580.93	1,626.35	1,593.44	4.73	31.03	93.27	-16.73	-1,066.98	1,062.13	1,026.37	35.76	29.705	ES
1,700.00	1,677.90	1,690.61	1,690.41	5.03	32.17	94.54	-16.73	-1,066.98	1,063.84	1,026.65	37.19	28.604	
1,800.00	1,774.87	1,787.58	1,787.38	5.33	33.88	95.81	-16.73	-1,066.98	1,066.12	1,026.91	39.21	27.192	
1,900.00	1,871.83	1,884.60	1,884.40	5.63	35.60	97.09	-16.46	-1,066.98	1,069.01	1,027.78	41.22	25.933	
2,000.00	1,968.80	1,981.80	1,981.60	5.93	37.31	98.35	-16.52	-1,066.98	1,072.37	1,029.13	43.24	24.800	
2,100.00	2,065.77	2,139.50	2,078.28	6.23	40.16	99.58	-16.73	-1,066.98	1,076.24	1,029.85	46.39	23.200	
2,200.00	2,162.74	2,175.47	2,175.25	6.53	40.87	100.82	-16.73	-1,066.98	1,080.70	1,033.30	47.40	22.800	
2,300.00	2,259.71	2,272.43	2,272.22	6.83	42.78	102.05	-16.73	-1,066.98	1,085.69	1,036.09	49.61	21.886	
2,400.00	2,356.67	2,369.49	2,369.27	7.13	44.69	103.30	-16.19	-1,066.98	1,091.39	1,039.57	51.82	21.062	
2,500.00	2,453.64	2,467.13	2,466.92	7.43	46.61	104.51	-16.30	-1,066.98	1,097.39	1,043.35	54.04	20.308	
2,600.00	2,550.61	2,640.62	2,563.12	7.73	50.10	105.67	-16.73	-1,066.98	1,103.78	1,045.95	57.83	19.086	
2,700.00	2,647.58	2,660.35	2,660.09	8.03	50.53	106.85	-16.73	-1,066.98	1,110.82	1,052.26	58.56	18.969	
2,800.00	2,744.55	2,757.32	2,757.06	8.33	52.64	108.02	-16.73	-1,066.98	1,118.35	1,057.39	60.97	18.343	
2,900.00	2,841.51	2,854.69	2,854.43	8.63	54.76	109.22	-15.73	-1,066.98	1,126.79	1,063.41	63.38	17.777	
3,000.00	2,938.48	2,953.60	2,953.33	8.93	56.91	110.36	-16.00	-1,066.98	1,135.17	1,069.34	65.83	17.243	
3,100.00	3,035.45	3,077.69	3,047.96	9.23	59.57	111.42	-16.73	-1,066.98	1,143.78	1,074.98	68.80	16.625	
3,200.00	3,132.42	3,145.28	3,144.93	9.53	60.90	112.52	-16.73	-1,066.98	1,153.17	1,082.74	70.43	16.373	
3,300.00	3,229.39	3,242.25	3,241.90	9.83	62.81	113.61	-16.73	-1,066.98	1,163.00	1,090.35	72.64	16.010	
3,400.00	3,326.35	3,339.95	3,339.58	10.13	64.74	114.73	-15.39	-1,066.98	1,173.94	1,099.07	74.87	15.681	
3,500.00	3,423.32	3,439.71	3,439.34	10.43	66.70	115.80	-15.72	-1,066.98	1,184.46	1,107.32	77.13	15.356	
3,600.00	3,520.29	3,590.80	3,532.80	10.73	69.70	116.75	-16.73	-1,066.98	1,194.99	1,114.56	80.43	14.858	
3,700.00	3,617.26	3,630.17	3,629.77	11.03	70.50	117.76	-16.73	-1,066.98	1,206.46	1,124.92	81.53	14.797	
3,800.00	3,714.23	3,727.14	3,726.74	11.33	72.48	118.76	-16.73	-1,066.98	1,218.30	1,134.49	83.81	14.536	
3,900.00	3,811.19	3,824.34	3,823.94	11.63	74.47	119.74	-16.49	-1,066.98	1,230.67	1,144.57	86.09	14.294	
4,000.00	3,908.16	3,922.01	3,921.62	11.93	76.46	120.70	-16.56	-1,066.98	1,243.20	1,154.82	88.39	14.065	
4,100.00	4,005.13	4,019.90	4,017.64	12.23	78.46	121.62	-16.73	-1,066.98	1,256.03	1,165.35	90.69	13.850	
4,200.00	4,102.10	4,115.07	4,114.61	12.53	80.61	122.54	-16.73	-1,066.98	1,269.30	1,176.16	93.14	13.628	
4,300.00	4,199.07	4,212.04	4,211.58	12.83	82.81	123.44	-16.73	-1,066.98	1,282.90	1,187.26	95.64	13.414	
4,400.00	4,296.03	4,311.51	4,311.03	13.13	85.06	124.40	-15.24	-1,066.98	1,297.79	1,199.60	98.19	13.218	
4,500.00	4,393.00	4,587.91	4,405.52	13.43	91.41	125.19	-16.73	-1,066.98	1,311.04	1,206.20	104.84	12.505	
4,600.00	4,489.97	4,515.72	4,515.21	13.73	89.68	126.14	-16.99	-1,066.98	1,325.45	1,222.04	103.40	12.818	
4,700.00	4,586.94	4,600.03	4,599.45	14.03	91.70	126.87	-16.73	-1,066.98	1,340.37	1,234.64	105.72	12.678	
4,800.00	4,683.91	4,696.99	4,696.42	14.33	93.99	127.68	-16.73	-1,066.98	1,355.45	1,247.13	108.32	12.513	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,780.87	4,793.96	4,793.39	14.63	96.29	128.47	-16.73	-1,066.98	1,370.81	1,259.89	110.92	12.359	
5,000.00	4,877.84	4,890.93	4,890.36	14.93	98.58	129.25	-16.73	-1,066.98	1,386.43	1,272.92	113.51	12.214	
5,100.00	4,974.81	4,987.90	4,987.32	15.23	100.88	130.01	-16.73	-1,066.98	1,402.30	1,286.19	116.11	12.077	
5,200.00	5,071.78	5,084.87	5,084.29	15.53	103.17	130.75	-16.73	-1,066.98	1,418.41	1,299.71	118.70	11.949	
5,300.00	5,168.75	5,181.83	5,181.26	15.83	105.47	131.48	-16.73	-1,066.98	1,434.76	1,313.46	121.30	11.828	
5,400.00	5,265.71	5,278.80	5,278.23	16.13	107.77	132.19	-16.73	-1,066.98	1,451.34	1,327.44	123.90	11.714	
5,500.00	5,362.68	5,376.18	5,375.58	16.43	110.07	132.98	-13.05	-1,066.98	1,470.92	1,344.42	126.50	11.628	
5,600.00	5,459.65	5,474.33	5,473.72	16.73	112.40	133.66	-13.14	-1,066.98	1,487.89	1,358.77	129.13	11.523	
5,700.00	5,556.62	5,572.54	5,571.92	17.03	114.72	134.33	-13.33	-1,066.98	1,504.99	1,373.24	131.75	11.423	
5,800.00	5,653.59	5,670.79	5,670.17	17.33	117.05	134.98	-13.61	-1,066.98	1,522.21	1,387.83	134.38	11.328	
5,900.00	5,750.55	5,769.10	5,768.47	17.63	119.38	135.61	-14.00	-1,066.98	1,539.53	1,402.52	137.01	11.237	
6,000.00	5,847.52	5,867.46	5,866.82	17.93	121.70	136.23	-14.48	-1,066.98	1,556.95	1,417.32	139.63	11.150	
6,100.00	5,944.49	5,965.87	5,965.23	18.23	124.03	136.83	-15.07	-1,066.98	1,574.47	1,432.21	142.26	11.067	
6,200.00	6,041.46	6,064.33	6,063.68	18.53	126.37	137.42	-15.76	-1,066.98	1,592.07	1,447.18	144.89	10.988	
6,300.00	6,138.43	6,162.84	6,162.19	18.83	128.70	137.99	-16.54	-1,066.98	1,609.75	1,462.23	147.53	10.912	
6,400.00	6,235.39	6,261.41	6,260.74	19.13	131.03	138.55	-17.43	-1,066.98	1,627.50	1,477.34	150.16	10.839	
6,500.00	6,332.36	6,345.99	6,344.88	19.43	133.07	139.04	-16.73	-1,066.98	1,646.65	1,494.14	152.50	10.797	
6,600.00	6,429.33	6,442.99	6,441.84	19.73	135.56	139.59	-16.73	-1,066.98	1,665.42	1,510.13	155.29	10.725	
6,700.00	6,526.30	6,540.07	6,538.81	20.03	138.87	140.12	-16.73	-1,066.98	1,684.34	1,525.43	158.91	10.600	
6,715.28	6,541.12	6,554.88	6,553.63	20.08	139.41	140.20	-16.73	-1,066.98	1,687.24	1,527.75	159.49	10.579	
6,750.00	6,574.74	6,594.55	6,593.27	20.18	140.86	126.79	-15.93	-1,066.98	1,693.94	1,532.90	161.04	10.519	
6,800.00	6,622.83	6,657.22	6,635.34	20.33	143.13	110.85	-16.73	-1,066.98	1,699.90	1,536.44	163.46	10.399	
6,850.00	6,670.20	6,684.16	6,682.72	20.49	144.10	99.62	-16.73	-1,066.98	1,704.15	1,539.58	164.58	10.355	
6,900.00	6,716.50	6,736.08	6,734.61	20.64	145.96	92.16	-15.64	-1,066.98	1,707.03	1,540.44	166.59	10.247	
6,950.00	6,761.36	6,831.95	6,830.39	20.79	149.40	87.99	-17.67	-1,066.98	1,705.94	1,535.85	170.10	10.029	
7,000.00	6,804.45	6,818.62	6,816.96	20.94	148.88	83.94	-16.73	-1,066.98	1,703.43	1,533.62	169.81	10.031	
7,050.00	6,845.44	6,859.61	6,857.95	21.09	150.25	82.03	-16.73	-1,066.98	1,699.11	1,527.78	171.33	9.917	
7,100.00	6,884.01	6,898.18	6,896.53	21.24	151.54	81.05	-16.73	-1,066.98	1,693.03	1,520.26	172.77	9.799	
7,150.00	6,919.88	6,955.74	6,954.03	21.39	153.46	81.30	-16.00	-1,066.98	1,686.19	1,511.36	174.83	9.645	
7,200.00	6,952.78	7,009.32	7,007.57	21.54	155.25	82.13	-17.13	-1,066.98	1,676.60	1,499.87	176.73	9.487	
7,250.00	6,982.44	6,996.81	6,994.95	21.69	154.83	81.62	-16.73	-1,066.98	1,666.35	1,489.84	176.51	9.441	
7,300.00	7,008.65	7,023.02	7,021.16	21.84	155.66	82.54	-16.73	-1,066.98	1,655.41	1,477.92	177.49	9.327	
7,350.00	7,031.20	7,045.57	7,043.71	21.99	156.38	83.66	-16.73	-1,066.98	1,643.83	1,465.48	178.36	9.217	
7,400.00	7,049.92	7,064.29	7,062.44	22.14	156.97	84.91	-16.73	-1,066.98	1,631.85	1,452.75	179.10	9.111	
7,450.00	7,064.68	7,079.05	7,077.19	22.29	157.44	86.21	-16.73	-1,066.98	1,619.69	1,439.97	179.72	9.012	
7,500.00	7,075.36	7,089.73	7,087.87	22.44	157.78	87.51	-16.73	-1,066.98	1,607.55	1,427.34	180.21	8.921	
7,550.00	7,081.87	7,096.24	7,094.39	22.59	157.99	88.77	-16.73	-1,066.98	1,595.59	1,415.03	180.57	8.837	
7,604.16	7,084.18	7,098.55	7,096.69	22.75	158.06	90.04	-16.73	-1,066.98	1,583.03	1,402.23	180.80	8.756	
7,700.00	7,083.86	7,098.23	7,096.37	23.04	158.05	90.03	-16.73	-1,066.98	1,564.04	1,382.96	181.08	8.637	
7,800.00	7,083.53	7,097.90	7,096.04	23.34	158.04	90.02	-16.73	-1,066.98	1,550.30	1,368.93	181.37	8.548	
7,900.00	7,083.20	7,097.57	7,095.72	23.64	158.03	90.01	-16.73	-1,066.98	1,542.93	1,361.27	181.66	8.494	
7,963.93	7,082.99	7,097.36	7,095.51	23.83	158.02	90.00	-16.73	-1,066.98	1,541.61	1,359.76	181.85	8.478	
8,000.00	7,082.87	7,097.24	7,095.39	23.94	158.02	90.00	-16.73	-1,066.98	1,542.03	1,360.08	181.95	8.475	SF
8,100.00	7,082.54	7,096.91	7,095.06	24.24	158.01	89.98	-16.73	-1,066.98	1,547.60	1,365.36	182.24	8.492	
8,200.00	7,082.22	7,096.59	7,094.73	24.54	158.00	89.97	-16.73	-1,066.98	1,559.58	1,377.05	182.53	8.544	
8,300.00	7,081.89	7,096.26	7,094.40	24.84	157.99	89.96	-16.73	-1,066.98	1,577.81	1,394.99	182.82	8.630	
8,400.00	7,081.56	7,095.93	7,094.07	25.14	157.98	89.95	-16.73	-1,066.98	1,602.09	1,418.98	183.11	8.749	
8,500.00	7,081.23	7,095.60	7,093.74	25.45	157.97	89.93	-16.73	-1,066.98	1,632.15	1,448.75	183.40	8.899	
8,600.00	7,080.90	7,095.27	7,093.41	25.75	157.96	89.92	-16.73	-1,066.98	1,667.67	1,483.98	183.70	9.078	
8,700.00	7,080.57	7,094.94	7,093.08	26.05	157.95	89.91	-16.73	-1,066.98	1,708.32	1,524.33	183.99	9.285	
8,800.00	7,080.24	7,094.61	7,092.76	26.35	157.94	89.90	-16.73	-1,066.98	1,753.73	1,569.45	184.28	9.517	
8,900.00	7,079.91	7,094.28	7,092.43	26.65	157.93	89.89	-16.73	-1,066.98	1,803.54	1,618.98	184.57	9.772	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,079.59	7,093.96	7,092.10	26.95	157.92	89.87	-16.73	-1,066.98	1,857.41	1,672.55	184.86	10.048	
9,100.00	7,079.26	7,093.63	7,091.77	27.25	157.91	89.86	-16.73	-1,066.98	1,914.99	1,729.84	185.15	10.343	
9,200.00	7,078.93	7,093.30	7,091.44	27.55	157.90	89.85	-16.73	-1,066.98	1,975.96	1,790.52	185.44	10.656	
9,300.00	7,078.60	7,092.97	7,091.11	27.85	157.88	89.84	-16.73	-1,066.98	2,040.00	1,854.27	185.73	10.984	
9,400.00	7,078.27	7,092.64	7,090.78	28.15	157.87	89.82	-16.73	-1,066.98	2,106.85	1,920.83	186.02	11.326	
9,500.00	7,077.94	7,092.31	7,090.45	28.45	157.86	89.81	-16.73	-1,066.98	2,176.24	1,989.93	186.31	11.681	
9,600.00	7,077.61	7,091.98	7,090.13	28.75	157.85	89.80	-16.73	-1,066.98	2,247.94	2,061.34	186.60	12.047	
9,700.00	7,077.28	7,091.65	7,089.80	29.05	157.84	89.79	-16.73	-1,066.98	2,321.73	2,134.84	186.89	12.423	
9,800.00	7,076.95	7,091.32	7,089.47	29.35	157.83	89.78	-16.73	-1,066.98	2,397.43	2,210.25	187.18	12.808	
9,900.00	7,076.63	7,091.00	7,089.14	29.65	157.82	89.76	-16.73	-1,066.98	2,474.85	2,287.38	187.47	13.201	
10,000.00	7,076.30	7,090.67	7,088.81	29.95	157.81	89.75	-16.73	-1,066.98	2,553.84	2,366.07	187.76	13.601	
10,100.00	7,075.97	7,090.34	7,088.48	30.25	157.80	89.74	-16.73	-1,066.98	2,634.25	2,446.20	188.05	14.008	
10,200.00	7,075.64	7,090.01	7,088.15	30.55	157.79	89.73	-16.73	-1,066.98	2,715.97	2,527.63	188.34	14.420	
10,300.00	7,075.31	7,089.68	7,087.82	30.85	157.78	89.71	-16.73	-1,066.98	2,798.88	2,610.24	188.63	14.838	
10,400.00	7,074.98	7,089.35	7,087.49	31.15	157.77	89.70	-16.73	-1,066.98	2,882.87	2,693.94	188.92	15.260	
10,500.00	7,074.65	7,089.02	7,087.17	31.46	157.76	89.69	-16.73	-1,066.98	2,967.85	2,778.64	189.21	15.685	
10,600.00	7,074.32	7,088.69	7,086.84	31.76	157.75	89.68	-16.73	-1,066.98	3,053.74	2,864.24	189.50	16.115	
10,700.00	7,074.00	7,088.37	7,086.51	32.06	157.74	89.67	-16.73	-1,066.98	3,140.47	2,950.68	189.79	16.547	
10,800.00	7,073.67	7,088.04	7,086.18	32.36	157.73	89.65	-16.73	-1,066.98	3,227.96	3,037.88	190.08	16.982	
10,900.00	7,073.34	7,087.71	7,085.85	32.66	157.72	89.64	-16.73	-1,066.98	3,316.17	3,125.79	190.37	17.419	
11,000.00	7,073.01	7,087.38	7,085.52	32.96	157.71	89.63	-16.73	-1,066.98	3,405.02	3,214.36	190.66	17.859	
11,100.00	7,072.68	7,087.05	7,085.19	33.26	157.70	89.62	-16.73	-1,066.98	3,494.48	3,303.52	190.95	18.300	
11,200.00	7,072.35	7,086.72	7,084.86	33.56	157.69	89.60	-16.73	-1,066.98	3,584.49	3,393.25	191.24	18.743	
11,300.00	7,072.02	7,086.39	7,084.54	33.86	157.68	89.59	-16.73	-1,066.98	3,675.02	3,483.49	191.53	19.187	
11,400.00	7,071.69	7,086.06	7,084.21	34.16	157.67	89.58	-16.73	-1,066.98	3,766.03	3,574.21	191.82	19.633	
11,500.00	7,071.36	7,085.73	7,083.88	34.46	157.65	89.57	-16.73	-1,066.98	3,857.48	3,665.37	192.11	20.079	
11,600.00	7,071.04	7,085.41	7,083.55	34.76	157.64	89.56	-16.73	-1,066.98	3,949.35	3,756.95	192.40	20.527	
11,700.00	7,070.71	7,085.08	7,083.22	35.06	157.63	89.54	-16.73	-1,066.98	4,041.61	3,848.92	192.69	20.974	
11,800.00	7,070.38	7,084.75	7,082.89	35.36	157.62	89.53	-16.73	-1,066.98	4,134.22	3,941.24	192.98	21.423	
11,900.00	7,070.05	7,084.42	7,082.56	35.66	157.61	89.52	-16.73	-1,066.98	4,227.18	4,033.90	193.27	21.872	
12,000.00	7,069.72	7,084.09	7,082.23	35.96	157.60	89.51	-16.73	-1,066.98	4,320.44	4,126.88	193.56	22.321	
12,100.00	7,069.39	7,083.76	7,081.90	36.26	157.59	89.49	-16.73	-1,066.98	4,414.00	4,220.15	193.85	22.770	
12,200.00	7,069.06	7,083.43	7,081.58	36.56	157.58	89.48	-16.73	-1,066.98	4,507.84	4,313.70	194.14	23.219	
12,300.00	7,068.73	7,083.10	7,081.25	36.86	157.57	89.47	-16.73	-1,066.98	4,601.94	4,407.51	194.43	23.669	
12,400.00	7,068.41	7,082.78	7,080.92	37.16	157.56	89.46	-16.73	-1,066.98	4,696.28	4,501.56	194.72	24.118	
12,500.00	7,068.08	7,082.45	7,080.59	37.46	157.55	89.45	-16.73	-1,066.98	4,790.85	4,595.84	195.01	24.567	
12,600.00	7,067.75	7,082.12	7,080.26	37.76	157.54	89.43	-16.73	-1,066.98	4,885.64	4,690.33	195.30	25.016	
12,700.00	7,067.42	7,081.79	7,079.93	38.06	157.53	89.42	-16.73	-1,066.98	4,980.63	4,785.04	195.59	25.464	
12,800.00	7,067.09	7,081.46	7,079.60	38.36	157.52	89.41	-16.73	-1,066.98	5,075.81	4,879.93	195.88	25.913	
12,900.00	7,066.76	7,081.13	7,079.27	38.66	157.51	89.40	-16.73	-1,066.98	5,171.17	4,975.00	196.17	26.361	
13,000.00	7,066.43	7,080.80	7,078.95	38.96	157.50	89.38	-16.73	-1,066.98	5,266.71	5,070.25	196.46	26.808	
13,100.00	7,066.10	7,080.47	7,078.62	39.26	157.49	89.37	-16.73	-1,066.98	5,362.41	5,165.66	196.75	27.255	
13,200.00	7,065.77	7,080.14	7,078.29	39.56	157.48	89.36	-16.73	-1,066.98	5,458.26	5,261.22	197.04	27.701	
13,300.00	7,065.45	7,079.82	7,077.96	39.86	157.47	89.35	-16.73	-1,066.98	5,554.26	5,356.93	197.33	28.147	
13,400.00	7,065.12	7,079.49	7,077.63	40.16	157.46	89.34	-16.73	-1,066.98	5,650.40	5,452.78	197.62	28.592	
13,500.00	7,064.79	7,079.16	7,077.30	40.47	157.45	89.32	-16.73	-1,066.98	5,746.67	5,548.76	197.91	29.037	
13,600.00	7,064.46	7,078.83	7,076.97	40.77	157.44	89.31	-16.73	-1,066.98	5,843.07	5,644.87	198.20	29.481	
13,700.00	7,064.13	7,078.50	7,076.64	41.07	157.43	89.30	-16.73	-1,066.98	5,939.58	5,741.09	198.49	29.924	
13,800.00	7,063.80	7,078.17	7,076.31	41.37	157.41	89.29	-16.73	-1,066.98	6,036.21	5,837.43	198.78	30.366	
13,900.00	7,063.47	7,077.84	7,075.99	41.67	157.40	89.27	-16.73	-1,066.98	6,132.95	5,933.88	199.07	30.808	
14,000.00	7,063.14	7,077.51	7,075.66	41.97	157.39	89.26	-16.73	-1,066.98	6,229.79	6,030.43	199.36	31.249	
14,100.00	7,062.82	7,077.19	7,075.33	42.27	157.38	89.25	-16.73	-1,066.98	6,326.73	6,127.08	199.65	31.689	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,062.49	7,076.86	7,075.00	42.57	157.37	89.24	-16.73	-1,066.98	6,423.76	6,223.82	199.94	32.129	
14,300.00	7,062.16	7,076.53	7,074.67	42.87	157.36	89.23	-16.73	-1,066.98	6,520.88	6,320.65	200.23	32.567	
14,400.00	7,061.83	7,076.20	7,074.34	43.17	157.35	89.21	-16.73	-1,066.98	6,618.09	6,417.57	200.52	33.005	
14,500.00	7,061.50	7,075.87	7,074.01	43.47	157.34	89.20	-16.73	-1,066.98	6,715.38	6,514.57	200.81	33.442	
14,600.00	7,061.17	7,075.54	7,073.68	43.77	157.33	89.19	-16.73	-1,066.98	6,812.74	6,611.64	201.10	33.878	
14,700.00	7,060.84	7,075.21	7,073.36	44.07	157.32	89.18	-16.73	-1,066.98	6,910.19	6,708.80	201.39	34.313	
14,800.00	7,060.51	7,074.88	7,073.03	44.37	157.31	89.16	-16.73	-1,066.98	7,007.70	6,806.02	201.68	34.747	
14,900.00	7,060.18	7,074.55	7,072.70	44.67	157.30	89.15	-16.73	-1,066.98	7,105.28	6,903.32	201.97	35.180	
15,000.00	7,059.86	7,074.23	7,072.37	44.97	157.29	89.14	-16.73	-1,066.98	7,202.93	7,000.68	202.26	35.613	
15,100.00	7,059.53	7,073.90	7,072.04	45.27	157.28	89.13	-16.73	-1,066.98	7,300.65	7,098.10	202.55	36.044	
15,200.00	7,059.20	7,073.57	7,071.71	45.57	157.27	89.12	-16.73	-1,066.98	7,398.42	7,195.59	202.84	36.475	
15,300.00	7,058.87	7,073.24	7,071.38	45.87	157.26	89.10	-16.73	-1,066.98	7,496.26	7,293.13	203.13	36.904	
15,400.00	7,058.54	7,072.91	7,071.05	46.17	157.25	89.09	-16.73	-1,066.98	7,594.15	7,390.73	203.42	37.333	
15,500.00	7,058.21	7,072.58	7,070.72	46.47	157.24	89.08	-16.73	-1,066.98	7,692.09	7,488.38	203.71	37.761	
15,600.00	7,057.88	7,072.25	7,070.40	46.77	157.23	89.07	-16.73	-1,066.98	7,790.09	7,586.09	204.00	38.187	
15,700.00	7,057.55	7,071.92	7,070.07	47.07	157.22	89.05	-16.73	-1,066.98	7,888.13	7,683.85	204.29	38.613	
15,800.00	7,057.23	7,071.60	7,069.74	47.37	157.21	89.04	-16.73	-1,066.98	7,986.23	7,781.65	204.58	39.038	
15,900.00	7,056.90	7,071.27	7,069.41	47.67	157.20	89.03	-16.73	-1,066.98	8,084.37	7,879.50	204.87	39.462	
16,000.00	7,056.57	7,070.94	7,069.08	47.97	157.18	89.02	-16.73	-1,066.98	8,182.56	7,977.40	205.15	39.885	
16,100.00	7,056.24	7,070.61	7,068.75	48.27	157.17	89.01	-16.73	-1,066.98	8,280.79	8,075.34	205.44	40.307	
16,200.00	7,055.91	7,070.28	7,068.42	48.57	157.16	88.99	-16.73	-1,066.98	8,379.06	8,173.32	205.73	40.728	
16,300.00	7,055.58	7,069.95	7,068.09	48.87	157.15	88.98	-16.73	-1,066.98	8,477.37	8,271.35	206.02	41.147	
16,400.00	7,055.25	7,069.62	7,067.77	49.17	157.14	88.97	-16.73	-1,066.98	8,575.72	8,369.41	206.31	41.566	
16,500.00	7,054.92	7,069.29	7,067.44	49.47	157.13	88.96	-16.73	-1,066.98	8,674.11	8,467.51	206.60	41.984	
16,600.00	7,054.59	7,068.96	7,067.11	49.77	157.12	88.94	-16.73	-1,066.98	8,772.54	8,565.64	206.89	42.401	
16,619.57	7,054.53	7,068.90	7,067.04	49.83	157.12	88.94	-16.73	-1,066.98	8,791.81	8,584.86	206.95	42.483	
16,700.00	7,054.27	7,068.64	7,066.78	50.07	157.11	88.93	-16.73	-1,066.98	8,871.00	8,663.81	207.18	42.817	
16,782.16	7,054.00	7,068.37	7,066.51	50.32	157.10	88.92	-16.73	-1,066.98	8,951.92	8,744.50	207.42	43.158	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	97.50	-1,111.25	8,439.82	8,512.66				
100.00	100.00	129.20	129.20	0.23	0.10	97.50	-1,111.25	8,439.83	8,512.67	8,512.36	0.31	N/A	
200.00	200.00	227.89	227.89	0.53	0.23	97.50	-1,111.24	8,439.85	8,512.69	8,511.96	0.73	N/A	
300.00	300.00	327.74	327.74	0.83	0.36	97.50	-1,111.23	8,439.88	8,512.72	8,511.57	1.15	7,371.382	
400.00	400.00	426.57	426.57	1.13	0.49	97.50	-1,111.21	8,439.93	8,512.76	8,511.19	1.57	5,406.805	
500.00	500.00	525.26	525.26	1.43	0.62	97.50	-1,111.19	8,439.99	8,512.82	8,510.83	1.99	4,269.447	
600.00	599.98	626.08	623.92	1.73	0.75	-88.09	-1,111.16	8,440.05	8,512.83	8,510.41	2.42	3,523.582	
700.00	699.84	723.78	723.78	2.03	0.88	-88.13	-1,111.13	8,440.13	8,512.73	8,509.90	2.83	3,003.383	
800.00	799.45	822.08	822.08	2.33	1.01	-88.19	-1,111.10	8,440.23	8,512.54	8,509.29	3.25	2,616.267	
900.00	898.70	920.00	920.00	2.63	1.14	-88.28	-1,111.06	8,440.33	8,512.27	8,508.59	3.67	2,317.652	
1,000.00	997.47	1,017.82	1,017.82	2.93	1.27	-88.39	-1,111.02	8,440.45	8,511.92	8,507.82	4.09	2,080.115	
1,100.00	1,095.62	1,115.59	1,115.59	3.23	1.40	-88.52	-1,110.97	8,440.57	8,511.52	8,507.01	4.51	1,886.607	
1,207.25	1,200.09	1,218.72	1,218.72	3.55	1.53	-88.69	-1,110.92	8,440.72	8,511.06	8,506.10	4.96	1,716.012	
1,300.00	1,290.03	1,307.32	1,307.32	3.83	1.65	-88.84	-1,110.87	8,440.86	8,510.69	8,505.35	5.35	1,591.676	
1,400.00	1,386.99	1,404.05	1,404.05	4.13	1.78	-89.00	-1,110.81	8,441.01	8,510.38	8,504.61	5.77	1,475.917	
1,500.00	1,483.96	1,500.11	1,499.89	4.43	1.90	-89.15	-1,110.74	8,441.19	8,510.14	8,503.96	6.18	1,375.996	
1,600.00	1,580.93	1,595.51	1,595.51	4.73	2.03	-89.31	-1,110.68	8,441.37	8,509.99	8,503.39	6.60	1,288.870	
1,700.00	1,677.90	1,691.57	1,691.57	5.03	2.15	-89.47	-1,110.61	8,441.56	8,509.92	8,502.90	7.02	1,211.952	
1,733.94	1,710.81	1,724.03	1,724.02	5.13	2.20	-89.52	-1,110.58	8,441.63	8,509.92	8,502.75	7.16	1,187.917	CC
1,800.00	1,774.87	1,788.07	1,788.07	5.33	2.28	-89.63	-1,110.53	8,441.76	8,509.93	8,502.49	7.44	1,143.595	
1,900.00	1,871.83	1,883.68	1,883.68	5.63	2.41	-89.79	-1,110.45	8,441.98	8,510.02	8,502.16	7.86	1,082.668	
2,000.00	1,968.80	1,979.28	1,979.28	5.93	2.53	-89.95	-1,110.37	8,442.20	8,510.20	8,501.92	8.28	1,027.890	
2,100.00	2,065.77	2,076.22	2,076.22	6.23	2.66	-90.11	-1,110.28	8,442.44	8,510.45	8,501.75	8.70	978.193	
2,200.00	2,162.74	2,171.82	2,171.82	6.53	2.79	-90.26	-1,110.19	8,442.68	8,510.79	8,501.67	9.12	933.239	ES
2,300.00	2,259.71	2,267.42	2,267.42	6.83	2.91	-90.42	-1,110.09	8,442.94	8,511.21	8,501.67	9.54	892.229	
2,400.00	2,356.67	2,363.62	2,363.62	7.13	3.04	-90.58	-1,109.99	8,443.21	8,511.71	8,501.75	9.96	854.601	
2,500.00	2,453.64	2,459.95	2,459.94	7.43	3.17	-90.74	-1,109.89	8,443.50	8,512.29	8,501.91	10.38	820.004	
2,600.00	2,550.61	2,555.53	2,555.53	7.73	3.29	-90.90	-1,109.78	8,443.79	8,512.95	8,502.15	10.80	788.163	
2,700.00	2,647.58	2,651.12	2,651.11	8.03	3.42	-91.06	-1,109.67	8,444.09	8,513.70	8,502.48	11.22	758.701	
2,800.00	2,744.55	2,748.05	2,748.04	8.33	3.55	-91.22	-1,109.55	8,444.41	8,514.53	8,502.88	11.64	731.258	
2,900.00	2,841.51	2,843.62	2,843.62	8.63	3.67	-91.37	-1,109.43	8,444.74	8,515.44	8,503.37	12.06	705.829	
3,000.00	2,938.48	2,939.20	2,939.19	8.93	3.80	-91.53	-1,109.30	8,445.07	8,516.43	8,503.94	12.49	682.111	
3,100.00	3,035.45	3,035.55	3,035.54	9.23	3.92	-91.69	-1,109.17	8,445.42	8,517.50	8,504.59	12.91	659.887	
3,200.00	3,132.42	3,131.69	3,131.68	9.53	4.05	-91.85	-1,109.04	8,445.78	8,518.66	8,505.33	13.33	639.081	
3,300.00	3,229.39	3,227.26	3,227.25	9.83	4.18	-92.01	-1,108.90	8,446.15	8,519.89	8,506.14	13.75	619.582	
3,400.00	3,326.35	3,327.18	3,322.81	10.13	4.31	-92.17	-1,108.76	8,446.53	8,521.21	8,507.04	14.18	601.012	
3,500.00	3,423.32	3,419.74	3,419.73	10.43	4.43	-92.33	-1,108.61	8,446.93	8,522.61	8,508.02	14.60	583.891	
3,600.00	3,520.29	3,515.29	3,515.28	10.73	4.56	-92.49	-1,108.46	8,447.33	8,524.10	8,509.08	15.02	567.583	
3,700.00	3,617.26	3,610.84	3,610.83	11.03	4.68	-92.64	-1,108.31	8,447.75	8,525.66	8,510.22	15.44	552.165	
3,800.00	3,714.23	3,706.39	3,706.37	11.33	4.81	-92.80	-1,108.15	8,448.17	8,527.31	8,511.45	15.86	537.568	
3,900.00	3,811.19	3,803.30	3,803.29	11.63	4.93	-92.96	-1,107.99	8,448.62	8,529.04	8,512.76	16.29	523.673	
4,000.00	3,908.16	3,901.16	3,898.83	11.93	5.06	-93.12	-1,107.82	8,449.06	8,530.85	8,514.14	16.71	510.447	
4,100.00	4,005.13	3,994.38	3,994.36	12.23	5.19	-93.28	-1,107.65	8,449.52	8,532.75	8,515.61	17.13	498.045	
4,200.00	4,102.10	4,084.24	4,084.22	12.53	5.30	-93.43	-1,107.48	8,450.02	8,534.78	8,517.23	17.55	486.345	
4,300.00	4,199.07	4,190.60	4,190.57	12.83	5.44	-93.60	-1,107.22	8,450.58	8,536.86	8,518.88	17.98	474.764	
4,400.00	4,296.03	4,290.77	4,290.75	13.13	5.57	-93.77	-1,107.12	8,450.94	8,538.85	8,520.44	18.41	463.850	
4,500.00	4,393.00	4,402.88	4,402.85	13.43	5.71	-93.95	-1,107.06	8,451.22	8,540.79	8,521.94	18.85	453.081	
4,600.00	4,489.97	4,521.61	4,521.59	13.73	5.84	-94.14	-1,107.12	8,451.48	8,542.82	8,523.52	19.30	442.692	
4,700.00	4,586.94	4,605.92	4,605.90	14.03	5.87	-94.28	-1,107.34	8,451.59	8,544.79	8,525.12	19.66	434.548	
4,800.00	4,683.91	4,716.86	4,716.84	14.33	5.89	-94.46	-1,107.63	8,451.60	8,546.72	8,526.71	20.02	427.005	
4,900.00	4,780.87	4,805.70	4,805.67	14.63	5.90	-94.60	-1,107.90	8,451.61	8,548.73	8,528.37	20.36	419.895	
5,000.00	4,877.84	4,913.57	4,913.55	14.93	5.91	-94.78	-1,108.27	8,451.58	8,550.77	8,530.06	20.70	413.039	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	4,974.81	5,022.66	5,022.63	15.23	5.91	-94.95	-1,108.70	8,451.45	8,552.78	8,531.76	21.02	406.825	
5,200.00	5,071.78	5,111.48	5,111.45	15.53	5.90	-95.09	-1,109.11	8,451.29	8,554.81	8,533.48	21.34	400.960	
5,300.00	5,168.75	5,220.84	5,220.81	15.83	5.90	-95.27	-1,109.60	8,451.14	8,556.95	8,535.29	21.66	395.103	
5,400.00	5,265.71	5,329.21	5,329.18	16.13	5.88	-95.44	-1,110.20	8,450.76	8,558.94	8,536.98	21.96	389.812	
5,500.00	5,362.68	5,428.34	5,428.31	16.43	5.87	-95.60	-1,110.77	8,450.40	8,560.98	8,538.73	22.26	384.646	
5,600.00	5,459.65	5,521.31	5,521.28	16.73	5.86	-95.75	-1,111.28	8,450.01	8,563.05	8,540.49	22.55	379.684	
5,700.00	5,556.62	5,621.21	5,621.17	17.03	5.84	-95.91	-1,111.78	8,449.53	8,565.11	8,542.27	22.84	374.954	
5,800.00	5,653.59	5,728.73	5,728.69	17.33	5.82	-96.08	-1,112.33	8,449.05	8,567.27	8,544.14	23.13	370.325	
5,900.00	5,750.55	5,825.00	5,824.96	17.63	5.81	-96.23	-1,112.99	8,448.51	8,569.39	8,545.96	23.43	365.717	
6,000.00	5,847.52	5,940.13	5,940.08	17.93	5.80	-96.41	-1,113.75	8,447.67	8,571.39	8,547.67	23.72	361.340	
6,100.00	5,944.49	6,025.00	6,024.95	18.23	5.79	-96.55	-1,114.34	8,447.14	8,573.57	8,549.55	24.02	356.958	
6,200.00	6,041.46	6,114.92	6,114.86	18.53	5.79	-96.69	-1,114.96	8,446.46	8,575.71	8,551.40	24.32	352.666	
6,300.00	6,138.43	6,212.43	6,212.37	18.83	5.79	-96.84	-1,115.68	8,445.78	8,577.95	8,553.33	24.62	348.395	
6,400.00	6,235.39	6,311.73	6,311.65	19.13	5.81	-97.00	-1,116.67	8,445.23	8,580.39	8,555.45	24.94	344.096	
6,500.00	6,332.36	6,418.29	6,418.21	19.43	5.84	-97.16	-1,117.77	8,444.72	8,582.98	8,557.72	25.26	339.812	
6,600.00	6,429.33	6,511.88	6,511.79	19.73	5.87	-97.31	-1,119.00	8,444.28	8,585.61	8,560.03	25.58	335.600	
6,700.00	6,526.30	6,700.00	6,595.04	20.03	5.94	-97.43	-1,120.21	8,443.94	8,588.36	8,562.42	25.94	331.101	
6,715.28	6,541.12	6,609.27	6,609.17	20.08	5.90	-97.45	-1,120.38	8,443.88	8,588.78	8,562.82	25.96	330.860	
6,750.00	6,574.74	6,628.42	6,628.32	20.18	5.91	-110.67	-1,120.64	8,443.82	8,590.84	8,564.77	26.07	329.536	
6,800.00	6,622.83	6,674.71	6,674.60	20.33	5.94	-126.49	-1,121.38	8,443.73	8,597.54	8,571.30	26.24	327.661	
6,850.00	6,670.20	6,714.40	6,714.29	20.49	5.96	-137.98	-1,121.90	8,443.64	8,608.54	8,582.14	26.41	326.013	
6,900.00	6,716.50	6,768.74	6,768.62	20.64	5.99	-146.10	-1,122.65	8,443.52	8,623.75	8,597.17	26.58	324.473	
6,950.00	6,761.36	6,790.17	6,790.05	20.79	6.00	-151.89	-1,122.88	8,443.51	8,643.13	8,616.40	26.74	323.253	
7,000.00	6,804.45	6,850.49	6,850.37	20.94	6.04	-156.22	-1,123.73	8,443.51	8,666.49	8,639.57	26.92	321.950	
7,050.00	6,845.44	6,883.78	6,883.65	21.09	6.06	-159.51	-1,124.24	8,443.50	8,693.60	8,666.51	27.09	320.971	
7,100.00	6,884.01	6,930.85	6,930.71	21.24	6.09	-162.14	-1,124.93	8,443.45	8,724.23	8,696.97	27.26	320.063	
7,150.00	6,919.88	6,956.37	6,956.23	21.39	6.10	-164.29	-1,125.29	8,443.43	8,758.21	8,730.79	27.42	319.403	
7,200.00	6,952.78	7,020.60	7,020.46	21.54	6.14	-166.22	-1,126.23	8,443.37	8,795.26	8,767.66	27.60	318.646	
7,250.00	6,982.44	7,034.30	7,034.15	21.69	6.15	-167.90	-1,126.45	8,443.33	8,835.02	8,807.26	27.76	318.281	
7,300.00	7,008.65	7,050.00	7,049.86	21.84	6.16	-169.55	-1,126.66	8,443.32	8,877.32	8,849.40	27.92	317.993	
7,350.00	7,031.20	7,350.00	7,096.98	21.99	6.33	-171.40	-1,127.24	8,443.23	8,921.75	8,893.57	28.18	316.643 SF	
7,400.00	7,049.92	7,108.11	7,107.96	22.14	6.20	-173.58	-1,127.37	8,443.20	8,967.96	8,939.72	28.24	317.535	
7,450.00	7,064.68	7,113.18	7,113.03	22.29	6.20	-176.75	-1,127.43	8,443.19	9,015.66	8,987.27	28.40	317.506	
7,500.00	7,075.36	7,116.83	7,116.69	22.44	6.20	177.46	-1,127.47	8,443.18	9,064.48	9,035.93	28.55	317.522	
7,550.00	7,081.87	7,125.00	7,124.85	22.59	6.21	161.95	-1,127.56	8,443.19	9,114.02	9,085.32	28.70	317.542	
7,604.16	7,084.18	7,125.00	7,124.85	22.75	6.21	87.60	-1,127.56	8,443.19	9,168.07	9,139.20	28.86	317.619	
7,700.00	7,083.86	7,125.00	7,124.85	23.04	6.21	87.60	-1,127.56	8,443.19	9,263.78	9,234.63	29.15	317.757	
7,800.00	7,083.53	7,125.00	7,124.85	23.34	6.21	87.60	-1,127.56	8,443.19	9,363.65	9,334.19	29.45	317.899	
7,900.00	7,083.20	7,125.00	7,124.85	23.64	6.21	87.60	-1,127.56	8,443.19	9,463.52	9,433.76	29.76	318.038	
8,000.00	7,082.87	7,125.00	7,124.85	23.94	6.21	87.60	-1,127.56	8,443.19	9,563.39	9,533.34	30.06	318.174	
8,100.00	7,082.54	7,125.00	7,124.85	24.24	6.21	87.60	-1,127.56	8,443.19	9,663.27	9,632.91	30.36	318.308	
8,200.00	7,082.22	7,125.00	7,124.85	24.54	6.21	87.60	-1,127.56	8,443.19	9,763.15	9,732.49	30.66	318.440	
8,300.00	7,081.89	7,125.00	7,124.85	24.84	6.21	87.60	-1,127.56	8,443.19	9,863.03	9,832.07	30.96	318.570	
8,400.00	7,081.56	7,125.00	7,124.85	25.14	6.21	87.60	-1,127.56	8,443.19	9,962.92	9,931.65	31.26	318.697	
8,500.00	7,081.23	7,125.00	7,124.85	25.45	6.21	87.60	-1,127.56	8,443.19	10,062.80	10,031.24	31.56	318.823	
8,600.00	7,080.90	7,125.00	7,124.85	25.75	6.21	87.60	-1,127.56	8,443.19	10,162.69	10,130.83	31.86	318.946	
8,700.00	7,080.57	7,125.00	7,124.85	26.05	6.21	87.60	-1,127.56	8,443.19	10,262.58	10,230.42	32.16	319.067	
8,800.00	7,080.24	7,125.00	7,124.85	26.35	6.21	87.60	-1,127.56	8,443.19	10,362.47	10,330.01	32.47	319.187	
8,900.00	7,079.91	7,125.00	7,124.85	26.65	6.21	87.60	-1,127.56	8,443.19	10,462.37	10,429.60	32.77	319.304	
9,000.00	7,079.59	7,125.00	7,124.85	26.95	6.21	87.60	-1,127.56	8,443.19	10,562.27	10,529.20	33.07	319.420	
9,100.00	7,079.26	7,125.00	7,124.85	27.25	6.21	87.60	-1,127.56	8,443.19	10,662.16	10,628.80	33.37	319.533	
9,200.00	7,078.93	7,125.00	7,124.85	27.55	6.21	87.60	-1,127.56	8,443.19	10,762.07	10,728.40	33.67	319.645	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,300.00	7,078.60	7,125.00	7,124.85	27.85	6.21	87.60	-1,127.56	8,443.19	10,861.97	10,828.00	33.97	319.755	
9,400.00	7,078.27	7,125.00	7,124.85	28.15	6.21	87.60	-1,127.56	8,443.19	10,961.87	10,927.60	34.27	319.864	
9,500.00	7,077.94	7,125.00	7,124.85	28.45	6.21	87.60	-1,127.56	8,443.19	11,061.78	11,027.21	34.57	319.970	
9,600.00	7,077.61	7,125.00	7,124.85	28.75	6.21	87.60	-1,127.56	8,443.19	11,161.69	11,126.81	34.87	320.075	
9,700.00	7,077.28	7,125.00	7,124.85	29.05	6.21	87.60	-1,127.56	8,443.19	11,261.60	11,226.42	35.17	320.179	
9,800.00	7,076.95	7,125.00	7,124.85	29.35	6.21	87.60	-1,127.56	8,443.19	11,361.51	11,326.03	35.47	320.281	
9,900.00	7,076.63	7,125.00	7,124.85	29.65	6.21	87.60	-1,127.56	8,443.19	11,461.42	11,425.64	35.77	320.381	
10,000.00	7,076.30	7,125.00	7,124.85	29.95	6.21	87.60	-1,127.56	8,443.19	11,561.33	11,525.26	36.08	320.480	
10,100.00	7,075.97	7,125.00	7,124.85	30.25	6.21	87.60	-1,127.56	8,443.19	11,661.25	11,624.87	36.38	320.577	
10,200.00	7,075.64	7,125.00	7,124.85	30.55	6.21	87.60	-1,127.56	8,443.19	11,761.17	11,724.49	36.68	320.673	
10,300.00	7,075.31	7,125.00	7,124.85	30.85	6.21	87.60	-1,127.56	8,443.19	11,861.08	11,824.11	36.98	320.768	
10,400.00	7,074.98	7,125.00	7,124.85	31.15	6.21	87.60	-1,127.56	8,443.19	11,961.00	11,923.73	37.28	320.861	
10,500.00	7,074.65	7,125.00	7,124.85	31.46	6.21	87.60	-1,127.56	8,443.19	12,060.92	12,023.35	37.58	320.953	
10,600.00	7,074.32	7,125.00	7,124.85	31.76	6.21	87.60	-1,127.56	8,443.19	12,160.85	12,122.97	37.88	321.043	
10,700.00	7,074.00	7,125.00	7,124.85	32.06	6.21	87.60	-1,127.56	8,443.19	12,260.77	12,222.59	38.18	321.133	
10,800.00	7,073.67	7,125.00	7,124.85	32.36	6.21	87.60	-1,127.56	8,443.19	12,360.70	12,322.21	38.48	321.220	
10,900.00	7,073.34	7,125.00	7,124.85	32.66	6.21	87.60	-1,127.56	8,443.19	12,460.62	12,421.84	38.78	321.307	
11,000.00	7,073.01	7,125.00	7,124.85	32.96	6.21	87.60	-1,127.56	8,443.19	12,560.55	12,521.47	39.08	321.393	
11,100.00	7,072.68	7,125.00	7,124.85	33.26	6.21	87.60	-1,127.56	8,443.19	12,660.48	12,621.09	39.38	321.477	
11,200.00	7,072.35	7,125.00	7,124.85	33.56	6.21	87.60	-1,127.56	8,443.19	12,760.41	12,720.72	39.68	321.560	
11,300.00	7,072.02	7,125.00	7,124.85	33.86	6.21	87.60	-1,127.56	8,443.19	12,860.34	12,820.35	39.98	321.642	
11,400.00	7,071.69	7,125.00	7,124.85	34.16	6.21	87.60	-1,127.56	8,443.19	12,960.27	12,919.98	40.28	321.723	
11,500.00	7,071.36	7,116.43	7,116.28	34.46	6.20	86.58	-1,127.46	8,443.18	13,060.19	13,019.61	40.58	321.834	
11,600.00	7,071.04	7,116.36	7,116.21	34.76	6.20	86.57	-1,127.46	8,443.18	13,160.12	13,119.24	40.88	321.913	
11,700.00	7,070.71	7,116.29	7,116.14	35.06	6.20	86.56	-1,127.46	8,443.18	13,260.06	13,218.88	41.18	321.990	
11,800.00	7,070.38	7,116.23	7,116.08	35.36	6.20	86.55	-1,127.46	8,443.18	13,359.99	13,318.51	41.48	322.067	
11,900.00	7,070.05	7,116.16	7,116.01	35.66	6.20	86.55	-1,127.46	8,443.18	13,459.93	13,418.15	41.78	322.142	
12,000.00	7,069.72	7,116.10	7,115.95	35.96	6.20	86.54	-1,127.46	8,443.18	13,559.87	13,517.79	42.08	322.217	
12,100.00	7,069.39	7,116.03	7,115.88	36.26	6.20	86.53	-1,127.46	8,443.18	13,659.81	13,617.42	42.38	322.291	
12,200.00	7,069.06	7,115.97	7,115.82	36.56	6.20	86.52	-1,127.46	8,443.18	13,759.75	13,717.06	42.68	322.363	
12,300.00	7,068.73	7,115.91	7,115.76	36.86	6.20	86.52	-1,127.46	8,443.18	13,859.69	13,816.70	42.98	322.435	
12,400.00	7,068.41	7,115.84	7,115.69	37.16	6.20	86.51	-1,127.46	8,443.18	13,959.63	13,916.34	43.28	322.506	
12,500.00	7,068.08	7,115.78	7,115.63	37.46	6.20	86.50	-1,127.46	8,443.18	14,059.57	14,015.98	43.59	322.576	
12,600.00	7,067.75	7,115.72	7,115.57	37.76	6.20	86.49	-1,127.45	8,443.18	14,159.51	14,115.63	43.89	322.645	
12,700.00	7,067.42	7,115.66	7,115.51	38.06	6.20	86.49	-1,127.45	8,443.18	14,259.45	14,215.27	44.19	322.713	
12,800.00	7,067.09	7,115.60	7,115.45	38.36	6.20	86.48	-1,127.45	8,443.18	14,359.40	14,314.91	44.49	322.781	
12,900.00	7,066.76	7,115.54	7,115.39	38.66	6.20	86.47	-1,127.45	8,443.18	14,459.34	14,414.56	44.79	322.847	
13,000.00	7,066.43	7,115.49	7,115.34	38.96	6.20	86.47	-1,127.45	8,443.18	14,559.29	14,514.20	45.09	322.913	
13,100.00	7,066.10	7,115.43	7,115.28	39.26	6.20	86.46	-1,127.45	8,443.18	14,659.24	14,613.85	45.39	322.978	
13,200.00	7,065.77	7,115.37	7,115.22	39.56	6.20	86.45	-1,127.45	8,443.18	14,759.18	14,713.50	45.69	323.042	
13,300.00	7,065.45	7,115.31	7,115.16	39.86	6.20	86.44	-1,127.45	8,443.18	14,859.13	14,813.14	45.99	323.105	
13,400.00	7,065.12	7,115.26	7,115.11	40.16	6.20	86.44	-1,127.45	8,443.18	14,959.08	14,912.79	46.29	323.167	
13,500.00	7,064.79	7,115.20	7,115.05	40.47	6.20	86.43	-1,127.45	8,443.19	15,059.03	15,012.44	46.59	323.229	
13,600.00	7,064.46	7,115.15	7,115.00	40.77	6.20	86.42	-1,127.45	8,443.19	15,158.98	15,112.09	46.89	323.290	
13,700.00	7,064.13	7,115.09	7,114.94	41.07	6.20	86.42	-1,127.45	8,443.19	15,258.93	15,211.74	47.19	323.350	
13,800.00	7,063.80	7,115.04	7,114.89	41.37	6.20	86.41	-1,127.45	8,443.19	15,358.88	15,311.39	47.49	323.410	
13,900.00	7,063.47	7,114.99	7,114.84	41.67	6.20	86.41	-1,127.45	8,443.19	15,458.83	15,411.04	47.79	323.469	
14,000.00	7,063.14	7,114.93	7,114.78	41.97	6.20	86.40	-1,127.45	8,443.19	15,558.79	15,510.69	48.09	323.527	
14,100.00	7,062.82	7,114.88	7,114.73	42.27	6.20	86.39	-1,127.45	8,443.19	15,658.74	15,610.35	48.39	323.585	
14,200.00	7,062.49	7,114.83	7,114.68	42.57	6.20	86.39	-1,127.44	8,443.19	15,758.69	15,710.00	48.69	323.642	
14,300.00	7,062.16	7,114.78	7,114.63	42.87	6.20	86.38	-1,127.44	8,443.19	15,858.65	15,809.65	48.99	323.698	
14,400.00	7,061.83	7,114.73	7,114.58	43.17	6.20	86.37	-1,127.44	8,443.19	15,958.60	15,909.31	49.29	323.753	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,500.00	7,061.50	7,114.68	7,114.53	43.47	6.20	86.37	-1,127.44	8,443.19	16,058.56	16,008.96	49.59	323.808	
14,600.00	7,061.17	7,114.63	7,114.48	43.77	6.20	86.36	-1,127.44	8,443.19	16,158.51	16,108.62	49.89	323.862	
14,700.00	7,060.84	7,114.58	7,114.43	44.07	6.20	86.36	-1,127.44	8,443.19	16,258.47	16,208.28	50.19	323.916	
14,800.00	7,060.51	7,114.53	7,114.38	44.37	6.20	86.35	-1,127.44	8,443.19	16,358.43	16,307.93	50.49	323.969	
14,900.00	7,060.18	7,114.48	7,114.33	44.67	6.20	86.35	-1,127.44	8,443.19	16,458.38	16,407.59	50.79	324.022	
15,000.00	7,059.86	7,114.43	7,114.28	44.97	6.20	86.34	-1,127.44	8,443.19	16,558.34	16,507.25	51.09	324.074	
15,100.00	7,059.53	7,114.39	7,114.24	45.27	6.20	86.33	-1,127.44	8,443.19	16,658.30	16,606.91	51.39	324.125	
15,200.00	7,059.20	7,114.34	7,114.19	45.57	6.20	86.33	-1,127.44	8,443.19	16,758.26	16,706.57	51.69	324.176	
15,300.00	7,058.87	7,114.29	7,114.14	45.87	6.20	86.32	-1,127.44	8,443.19	16,858.22	16,806.22	52.00	324.226	
15,400.00	7,058.54	7,114.25	7,114.10	46.17	6.20	86.32	-1,127.44	8,443.19	16,958.18	16,905.88	52.30	324.276	
15,500.00	7,058.21	7,114.20	7,114.05	46.47	6.20	86.31	-1,127.44	8,443.19	17,058.14	17,005.54	52.60	324.325	
15,600.00	7,057.88	7,114.16	7,114.01	46.77	6.20	86.31	-1,127.44	8,443.19	17,158.10	17,105.21	52.90	324.374	
15,700.00	7,057.55	7,114.11	7,113.96	47.07	6.20	86.30	-1,127.44	8,443.19	17,258.06	17,204.87	53.20	324.422	
15,800.00	7,057.23	7,114.07	7,113.92	47.37	6.20	86.30	-1,127.44	8,443.19	17,358.02	17,304.53	53.50	324.469	
15,900.00	7,056.90	7,114.02	7,113.87	47.67	6.20	86.29	-1,127.44	8,443.19	17,457.99	17,404.19	53.80	324.516	
16,000.00	7,056.57	7,113.98	7,113.83	47.97	6.20	86.28	-1,127.44	8,443.19	17,557.95	17,503.85	54.10	324.563	
16,100.00	7,056.24	7,113.94	7,113.79	48.27	6.20	86.28	-1,127.43	8,443.19	17,657.91	17,603.52	54.40	324.609	
16,200.00	7,055.91	7,113.89	7,113.74	48.57	6.20	86.27	-1,127.43	8,443.19	17,757.88	17,703.18	54.70	324.655	
16,300.00	7,055.58	7,113.85	7,113.70	48.87	6.20	86.27	-1,127.43	8,443.19	17,857.84	17,802.84	55.00	324.700	
16,400.00	7,055.25	7,113.81	7,113.66	49.17	6.20	86.26	-1,127.43	8,443.19	17,957.80	17,902.51	55.30	324.745	
16,500.00	7,054.92	7,113.77	7,113.62	49.47	6.20	86.26	-1,127.43	8,443.19	18,057.77	18,002.17	55.60	324.789	
16,600.00	7,054.59	7,113.72	7,113.57	49.77	6.20	86.25	-1,127.43	8,443.19	18,157.73	18,101.84	55.90	324.833	
16,619.57	7,054.53	7,113.72	7,113.57	49.83	6.20	86.25	-1,127.43	8,443.19	18,177.30	18,121.34	55.96	324.841	
16,700.00	7,054.27	7,113.68	7,113.53	50.07	6.20	86.25	-1,127.43	8,443.19	18,257.70	18,201.50	56.20	324.876	
16,782.16	7,054.00	7,113.65	7,113.50	50.32	6.20	86.25	-1,127.43	8,443.19	18,339.83	18,283.39	56.45	324.911	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-170.36	-801.42	-136.19	813.01				
100.00	100.00	86.35	86.35	0.23	0.04	-170.36	-801.49	-136.18	812.98	812.70	0.27	2,976.882	
200.00	200.00	185.06	185.06	0.53	0.17	-170.36	-801.72	-136.15	813.20	812.51	0.69	1,181.231	
300.00	300.00	283.78	283.78	0.83	0.30	-170.37	-802.11	-136.09	813.58	812.47	1.11	730.544	
400.00	400.00	382.44	382.44	1.13	0.43	-170.38	-802.67	-136.00	814.12	812.58	1.54	529.078	
500.00	500.00	481.06	481.06	1.43	0.56	-170.40	-803.39	-135.89	814.83	812.86	1.96	414.947	
600.00	599.98	579.06	579.05	1.73	0.69	4.00	-804.38	-135.63	814.04	811.65	2.38	341.446	
700.00	699.84	677.73	677.71	2.03	0.81	3.98	-805.58	-135.12	809.93	807.13	2.80	289.326	
800.00	799.45	778.08	778.05	2.33	0.94	3.97	-806.91	-134.42	802.43	799.21	3.21	249.795	
900.00	898.70	877.27	877.23	2.63	1.07	3.97	-808.21	-133.54	791.40	787.78	3.62	218.780	
1,000.00	997.47	976.74	976.69	2.93	1.19	3.99	-809.47	-132.64	776.89	772.87	4.02	193.169	
1,100.00	1,095.62	1,077.86	1,077.80	3.23	1.32	4.03	-810.59	-131.72	758.78	754.36	4.42	171.552	
1,207.25	1,200.09	1,181.64	1,181.56	3.55	1.44	4.09	-811.55	-130.48	735.33	730.49	4.83	152.156	
1,300.00	1,290.03	1,270.05	1,269.96	3.83	1.55	4.10	-812.60	-129.28	713.56	708.37	5.19	137.500	
1,400.00	1,386.99	1,369.61	1,369.50	4.13	1.68	4.16	-813.68	-128.34	690.07	684.48	5.59	123.500	
1,500.00	1,483.96	1,464.14	1,464.02	4.43	1.80	4.22	-814.64	-127.56	666.54	660.56	5.98	111.420	
1,600.00	1,580.93	1,561.53	1,561.41	4.73	1.92	4.33	-815.82	-127.17	643.26	636.86	6.40	100.542	
1,700.00	1,677.90	1,658.24	1,658.11	5.03	2.05	4.46	-816.96	-126.95	619.97	613.16	6.82	90.948	
1,800.00	1,774.87	1,758.70	1,758.57	5.33	2.16	4.65	-817.86	-127.13	596.50	589.25	7.25	82.330	
1,900.00	1,871.83	1,856.24	1,856.11	5.63	2.28	4.84	-818.42	-127.12	572.69	565.02	7.67	74.683	
2,000.00	1,968.80	1,953.07	1,952.94	5.93	2.41	5.03	-818.92	-127.02	548.81	540.73	8.09	67.867	
2,100.00	2,065.77	2,046.71	2,046.58	6.23	2.52	5.23	-819.44	-126.84	524.97	516.48	8.49	61.803	
2,200.00	2,162.74	2,148.63	2,148.49	6.53	2.64	5.47	-820.12	-126.76	501.25	492.33	8.92	56.188	
2,300.00	2,259.71	2,246.31	2,246.17	6.83	2.72	5.77	-820.37	-126.98	477.21	467.88	9.33	51.165	
2,400.00	2,356.67	2,343.38	2,343.23	7.13	2.74	6.16	-820.44	-127.56	453.08	443.39	9.69	46.748	
2,500.00	2,453.64	2,439.57	2,439.43	7.43	2.77	6.61	-820.54	-128.36	429.05	418.99	10.05	42.671	
2,600.00	2,550.61	2,537.40	2,537.25	7.73	2.81	7.15	-820.61	-129.35	405.06	394.64	10.42	38.886	
2,700.00	2,647.58	2,635.38	2,635.22	8.03	2.82	7.76	-820.45	-130.30	380.86	370.10	10.76	35.399	
2,800.00	2,744.55	2,732.00	2,731.85	8.33	2.84	8.39	-820.26	-130.92	356.61	345.51	11.09	32.141	
2,900.00	2,841.51	2,828.66	2,828.50	8.63	2.88	9.06	-820.28	-131.26	332.54	321.08	11.46	29.018	
3,000.00	2,938.48	2,926.02	2,925.86	8.93	2.93	9.84	-820.28	-131.58	308.50	296.68	11.82	26.094	
3,100.00	3,035.45	3,022.05	3,021.89	9.23	3.01	10.72	-820.40	-131.85	284.62	272.41	12.21	23.313	
3,200.00	3,132.42	3,118.87	3,118.71	9.53	3.12	11.74	-820.80	-132.09	261.07	248.45	12.62	20.680	
3,300.00	3,229.39	3,215.13	3,214.97	9.83	3.24	12.94	-821.29	-132.30	237.70	224.66	13.04	18.229	
3,400.00	3,326.35	3,312.50	3,312.33	10.13	3.37	14.29	-822.22	-132.17	214.75	201.30	13.45	15.969	
3,500.00	3,423.32	3,409.12	3,408.94	10.43	3.49	15.96	-823.18	-132.12	192.00	178.15	13.85	13.861	
3,600.00	3,520.29	3,506.10	3,505.93	10.73	3.62	18.09	-824.20	-132.12	169.51	155.26	14.25	11.896	
3,700.00	3,617.26	3,603.41	3,603.23	11.03	3.74	20.86	-825.24	-132.09	147.33	132.70	14.63	10.067	
3,800.00	3,714.23	3,700.90	3,700.72	11.33	3.87	24.58	-826.36	-132.04	125.65	110.65	15.00	8.378	
3,900.00	3,811.19	3,797.89	3,797.70	11.63	3.99	29.83	-827.46	-132.11	104.74	89.41	15.32	6.835	
4,000.00	3,908.16	3,895.09	3,894.89	11.93	4.12	37.55	-828.48	-132.08	84.97	69.40	15.57	5.457	
4,100.00	4,005.13	3,992.42	3,992.21	12.23	4.24	49.46	-829.55	-132.11	67.66	51.98	15.68	4.316	
4,200.00	4,102.10	4,089.58	4,089.37	12.53	4.37	67.82	-830.59	-132.20	55.06	39.46	15.60	3.530	
4,291.59	4,190.91	4,178.64	4,178.42	12.81	4.48	89.99	-831.69	-132.30	50.77	35.09	15.68	3.238	CC
4,300.00	4,199.07	4,186.83	4,186.61	12.83	4.49	92.10	-831.82	-132.31	50.81	35.09	15.72	3.233	ES, SF
4,400.00	4,296.03	4,284.22	4,283.99	13.13	4.62	115.36	-833.44	-132.50	56.50	40.01	16.49	3.426	
4,500.00	4,393.00	4,381.73	4,381.47	13.43	4.75	132.02	-835.45	-132.87	69.43	52.06	17.37	3.997	
4,600.00	4,489.97	4,479.54	4,479.25	13.73	4.87	142.71	-837.92	-133.44	86.03	67.96	18.07	4.760	
4,700.00	4,586.94	4,577.22	4,576.90	14.03	5.00	149.79	-840.60	-134.00	104.43	85.77	18.66	5.596	
4,800.00	4,683.91	4,674.62	4,674.26	14.33	5.12	154.71	-843.29	-134.53	123.88	104.70	19.19	6.457	
4,900.00	4,780.87	4,772.50	4,772.09	14.63	5.25	158.29	-846.04	-135.06	143.94	124.26	19.67	7.316	
5,000.00	4,877.84	4,869.88	4,869.43	14.93	5.37	160.96	-848.77	-135.67	164.43	144.29	20.14	8.164	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	4,974.81	4,967.74	4,967.25	15.23	5.50	163.04	-851.53	-136.31	185.17	164.58	20.59	8.992	
5,200.00	5,071.78	5,065.41	5,064.88	15.53	5.63	164.68	-854.38	-136.98	206.02	184.98	21.04	9.793	
5,300.00	5,168.75	5,163.06	5,162.49	15.83	5.75	166.01	-857.21	-137.68	227.01	205.53	21.48	10.569	
5,400.00	5,265.71	5,260.93	5,260.31	16.13	5.88	167.11	-860.14	-138.41	248.02	226.11	21.92	11.317	
5,500.00	5,362.68	5,359.08	5,358.41	16.43	6.00	168.03	-863.19	-139.15	268.99	246.64	22.35	12.035	
5,600.00	5,459.65	5,456.96	5,456.24	16.73	6.13	168.82	-866.27	-139.89	289.98	267.20	22.78	12.729	
5,700.00	5,556.62	5,555.01	5,554.23	17.03	6.26	169.51	-869.42	-140.63	310.95	287.74	23.21	13.395	
5,800.00	5,653.59	5,652.93	5,652.10	17.33	6.38	170.09	-872.60	-141.40	331.93	308.28	23.64	14.039	
5,900.00	5,750.55	5,751.07	5,750.18	17.63	6.51	170.61	-875.90	-142.21	352.82	328.75	24.07	14.656	
6,000.00	5,847.52	5,848.50	5,847.55	17.93	6.64	171.06	-879.27	-142.98	373.64	349.14	24.50	15.249	
6,100.00	5,944.49	5,945.81	5,944.80	18.23	6.76	171.46	-882.45	-143.84	394.67	369.74	24.93	15.832	
6,200.00	6,041.46	6,043.45	6,042.39	18.53	6.89	171.82	-885.61	-144.67	415.75	390.40	25.36	16.397	
6,300.00	6,138.43	6,141.61	6,140.49	18.83	7.01	172.13	-888.87	-145.62	436.77	410.99	25.78	16.941	
6,400.00	6,235.39	6,239.48	6,238.30	19.13	7.14	172.41	-892.15	-146.59	457.77	431.56	26.21	17.466	
6,500.00	6,332.36	6,336.84	6,335.60	19.43	7.26	172.66	-895.42	-147.63	478.76	452.13	26.63	17.977	
6,600.00	6,429.33	6,433.40	6,432.10	19.73	7.39	172.87	-898.57	-148.69	499.87	472.82	27.06	18.476	
6,700.00	6,526.30	6,529.51	6,528.17	20.03	7.51	173.11	-901.39	-149.47	521.30	493.82	27.48	18.970	
6,715.28	6,541.12	6,544.01	6,542.66	20.08	7.53	173.14	-901.79	-149.56	524.60	497.06	27.54	19.046	
6,750.00	6,574.74	6,577.05	6,575.69	20.18	7.57	159.40	-902.64	-149.72	532.12	504.43	27.69	19.215	
6,800.00	6,622.83	6,624.63	6,623.25	20.33	7.63	143.24	-903.85	-149.93	542.88	514.97	27.91	19.449	
6,850.00	6,670.20	6,671.77	6,670.38	20.49	7.70	131.83	-904.93	-150.09	553.69	525.55	28.14	19.678	
6,900.00	6,716.50	6,716.73	6,715.33	20.64	7.75	124.13	-905.90	-150.26	564.65	536.29	28.36	19.910	
6,950.00	6,761.36	6,760.66	6,759.25	20.79	7.81	119.01	-906.72	-150.41	576.04	547.46	28.58	20.154	
7,000.00	6,804.45	6,803.29	6,801.87	20.94	7.87	115.61	-907.46	-150.57	588.05	559.26	28.80	20.420	
7,050.00	6,845.44	6,843.63	6,842.21	21.09	7.92	113.31	-908.09	-150.69	601.00	571.99	29.00	20.722	
7,100.00	6,884.01	6,883.57	6,882.15	21.24	7.97	111.81	-908.72	-150.85	615.07	585.87	29.20	21.065	
7,150.00	6,919.88	6,919.12	6,917.69	21.39	8.02	110.60	-909.32	-150.97	630.57	601.19	29.38	21.465	
7,200.00	6,952.78	6,952.16	6,950.72	21.54	8.06	109.59	-909.84	-151.08	647.80	618.26	29.54	21.932	
7,250.00	6,982.44	6,982.87	6,981.43	21.69	8.10	108.60	-910.33	-151.22	666.91	637.23	29.68	22.472	
7,300.00	7,008.65	7,009.25	7,007.81	21.84	8.14	107.39	-910.78	-151.32	688.05	658.25	29.80	23.091	
7,350.00	7,031.20	7,031.33	7,029.88	21.99	8.16	105.82	-911.16	-151.36	711.32	681.42	29.90	23.792	
7,400.00	7,049.92	7,049.49	7,048.04	22.14	8.19	103.84	-911.45	-151.39	736.69	706.71	29.98	24.574	
7,450.00	7,064.68	7,064.22	7,062.77	22.29	8.21	101.43	-911.68	-151.42	764.06	734.01	30.04	25.431	
7,500.00	7,075.36	7,074.95	7,073.50	22.44	8.22	98.51	-911.84	-151.44	793.23	763.13	30.10	26.355	
7,550.00	7,081.87	7,081.72	7,080.27	22.59	8.23	95.09	-911.94	-151.46	823.96	793.82	30.14	27.336	
7,604.16	7,084.18	7,084.22	7,082.77	22.75	8.23	90.81	-911.97	-151.47	858.68	828.50	30.18	28.451	
7,700.00	7,083.86	7,084.17	7,082.72	23.04	8.23	90.81	-911.97	-151.47	924.05	893.81	30.25	30.548	
7,800.00	7,083.53	7,084.12	7,082.67	23.34	8.23	90.80	-911.97	-151.47	997.53	967.19	30.34	32.880	
7,900.00	7,083.20	7,084.07	7,082.62	23.64	8.23	90.80	-911.97	-151.47	1,075.29	1,044.84	30.45	35.316	
8,000.00	7,082.87	7,084.02	7,082.57	23.94	8.23	90.80	-911.97	-151.47	1,156.48	1,125.90	30.58	37.820	
8,100.00	7,082.54	7,083.97	7,082.51	24.24	8.23	90.79	-911.97	-151.47	1,240.41	1,209.68	30.73	40.366	
8,200.00	7,082.22	7,083.91	7,082.46	24.54	8.23	90.79	-911.97	-151.47	1,326.58	1,295.68	30.90	42.934	
8,300.00	7,081.89	7,083.86	7,082.41	24.84	8.23	90.78	-911.97	-151.47	1,414.57	1,383.48	31.08	45.508	
8,400.00	7,081.56	7,083.81	7,082.35	25.14	8.23	90.78	-911.97	-151.47	1,504.06	1,472.77	31.28	48.079	
8,500.00	7,081.23	7,083.75	7,082.30	25.45	8.23	90.77	-911.97	-151.47	1,594.79	1,563.30	31.49	50.637	
8,600.00	7,080.90	7,083.70	7,082.24	25.75	8.23	90.77	-911.97	-151.47	1,686.58	1,654.86	31.72	53.176	
8,700.00	7,080.57	7,083.64	7,082.19	26.05	8.23	90.76	-911.97	-151.47	1,779.25	1,747.31	31.95	55.692	
8,800.00	7,080.24	7,083.59	7,082.13	26.35	8.23	90.76	-911.96	-151.47	1,872.68	1,840.49	32.19	58.182	
8,900.00	7,079.91	7,083.53	7,082.08	26.65	8.23	90.75	-911.96	-151.47	1,966.75	1,934.32	32.43	60.642	
9,000.00	7,079.59	7,083.47	7,082.02	26.95	8.23	90.75	-911.96	-151.47	2,061.38	2,028.70	32.68	63.072	
9,100.00	7,079.26	7,083.42	7,081.97	27.25	8.23	90.74	-911.96	-151.47	2,156.50	2,123.56	32.94	65.469	
9,200.00	7,078.93	7,083.36	7,081.91	27.55	8.23	90.74	-911.96	-151.47	2,252.04	2,218.84	33.20	67.833	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	7,083.30	7,081.85	27.85	8.23	90.73	-911.96	-151.47	2,347.95	2,314.48	33.46	70.163	
9,400.00	7,078.27	7,083.25	7,081.80	28.15	8.23	90.73	-911.96	-151.47	2,444.19	2,410.46	33.73	72.459	
9,500.00	7,077.94	7,083.19	7,081.74	28.45	8.23	90.72	-911.96	-151.47	2,540.72	2,506.71	34.00	74.722	
9,600.00	7,077.61	7,083.13	7,081.68	28.75	8.23	90.72	-911.96	-151.47	2,637.50	2,603.23	34.28	76.950	
9,700.00	7,077.28	7,083.07	7,081.62	29.05	8.23	90.71	-911.96	-151.47	2,734.52	2,699.97	34.55	79.145	
9,800.00	7,076.95	7,083.01	7,081.56	29.35	8.23	90.71	-911.96	-151.47	2,831.75	2,796.92	34.83	81.306	
9,900.00	7,076.63	7,082.95	7,081.50	29.65	8.23	90.70	-911.96	-151.47	2,929.16	2,894.05	35.11	83.434	
10,000.00	7,076.30	7,082.89	7,081.44	29.95	8.23	90.70	-911.95	-151.47	3,026.74	2,991.35	35.39	85.529	
10,100.00	7,075.97	7,082.83	7,081.38	30.25	8.23	90.69	-911.95	-151.47	3,124.48	3,088.81	35.67	87.593	
10,200.00	7,075.64	7,082.77	7,081.32	30.55	8.23	90.69	-911.95	-151.46	3,222.35	3,186.40	35.95	89.624	
10,300.00	7,075.31	7,082.71	7,081.26	30.85	8.23	90.68	-911.95	-151.46	3,320.35	3,284.11	36.24	91.624	
10,400.00	7,074.98	7,082.65	7,081.20	31.15	8.23	90.67	-911.95	-151.46	3,418.47	3,381.94	36.52	93.593	
10,500.00	7,074.65	7,082.59	7,081.13	31.46	8.23	90.67	-911.95	-151.46	3,516.69	3,479.88	36.81	95.532	
10,600.00	7,074.32	7,082.52	7,081.07	31.76	8.23	90.66	-911.95	-151.46	3,615.01	3,577.91	37.10	97.442	
10,700.00	7,074.00	7,082.46	7,081.01	32.06	8.23	90.66	-911.95	-151.46	3,713.42	3,676.03	37.39	99.322	
10,800.00	7,073.67	7,082.40	7,080.95	32.36	8.23	90.65	-911.95	-151.46	3,811.91	3,774.23	37.68	101.174	
10,900.00	7,073.34	7,082.33	7,080.88	32.66	8.23	90.65	-911.95	-151.46	3,910.48	3,872.51	37.97	102.998	
11,000.00	7,073.01	7,082.27	7,080.82	32.96	8.23	90.64	-911.95	-151.46	4,009.12	3,970.86	38.26	104.794	
11,100.00	7,072.68	7,082.20	7,080.75	33.26	8.23	90.64	-911.94	-151.46	4,107.82	4,069.28	38.55	106.563	
11,200.00	7,072.35	7,082.14	7,080.69	33.56	8.23	90.63	-911.94	-151.46	4,206.59	4,167.75	38.84	108.307	
11,300.00	7,072.02	7,082.07	7,080.62	33.86	8.23	90.62	-911.94	-151.46	4,305.41	4,266.28	39.13	110.024	
11,400.00	7,071.69	7,082.01	7,080.55	34.16	8.23	90.62	-911.94	-151.46	4,404.29	4,364.87	39.42	111.716	
11,500.00	7,071.36	7,081.94	7,080.49	34.46	8.23	90.61	-911.94	-151.46	4,503.22	4,463.50	39.72	113.383	
11,600.00	7,071.04	7,081.87	7,080.42	34.76	8.23	90.61	-911.94	-151.46	4,602.19	4,562.18	40.01	115.025	
11,700.00	7,070.71	7,081.80	7,080.35	35.06	8.23	90.60	-911.94	-151.46	4,701.21	4,660.90	40.30	116.644	
11,800.00	7,070.38	7,081.73	7,080.28	35.36	8.23	90.59	-911.94	-151.46	4,800.26	4,759.67	40.60	118.240	
11,900.00	7,070.05	7,081.67	7,080.21	35.66	8.23	90.59	-911.94	-151.46	4,899.36	4,858.47	40.89	119.813	
12,000.00	7,069.72	7,081.60	7,080.14	35.96	8.23	90.58	-911.94	-151.46	4,998.49	4,957.30	41.19	121.363	
12,100.00	7,069.39	7,081.53	7,080.07	36.26	8.23	90.58	-911.93	-151.46	5,097.65	5,056.17	41.48	122.891	
12,200.00	7,069.06	7,081.46	7,080.00	36.56	8.23	90.57	-911.93	-151.46	5,196.85	5,155.08	41.78	124.398	
12,300.00	7,068.73	7,081.38	7,079.93	36.86	8.23	90.56	-911.93	-151.46	5,296.08	5,254.01	42.07	125.884	
12,400.00	7,068.41	7,081.31	7,079.86	37.16	8.23	90.56	-911.93	-151.46	5,395.34	5,352.97	42.37	127.349	
12,500.00	7,068.08	7,081.24	7,079.79	37.46	8.23	90.55	-911.93	-151.46	5,494.62	5,451.96	42.66	128.793	
12,600.00	7,067.75	7,081.17	7,079.72	37.76	8.23	90.54	-911.93	-151.46	5,593.93	5,550.97	42.96	130.218	
12,700.00	7,067.42	7,081.09	7,079.64	38.06	8.23	90.54	-911.93	-151.46	5,693.26	5,650.01	43.25	131.624	
12,800.00	7,067.09	7,081.02	7,079.57	38.36	8.23	90.53	-911.93	-151.46	5,792.62	5,749.06	43.55	133.010	
12,900.00	7,066.76	7,080.95	7,079.49	38.66	8.23	90.53	-911.93	-151.46	5,891.99	5,848.15	43.85	134.377	
13,000.00	7,066.43	7,080.87	7,079.42	38.96	8.23	90.52	-911.92	-151.46	5,991.39	5,947.25	44.14	135.727	
13,100.00	7,066.10	7,080.80	7,079.34	39.26	8.23	90.51	-911.92	-151.46	6,090.81	6,046.37	44.44	137.058	
13,200.00	7,065.77	7,080.72	7,079.27	39.56	8.23	90.51	-911.92	-151.46	6,190.25	6,145.51	44.74	138.372	
13,300.00	7,065.45	7,080.64	7,079.19	39.86	8.23	90.50	-911.92	-151.46	6,289.70	6,244.67	45.03	139.668	
13,400.00	7,065.12	7,080.56	7,079.11	40.16	8.23	90.49	-911.92	-151.46	6,389.17	6,343.84	45.33	140.947	
13,500.00	7,064.79	7,080.49	7,079.03	40.47	8.23	90.48	-911.92	-151.46	6,488.66	6,443.03	45.63	142.210	
13,600.00	7,064.46	7,080.41	7,078.96	40.77	8.23	90.48	-911.92	-151.46	6,588.16	6,542.24	45.92	143.456	
13,700.00	7,064.13	7,080.33	7,078.88	41.07	8.23	90.47	-911.92	-151.46	6,687.68	6,641.46	46.22	144.687	
13,800.00	7,063.80	7,080.25	7,078.80	41.37	8.23	90.46	-911.92	-151.46	6,787.21	6,740.69	46.52	145.901	
13,900.00	7,063.47	7,080.17	7,078.72	41.67	8.23	90.46	-911.91	-151.46	6,886.76	6,839.94	46.82	147.100	
14,000.00	7,063.14	7,080.09	7,078.63	41.97	8.23	90.45	-911.91	-151.46	6,986.32	6,939.20	47.11	148.285	
14,100.00	7,062.82	7,080.00	7,078.55	42.27	8.23	90.44	-911.91	-151.46	7,085.89	7,038.48	47.41	149.454	
14,200.00	7,062.49	7,080.12	7,078.67	42.57	8.23	90.45	-911.91	-151.46	7,185.47	7,137.76	47.71	150.608	
14,300.00	7,062.16	7,080.04	7,078.59	42.87	8.23	90.45	-911.91	-151.46	7,285.07	7,237.06	48.01	151.749	
14,400.00	7,061.83	7,079.96	7,078.51	43.17	8.23	90.44	-911.91	-151.46	7,384.67	7,336.37	48.31	152.875	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,500.00	7,061.50	7,079.88	7,078.43	43.47	8.23	90.43	-911.91	-151.46	7,484.29	7,435.68	48.60	153.987	
14,600.00	7,061.17	7,079.80	7,078.34	43.77	8.23	90.42	-911.91	-151.46	7,583.91	7,535.01	48.90	155.086	
14,700.00	7,060.84	7,079.71	7,078.26	44.07	8.23	90.42	-911.91	-151.46	7,683.55	7,634.35	49.20	156.172	
14,800.00	7,060.51	7,079.63	7,078.17	44.37	8.23	90.41	-911.91	-151.46	7,783.19	7,733.70	49.50	157.244	
14,900.00	7,060.18	7,079.54	7,078.09	44.67	8.23	90.40	-911.90	-151.46	7,882.85	7,833.05	49.80	158.304	
15,000.00	7,059.86	7,079.45	7,078.00	44.97	8.23	90.39	-911.90	-151.46	7,982.51	7,932.42	50.09	159.351	
15,100.00	7,059.53	7,079.36	7,077.91	45.27	8.23	90.39	-911.90	-151.46	8,082.18	8,031.79	50.39	160.386	
15,200.00	7,059.20	7,079.28	7,077.82	45.57	8.23	90.38	-911.90	-151.46	8,181.86	8,131.17	50.69	161.408	
15,300.00	7,058.87	7,079.19	7,077.73	45.87	8.23	90.37	-911.90	-151.46	8,281.55	8,230.56	50.99	162.419	
15,400.00	7,058.54	7,079.09	7,077.64	46.17	8.23	90.36	-911.90	-151.45	8,381.24	8,329.96	51.29	163.417	
15,500.00	7,058.21	7,079.00	7,077.55	46.47	8.23	90.35	-911.90	-151.45	8,480.94	8,429.36	51.59	164.405	
15,600.00	7,057.88	7,078.91	7,077.46	46.77	8.23	90.35	-911.90	-151.45	8,580.65	8,528.77	51.88	165.380	
15,700.00	7,057.55	7,078.81	7,077.36	47.07	8.23	90.34	-911.89	-151.45	8,680.37	8,628.19	52.18	166.345	
15,800.00	7,057.23	7,078.72	7,077.27	47.37	8.23	90.33	-911.89	-151.45	8,780.09	8,727.61	52.48	167.299	
15,900.00	7,056.90	7,078.62	7,077.17	47.67	8.23	90.32	-911.89	-151.45	8,879.82	8,827.04	52.78	168.242	
16,000.00	7,056.57	7,078.53	7,077.07	47.97	8.23	90.31	-911.89	-151.45	8,979.55	8,926.47	53.08	169.174	
16,100.00	7,056.24	7,078.43	7,076.98	48.27	8.23	90.30	-911.89	-151.45	9,079.29	9,025.91	53.38	170.096	
16,200.00	7,055.91	7,078.33	7,076.88	48.57	8.23	90.29	-911.89	-151.45	9,179.04	9,125.36	53.68	171.008	
16,300.00	7,055.58	7,078.22	7,076.77	48.87	8.23	90.29	-911.89	-151.45	9,278.79	9,224.81	53.97	171.909	
16,400.00	7,055.25	7,078.12	7,076.67	49.17	8.23	90.28	-911.88	-151.45	9,378.54	9,324.27	54.27	172.801	
16,500.00	7,054.92	7,078.02	7,076.57	49.47	8.23	90.27	-911.88	-151.45	9,478.31	9,423.73	54.57	173.683	
16,600.00	7,054.59	7,077.91	7,076.46	49.77	8.23	90.26	-911.88	-151.45	9,578.07	9,523.20	54.87	174.555	
16,619.57	7,054.53	7,077.89	7,076.44	49.83	8.23	90.26	-911.88	-151.45	9,597.60	9,542.67	54.93	174.725	
16,700.00	7,054.27	7,077.81	7,076.36	50.07	8.22	90.25	-911.88	-151.45	9,677.84	9,622.67	55.17	175.418	
16,782.16	7,054.00	7,077.72	7,076.27	50.32	8.22	90.24	-911.88	-151.45	9,759.82	9,704.40	55.42	176.120	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	108.32	-1,047.07	3,162.94	3,332.21				
100.00	100.00	44.51	44.51	0.23	0.44	108.32	-1,047.07	3,162.94	3,331.74	3,331.08	0.67	5,009.581	
200.00	200.00	144.52	144.51	0.53	1.67	108.32	-1,047.07	3,162.94	3,331.74	3,329.55	2.19	1,520.338	
269.67	269.67	214.18	214.17	0.74	3.04	108.31	-1,046.76	3,162.94	3,331.65	3,327.88	3.77	883.089	
300.00	300.00	242.44	242.44	0.83	3.59	108.31	-1,046.79	3,162.94	3,331.66	3,327.24	4.42	753.667	
400.00	400.00	344.53	344.51	1.13	5.58	108.32	-1,047.07	3,162.94	3,331.74	3,325.04	6.71	496.776	
500.00	500.00	443.64	443.62	1.43	7.46	108.31	-1,046.68	3,162.94	3,331.62	3,322.73	8.89	374.701	
537.18	537.18	478.81	478.79	1.54	8.13	-77.27	-1,046.74	3,162.94	3,331.59	3,321.92	9.67	344.464	
600.00	599.98	538.24	538.21	1.73	9.26	-77.30	-1,047.01	3,162.94	3,331.35	3,320.36	10.99	303.115	
700.00	699.84	644.38	644.35	2.03	11.28	-77.41	-1,047.07	3,162.94	3,330.21	3,316.90	13.31	250.191	
800.00	799.45	744.00	743.97	2.33	13.18	-77.59	-1,047.07	3,162.94	3,328.32	3,312.81	15.51	214.636	
900.00	898.70	842.36	842.33	2.63	15.05	-77.86	-1,046.55	3,162.94	3,325.55	3,307.87	17.68	188.105	
1,000.00	997.47	939.42	939.38	2.93	16.90	-78.17	-1,046.72	3,162.94	3,322.32	3,302.49	19.83	167.569	
1,100.00	1,095.62	1,035.94	1,035.90	3.23	18.74	-78.55	-1,047.05	3,162.94	3,318.51	3,296.54	21.96	151.089	
1,207.25	1,200.09	1,144.67	1,144.60	3.55	20.95	-79.06	-1,047.07	3,162.94	3,313.68	3,289.19	24.49	135.280	
1,300.00	1,290.03	1,234.60	1,234.54	3.83	22.78	-79.44	-1,047.07	3,162.94	3,309.33	3,282.72	26.60	124.392	
1,400.00	1,386.99	1,330.51	1,330.44	4.13	24.73	-79.85	-1,046.28	3,162.94	3,304.58	3,275.73	28.86	114.518	
1,500.00	1,483.96	1,425.29	1,425.22	4.43	26.66	-80.24	-1,046.51	3,162.94	3,300.30	3,269.21	31.09	106.167	
1,600.00	1,580.93	1,520.19	1,520.11	4.73	28.59	-80.63	-1,046.98	3,162.94	3,296.25	3,262.93	33.32	98.934	
1,700.00	1,677.90	1,622.53	1,622.41	5.03	30.68	-81.06	-1,047.07	3,162.94	3,292.27	3,256.56	35.71	92.207	
1,800.00	1,774.87	1,719.50	1,719.38	5.33	32.66	-81.47	-1,047.07	3,162.94	3,288.44	3,250.46	37.98	86.574	
1,900.00	1,871.83	1,815.75	1,815.61	5.63	34.62	-81.89	-1,045.97	3,162.94	3,284.53	3,244.28	40.25	81.607	
2,000.00	1,968.80	1,910.27	1,910.14	5.93	36.55	-82.29	-1,046.21	3,162.94	3,281.13	3,238.65	42.48	77.245	
2,100.00	2,065.77	2,004.96	2,004.81	6.23	38.48	-82.68	-1,046.75	3,162.94	3,277.97	3,233.26	44.71	73.318	
2,200.00	2,162.74	2,107.43	2,107.25	6.53	40.48	-83.11	-1,047.07	3,162.94	3,274.92	3,227.91	47.01	69.664	
2,300.00	2,259.71	2,204.40	2,204.22	6.83	42.33	-83.52	-1,047.07	3,162.94	3,271.99	3,222.84	49.15	66.569	
2,400.00	2,356.67	2,301.11	2,300.92	7.13	44.16	-83.95	-1,046.28	3,162.94	3,269.08	3,217.79	51.29	63.739	
2,500.00	2,453.64	2,396.43	2,396.24	7.43	45.97	-84.35	-1,046.44	3,162.94	3,266.54	3,213.14	53.40	61.173	
2,600.00	2,550.61	2,491.88	2,491.69	7.73	47.79	-84.75	-1,046.84	3,162.94	3,264.24	3,208.72	55.51	58.803	
2,700.00	2,647.58	2,592.30	2,592.09	8.03	49.69	-85.18	-1,047.07	3,162.94	3,262.07	3,204.35	57.72	56.516	
2,800.00	2,744.55	2,689.27	2,689.06	8.33	51.54	-85.59	-1,047.07	3,162.94	3,260.04	3,200.18	59.86	54.459	
2,900.00	2,841.51	2,786.20	2,785.99	8.63	53.38	-86.02	-1,046.51	3,162.94	3,258.10	3,196.10	62.01	52.546	
3,000.00	2,938.48	2,882.31	2,882.09	8.93	55.21	-86.43	-1,046.60	3,162.94	3,256.46	3,192.32	64.13	50.777	
3,100.00	3,035.45	2,978.50	2,978.28	9.23	57.03	-86.84	-1,046.84	3,162.94	3,255.02	3,188.76	66.26	49.125	
3,200.00	3,132.42	3,077.17	3,076.93	9.53	58.97	-87.26	-1,047.07	3,162.94	3,253.75	3,185.26	68.49	47.505	
3,300.00	3,229.39	3,174.14	3,173.90	9.83	60.94	-87.67	-1,047.07	3,162.94	3,252.64	3,181.87	70.77	45.961	
3,400.00	3,326.35	3,270.59	3,270.35	10.13	62.91	-88.10	-1,046.44	3,162.94	3,251.62	3,178.59	73.04	44.521	
3,500.00	3,423.32	3,366.33	3,366.08	10.43	64.86	-88.51	-1,046.71	3,162.94	3,250.92	3,175.63	75.29	43.180	
3,600.00	3,520.29	3,465.09	3,464.80	10.73	66.92	-88.93	-1,047.07	3,162.94	3,250.39	3,172.74	77.65	41.860	
3,700.00	3,617.26	3,562.06	3,561.77	11.03	69.04	-89.34	-1,047.07	3,162.94	3,250.01	3,169.95	80.07	40.591	
3,800.00	3,714.23	3,658.14	3,657.84	11.33	71.14	-89.77	-1,046.39	3,162.94	3,249.75	3,167.28	82.46	39.408	
3,832.47	3,745.71	3,689.15	3,688.85	11.43	71.81	-89.90	-1,046.50	3,162.94	3,249.74	3,166.50	83.24	39.041	CC
3,900.00	3,811.19	3,753.72	3,753.42	11.63	73.22	-90.17	-1,046.88	3,162.94	3,249.79	3,164.94	84.85	38.300	
4,000.00	3,908.16	3,852.53	3,852.18	11.93	75.33	-90.60	-1,046.72	3,162.94	3,249.94	3,162.69	87.26	37.246	
4,100.00	4,005.13	3,950.02	3,949.64	12.23	77.27	-91.01	-1,047.07	3,162.94	3,250.33	3,160.84	89.49	36.319	
4,200.00	4,102.10	4,046.26	4,045.88	12.53	79.02	-91.43	-1,046.83	3,162.94	3,250.85	3,159.30	91.55	35.509	
4,300.00	4,199.07	4,143.96	4,143.58	12.83	80.74	-91.85	-1,047.07	3,162.94	3,251.59	3,158.02	93.57	34.752	
4,400.00	4,296.03	4,240.91	4,240.53	13.13	82.37	-92.27	-1,046.91	3,162.94	3,252.48	3,156.98	95.50	34.057	
4,500.00	4,393.00	4,337.65	4,337.26	13.43	84.01	-92.68	-1,046.99	3,162.94	3,253.58	3,156.14	97.43	33.393	
4,600.00	4,489.97	4,434.87	4,434.48	13.73	85.65	-93.10	-1,047.07	3,162.94	3,254.85	3,155.47	99.38	32.752	
4,700.00	4,586.94	4,531.78	4,531.39	14.03	87.30	-93.52	-1,046.94	3,162.94	3,256.30	3,154.98	101.32	32.138	
4,800.00	4,683.91	4,628.81	4,628.42	14.33	88.94	-93.93	-1,047.07	3,162.94	3,257.94	3,154.67	103.27	31.548	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,780.87	4,725.78	4,725.39	14.63	90.66	-94.35	-1,047.07	3,162.94	3,259.76	3,154.48	105.28	30.961	
5,000.00	4,877.84	4,822.70	4,822.31	14.93	92.37	-94.77	-1,046.96	3,162.94	3,261.76	3,154.46	107.30	30.399	
5,100.00	4,974.81	4,919.72	4,919.32	15.23	94.13	-95.18	-1,047.07	3,162.94	3,263.95	3,154.59	109.36	29.847	
5,200.00	5,071.78	5,016.69	5,016.29	15.53	95.98	-95.60	-1,046.79	3,162.94	3,266.31	3,154.81	111.50	29.294	
5,300.00	5,168.75	5,162.33	5,113.26	15.83	98.76	-96.01	-1,047.07	3,162.94	3,268.86	3,154.27	114.59	28.526 ES	
5,400.00	5,265.71	5,210.64	5,210.23	16.13	99.71	-96.42	-1,047.07	3,162.94	3,271.58	3,155.74	115.84	28.242	
5,500.00	5,362.68	5,307.81	5,307.40	16.43	101.63	-96.84	-1,046.72	3,162.94	3,274.50	3,156.45	118.05	27.737	
5,600.00	5,459.65	5,405.41	5,405.00	16.73	103.55	-97.24	-1,047.21	3,162.94	3,277.57	3,157.30	120.28	27.250	
5,700.00	5,556.62	5,501.56	5,501.13	17.03	105.60	-97.65	-1,047.07	3,162.94	3,280.84	3,158.22	122.62	26.755	
5,800.00	5,653.59	5,599.26	5,598.83	17.33	107.65	-98.07	-1,046.86	3,162.94	3,284.30	3,159.32	124.98	26.279	
5,900.00	5,750.55	5,695.54	5,695.07	17.63	109.76	-98.47	-1,047.07	3,162.94	3,287.91	3,160.52	127.39	25.811	
6,000.00	5,847.52	5,793.17	5,792.69	17.93	111.95	-98.89	-1,046.46	3,162.94	3,291.74	3,161.87	129.87	25.346	
6,100.00	5,944.49	5,892.30	5,891.81	18.23	114.17	-99.30	-1,047.22	3,162.94	3,295.67	3,163.28	132.40	24.893	
6,200.00	6,041.46	5,986.50	5,985.97	18.53	116.36	-99.69	-1,047.07	3,162.94	3,299.83	3,164.94	134.89	24.463	
6,300.00	6,138.43	6,085.43	6,084.89	18.83	118.66	-100.11	-1,046.66	3,162.94	3,304.20	3,166.71	137.49	24.033	
6,400.00	6,235.39	6,180.51	6,179.91	19.13	120.83	-100.50	-1,047.07	3,162.94	3,308.66	3,168.71	139.96	23.640	
6,500.00	6,332.36	6,278.08	6,277.47	19.43	123.03	-100.92	-1,046.24	3,162.94	3,313.42	3,170.96	142.46	23.259	
6,600.00	6,429.33	6,403.49	6,373.84	19.73	125.84	-101.31	-1,047.07	3,162.94	3,318.19	3,172.62	145.57	22.794	
6,700.00	6,526.30	6,471.47	6,470.81	20.03	127.28	-101.71	-1,047.07	3,162.94	3,323.21	3,175.91	147.31	22.560	
6,715.28	6,541.12	6,486.29	6,485.63	20.08	127.59	-101.77	-1,047.07	3,162.94	3,324.00	3,176.33	147.67	22.510	
6,750.00	6,574.74	6,520.04	6,519.37	20.18	128.31	-115.13	-1,046.52	3,162.94	3,326.90	3,178.41	148.48	22.406	
6,800.00	6,622.83	6,569.50	6,568.83	20.33	129.35	-131.14	-1,046.62	3,162.94	3,334.64	3,184.96	149.68	22.278	
6,850.00	6,670.20	6,618.32	6,617.64	20.49	130.39	-142.86	-1,046.88	3,162.94	3,346.65	3,195.79	150.86	22.183	
6,900.00	6,716.50	6,666.10	6,665.42	20.64	131.40	-151.22	-1,047.30	3,162.94	3,362.81	3,210.79	152.03	22.120	
6,950.00	6,761.36	6,706.57	6,705.87	20.79	132.25	-157.33	-1,047.07	3,162.94	3,383.10	3,230.07	153.03	22.107 SF	
7,000.00	6,804.45	6,749.66	6,748.96	20.94	133.17	-161.99	-1,047.07	3,162.94	3,407.25	3,253.15	154.09	22.111	
7,050.00	6,845.44	6,791.39	6,790.69	21.09	134.05	-165.72	-1,046.54	3,162.94	3,435.16	3,280.03	155.13	22.144	
7,100.00	6,884.01	6,831.27	6,830.57	21.24	134.89	-168.86	-1,046.66	3,162.94	3,466.46	3,310.34	156.12	22.203	
7,150.00	6,919.88	6,868.41	6,867.70	21.39	135.68	-171.65	-1,046.87	3,162.94	3,500.98	3,343.92	157.06	22.291	
7,200.00	6,952.78	6,902.51	6,901.79	21.54	136.40	-174.30	-1,047.14	3,162.94	3,538.46	3,380.53	157.93	22.405	
7,250.00	6,982.44	6,927.69	6,926.95	21.69	136.96	-177.02	-1,047.07	3,162.94	3,578.65	3,420.01	158.64	22.558	
7,300.00	7,008.65	6,953.90	6,953.16	21.84	137.53	179.96	-1,047.07	3,162.94	3,621.21	3,461.85	159.36	22.723	
7,350.00	7,031.20	6,976.45	6,975.71	21.99	138.03	176.28	-1,047.07	3,162.94	3,665.82	3,505.81	160.01	22.910	
7,400.00	7,049.92	6,995.18	6,994.44	22.14	138.44	171.32	-1,047.07	3,162.94	3,712.12	3,551.55	160.57	23.118	
7,450.00	7,064.68	7,009.93	7,009.19	22.29	138.76	163.85	-1,047.07	3,162.94	3,759.79	3,598.74	161.04	23.346	
7,500.00	7,075.36	7,020.71	7,019.96	22.44	139.00	151.05	-1,046.53	3,162.94	3,808.52	3,647.09	161.43	23.592	
7,550.00	7,081.87	7,027.47	7,026.72	22.59	139.14	127.37	-1,046.53	3,162.94	3,857.80	3,696.07	161.73	23.853	
7,604.16	7,084.18	7,029.86	7,029.11	22.75	139.20	88.67	-1,046.53	3,162.94	3,911.46	3,749.52	161.95	24.153	
7,700.00	7,083.86	7,029.53	7,028.79	23.04	139.19	88.64	-1,046.53	3,162.94	4,006.43	3,844.21	162.23	24.697	
7,800.00	7,083.53	7,029.19	7,028.44	23.34	139.18	88.60	-1,046.53	3,162.94	4,105.57	3,943.05	162.52	25.262	
7,900.00	7,083.20	7,028.85	7,028.10	23.64	139.18	88.57	-1,046.53	3,162.94	4,204.74	4,041.93	162.81	25.826	
8,000.00	7,082.87	7,028.51	7,027.76	23.94	139.17	88.53	-1,046.53	3,162.94	4,303.96	4,140.85	163.11	26.387	
8,100.00	7,082.54	7,028.16	7,027.42	24.24	139.16	88.49	-1,046.53	3,162.94	4,403.21	4,239.81	163.40	26.948	
8,200.00	7,082.22	7,027.82	7,027.08	24.54	139.15	88.46	-1,046.53	3,162.94	4,502.49	4,338.80	163.69	27.506	
8,300.00	7,081.89	7,027.48	7,026.74	24.84	139.15	88.42	-1,046.53	3,162.94	4,601.80	4,437.82	163.99	28.062	
8,400.00	7,081.56	7,027.14	7,026.40	25.14	139.14	88.38	-1,046.53	3,162.94	4,701.14	4,536.87	164.28	28.617	
8,500.00	7,081.23	7,026.80	7,026.05	25.45	139.13	88.35	-1,046.53	3,162.94	4,800.51	4,635.94	164.57	29.170	
8,600.00	7,080.90	7,026.46	7,025.71	25.75	139.12	88.31	-1,046.53	3,162.94	4,899.91	4,735.04	164.87	29.721	
8,700.00	7,080.57	7,026.12	7,025.37	26.05	139.12	88.27	-1,046.53	3,162.94	4,999.33	4,834.17	165.16	30.270	
8,800.00	7,080.24	7,025.77	7,025.03	26.35	139.11	88.24	-1,046.53	3,162.94	5,098.77	4,933.32	165.45	30.817	
8,900.00	7,079.91	7,025.43	7,024.69	26.65	139.10	88.20	-1,046.53	3,162.94	5,198.23	5,032.49	165.74	31.363	
9,000.00	7,079.59	7,025.09	7,024.35	26.95	139.09	88.16	-1,046.53	3,162.94	5,297.72	5,131.68	166.04	31.907	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,100.00	7,079.26	7,024.75	7,024.01	27.25	139.09	88.13	-1,046.53	3,162.94	5,397.22	5,230.89	166.33	32.449	
9,200.00	7,078.93	7,024.41	7,023.67	27.55	139.08	88.09	-1,046.53	3,162.94	5,496.74	5,330.12	166.62	32.989	
9,300.00	7,078.60	7,024.07	7,023.32	27.85	139.07	88.05	-1,046.53	3,162.94	5,596.28	5,429.36	166.92	33.527	
9,400.00	7,078.27	7,023.73	7,022.98	28.15	139.06	88.02	-1,046.53	3,162.94	5,695.83	5,528.62	167.21	34.064	
9,500.00	7,077.94	7,023.39	7,022.64	28.45	139.06	87.98	-1,046.53	3,162.94	5,795.40	5,627.90	167.50	34.599	
9,600.00	7,077.61	7,023.04	7,022.30	28.75	139.05	87.94	-1,046.53	3,162.94	5,894.99	5,727.19	167.80	35.132	
9,700.00	7,077.28	7,022.70	7,021.96	29.05	139.04	87.91	-1,046.53	3,162.94	5,994.59	5,826.50	168.09	35.663	
9,800.00	7,076.95	7,022.36	7,021.62	29.35	139.03	87.87	-1,046.53	3,162.94	6,094.20	5,925.81	168.38	36.193	
9,900.00	7,076.63	7,022.02	7,021.28	29.65	139.03	87.83	-1,046.53	3,162.94	6,193.82	6,025.14	168.68	36.720	
10,000.00	7,076.30	7,021.68	7,020.94	29.95	139.02	87.80	-1,046.53	3,162.94	6,293.45	6,124.49	168.97	37.246	
10,100.00	7,075.97	7,021.34	7,020.60	30.25	139.01	87.76	-1,046.53	3,162.94	6,393.10	6,223.84	169.26	37.771	
10,200.00	7,075.64	7,021.00	7,020.25	30.55	139.00	87.72	-1,046.53	3,162.94	6,492.76	6,323.20	169.55	38.293	
10,300.00	7,075.31	7,020.66	7,019.91	30.85	139.00	87.69	-1,046.53	3,162.94	6,592.43	6,422.58	169.85	38.814	
10,400.00	7,074.98	7,020.32	7,019.57	31.15	138.99	87.65	-1,046.53	3,162.94	6,692.11	6,521.96	170.14	39.333	
10,500.00	7,074.65	7,019.97	7,019.23	31.46	138.98	87.61	-1,046.53	3,162.94	6,791.79	6,621.36	170.43	39.850	
10,600.00	7,074.32	7,019.63	7,018.89	31.76	138.97	87.58	-1,046.53	3,162.94	6,891.49	6,720.76	170.73	40.366	
10,700.00	7,074.00	7,019.29	7,018.55	32.06	138.97	87.54	-1,046.53	3,162.94	6,991.19	6,820.17	171.02	40.879	
10,800.00	7,073.67	7,018.95	7,018.21	32.36	138.96	87.50	-1,046.53	3,162.94	7,090.91	6,919.59	171.31	41.392	
10,900.00	7,073.34	7,018.61	7,017.87	32.66	138.95	87.47	-1,046.53	3,162.94	7,190.63	7,019.02	171.61	41.902	
11,000.00	7,073.01	7,018.27	7,017.53	32.96	138.94	87.43	-1,046.53	3,162.94	7,290.36	7,118.46	171.90	42.411	
11,100.00	7,072.68	7,017.93	7,017.19	33.26	138.94	87.39	-1,047.07	3,162.94	7,390.06	7,217.87	172.19	42.918	
11,200.00	7,072.35	7,017.60	7,016.86	33.56	138.93	87.35	-1,047.07	3,162.94	7,489.80	7,317.32	172.48	43.423	
11,300.00	7,072.02	7,017.27	7,016.54	33.86	138.92	87.32	-1,047.07	3,162.94	7,589.55	7,416.77	172.78	43.927	
11,400.00	7,071.69	7,016.95	7,016.21	34.16	138.91	87.28	-1,047.07	3,162.94	7,689.31	7,516.24	173.07	44.429	
11,500.00	7,071.36	7,016.62	7,015.88	34.46	138.91	87.25	-1,047.07	3,162.94	7,789.07	7,615.71	173.36	44.929	
11,600.00	7,071.04	7,016.29	7,015.55	34.76	138.90	87.21	-1,047.07	3,162.94	7,888.84	7,715.18	173.66	45.428	
11,700.00	7,070.71	7,015.96	7,015.22	35.06	138.89	87.18	-1,047.07	3,162.94	7,988.62	7,814.66	173.95	45.925	
11,800.00	7,070.38	7,015.63	7,014.89	35.36	138.89	87.14	-1,047.07	3,162.94	8,088.40	7,914.15	174.24	46.420	
11,900.00	7,070.05	7,015.30	7,014.56	35.66	138.88	87.11	-1,047.07	3,162.94	8,188.18	8,013.64	174.54	46.914	
12,000.00	7,069.72	7,014.97	7,014.23	35.96	138.87	87.07	-1,047.07	3,162.94	8,287.97	8,113.14	174.83	47.406	
12,100.00	7,069.39	7,014.64	7,013.90	36.26	138.86	87.04	-1,047.07	3,162.94	8,387.77	8,212.65	175.12	47.896	
12,200.00	7,069.06	7,014.31	7,013.58	36.56	138.86	87.00	-1,047.07	3,162.94	8,487.57	8,312.15	175.42	48.385	
12,300.00	7,068.73	7,013.99	7,013.25	36.86	138.85	86.97	-1,047.07	3,162.94	8,587.37	8,411.67	175.71	48.873	
12,400.00	7,068.41	7,013.66	7,012.92	37.16	138.84	86.93	-1,047.07	3,162.94	8,687.18	8,511.18	176.00	49.358	
12,500.00	7,068.08	7,013.33	7,012.59	37.46	138.84	86.90	-1,047.07	3,162.94	8,787.00	8,610.70	176.30	49.842	
12,600.00	7,067.75	7,013.00	7,012.26	37.76	138.83	86.86	-1,047.07	3,162.94	8,886.82	8,710.23	176.59	50.325	
12,700.00	7,067.42	7,012.67	7,011.93	38.06	138.82	86.82	-1,047.07	3,162.94	8,986.64	8,809.76	176.88	50.806	
12,800.00	7,067.09	7,012.34	7,011.60	38.36	138.81	86.79	-1,047.07	3,162.94	9,086.46	8,909.29	177.17	51.285	
12,900.00	7,066.76	7,012.01	7,011.27	38.66	138.81	86.75	-1,047.07	3,162.94	9,186.29	9,008.83	177.47	51.763	
13,000.00	7,066.43	7,011.68	7,010.95	38.96	138.80	86.72	-1,047.07	3,162.94	9,286.13	9,108.37	177.76	52.239	
13,100.00	7,066.10	7,011.36	7,010.62	39.26	138.79	86.68	-1,047.07	3,162.94	9,385.97	9,207.91	178.05	52.714	
13,200.00	7,065.77	7,011.03	7,010.29	39.56	138.78	86.65	-1,047.07	3,162.94	9,485.81	9,307.46	178.35	53.187	
13,300.00	7,065.45	7,010.70	7,009.96	39.86	138.78	86.61	-1,047.07	3,162.94	9,585.65	9,407.01	178.64	53.659	
13,400.00	7,065.12	7,010.37	7,009.63	40.16	138.77	86.58	-1,047.07	3,162.94	9,685.50	9,506.56	178.93	54.129	
13,500.00	7,064.79	7,010.04	7,009.30	40.47	138.76	86.54	-1,047.07	3,162.94	9,785.35	9,606.12	179.23	54.598	
13,600.00	7,064.46	7,009.71	7,008.97	40.77	138.76	86.51	-1,047.07	3,162.94	9,885.20	9,705.68	179.52	55.065	
13,700.00	7,064.13	7,009.38	7,008.64	41.07	138.75	86.47	-1,047.07	3,162.94	9,985.06	9,805.24	179.81	55.530	
13,800.00	7,063.80	7,009.05	7,008.31	41.37	138.74	86.44	-1,047.07	3,162.94	10,084.92	9,904.81	180.11	55.994	
13,900.00	7,063.47	7,008.72	7,007.99	41.67	138.73	86.40	-1,047.07	3,162.94	10,184.78	10,004.38	180.40	56.457	
14,000.00	7,063.14	7,008.40	7,007.66	41.97	138.73	86.37	-1,047.07	3,162.94	10,284.64	10,103.95	180.69	56.918	
14,100.00	7,062.82	7,008.07	7,007.33	42.27	138.72	86.33	-1,047.07	3,162.94	10,384.51	10,203.52	180.98	57.378	
14,200.00	7,062.49	7,007.74	7,007.00	42.57	138.71	86.30	-1,047.07	3,162.94	10,484.38	10,303.10	181.28	57.836	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
14,300.00	7,062.16	7,007.41	7,006.67	42.87	138.71	86.26	-1,047.07	3,162.94	10,584.25	10,402.68	181.57	58.293	
14,400.00	7,061.83	7,007.08	7,006.34	43.17	138.70	86.22	-1,047.07	3,162.94	10,684.12	10,502.26	181.86	58.748	
14,500.00	7,061.50	7,006.75	7,006.01	43.47	138.69	86.19	-1,047.07	3,162.94	10,784.00	10,601.84	182.16	59.202	
14,600.00	7,061.17	7,006.42	7,005.68	43.77	138.68	86.15	-1,047.07	3,162.94	10,883.88	10,701.43	182.45	59.654	
14,700.00	7,060.84	7,006.09	7,005.36	44.07	138.68	86.12	-1,047.07	3,162.94	10,983.76	10,801.02	182.74	60.105	
14,800.00	7,060.51	7,005.77	7,005.03	44.37	138.67	86.08	-1,047.07	3,162.94	11,083.64	10,900.61	183.04	60.554	
14,900.00	7,060.18	7,005.44	7,004.70	44.67	138.66	86.05	-1,047.07	3,162.94	11,183.53	11,000.20	183.33	61.003	
15,000.00	7,059.86	7,005.11	7,004.37	44.97	138.65	86.01	-1,047.07	3,162.94	11,283.42	11,099.80	183.62	61.449	
15,100.00	7,059.53	7,004.78	7,004.04	45.27	138.65	85.98	-1,047.07	3,162.94	11,383.31	11,199.39	183.92	61.894	
15,200.00	7,059.20	7,004.45	7,003.71	45.57	138.64	85.94	-1,047.07	3,162.94	11,483.20	11,298.99	184.21	62.338	
15,300.00	7,058.87	7,004.12	7,003.38	45.87	138.63	85.91	-1,047.07	3,162.94	11,583.09	11,398.59	184.50	62.781	
15,400.00	7,058.54	7,003.79	7,003.05	46.17	138.63	85.87	-1,047.07	3,162.94	11,682.99	11,498.19	184.79	63.222	
15,500.00	7,058.21	7,003.46	7,002.72	46.47	138.62	85.84	-1,047.07	3,162.94	11,782.88	11,597.80	185.09	63.661	
15,600.00	7,057.88	7,003.13	7,002.40	46.77	138.61	85.80	-1,047.07	3,162.94	11,882.78	11,697.40	185.38	64.100	
15,700.00	7,057.55	7,002.81	7,002.07	47.07	138.60	85.77	-1,047.07	3,162.94	11,982.68	11,797.01	185.67	64.536	
15,800.00	7,057.23	7,002.48	7,001.74	47.37	138.60	85.73	-1,047.07	3,162.94	12,082.58	11,896.62	185.97	64.972	
15,900.00	7,056.90	7,002.15	7,001.41	47.67	138.59	85.70	-1,047.07	3,162.94	12,182.49	11,996.23	186.26	65.406	
16,000.00	7,056.57	7,001.82	7,001.08	47.97	138.58	85.66	-1,047.07	3,162.94	12,282.39	12,095.84	186.55	65.839	
16,100.00	7,056.24	7,001.49	7,000.75	48.27	138.58	85.63	-1,047.07	3,162.94	12,382.30	12,195.45	186.85	66.270	
16,200.00	7,055.91	7,001.16	7,000.42	48.57	138.57	85.59	-1,047.07	3,162.94	12,482.21	12,295.07	187.14	66.701	
16,300.00	7,055.58	7,000.83	7,000.09	48.87	138.56	85.55	-1,047.07	3,162.94	12,582.12	12,394.68	187.43	67.129	
16,400.00	7,055.25	7,000.50	6,999.77	49.17	138.55	85.52	-1,047.07	3,162.94	12,682.03	12,494.30	187.72	67.557	
16,500.00	7,054.92	7,000.17	6,999.44	49.47	138.55	85.48	-1,047.07	3,162.94	12,781.94	12,593.92	188.02	67.983	
16,600.00	7,054.59	6,999.85	6,999.11	49.77	138.54	85.45	-1,047.07	3,162.94	12,881.85	12,693.54	188.31	68.408	
16,619.57	7,054.53	6,999.78	6,999.04	49.83	138.54	85.44	-1,047.07	3,162.94	12,901.41	12,713.04	188.37	68.491	
16,700.00	7,054.27	6,999.52	6,998.78	50.07	138.53	85.41	-1,047.07	3,162.94	12,981.77	12,793.16	188.60	68.831	
16,782.16	7,054.00	6,999.25	6,998.51	50.32	138.53	85.39	-1,047.07	3,162.94	13,063.86	12,875.02	188.84	69.178	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	137.56	-1,720.76	1,573.68	2,332.53				
100.00	100.00	43.51	43.51	0.23	0.39	137.56	-1,720.76	1,573.68	2,331.84	2,331.23	0.61	3,809.380	
200.00	200.00	143.51	143.51	0.53	1.27	137.56	-1,720.76	1,573.68	2,331.84	2,330.04	1.80	1,296.971	
300.00	300.00	243.51	243.51	0.83	2.16	137.56	-1,720.76	1,573.68	2,331.84	2,328.86	2.98	781.528	
400.00	400.00	343.51	343.51	1.13	3.51	137.56	-1,720.76	1,573.68	2,331.84	2,327.21	4.63	503.211	
500.00	500.00	443.51	443.51	1.43	5.35	137.56	-1,720.76	1,573.68	2,331.84	2,325.06	6.78	344.080	
600.00	599.98	543.49	543.49	1.73	7.19	-48.07	-1,720.76	1,573.68	2,330.67	2,321.75	8.92	261.292	
700.00	699.84	641.90	641.90	2.03	9.01	-48.22	-1,720.53	1,573.68	2,327.01	2,315.98	11.03	210.901	
800.00	799.45	740.07	740.06	2.33	10.82	-48.47	-1,720.65	1,573.68	2,321.30	2,308.16	13.14	176.619	
900.00	898.70	842.24	842.21	2.63	12.73	-48.82	-1,720.76	1,573.68	2,313.29	2,297.94	15.35	150.683	
1,000.00	997.47	941.00	940.98	2.93	14.60	-49.26	-1,720.76	1,573.68	2,302.96	2,285.43	17.53	131.401	
1,100.00	1,095.62	1,039.13	1,039.10	3.23	16.46	-49.83	-1,719.96	1,573.68	2,289.87	2,270.18	19.69	116.305	
1,207.25	1,200.09	1,139.21	1,139.18	3.55	18.36	-50.51	-1,720.10	1,573.68	2,274.20	2,252.29	21.91	103.799	
1,300.00	1,290.03	1,225.48	1,225.45	3.83	20.00	-50.92	-1,720.43	1,573.68	2,259.84	2,236.01	23.82	94.852	
1,400.00	1,386.99	1,330.56	1,330.51	4.13	21.99	-51.43	-1,720.76	1,573.68	2,244.46	2,218.34	26.12	85.925	
1,500.00	1,483.96	1,427.53	1,427.47	4.43	23.84	-51.91	-1,720.76	1,573.68	2,229.02	2,200.75	28.27	78.861	
1,600.00	1,580.93	1,524.49	1,524.44	4.73	25.68	-52.40	-1,720.76	1,573.68	2,213.74	2,183.33	30.41	72.799	
1,700.00	1,677.90	1,619.14	1,619.09	5.03	27.48	-52.89	-1,720.28	1,573.68	2,198.30	2,165.79	32.51	67.621	
1,800.00	1,774.87	1,713.69	1,713.64	5.33	29.28	-53.38	-1,720.51	1,573.68	2,183.51	2,148.90	34.61	63.095	
1,900.00	1,871.83	1,815.43	1,815.35	5.63	31.23	-53.91	-1,720.76	1,573.68	2,168.90	2,132.04	36.86	58.839	
2,000.00	1,968.80	1,912.40	1,912.31	5.93	33.13	-54.42	-1,720.76	1,573.68	2,154.31	2,115.24	39.06	55.150	
2,100.00	2,065.77	2,009.36	2,009.28	6.23	35.04	-54.94	-1,720.76	1,573.68	2,139.89	2,098.63	41.26	51.859	
2,200.00	2,162.74	2,103.69	2,103.60	6.53	36.88	-55.47	-1,720.01	1,573.68	2,125.17	2,081.75	43.41	48.953	
2,300.00	2,259.71	2,197.36	2,197.27	6.83	38.72	-55.98	-1,720.31	1,573.68	2,111.32	2,065.77	45.55	46.353	
2,400.00	2,356.67	2,300.31	2,300.19	7.13	40.74	-56.55	-1,720.76	1,573.68	2,097.75	2,049.88	47.87	43.824	
2,500.00	2,453.64	2,397.28	2,397.15	7.43	42.64	-57.10	-1,720.76	1,573.68	2,084.09	2,034.02	50.07	41.622	
2,600.00	2,550.61	2,494.25	2,494.12	7.73	44.55	-57.65	-1,720.76	1,573.68	2,070.62	2,018.35	52.28	39.609	
2,700.00	2,647.58	2,589.26	2,589.13	8.03	46.41	-58.22	-1,719.99	1,573.68	2,056.89	2,002.44	54.44	37.781	
2,800.00	2,744.55	2,683.21	2,683.07	8.33	48.26	-58.77	-1,720.25	1,573.68	2,044.00	1,987.41	56.59	36.121	
2,900.00	2,841.51	2,785.19	2,785.03	8.63	50.27	-59.36	-1,720.76	1,573.68	2,031.46	1,972.57	58.89	34.493	
3,000.00	2,938.48	2,882.16	2,882.00	8.93	52.23	-59.94	-1,720.76	1,573.68	2,018.83	1,957.67	61.16	33.008	
3,100.00	3,035.45	2,979.13	2,978.96	9.23	54.20	-60.53	-1,720.76	1,573.68	2,006.42	1,942.99	63.43	31.632	
3,200.00	3,132.42	3,074.75	3,074.58	9.53	56.14	-61.14	-1,719.97	1,573.68	1,993.77	1,928.10	65.67	30.360	
3,300.00	3,229.39	3,168.99	3,168.81	9.83	58.06	-61.72	-1,720.20	1,573.68	1,981.94	1,914.06	67.88	29.196	
3,400.00	3,326.35	3,263.34	3,263.16	10.13	59.97	-62.31	-1,720.66	1,573.68	1,970.48	1,900.38	70.10	28.111	
3,500.00	3,423.32	3,367.06	3,366.84	10.43	62.14	-62.96	-1,720.76	1,573.68	1,959.02	1,886.45	72.57	26.994	
3,600.00	3,520.29	3,464.03	3,463.80	10.73	64.19	-63.59	-1,720.76	1,573.68	1,947.76	1,872.85	74.92	25.999	
3,700.00	3,617.26	3,561.00	3,560.77	11.03	66.23	-64.22	-1,720.76	1,573.68	1,936.74	1,859.48	77.26	25.068	
3,800.00	3,714.23	3,657.96	3,657.74	11.33	68.28	-64.86	-1,720.76	1,573.68	1,925.97	1,846.37	79.61	24.194	
3,900.00	3,811.19	3,754.93	3,754.71	11.63	70.32	-65.50	-1,720.76	1,573.68	1,915.45	1,833.50	81.95	23.374	
4,000.00	3,908.16	3,851.90	3,851.68	11.93	72.37	-66.16	-1,720.76	1,573.68	1,905.19	1,820.89	84.29	22.602	
4,100.00	4,005.13	3,948.87	3,948.64	12.23	74.41	-66.81	-1,720.76	1,573.68	1,895.18	1,808.55	86.64	21.875	
4,200.00	4,102.10	4,045.84	4,045.61	12.53	76.46	-67.48	-1,720.76	1,573.68	1,885.44	1,796.46	88.98	21.189	
4,300.00	4,199.07	4,142.80	4,142.58	12.83	78.50	-68.15	-1,720.76	1,573.68	1,875.97	1,784.64	91.33	20.541	
4,400.00	4,296.03	4,239.02	4,238.76	13.13	80.53	-68.92	-1,717.00	1,573.68	1,865.04	1,771.39	93.66	19.914	
4,500.00	4,393.00	4,335.23	4,334.96	13.43	82.56	-69.60	-1,717.14	1,573.68	1,856.22	1,760.23	95.98	19.339	
4,600.00	4,489.97	4,431.48	4,431.21	13.73	84.59	-70.28	-1,717.36	1,573.68	1,847.71	1,749.40	98.31	18.794	
4,700.00	4,586.94	4,527.78	4,527.51	14.03	86.62	-70.96	-1,717.68	1,573.68	1,839.52	1,738.88	100.64	18.277	
4,800.00	4,683.91	4,624.13	4,623.85	14.33	88.65	-71.65	-1,718.09	1,573.68	1,831.65	1,728.68	102.98	17.787	
4,900.00	4,780.87	4,720.53	4,720.24	14.63	90.68	-72.34	-1,718.59	1,573.68	1,824.11	1,718.80	105.31	17.322	
5,000.00	4,877.84	4,816.98	4,816.68	14.93	92.71	-73.03	-1,719.19	1,573.68	1,816.88	1,709.24	107.64	16.879	
5,100.00	4,974.81	4,913.47	4,913.17	15.23	94.75	-73.73	-1,719.88	1,573.68	1,809.97	1,700.00	109.98	16.458	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	5,071.78	5,010.02	5,009.71	15.53	96.79	-74.43	-1,720.67	1,573.68	1,803.39	1,691.07	112.31	16.057	
5,300.00	5,168.75	5,112.75	5,112.26	15.83	98.96	-75.20	-1,720.76	1,573.68	1,796.83	1,682.04	114.79	15.654	
5,400.00	5,265.71	5,209.72	5,209.23	16.13	101.01	-75.93	-1,720.76	1,573.68	1,790.56	1,673.42	117.14	15.285	
5,500.00	5,362.68	5,306.69	5,306.20	16.43	103.07	-76.67	-1,720.76	1,573.68	1,784.60	1,665.11	119.50	14.934	
5,600.00	5,459.65	5,403.65	5,403.16	16.73	105.12	-77.41	-1,720.76	1,573.68	1,778.96	1,657.11	121.85	14.600	
5,700.00	5,556.62	5,500.62	5,500.13	17.03	107.18	-78.16	-1,720.76	1,573.68	1,773.64	1,649.43	124.20	14.280	
5,800.00	5,653.59	5,597.59	5,597.10	17.33	109.23	-78.91	-1,720.76	1,573.68	1,768.63	1,642.07	126.56	13.975	
5,900.00	5,750.55	5,694.56	5,694.07	17.63	111.29	-79.67	-1,720.76	1,573.68	1,763.96	1,635.04	128.91	13.683	
6,000.00	5,847.52	5,791.53	5,791.04	17.93	113.34	-80.43	-1,720.76	1,573.68	1,759.61	1,628.34	131.27	13.405	
6,100.00	5,944.49	5,888.49	5,888.00	18.23	115.40	-81.19	-1,720.76	1,573.68	1,755.58	1,621.96	133.62	13.138	
6,200.00	6,041.46	5,985.46	5,984.97	18.53	117.45	-81.96	-1,720.76	1,573.68	1,751.89	1,615.92	135.98	12.884	
6,300.00	6,138.43	6,082.43	6,081.94	18.83	119.50	-82.73	-1,720.76	1,573.68	1,748.54	1,610.21	138.33	12.640	
6,400.00	6,235.39	6,179.40	6,178.91	19.13	121.56	-83.50	-1,720.76	1,573.68	1,745.52	1,604.83	140.68	12.407	
6,500.00	6,332.36	6,276.37	6,275.88	19.43	123.61	-84.27	-1,720.76	1,573.68	1,742.84	1,599.80	143.04	12.184	
6,551.66	6,382.46	6,326.46	6,325.97	19.59	124.67	-84.68	-1,720.76	1,573.68	1,741.58	1,597.33	144.26	12.073	CC, ES, SF
6,600.00	6,429.33	6,219.00	6,218.33	19.73	122.40	-83.81	-1,720.76	1,573.68	1,747.34	1,605.68	141.66	12.335	
6,700.00	6,526.30	6,219.00	6,218.33	20.03	122.40	-83.81	-1,720.76	1,573.68	1,756.58	1,615.39	141.20	12.441	
6,715.28	6,541.12	6,219.00	6,218.33	20.08	122.40	-83.81	-1,720.76	1,573.68	1,758.49	1,617.40	141.10	12.463	
6,750.00	6,574.74	6,219.00	6,218.33	20.18	122.40	-96.87	-1,720.76	1,573.68	1,764.33	1,623.49	140.84	12.527	
6,800.00	6,622.83	6,219.00	6,218.33	20.33	122.40	-112.32	-1,720.76	1,573.68	1,777.42	1,637.00	140.42	12.658	
6,850.00	6,670.20	6,219.00	6,218.33	20.49	122.40	-123.29	-1,720.76	1,573.68	1,795.81	1,655.86	139.95	12.832	
6,900.00	6,716.50	6,219.00	6,218.33	20.64	122.40	-130.69	-1,720.76	1,573.68	1,819.22	1,679.76	139.46	13.044	
6,950.00	6,761.36	6,219.00	6,218.33	20.79	122.40	-135.57	-1,720.76	1,573.68	1,847.28	1,708.31	138.97	13.292	
7,000.00	6,804.45	6,219.00	6,218.33	20.94	122.40	-138.64	-1,720.76	1,573.68	1,879.58	1,741.07	138.50	13.571	
7,050.00	6,845.44	6,219.00	6,218.33	21.09	122.40	-140.33	-1,720.76	1,573.68	1,915.65	1,777.57	138.08	13.874	
7,100.00	6,884.01	6,219.00	6,218.33	21.24	122.40	-140.81	-1,720.76	1,573.68	1,955.02	1,817.32	137.70	14.197	
7,150.00	6,919.88	6,219.00	6,218.33	21.39	122.40	-140.04	-1,720.76	1,573.68	1,997.22	1,859.82	137.40	14.536	
7,200.00	6,952.78	6,219.00	6,218.33	21.54	122.40	-137.74	-1,720.76	1,573.68	2,041.75	1,904.57	137.18	14.884	
7,250.00	6,982.44	6,219.00	6,218.33	21.69	122.40	-133.22	-1,720.76	1,573.68	2,088.13	1,951.09	137.04	15.237	
7,300.00	7,008.65	6,219.00	6,218.33	21.84	122.40	-124.95	-1,720.76	1,573.68	2,135.91	1,998.92	136.99	15.592	
7,350.00	7,031.20	6,219.00	6,218.33	21.99	122.40	-109.75	-1,720.76	1,573.68	2,184.64	2,047.61	137.02	15.944	
7,400.00	7,049.92	6,219.00	6,218.33	22.14	122.40	-83.82	-1,720.76	1,573.68	2,233.90	2,096.76	137.14	16.289	
7,450.00	7,064.68	6,219.00	6,218.33	22.29	122.40	-53.06	-1,720.76	1,573.68	2,283.29	2,145.95	137.34	16.625	
7,500.00	7,075.36	6,219.00	6,218.33	22.44	122.40	-31.07	-1,720.76	1,573.68	2,332.44	2,194.84	137.61	16.950	
7,550.00	7,081.87	6,219.00	6,218.33	22.59	122.40	-18.39	-1,720.76	1,573.68	2,381.01	2,243.07	137.94	17.261	
7,604.16	7,084.18	6,219.00	6,218.33	22.75	122.40	-10.38	-1,720.76	1,573.68	2,432.58	2,294.21	138.37	17.581	
7,700.00	7,083.86	6,219.00	6,218.33	23.04	122.40	-10.38	-1,720.76	1,573.68	2,522.87	2,383.72	139.15	18.131	
7,800.00	7,083.53	6,219.00	6,218.33	23.34	122.40	-10.38	-1,720.76	1,573.68	2,617.50	2,477.59	139.91	18.708	
7,900.00	7,083.20	6,219.00	6,218.33	23.64	122.40	-10.38	-1,720.76	1,573.68	2,712.52	2,571.90	140.63	19.289	
8,000.00	7,082.87	6,219.00	6,218.33	23.94	122.40	-10.38	-1,720.76	1,573.68	2,807.89	2,666.59	141.30	19.872	
8,100.00	7,082.54	6,219.00	6,218.33	24.24	122.40	-10.38	-1,720.76	1,573.68	2,903.56	2,761.63	141.94	20.456	
8,200.00	7,082.22	6,219.00	6,218.33	24.54	122.40	-10.38	-1,720.76	1,573.68	2,999.52	2,856.98	142.54	21.043	
8,300.00	7,081.89	6,219.00	6,218.33	24.84	122.40	-10.38	-1,720.76	1,573.68	3,095.74	2,952.62	143.12	21.630	
8,400.00	7,081.56	6,219.00	6,218.33	25.14	122.40	-10.38	-1,720.76	1,573.68	3,192.19	3,048.51	143.67	22.218	
8,500.00	7,081.23	6,219.00	6,218.33	25.45	122.40	-10.38	-1,720.76	1,573.68	3,288.84	3,144.64	144.21	22.807	
8,600.00	7,080.90	6,219.00	6,218.33	25.75	122.40	-10.38	-1,720.76	1,573.68	3,385.70	3,240.98	144.72	23.395	
8,700.00	7,080.57	6,219.00	6,218.33	26.05	122.40	-10.38	-1,720.76	1,573.68	3,482.73	3,337.52	145.21	23.984	
8,800.00	7,080.24	6,219.00	6,218.33	26.35	122.40	-10.38	-1,720.76	1,573.68	3,579.92	3,434.24	145.69	24.572	
8,900.00	7,079.91	6,219.00	6,218.33	26.65	122.40	-10.38	-1,720.76	1,573.68	3,677.27	3,531.12	146.15	25.160	
9,000.00	7,079.59	6,219.00	6,218.33	26.95	122.40	-10.38	-1,720.76	1,573.68	3,774.75	3,628.15	146.60	25.748	
9,100.00	7,079.26	6,219.00	6,218.33	27.25	122.40	-10.38	-1,720.76	1,573.68	3,872.37	3,725.32	147.05	26.335	
9,200.00	7,078.93	6,219.00	6,218.33	27.55	122.40	-10.38	-1,720.76	1,573.68	3,970.10	3,822.62	147.48	26.920	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	6,219.00	6,218.33	27.85	122.40	-10.38	-1,720.76	1,573.68	4,067.94	3,920.04	147.90	27.505	
9,400.00	7,078.27	6,219.00	6,218.33	28.15	122.40	-10.38	-1,720.76	1,573.68	4,165.88	4,017.57	148.31	28.089	
9,500.00	7,077.94	6,219.00	6,218.33	28.45	122.40	-10.38	-1,720.76	1,573.68	4,263.92	4,115.21	148.71	28.672	
9,600.00	7,077.61	6,219.00	6,218.33	28.75	122.40	-10.38	-1,720.76	1,573.68	4,362.05	4,212.94	149.11	29.254	
9,700.00	7,077.28	6,219.00	6,218.33	29.05	122.40	-10.38	-1,720.76	1,573.68	4,460.26	4,310.76	149.50	29.834	
9,800.00	7,076.95	6,219.00	6,218.33	29.35	122.40	-10.38	-1,720.76	1,573.68	4,558.55	4,408.66	149.89	30.413	
9,900.00	7,076.63	6,219.00	6,218.33	29.65	122.40	-10.38	-1,720.76	1,573.68	4,656.91	4,506.65	150.27	30.991	
10,000.00	7,076.30	6,219.00	6,218.33	29.95	122.40	-10.38	-1,720.76	1,573.68	4,755.34	4,604.70	150.64	31.567	
10,100.00	7,075.97	6,219.00	6,218.33	30.25	122.40	-10.38	-1,720.76	1,573.68	4,853.84	4,702.82	151.01	32.142	
10,200.00	7,075.64	6,219.00	6,218.33	30.55	122.40	-10.38	-1,720.76	1,573.68	4,952.39	4,801.01	151.38	32.715	
10,300.00	7,075.31	6,219.00	6,218.33	30.85	122.40	-10.38	-1,720.76	1,573.68	5,051.01	4,899.26	151.74	33.287	
10,400.00	7,074.98	6,219.00	6,218.33	31.15	122.40	-10.38	-1,720.76	1,573.68	5,149.67	4,997.57	152.10	33.857	
10,500.00	7,074.65	6,219.00	6,218.33	31.46	122.40	-10.38	-1,720.76	1,573.68	5,248.39	5,095.93	152.46	34.425	
10,600.00	7,074.32	6,219.00	6,218.33	31.76	122.40	-10.38	-1,720.76	1,573.68	5,347.15	5,194.34	152.81	34.992	
10,700.00	7,074.00	6,219.00	6,218.33	32.06	122.40	-10.38	-1,720.76	1,573.68	5,445.96	5,292.80	153.16	35.557	
10,800.00	7,073.67	6,219.00	6,218.33	32.36	122.40	-10.38	-1,720.76	1,573.68	5,544.81	5,391.30	153.51	36.121	
10,900.00	7,073.34	6,219.00	6,218.33	32.66	122.40	-10.38	-1,720.76	1,573.68	5,643.70	5,489.85	153.85	36.683	
11,000.00	7,073.01	6,219.00	6,218.33	32.96	122.40	-10.38	-1,720.76	1,573.68	5,742.63	5,588.44	154.19	37.243	
11,100.00	7,072.68	6,219.00	6,218.33	33.26	122.40	-10.38	-1,720.76	1,573.68	5,841.60	5,687.06	154.53	37.801	
11,200.00	7,072.35	6,219.00	6,218.33	33.56	122.40	-10.38	-1,720.76	1,573.68	5,940.60	5,785.73	154.87	38.358	
11,300.00	7,072.02	6,219.00	6,218.33	33.86	122.40	-10.38	-1,720.76	1,573.68	6,039.63	5,884.42	155.21	38.913	
11,400.00	7,071.69	6,219.00	6,218.33	34.16	122.40	-10.38	-1,720.76	1,573.68	6,138.70	5,983.16	155.54	39.466	
11,500.00	7,071.36	6,219.00	6,218.33	34.46	122.40	-10.38	-1,720.76	1,573.68	6,237.80	6,081.92	155.88	40.017	
11,600.00	7,071.04	6,219.00	6,218.33	34.76	122.40	-10.38	-1,720.76	1,573.68	6,336.92	6,180.71	156.21	40.567	
11,700.00	7,070.71	6,219.00	6,218.33	35.06	122.40	-10.38	-1,720.76	1,573.68	6,436.07	6,279.53	156.54	41.115	
11,800.00	7,070.38	6,219.00	6,218.33	35.36	122.40	-10.38	-1,720.76	1,573.68	6,535.25	6,378.38	156.87	41.661	
11,900.00	7,070.05	6,219.00	6,218.33	35.66	122.40	-10.38	-1,720.76	1,573.68	6,634.45	6,477.25	157.20	42.205	
12,000.00	7,069.72	6,219.00	6,218.33	35.96	122.40	-10.38	-1,720.76	1,573.68	6,733.67	6,576.15	157.52	42.748	
12,100.00	7,069.39	6,219.00	6,218.33	36.26	122.40	-10.38	-1,720.76	1,573.68	6,832.92	6,675.07	157.85	43.288	
12,200.00	7,069.06	6,219.00	6,218.33	36.56	122.40	-10.38	-1,720.76	1,573.68	6,932.19	6,774.02	158.17	43.827	
12,300.00	7,068.73	6,219.00	6,218.33	36.86	122.40	-10.38	-1,720.76	1,573.68	7,031.48	6,872.99	158.49	44.365	
12,400.00	7,068.41	6,219.00	6,218.33	37.16	122.40	-10.38	-1,720.76	1,573.68	7,130.79	6,971.97	158.82	44.900	
12,500.00	7,068.08	6,219.00	6,218.33	37.46	122.40	-10.38	-1,720.76	1,573.68	7,230.12	7,070.98	159.14	45.433	
12,600.00	7,067.75	6,219.00	6,218.33	37.76	122.40	-10.38	-1,720.76	1,573.68	7,329.47	7,170.01	159.46	45.965	
12,700.00	7,067.42	6,219.00	6,218.33	38.06	122.40	-10.38	-1,720.76	1,573.68	7,428.83	7,269.05	159.78	46.495	
12,800.00	7,067.09	6,219.00	6,218.33	38.36	122.40	-10.38	-1,720.76	1,573.68	7,528.21	7,368.12	160.09	47.023	
12,900.00	7,066.76	6,219.00	6,218.33	38.66	122.40	-10.38	-1,720.76	1,573.68	7,627.61	7,467.20	160.41	47.550	
13,000.00	7,066.43	6,219.00	6,218.33	38.96	122.40	-10.38	-1,720.76	1,573.68	7,727.02	7,566.29	160.73	48.074	
13,100.00	7,066.10	6,219.00	6,218.33	39.26	122.40	-10.38	-1,720.76	1,573.68	7,826.45	7,665.40	161.05	48.597	
13,200.00	7,065.77	6,219.00	6,218.33	39.56	122.40	-10.38	-1,720.76	1,573.68	7,925.89	7,764.53	161.36	49.118	
13,300.00	7,065.45	6,219.00	6,218.33	39.86	122.40	-10.38	-1,720.76	1,573.68	8,025.35	7,863.67	161.68	49.638	
13,400.00	7,065.12	6,219.00	6,218.33	40.16	122.40	-10.38	-1,720.76	1,573.68	8,124.82	7,962.83	161.99	50.155	
13,500.00	7,064.79	6,219.00	6,218.33	40.47	122.40	-10.38	-1,720.76	1,573.68	8,224.30	8,061.99	162.31	50.671	
13,600.00	7,064.46	6,219.00	6,218.33	40.77	122.40	-10.38	-1,720.76	1,573.68	8,323.80	8,161.18	162.62	51.185	
13,700.00	7,064.13	6,219.00	6,218.33	41.07	122.40	-10.38	-1,720.76	1,573.68	8,423.30	8,260.37	162.93	51.697	
13,800.00	7,063.80	6,219.00	6,218.33	41.37	122.40	-10.38	-1,720.76	1,573.68	8,522.82	8,359.58	163.25	52.208	
13,900.00	7,063.47	6,219.00	6,218.33	41.67	122.40	-10.38	-1,720.76	1,573.68	8,622.35	8,458.79	163.56	52.717	
14,000.00	7,063.14	6,219.00	6,218.33	41.97	122.40	-10.38	-1,720.76	1,573.68	8,721.89	8,558.02	163.87	53.224	
14,100.00	7,062.82	6,219.00	6,218.33	42.27	122.40	-10.38	-1,720.76	1,573.68	8,821.44	8,657.26	164.18	53.729	
14,200.00	7,062.49	6,219.00	6,218.33	42.57	122.40	-10.38	-1,720.76	1,573.68	8,921.00	8,756.51	164.49	54.233	
14,300.00	7,062.16	6,219.00	6,218.33	42.87	122.40	-10.38	-1,720.76	1,573.68	9,020.57	8,855.77	164.81	54.735	
14,400.00	7,061.83	6,219.00	6,218.33	43.17	122.40	-10.38	-1,720.76	1,573.68	9,120.15	8,955.04	165.12	55.235	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 295-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,500.00	7,061.50	6,219.00	6,218.33	43.47	122.40	-10.38	-1,720.76	1,573.68	9,219.74	9,054.32	165.43	55.733	
14,600.00	7,061.17	6,219.00	6,218.33	43.77	122.40	-10.38	-1,720.76	1,573.68	9,319.34	9,153.61	165.74	56.230	
14,700.00	7,060.84	6,219.00	6,218.33	44.07	122.40	-10.38	-1,720.76	1,573.68	9,418.95	9,252.90	166.05	56.725	
14,800.00	7,060.51	6,219.00	6,218.33	44.37	122.40	-10.38	-1,720.76	1,573.68	9,518.56	9,352.21	166.35	57.218	
14,900.00	7,060.18	6,219.00	6,218.33	44.67	122.40	-10.38	-1,720.76	1,573.68	9,618.19	9,451.52	166.66	57.710	
15,000.00	7,059.86	6,219.00	6,218.33	44.97	122.40	-10.38	-1,720.76	1,573.68	9,717.82	9,550.84	166.97	58.200	
15,100.00	7,059.53	6,219.00	6,218.33	45.27	122.40	-10.38	-1,720.76	1,573.68	9,817.45	9,650.17	167.28	58.688	
15,200.00	7,059.20	6,219.00	6,218.33	45.57	122.40	-10.38	-1,720.76	1,573.68	9,917.10	9,749.51	167.59	59.175	
15,300.00	7,058.87	6,219.00	6,218.33	45.87	122.40	-10.38	-1,720.76	1,573.68	10,016.75	9,848.85	167.90	59.660	
15,400.00	7,058.54	6,219.00	6,218.33	46.17	122.40	-10.38	-1,720.76	1,573.68	10,116.41	9,948.21	168.20	60.143	
15,500.00	7,058.21	6,219.00	6,218.33	46.47	122.40	-10.38	-1,720.76	1,573.68	10,216.08	10,047.56	168.51	60.625	
15,600.00	7,057.88	6,219.00	6,218.33	46.77	122.40	-10.38	-1,720.76	1,573.68	10,315.75	10,146.93	168.82	61.105	
15,700.00	7,057.55	6,219.00	6,218.33	47.07	122.40	-10.38	-1,720.76	1,573.68	10,415.43	10,246.30	169.13	61.584	
15,800.00	7,057.23	6,219.00	6,218.33	47.37	122.40	-10.38	-1,720.76	1,573.68	10,515.11	10,345.68	169.43	62.060	
15,900.00	7,056.90	6,219.00	6,218.33	47.67	122.40	-10.38	-1,720.76	1,573.68	10,614.80	10,445.06	169.74	62.536	
16,000.00	7,056.57	6,219.00	6,218.33	47.97	122.40	-10.38	-1,720.76	1,573.68	10,714.50	10,544.45	170.05	63.009	
16,100.00	7,056.24	6,219.00	6,218.33	48.27	122.40	-10.38	-1,720.76	1,573.68	10,814.20	10,643.85	170.35	63.481	
16,200.00	7,055.91	6,219.00	6,218.33	48.57	122.40	-10.38	-1,720.76	1,573.68	10,913.91	10,743.25	170.66	63.952	
16,300.00	7,055.58	6,219.00	6,218.33	48.87	122.40	-10.38	-1,720.76	1,573.68	11,013.62	10,842.66	170.96	64.420	
16,400.00	7,055.25	6,219.00	6,218.33	49.17	122.40	-10.38	-1,720.76	1,573.68	11,113.34	10,942.07	171.27	64.888	
16,500.00	7,054.92	6,219.00	6,218.33	49.47	122.40	-10.38	-1,720.76	1,573.68	11,213.06	11,041.48	171.58	65.353	
16,600.00	7,054.59	6,219.00	6,218.33	49.77	122.40	-10.38	-1,720.76	1,573.68	11,312.79	11,140.91	171.88	65.817	
16,619.57	7,054.53	6,219.00	6,218.33	49.83	122.40	-10.38	-1,720.76	1,573.68	11,332.31	11,160.37	171.94	65.908	
16,700.00	7,054.27	6,219.00	6,218.33	50.07	122.40	-10.38	-1,720.76	1,573.68	11,412.52	11,240.33	172.19	66.280	
16,782.16	7,054.00	6,219.00	6,218.33	50.32	122.40	-10.38	-1,720.76	1,573.68	11,494.47	11,322.03	172.44	66.659	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	153.83	153.83	0.00	0.13	117.29	-1,947.40	3,775.29	4,247.96				
100.00	100.00	250.57	250.57	0.23	0.25	117.29	-1,947.80	3,775.27	4,248.14	4,247.75	0.39	N/A	
200.00	200.00	347.00	347.00	0.53	0.38	117.30	-1,948.38	3,775.24	4,248.39	4,247.62	0.77	5,521.105	
300.00	300.00	443.44	443.43	0.83	0.51	117.31	-1,949.16	3,775.20	4,248.73	4,247.57	1.15	3,693.677	
400.00	400.00	545.75	545.74	1.13	0.62	117.31	-1,949.80	3,775.30	4,249.09	4,247.55	1.55	2,749.611	
500.00	500.00	651.36	651.35	1.43	0.62	117.31	-1,949.43	3,775.81	4,249.36	4,247.42	1.94	2,191.917	
600.00	599.98	794.01	793.98	1.73	0.61	-68.35	-1,947.60	3,776.10	4,248.27	4,245.97	2.30	1,845.207	
700.00	699.84	901.82	901.77	2.03	0.63	-68.50	-1,945.42	3,776.06	4,245.38	4,242.73	2.65	1,602.032	
800.00	799.45	991.30	991.24	2.33	0.67	-68.69	-1,943.68	3,776.08	4,241.31	4,238.32	3.00	1,414.814	
900.00	898.70	1,092.33	1,092.24	2.63	0.74	-68.97	-1,941.63	3,776.29	4,236.15	4,232.79	3.36	1,260.976	
1,000.00	997.47	1,194.06	1,193.95	2.93	0.82	-69.32	-1,939.43	3,776.36	4,229.60	4,225.88	3.72	1,135.724	
1,100.00	1,095.62	1,290.25	1,290.12	3.23	0.91	-69.72	-1,937.49	3,776.51	4,222.04	4,217.95	4.09	1,032.560	
1,207.25	1,200.09	1,393.06	1,392.91	3.55	1.01	-70.22	-1,935.41	3,776.51	4,212.56	4,208.08	4.48	939.840	
1,300.00	1,290.03	1,493.28	1,493.11	3.83	1.12	-70.56	-1,933.46	3,776.49	4,203.92	4,199.09	4.83	869.931	
1,400.00	1,386.99	1,581.05	1,580.87	4.13	1.22	-70.86	-1,931.90	3,776.33	4,194.68	4,189.48	5.20	807.053	
1,500.00	1,483.96	1,686.91	1,686.71	4.43	1.34	-71.22	-1,929.84	3,776.12	4,185.47	4,179.90	5.58	750.333	
1,600.00	1,580.93	1,786.44	1,786.22	4.73	1.45	-71.56	-1,927.90	3,775.98	4,176.48	4,170.53	5.95	701.357	
1,700.00	1,677.90	1,874.22	1,873.98	5.03	1.56	-71.86	-1,926.09	3,775.78	4,167.52	4,161.19	6.32	659.053	
1,800.00	1,774.87	1,984.53	1,984.27	5.33	1.69	-72.24	-1,923.70	3,775.53	4,158.65	4,151.94	6.71	619.689	
1,900.00	1,871.83	2,096.52	2,096.23	5.63	1.82	-72.63	-1,921.36	3,774.97	4,149.73	4,142.63	7.10	584.156	
2,000.00	1,968.80	2,188.56	2,188.24	5.93	1.93	-72.94	-1,919.49	3,774.31	4,140.79	4,133.31	7.48	553.377	
2,100.00	2,065.77	2,252.38	2,252.05	6.23	2.01	-73.17	-1,918.18	3,774.10	4,132.35	4,124.51	7.83	527.489	
2,200.00	2,162.74	2,347.24	2,346.89	6.53	2.13	-73.50	-1,916.28	3,774.26	4,124.51	4,116.30	8.20	502.704	
2,300.00	2,259.71	2,444.71	2,444.34	6.83	2.25	-73.84	-1,914.52	3,774.40	4,116.86	4,108.28	8.58	479.975	
2,400.00	2,356.67	2,545.25	2,544.87	7.13	2.38	-74.19	-1,912.88	3,774.36	4,109.27	4,100.31	8.95	458.883	
2,500.00	2,453.64	2,643.53	2,643.14	7.43	2.50	-74.54	-1,911.24	3,774.19	4,101.69	4,092.36	9.33	439.480	
2,600.00	2,550.61	2,730.31	2,729.91	7.73	2.61	-74.84	-1,909.68	3,774.10	4,094.31	4,084.61	9.70	422.090	
2,700.00	2,647.58	2,822.59	2,822.17	8.03	2.73	-75.17	-1,907.79	3,774.45	4,087.40	4,077.34	10.06	406.151	
2,800.00	2,744.55	2,914.55	2,914.11	8.33	2.84	-75.50	-1,905.97	3,774.86	4,080.75	4,070.32	10.43	391.411	
2,900.00	2,841.51	3,010.48	3,010.02	8.63	2.96	-75.85	-1,904.28	3,775.32	4,074.34	4,063.56	10.79	377.642	
3,000.00	2,938.48	3,106.93	3,106.46	8.93	3.08	-76.19	-1,902.63	3,775.75	4,068.10	4,056.95	11.15	364.773	
3,100.00	3,035.45	3,196.52	3,196.04	9.23	3.20	-76.51	-1,901.30	3,776.09	4,062.02	4,050.51	11.51	352.876	
3,200.00	3,132.42	3,294.95	3,294.45	9.53	3.32	-76.86	-1,899.94	3,776.50	4,056.16	4,044.28	11.87	341.574	
3,300.00	3,229.39	3,391.54	3,391.04	9.83	3.44	-77.21	-1,898.68	3,776.94	4,050.52	4,038.28	12.24	331.027	
3,400.00	3,326.35	3,490.88	3,490.36	10.13	3.57	-77.56	-1,897.59	3,777.30	4,045.01	4,032.41	12.60	321.029	
3,500.00	3,423.32	3,583.69	3,583.17	10.43	3.69	-77.89	-1,896.41	3,777.67	4,039.64	4,026.68	12.96	311.706	
3,600.00	3,520.29	3,678.38	3,677.85	10.73	3.81	-78.23	-1,895.44	3,778.04	4,034.49	4,021.17	13.32	302.910	
3,700.00	3,617.26	3,768.34	3,767.81	11.03	3.92	-78.55	-1,894.61	3,778.54	4,029.66	4,015.99	13.67	294.729	
3,800.00	3,714.23	3,859.95	3,859.41	11.33	4.03	-78.87	-1,893.85	3,778.95	4,024.93	4,010.91	14.03	286.929	
3,900.00	3,811.19	3,940.29	3,939.75	11.63	4.08	-79.15	-1,893.83	3,779.42	4,020.70	4,006.34	14.37	279.828	
4,000.00	3,908.16	4,014.55	4,014.01	11.93	4.08	-79.39	-1,894.51	3,779.99	4,017.06	4,002.35	14.71	273.096	
4,100.00	4,005.13	4,095.10	4,094.54	12.23	4.07	-79.66	-1,895.93	3,780.94	4,014.13	3,999.08	15.06	266.582	
4,200.00	4,102.10	4,192.57	4,191.99	12.53	4.06	-79.97	-1,897.80	3,782.16	4,011.46	3,996.04	15.42	260.150	
4,300.00	4,199.07	4,291.94	4,291.33	12.83	4.06	-80.29	-1,899.71	3,783.43	4,008.94	3,993.15	15.79	253.947	
4,400.00	4,296.03	4,421.64	4,421.00	13.13	4.06	-80.71	-1,901.84	3,784.62	4,006.16	3,989.98	16.18	247.638	
4,500.00	4,393.00	4,539.90	4,539.26	13.43	4.05	-81.11	-1,903.08	3,784.96	4,002.73	3,986.17	16.56	241.666	
4,600.00	4,489.97	4,648.55	4,647.90	13.73	4.04	-81.47	-1,904.10	3,784.90	3,999.10	3,982.16	16.94	236.063	
4,700.00	4,586.94	4,744.88	4,744.23	14.03	4.03	-81.79	-1,904.83	3,784.79	3,995.51	3,978.20	17.31	230.828	
4,800.00	4,683.91	4,844.44	4,843.78	14.33	4.03	-82.13	-1,905.64	3,784.63	3,992.03	3,974.35	17.68	225.792	
4,900.00	4,780.87	4,936.89	4,936.23	14.63	4.03	-82.44	-1,906.45	3,784.54	3,988.76	3,970.71	18.05	221.027	
5,000.00	4,877.84	5,033.49	5,032.83	14.93	4.03	-82.76	-1,907.41	3,784.42	3,985.62	3,967.21	18.42	216.427	
5,100.00	4,974.81	5,126.10	5,125.43	15.23	4.04	-83.07	-1,908.40	3,784.31	3,982.64	3,963.86	18.78	212.047	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
5,200.00	5,071.78	5,221.21	5,220.53	15.53	4.05	-83.39	-1,909.41	3,784.24	3,979.85	3,960.70	19.15	207.819	
5,300.00	5,168.75	5,316.31	5,315.63	15.83	4.07	-83.71	-1,910.42	3,784.24	3,977.25	3,957.73	19.52	203.755	
5,400.00	5,265.71	5,403.77	5,403.09	16.13	4.09	-84.00	-1,911.36	3,784.44	3,975.01	3,955.13	19.89	199.891	
5,500.00	5,362.68	5,500.30	5,499.61	16.43	4.12	-84.33	-1,912.42	3,784.80	3,973.06	3,952.80	20.26	196.098	
5,600.00	5,459.65	5,594.81	5,594.11	16.73	4.16	-84.64	-1,913.49	3,785.22	3,971.31	3,950.67	20.63	192.457	
5,700.00	5,556.62	5,692.19	5,691.48	17.03	4.20	-84.97	-1,914.80	3,785.62	3,969.70	3,948.69	21.01	188.937	
5,800.00	5,653.59	5,811.01	5,810.29	17.33	4.24	-85.36	-1,916.71	3,785.68	3,967.93	3,946.53	21.40	185.436	
5,900.00	5,750.55	5,917.05	5,916.32	17.63	4.28	-85.71	-1,918.24	3,785.32	3,965.89	3,944.11	21.77	182.165	
6,000.00	5,847.52	6,015.12	6,014.38	17.93	4.32	-86.04	-1,919.27	3,785.01	3,963.93	3,941.79	22.14	179.061	
6,100.00	5,944.49	6,114.69	6,113.94	18.23	4.36	-86.38	-1,920.18	3,784.66	3,962.07	3,939.56	22.50	176.064	
6,200.00	6,041.46	6,207.96	6,207.20	18.53	4.40	-86.70	-1,921.08	3,784.30	3,960.32	3,937.45	22.87	173.201	
6,300.00	6,138.43	6,302.82	6,302.06	18.83	4.45	-87.02	-1,922.15	3,784.02	3,958.81	3,935.58	23.23	170.418	
6,400.00	6,235.39	6,391.24	6,390.48	19.13	4.50	-87.31	-1,923.18	3,783.87	3,957.57	3,933.98	23.59	167.753	
6,500.00	6,332.36	6,485.72	6,484.94	19.43	4.55	-87.63	-1,924.28	3,783.84	3,956.60	3,932.64	23.96	165.141	
6,600.00	6,429.33	6,586.58	6,585.80	19.73	4.62	-87.97	-1,925.37	3,783.87	3,955.81	3,931.47	24.33	162.581	
6,700.00	6,526.30	6,689.24	6,688.46	20.03	4.68	-88.32	-1,926.28	3,783.75	3,955.00	3,930.29	24.70	160.105	
6,715.28	6,541.12	6,704.92	6,704.14	20.08	4.69	-88.38	-1,926.41	3,783.72	3,954.88	3,930.12	24.76	159.735	
6,720.10	6,545.78	6,711.08	6,710.30	20.09	4.69	-90.30	-1,926.47	3,783.71	3,954.86	3,930.08	24.78	159.614	CC, ES
6,750.00	6,574.74	6,741.54	6,740.75	20.18	4.71	-101.67	-1,926.75	3,783.62	3,955.62	3,930.73	24.89	158.940	
6,800.00	6,622.83	6,788.38	6,787.60	20.33	4.74	-117.51	-1,927.11	3,783.53	3,960.43	3,935.36	25.07	157.981	
6,850.00	6,670.20	6,836.47	6,835.69	20.49	4.77	-128.97	-1,927.50	3,783.40	3,969.53	3,944.28	25.25	157.203	
6,900.00	6,716.50	6,884.74	6,883.95	20.64	4.81	-136.97	-1,927.95	3,783.26	3,982.89	3,957.46	25.43	156.603	
6,950.00	6,761.36	6,930.11	6,929.31	20.79	4.84	-142.60	-1,928.35	3,783.12	4,000.40	3,974.78	25.61	156.185	
7,000.00	6,804.45	6,970.30	6,969.50	20.94	4.86	-146.61	-1,928.73	3,783.02	4,021.96	3,996.17	25.79	155.949	
7,050.00	6,845.44	7,008.99	7,008.19	21.09	4.89	-149.52	-1,929.09	3,782.93	4,047.41	4,021.44	25.97	155.870	SF
7,100.00	6,884.01	7,045.02	7,044.23	21.24	4.92	-151.61	-1,929.39	3,782.88	4,076.54	4,050.40	26.14	155.941	
7,150.00	6,919.88	7,079.80	7,079.01	21.39	4.94	-153.08	-1,929.69	3,782.85	4,109.14	4,082.82	26.32	156.147	
7,200.00	6,952.78	7,111.65	7,110.85	21.54	4.97	-154.03	-1,929.95	3,782.83	4,144.92	4,118.44	26.49	156.481	
7,250.00	6,982.44	7,140.77	7,139.97	21.69	4.99	-154.50	-1,930.19	3,782.82	4,183.63	4,156.97	26.66	156.930	
7,300.00	7,008.65	7,163.63	7,162.83	21.84	5.01	-154.45	-1,930.39	3,782.82	4,224.95	4,198.12	26.83	157.496	
7,350.00	7,031.20	7,184.88	7,184.08	21.99	5.03	-153.80	-1,930.58	3,782.84	4,268.57	4,241.58	26.99	158.146	
7,400.00	7,049.92	7,204.66	7,203.86	22.14	5.04	-152.35	-1,930.76	3,782.85	4,314.14	4,286.98	27.16	158.865	
7,450.00	7,064.68	7,216.01	7,215.21	22.29	5.05	-149.42	-1,930.87	3,782.86	4,361.30	4,333.99	27.31	159.669	
7,500.00	7,075.36	7,225.00	7,224.20	22.44	5.06	-143.60	-1,930.95	3,782.87	4,409.70	4,382.23	27.47	160.518	
7,550.00	7,081.87	7,230.01	7,229.21	22.59	5.06	-130.00	-1,930.99	3,782.88	4,458.96	4,431.34	27.63	161.406	
7,604.16	7,084.18	7,232.07	7,231.27	22.75	5.06	-85.54	-1,931.01	3,782.89	4,512.85	4,485.06	27.79	162.389	
7,700.00	7,083.86	7,231.59	7,230.79	23.04	5.06	-85.47	-1,931.00	3,782.89	4,608.40	4,580.32	28.08	164.127	
7,800.00	7,083.53	7,231.09	7,230.29	23.34	5.06	-85.38	-1,931.00	3,782.88	4,708.12	4,679.74	28.38	165.904	
7,900.00	7,083.20	7,230.59	7,229.79	23.64	5.06	-85.30	-1,930.99	3,782.88	4,807.85	4,779.17	28.68	167.643	
8,000.00	7,082.87	7,230.09	7,229.29	23.94	5.06	-85.22	-1,930.99	3,782.88	4,907.59	4,878.61	28.98	169.347	
8,100.00	7,082.54	7,229.59	7,228.79	24.24	5.06	-85.14	-1,930.99	3,782.88	5,007.34	4,978.06	29.28	171.017	
8,200.00	7,082.22	7,229.09	7,228.29	24.54	5.06	-85.06	-1,930.98	3,782.88	5,107.10	5,077.52	29.58	172.653	
8,300.00	7,081.89	7,228.60	7,227.79	24.84	5.06	-84.98	-1,930.98	3,782.88	5,206.86	5,176.98	29.88	174.256	
8,400.00	7,081.56	7,228.10	7,227.30	25.14	5.06	-84.90	-1,930.97	3,782.88	5,306.64	5,276.46	30.18	175.828	
8,500.00	7,081.23	7,227.61	7,226.80	25.45	5.06	-84.82	-1,930.97	3,782.88	5,406.43	5,375.95	30.48	177.370	
8,600.00	7,080.90	7,227.11	7,226.31	25.75	5.06	-84.74	-1,930.96	3,782.88	5,506.22	5,475.44	30.78	178.881	
8,700.00	7,080.57	7,226.62	7,225.82	26.05	5.06	-84.65	-1,930.96	3,782.88	5,606.02	5,574.94	31.08	180.364	
8,800.00	7,080.24	7,226.13	7,225.32	26.35	5.06	-84.57	-1,930.96	3,782.87	5,705.83	5,674.45	31.38	181.819	
8,900.00	7,079.91	7,225.64	7,224.83	26.65	5.06	-84.49	-1,930.95	3,782.87	5,805.64	5,773.96	31.68	183.246	
9,000.00	7,079.59	7,225.15	7,224.34	26.95	5.06	-84.42	-1,930.95	3,782.87	5,905.46	5,873.48	31.98	184.647	
9,100.00	7,079.26	7,225.00	7,224.20	27.25	5.06	-84.39	-1,930.95	3,782.87	6,005.29	5,973.01	32.28	186.021	
9,200.00	7,078.93	7,225.00	7,224.20	27.55	5.06	-84.39	-1,930.95	3,782.87	6,105.12	6,072.54	32.58	187.369	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,300.00	7,078.60	7,225.00	7,224.20	27.85	5.06	-84.39	-1,930.95	3,782.87	6,204.96	6,172.08	32.88	188.692	
9,400.00	7,078.27	7,225.00	7,224.20	28.15	5.06	-84.39	-1,930.95	3,782.87	6,304.80	6,271.62	33.18	189.992	
9,500.00	7,077.94	7,225.00	7,224.20	28.45	5.06	-84.39	-1,930.95	3,782.87	6,404.65	6,371.16	33.49	191.269	
9,600.00	7,077.61	7,225.00	7,224.20	28.75	5.06	-84.39	-1,930.95	3,782.87	6,504.50	6,470.72	33.79	192.523	
9,700.00	7,077.28	7,222.58	7,221.78	29.05	5.06	-84.00	-1,930.93	3,782.87	6,604.36	6,570.27	34.08	193.765	
9,800.00	7,076.95	7,222.24	7,221.44	29.35	5.06	-83.94	-1,930.92	3,782.87	6,704.22	6,669.83	34.38	194.977	
9,900.00	7,076.63	7,221.89	7,221.09	29.65	5.05	-83.89	-1,930.92	3,782.87	6,804.08	6,769.40	34.68	196.168	
10,000.00	7,076.30	7,221.55	7,220.75	29.95	5.05	-83.83	-1,930.92	3,782.87	6,903.95	6,868.97	34.99	197.339	
10,100.00	7,075.97	7,221.22	7,220.42	30.25	5.05	-83.78	-1,930.91	3,782.87	7,003.82	6,968.54	35.29	198.491	
10,200.00	7,075.64	7,220.89	7,220.08	30.55	5.05	-83.72	-1,930.91	3,782.86	7,103.70	7,068.11	35.59	199.623	
10,300.00	7,075.31	7,220.56	7,219.75	30.85	5.05	-83.67	-1,930.91	3,782.86	7,203.58	7,167.69	35.89	200.736	
10,400.00	7,074.98	7,220.23	7,219.43	31.15	5.05	-83.62	-1,930.90	3,782.86	7,303.46	7,267.28	36.19	201.831	
10,500.00	7,074.65	7,219.91	7,219.10	31.46	5.05	-83.56	-1,930.90	3,782.86	7,403.35	7,366.86	36.49	202.907	
10,600.00	7,074.32	7,219.58	7,218.78	31.76	5.05	-83.51	-1,930.90	3,782.86	7,503.24	7,466.45	36.79	203.967	
10,700.00	7,074.00	7,219.27	7,218.47	32.06	5.05	-83.46	-1,930.90	3,782.86	7,603.13	7,566.04	37.09	205.009	
10,800.00	7,073.67	7,218.95	7,218.15	32.36	5.05	-83.41	-1,930.89	3,782.86	7,703.02	7,665.64	37.39	206.035	
10,900.00	7,073.34	7,218.64	7,217.84	32.66	5.05	-83.36	-1,930.89	3,782.86	7,802.92	7,765.23	37.69	207.045	
11,000.00	7,073.01	7,218.33	7,217.53	32.96	5.05	-83.31	-1,930.89	3,782.86	7,902.82	7,864.83	37.99	208.038	
11,100.00	7,072.68	7,218.03	7,217.23	33.26	5.05	-83.26	-1,930.89	3,782.86	8,002.72	7,964.43	38.29	209.017	
11,200.00	7,072.35	7,217.72	7,216.92	33.56	5.05	-83.21	-1,930.88	3,782.86	8,102.63	8,064.04	38.59	209.980	
11,300.00	7,072.02	7,217.42	7,216.62	33.86	5.05	-83.16	-1,930.88	3,782.86	8,202.53	8,163.65	38.89	210.928	
11,400.00	7,071.69	7,217.13	7,216.33	34.16	5.05	-83.11	-1,930.88	3,782.86	8,302.44	8,263.26	39.19	211.862	
11,500.00	7,071.36	7,216.83	7,216.03	34.46	5.05	-83.07	-1,930.87	3,782.86	8,402.35	8,362.87	39.49	212.782	
11,600.00	7,071.04	7,216.54	7,215.74	34.76	5.05	-83.02	-1,930.87	3,782.86	8,502.27	8,462.48	39.79	213.688	
11,700.00	7,070.71	7,216.25	7,215.45	35.06	5.05	-82.97	-1,930.87	3,782.86	8,602.18	8,562.10	40.09	214.580	
11,800.00	7,070.38	7,215.97	7,215.16	35.36	5.05	-82.93	-1,930.87	3,782.86	8,702.10	8,661.71	40.39	215.459	
11,900.00	7,070.05	7,215.68	7,214.88	35.66	5.05	-82.88	-1,930.86	3,782.86	8,802.02	8,761.33	40.69	216.326	
12,000.00	7,069.72	7,215.40	7,214.60	35.96	5.05	-82.83	-1,930.86	3,782.86	8,901.94	8,860.95	40.99	217.179	
12,100.00	7,069.39	7,215.12	7,214.32	36.26	5.05	-82.79	-1,930.86	3,782.86	9,001.86	8,960.57	41.29	218.021	
12,200.00	7,069.06	7,214.85	7,214.04	36.56	5.05	-82.74	-1,930.86	3,782.86	9,101.79	9,060.20	41.59	218.850	
12,300.00	7,068.73	7,214.57	7,213.77	36.86	5.05	-82.70	-1,930.85	3,782.86	9,201.71	9,159.82	41.89	219.667	
12,400.00	7,068.41	7,214.30	7,213.50	37.16	5.05	-82.66	-1,930.85	3,782.86	9,301.64	9,259.45	42.19	220.473	
12,500.00	7,068.08	7,214.03	7,213.23	37.46	5.05	-82.61	-1,930.85	3,782.86	9,401.57	9,359.08	42.49	221.268	
12,600.00	7,067.75	7,213.76	7,212.96	37.76	5.05	-82.57	-1,930.85	3,782.85	9,501.50	9,458.71	42.79	222.051	
12,700.00	7,067.42	7,213.50	7,212.70	38.06	5.05	-82.53	-1,930.84	3,782.85	9,601.43	9,558.34	43.09	222.824	
12,800.00	7,067.09	7,213.24	7,212.44	38.36	5.05	-82.48	-1,930.84	3,782.85	9,701.37	9,657.98	43.39	223.586	
12,900.00	7,066.76	7,212.98	7,212.18	38.66	5.05	-82.44	-1,930.84	3,782.85	9,801.30	9,757.61	43.69	224.337	
13,000.00	7,066.43	7,212.72	7,211.92	38.96	5.05	-82.40	-1,930.84	3,782.85	9,901.24	9,857.25	43.99	225.079	
13,100.00	7,066.10	7,212.47	7,211.66	39.26	5.05	-82.36	-1,930.84	3,782.85	10,001.18	9,956.89	44.29	225.810	
13,200.00	7,065.77	7,212.21	7,211.41	39.56	5.05	-82.32	-1,930.83	3,782.85	10,101.11	10,056.52	44.59	226.532	
13,300.00	7,065.45	7,211.96	7,211.16	39.86	5.05	-82.28	-1,930.83	3,782.85	10,201.05	10,156.16	44.89	227.243	
13,400.00	7,065.12	7,211.71	7,210.91	40.16	5.05	-82.24	-1,930.83	3,782.85	10,300.99	10,255.80	45.19	227.946	
13,500.00	7,064.79	7,211.47	7,210.66	40.47	5.05	-82.20	-1,930.83	3,782.85	10,400.94	10,355.45	45.49	228.639	
13,600.00	7,064.46	7,211.22	7,210.42	40.77	5.05	-82.16	-1,930.82	3,782.85	10,500.88	10,455.09	45.79	229.323	
13,700.00	7,064.13	7,210.98	7,210.18	41.07	5.05	-82.12	-1,930.82	3,782.85	10,600.82	10,554.73	46.09	229.999	
13,800.00	7,063.80	7,210.74	7,209.94	41.37	5.05	-82.08	-1,930.82	3,782.85	10,700.77	10,654.38	46.39	230.665	
13,900.00	7,063.47	7,210.50	7,209.70	41.67	5.05	-82.04	-1,930.82	3,782.85	10,800.72	10,754.02	46.69	231.323	
14,000.00	7,063.14	7,210.26	7,209.46	41.97	5.05	-82.00	-1,930.82	3,782.85	10,900.66	10,853.67	46.99	231.973	
14,100.00	7,062.82	7,210.03	7,209.22	42.27	5.05	-81.97	-1,930.81	3,782.85	11,000.61	10,953.32	47.29	232.615	
14,200.00	7,062.49	7,209.79	7,208.99	42.57	5.05	-81.93	-1,930.81	3,782.85	11,100.56	11,052.97	47.59	233.248	
14,300.00	7,062.16	7,209.56	7,208.76	42.87	5.04	-81.89	-1,930.81	3,782.85	11,200.51	11,152.62	47.89	233.874	
14,400.00	7,061.83	7,209.33	7,208.53	43.17	5.04	-81.85	-1,930.81	3,782.85	11,300.46	11,252.27	48.19	234.491	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
14,500.00	7,061.50	7,209.11	7,208.30	43.47	5.04	-81.82	-1,930.80	3,782.85	11,400.41	11,351.92	48.49	235.102	
14,600.00	7,061.17	7,208.88	7,208.08	43.77	5.04	-81.78	-1,930.80	3,782.85	11,500.37	11,451.57	48.79	235.704	
14,700.00	7,060.84	7,208.66	7,207.86	44.07	5.04	-81.75	-1,930.80	3,782.85	11,600.32	11,551.23	49.09	236.300	
14,800.00	7,060.51	7,208.44	7,207.63	44.37	5.04	-81.71	-1,930.80	3,782.85	11,700.27	11,650.88	49.39	236.888	
14,900.00	7,060.18	7,208.22	7,207.41	44.67	5.04	-81.67	-1,930.80	3,782.85	11,800.23	11,750.54	49.69	237.469	
15,000.00	7,059.86	7,208.00	7,207.20	44.97	5.04	-81.64	-1,930.79	3,782.85	11,900.18	11,850.19	49.99	238.043	
15,100.00	7,059.53	7,207.78	7,206.98	45.27	5.04	-81.60	-1,930.79	3,782.85	12,000.14	11,949.85	50.29	238.610	
15,200.00	7,059.20	7,207.57	7,206.76	45.57	5.04	-81.57	-1,930.79	3,782.85	12,100.10	12,049.51	50.59	239.171	
15,300.00	7,058.87	7,207.35	7,206.55	45.87	5.04	-81.54	-1,930.79	3,782.85	12,200.06	12,149.16	50.89	239.725	
15,400.00	7,058.54	7,207.14	7,206.34	46.17	5.04	-81.50	-1,930.79	3,782.85	12,300.01	12,248.82	51.19	240.272	
15,500.00	7,058.21	7,206.93	7,206.13	46.47	5.04	-81.47	-1,930.78	3,782.85	12,399.97	12,348.48	51.49	240.813	
15,600.00	7,057.88	7,206.72	7,205.92	46.77	5.04	-81.43	-1,930.78	3,782.85	12,499.93	12,448.14	51.79	241.348	
15,700.00	7,057.55	7,206.52	7,205.71	47.07	5.04	-81.40	-1,930.78	3,782.85	12,599.89	12,547.80	52.09	241.877	
15,800.00	7,057.23	7,206.31	7,205.51	47.37	5.04	-81.37	-1,930.78	3,782.85	12,699.85	12,647.46	52.39	242.399	
15,900.00	7,056.90	7,206.11	7,205.31	47.67	5.04	-81.34	-1,930.78	3,782.85	12,799.82	12,747.12	52.69	242.916	
16,000.00	7,056.57	7,205.90	7,205.10	47.97	5.04	-81.30	-1,930.77	3,782.85	12,899.78	12,846.79	52.99	243.427	
16,100.00	7,056.24	7,205.70	7,204.90	48.27	5.04	-81.27	-1,930.77	3,782.85	12,999.74	12,946.45	53.29	243.932	
16,200.00	7,055.91	7,205.51	7,204.70	48.57	5.04	-81.24	-1,930.77	3,782.85	13,099.70	13,046.11	53.59	244.432	
16,300.00	7,055.58	7,205.31	7,204.51	48.87	5.04	-81.21	-1,930.77	3,782.85	13,199.67	13,145.78	53.89	244.926	
16,400.00	7,055.25	7,205.11	7,204.31	49.17	5.04	-81.18	-1,930.77	3,782.85	13,299.63	13,245.44	54.19	245.414	
16,500.00	7,054.92	7,204.92	7,204.12	49.47	5.04	-81.14	-1,930.76	3,782.85	13,399.60	13,345.11	54.49	245.898	
16,600.00	7,054.59	16,600.00	7,201.68	49.77	13.85	-80.75	-1,930.74	3,782.85	13,499.56	13,438.05	61.51	219.452	
16,619.57	7,054.53	16,619.57	7,201.60	49.83	13.87	-80.74	-1,930.74	3,782.85	13,519.13	13,457.54	61.59	219.511	
16,700.00	7,054.27	16,700.00	7,201.29	50.07	13.95	-80.69	-1,930.74	3,782.85	13,599.53	13,537.64	61.89	219.751	
16,782.16	7,054.00	16,782.16	7,200.96	50.32	14.03	-80.64	-1,930.73	3,782.85	13,681.66	13,619.47	62.19	219.993	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-94.72	-766.57	-9,276.83	9,308.45				
100.00	100.00	107.49	86.51	0.23	1.05	-94.72	-766.57	-9,276.83	9,308.44	9,307.17	1.27	7,301.724	
200.00	200.00	186.51	186.51	0.53	2.47	-94.72	-766.57	-9,276.83	9,308.44	9,305.44	3.00	3,103.283	
300.00	300.00	286.52	286.51	0.83	4.28	-94.72	-766.57	-9,276.83	9,308.44	9,303.34	5.11	1,822.994	
400.00	400.00	386.52	386.51	1.13	6.18	-94.72	-766.57	-9,276.83	9,308.44	9,301.14	7.30	1,274.290	
500.00	500.00	486.52	486.51	1.43	8.20	-94.72	-766.57	-9,276.83	9,308.44	9,298.82	9.62	967.150	
600.00	599.98	586.50	586.49	1.73	10.22	79.71	-766.57	-9,276.83	9,308.13	9,296.19	11.94	779.314	
700.00	699.84	685.11	685.09	2.03	12.21	79.77	-765.81	-9,276.83	9,307.14	9,292.90	14.24	653.789	
800.00	799.45	782.80	782.78	2.33	14.18	79.84	-766.10	-9,276.83	9,305.61	9,289.10	16.51	563.674	
900.00	898.70	885.28	885.21	2.63	16.29	79.96	-766.57	-9,276.83	9,303.50	9,284.58	18.92	491.823	
1,000.00	997.47	984.05	983.98	2.93	18.53	80.11	-766.57	-9,276.83	9,300.76	9,279.30	21.45	433.522	
1,100.00	1,095.62	1,082.10	1,082.02	3.23	20.75	80.29	-765.66	-9,276.83	9,297.38	9,273.40	23.98	387.789	
1,207.25	1,200.09	1,183.68	1,183.60	3.55	23.05	80.51	-765.89	-9,276.83	9,293.25	9,266.65	26.60	349.388	
1,300.00	1,290.03	1,271.32	1,271.23	3.83	25.04	80.64	-766.44	-9,276.83	9,289.47	9,260.60	28.86	321.853	
1,400.00	1,386.99	1,373.68	1,373.51	4.13	27.31	80.79	-766.57	-9,276.83	9,285.41	9,253.98	31.43	295.414	
1,500.00	1,483.96	1,470.64	1,470.47	4.43	29.45	80.93	-766.57	-9,276.83	9,281.41	9,247.54	33.87	274.002	
1,600.00	1,580.93	1,565.30	1,565.11	4.73	31.54	81.08	-765.30	-9,276.83	9,277.40	9,241.13	36.26	255.829	
1,700.00	1,677.90	1,659.18	1,658.97	5.03	33.61	81.22	-765.94	-9,276.83	9,273.57	9,234.93	38.64	240.015	
1,800.00	1,774.87	1,761.63	1,761.38	5.33	35.76	81.37	-766.57	-9,276.83	9,269.79	9,228.71	41.08	225.633	
1,900.00	1,871.83	1,858.60	1,858.35	5.63	37.66	81.51	-766.57	-9,276.83	9,266.05	9,222.76	43.29	214.058	
2,000.00	1,968.80	1,955.57	1,955.31	5.93	39.57	81.66	-766.57	-9,276.83	9,262.36	9,216.87	45.49	203.606	
2,100.00	2,065.77	2,052.54	2,052.28	6.23	41.47	81.80	-766.57	-9,276.83	9,258.74	9,211.04	47.70	194.121	
2,200.00	2,162.74	2,149.50	2,149.25	6.53	43.37	81.95	-766.57	-9,276.83	9,255.18	9,205.28	49.90	185.475	
2,300.00	2,259.71	2,246.39	2,246.13	6.83	45.28	82.11	-764.88	-9,276.83	9,251.61	9,199.51	52.10	177.566	
2,400.00	2,356.67	2,342.90	2,342.63	7.13	47.17	82.25	-764.96	-9,276.83	9,248.18	9,193.89	54.30	170.325	
2,500.00	2,453.64	2,439.46	2,439.19	7.43	49.07	82.39	-765.15	-9,276.83	9,244.83	9,188.33	56.49	163.644	
2,600.00	2,550.61	2,536.08	2,535.81	7.73	50.96	82.54	-765.47	-9,276.83	9,241.54	9,182.85	58.69	157.461	
2,700.00	2,647.58	2,632.77	2,632.49	8.03	52.86	82.68	-765.90	-9,276.83	9,238.31	9,177.42	60.89	151.723	
2,800.00	2,744.55	2,729.52	2,729.23	8.33	54.76	82.82	-766.45	-9,276.83	9,235.15	9,172.06	63.09	146.383	
2,900.00	2,841.51	2,828.37	2,828.03	8.63	56.77	82.97	-766.57	-9,276.83	9,232.04	9,166.65	65.40	141.172	
3,000.00	2,938.48	2,925.34	2,925.00	8.93	58.75	83.12	-766.57	-9,276.83	9,228.99	9,161.31	67.68	136.365	
3,100.00	3,035.45	3,022.31	3,021.96	9.23	60.74	83.26	-766.57	-9,276.83	9,226.00	9,156.04	69.96	131.872	
3,200.00	3,132.42	3,119.27	3,118.93	9.53	62.72	83.41	-766.57	-9,276.83	9,223.08	9,150.83	72.24	127.665	
3,300.00	3,229.39	3,216.24	3,215.90	9.83	64.70	83.55	-766.57	-9,276.83	9,220.22	9,145.69	74.53	123.715	
3,400.00	3,326.35	3,313.21	3,312.87	10.13	66.68	83.70	-766.57	-9,276.83	9,217.42	9,140.61	76.81	120.002	
3,500.00	3,423.32	3,410.18	3,409.84	10.43	68.67	83.85	-766.57	-9,276.83	9,214.69	9,135.60	79.09	116.504	
3,600.00	3,520.29	3,507.14	3,506.78	10.73	70.65	84.01	-764.12	-9,276.82	9,212.00	9,130.62	81.38	113.202	
3,700.00	3,617.26	3,604.05	3,603.69	11.03	72.63	84.15	-764.18	-9,276.82	9,209.40	9,125.74	83.66	110.084	
3,800.00	3,714.23	3,701.01	3,700.64	11.33	74.61	84.30	-764.31	-9,276.82	9,206.87	9,120.93	85.94	107.130	
3,900.00	3,811.19	3,798.01	3,797.64	11.63	76.60	84.45	-764.53	-9,276.82	9,204.40	9,116.17	88.22	104.329	
4,000.00	3,908.16	3,895.05	3,894.68	11.93	78.58	84.59	-764.83	-9,276.82	9,201.99	9,111.48	90.51	101.669	
4,100.00	4,005.13	3,992.14	3,991.76	12.23	80.57	84.74	-765.21	-9,276.83	9,199.65	9,106.85	92.79	99.140	
4,200.00	4,102.10	4,089.27	4,088.89	12.53	82.55	84.88	-765.67	-9,276.83	9,197.37	9,102.29	95.08	96.732	
4,300.00	4,199.07	4,186.44	4,186.05	12.83	84.54	85.02	-766.22	-9,276.83	9,195.15	9,097.78	97.37	94.437	
4,400.00	4,296.03	4,283.65	4,283.26	13.13	86.53	85.17	-766.85	-9,276.83	9,192.99	9,093.33	99.66	92.247	
4,500.00	4,393.00	4,380.90	4,380.51	13.43	88.52	85.31	-767.56	-9,276.83	9,190.89	9,088.94	101.94	90.155	
4,600.00	4,489.97	4,477.74	4,477.21	13.73	90.50	85.47	-766.13	-9,276.83	9,188.88	9,084.66	104.23	88.164	
4,700.00	4,586.94	4,574.00	4,573.45	14.03	92.55	85.61	-766.57	-9,276.83	9,186.91	9,080.34	106.57	86.203	
4,800.00	4,683.91	4,670.97	4,670.42	14.33	94.76	85.76	-766.57	-9,276.83	9,185.02	9,075.93	109.09	84.197	
4,900.00	4,780.87	4,767.96	4,767.41	14.63	96.98	85.91	-765.84	-9,276.83	9,183.20	9,071.60	111.61	82.282	
5,000.00	4,877.84	4,865.63	4,865.07	14.93	99.21	86.06	-765.99	-9,276.83	9,181.44	9,067.30	114.14	80.441	
5,100.00	4,974.81	4,963.44	4,962.88	15.23	101.45	86.20	-766.42	-9,276.83	9,179.72	9,063.05	116.67	78.678	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	5,071.78	5,058.96	5,058.29	15.53	103.69	86.35	-766.57	-9,276.83	9,178.08	9,058.86	119.22	76.985	
5,300.00	5,168.75	5,242.01	5,155.26	15.83	107.97	86.50	-766.57	-9,276.83	9,176.51	9,052.72	123.79	74.128	
5,400.00	5,265.71	5,252.96	5,252.23	16.13	108.21	86.64	-766.57	-9,276.83	9,175.00	9,050.67	124.34	73.792	
5,500.00	5,362.68	5,349.92	5,349.20	16.43	110.35	86.79	-766.57	-9,276.83	9,173.56	9,046.78	126.78	72.358	
5,600.00	5,459.65	5,446.89	5,446.16	16.73	112.50	86.94	-766.57	-9,276.83	9,172.18	9,042.96	129.22	70.979	
5,700.00	5,556.62	5,543.86	5,543.13	17.03	114.64	87.09	-766.57	-9,276.83	9,170.87	9,039.20	131.67	69.651	
5,800.00	5,653.59	5,640.83	5,640.10	17.33	116.79	87.24	-766.57	-9,276.83	9,169.62	9,035.51	134.11	68.373	
5,900.00	5,750.55	5,737.80	5,737.07	17.63	118.93	87.38	-766.57	-9,276.83	9,168.44	9,031.88	136.56	67.140	
6,000.00	5,847.52	5,835.19	5,834.43	17.93	121.08	87.55	-764.06	-9,276.82	9,167.45	9,028.44	139.01	65.948	
6,100.00	5,944.49	5,932.94	5,932.18	18.23	123.25	87.70	-764.22	-9,276.82	9,166.40	9,024.92	141.47	64.793	
6,200.00	6,041.46	6,030.77	6,030.01	18.53	125.41	87.84	-764.52	-9,276.82	9,165.40	9,021.46	143.94	63.677	
6,300.00	6,138.43	6,128.67	6,127.91	18.83	127.57	87.99	-764.96	-9,276.83	9,164.45	9,018.05	146.40	62.598	
6,400.00	6,235.39	6,226.65	6,225.88	19.13	129.74	88.14	-765.55	-9,276.83	9,163.56	9,014.70	148.87	61.555	
6,500.00	6,332.36	6,396.17	6,318.88	19.43	133.59	88.27	-766.57	-9,276.83	9,162.71	9,009.69	153.02	59.881	
6,600.00	6,429.33	6,422.84	6,422.05	19.73	134.08	88.43	-767.17	-9,276.83	9,161.94	9,008.13	153.81	59.568	
6,700.00	6,526.30	6,513.76	6,512.81	20.03	136.50	88.57	-766.57	-9,276.83	9,161.32	9,004.79	156.52	58.530	
6,715.28	6,541.12	6,528.58	6,527.63	20.08	136.86	88.59	-766.57	-9,276.83	9,161.22	9,004.28	156.94	58.376	
6,750.00	6,574.74	6,562.20	6,561.25	20.18	137.69	75.48	-766.57	-9,276.83	9,159.96	9,002.09	157.87	58.022	
6,800.00	6,622.83	6,610.34	6,609.37	20.33	138.88	59.87	-765.20	-9,276.83	9,154.58	8,995.37	159.21	57.500	
6,850.00	6,670.20	6,659.19	6,658.22	20.49	140.09	48.64	-765.25	-9,276.83	9,144.82	8,984.25	160.57	56.953	
6,900.00	6,716.50	6,706.98	6,706.00	20.64	141.27	40.86	-765.41	-9,276.83	9,130.85	8,968.95	161.90	56.398	
6,950.00	6,761.36	6,753.34	6,752.36	20.79	142.42	35.44	-765.65	-9,276.83	9,112.76	8,949.56	163.20	55.839	
7,000.00	6,804.45	6,797.91	6,796.93	20.94	143.52	31.62	-765.98	-9,276.83	9,090.71	8,926.26	164.45	55.280	
7,050.00	6,845.44	6,886.93	6,831.95	21.09	145.75	28.90	-766.57	-9,276.83	9,064.83	8,898.00	166.83	54.337	
7,100.00	6,884.01	6,880.34	6,879.35	21.24	145.56	27.02	-766.80	-9,276.83	9,035.38	8,868.60	166.79	54.173	
7,150.00	6,919.88	6,917.55	6,916.55	21.39	146.48	25.75	-767.27	-9,276.83	9,002.54	8,834.68	167.86	53.632	
7,200.00	6,952.78	6,940.41	6,939.29	21.54	147.12	24.99	-766.57	-9,276.83	8,966.65	8,798.00	168.65	53.166	
7,250.00	6,982.44	6,970.08	6,968.95	21.69	147.89	24.75	-766.57	-9,276.83	8,927.85	8,758.29	169.57	52.651	
7,300.00	7,008.65	6,996.28	6,995.16	21.84	148.56	25.04	-766.57	-9,276.83	8,886.49	8,716.10	170.39	52.154	
7,350.00	7,031.20	7,018.84	7,017.71	21.99	149.14	25.96	-766.57	-9,276.83	8,842.87	8,671.75	171.12	51.677	
7,400.00	7,049.92	7,037.56	7,036.44	22.14	149.62	27.78	-766.57	-9,276.83	8,797.33	8,625.58	171.75	51.221	
7,450.00	7,064.68	7,052.32	7,051.19	22.29	150.00	31.10	-766.57	-9,276.83	8,750.21	8,577.93	172.28	50.790	
7,500.00	7,075.36	7,063.00	7,061.87	22.44	150.28	37.42	-766.57	-9,276.83	8,701.87	8,529.17	172.71	50.385	
7,550.00	7,081.87	7,069.51	7,068.39	22.59	150.44	51.37	-766.57	-9,276.83	8,652.67	8,479.65	173.02	50.008	
7,604.16	7,084.18	7,071.81	7,070.69	22.75	150.50	92.14	-766.57	-9,276.83	8,598.84	8,425.60	173.25	49.634	
7,700.00	7,083.86	7,071.50	7,070.37	23.04	150.49	92.12	-766.57	-9,276.83	8,503.38	8,329.85	173.53	49.003	
7,800.00	7,083.53	7,071.17	7,070.04	23.34	150.49	92.10	-766.57	-9,276.83	8,403.77	8,229.96	173.82	48.348	
7,900.00	7,083.20	7,070.84	7,069.72	23.64	150.48	92.07	-766.57	-9,276.83	8,304.18	8,130.07	174.11	47.695	
8,000.00	7,082.87	7,070.51	7,069.39	23.94	150.47	92.05	-766.57	-9,276.83	8,204.60	8,030.19	174.40	47.044	
8,100.00	7,082.54	7,070.18	7,069.06	24.24	150.46	92.02	-766.57	-9,276.83	8,105.02	7,930.33	174.70	46.395	
8,200.00	7,082.22	7,069.85	7,068.73	24.54	150.45	92.00	-766.57	-9,276.83	8,005.46	7,830.47	174.99	45.749	
8,300.00	7,081.89	7,069.53	7,068.40	24.84	150.44	91.97	-766.57	-9,276.83	7,905.91	7,730.63	175.28	45.104	
8,400.00	7,081.56	7,069.20	7,068.07	25.14	150.44	91.95	-766.57	-9,276.83	7,806.37	7,630.80	175.57	44.462	
8,500.00	7,081.23	7,068.87	7,067.74	25.45	150.43	91.92	-766.57	-9,276.83	7,706.84	7,530.98	175.87	43.822	
8,600.00	7,080.90	7,068.54	7,067.41	25.75	150.42	91.90	-766.57	-9,276.83	7,607.33	7,431.17	176.16	43.185	
8,700.00	7,080.57	7,068.21	7,067.08	26.05	150.41	91.87	-766.57	-9,276.83	7,507.82	7,331.37	176.45	42.549	
8,800.00	7,080.24	7,067.88	7,066.76	26.35	150.40	91.85	-766.57	-9,276.83	7,408.33	7,231.59	176.74	41.916	
8,900.00	7,079.91	7,067.55	7,066.43	26.65	150.39	91.82	-766.57	-9,276.83	7,308.86	7,131.82	177.03	41.285	
9,000.00	7,079.59	7,067.22	7,066.10	26.95	150.38	91.80	-766.57	-9,276.83	7,209.40	7,032.07	177.33	40.656	
9,100.00	7,079.26	7,066.90	7,065.77	27.25	150.38	91.77	-766.57	-9,276.83	7,109.95	6,932.33	177.62	40.029	
9,200.00	7,078.93	7,066.57	7,065.44	27.55	150.37	91.75	-766.57	-9,276.83	7,010.52	6,832.61	177.91	39.405	
9,300.00	7,078.60	7,066.24	7,065.11	27.85	150.36	91.72	-766.57	-9,276.83	6,911.11	6,732.90	178.20	38.782	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.27	7,065.91	7,064.78	28.15	150.35	91.70	-766.57	-9,276.83	6,811.71	6,633.21	178.49	38.162	
9,500.00	7,077.94	7,065.58	7,064.45	28.45	150.34	91.67	-766.57	-9,276.83	6,712.33	6,533.54	178.79	37.544	
9,600.00	7,077.61	7,065.25	7,064.13	28.75	150.33	91.65	-766.57	-9,276.83	6,612.97	6,433.89	179.08	36.928	
9,700.00	7,077.28	7,064.92	7,063.80	29.05	150.33	91.62	-766.57	-9,276.83	6,513.63	6,334.26	179.37	36.314	
9,800.00	7,076.95	7,064.59	7,063.47	29.35	150.32	91.60	-766.57	-9,276.83	6,414.31	6,234.65	179.66	35.702	
9,900.00	7,076.63	7,064.26	7,063.14	29.65	150.31	91.57	-766.57	-9,276.83	6,315.01	6,135.05	179.95	35.092	
10,000.00	7,076.30	7,063.94	7,062.81	29.95	150.30	91.55	-766.57	-9,276.83	6,215.73	6,035.49	180.25	34.485	
10,100.00	7,075.97	7,063.61	7,062.48	30.25	150.29	91.52	-766.57	-9,276.83	6,116.48	5,935.94	180.54	33.879	
10,200.00	7,075.64	7,063.28	7,062.15	30.55	150.28	91.50	-766.57	-9,276.83	6,017.25	5,836.42	180.83	33.276	
10,300.00	7,075.31	7,062.95	7,061.82	30.85	150.27	91.47	-766.57	-9,276.83	5,918.05	5,736.93	181.12	32.674	
10,400.00	7,074.98	7,062.62	7,061.49	31.15	150.27	91.45	-766.57	-9,276.83	5,818.88	5,637.46	181.41	32.075	
10,500.00	7,074.65	7,062.29	7,061.17	31.46	150.26	91.42	-766.57	-9,276.83	5,719.73	5,538.02	181.71	31.478	
10,600.00	7,074.32	7,061.96	7,060.84	31.76	150.25	91.40	-766.57	-9,276.83	5,620.61	5,438.61	182.00	30.883	
10,700.00	7,074.00	7,061.63	7,060.51	32.06	150.24	91.37	-766.57	-9,276.83	5,521.53	5,339.24	182.29	30.290	
10,800.00	7,073.67	7,061.30	7,060.18	32.36	150.23	91.35	-766.57	-9,276.83	5,422.48	5,239.90	182.58	29.699	
10,900.00	7,073.34	7,060.98	7,059.85	32.66	150.22	91.32	-766.57	-9,276.83	5,323.46	5,140.59	182.87	29.110	
11,000.00	7,073.01	7,060.65	7,059.52	32.96	150.22	91.29	-766.57	-9,276.83	5,224.49	5,041.32	183.17	28.523	
11,100.00	7,072.68	7,060.32	7,059.19	33.26	150.21	91.27	-766.57	-9,276.83	5,125.55	4,942.09	183.46	27.939	
11,200.00	7,072.35	7,059.99	7,058.86	33.56	150.20	91.24	-766.57	-9,276.83	5,026.65	4,842.90	183.75	27.356	
11,300.00	7,072.02	7,059.66	7,058.54	33.86	150.19	91.22	-766.57	-9,276.83	4,927.80	4,743.76	184.04	26.775	
11,400.00	7,071.69	7,059.33	7,058.21	34.16	150.18	91.19	-766.57	-9,276.83	4,829.00	4,644.66	184.33	26.197	
11,500.00	7,071.36	7,059.00	7,057.88	34.46	150.17	91.17	-766.57	-9,276.83	4,730.24	4,545.62	184.63	25.621	
11,600.00	7,071.04	7,058.67	7,057.55	34.76	150.16	91.14	-766.57	-9,276.83	4,631.54	4,446.63	184.92	25.047	
11,700.00	7,070.71	7,058.35	7,057.22	35.06	150.16	91.12	-766.57	-9,276.83	4,532.90	4,347.69	185.21	24.474	
11,800.00	7,070.38	7,058.02	7,056.89	35.36	150.15	91.09	-766.57	-9,276.83	4,434.32	4,248.82	185.50	23.905	
11,900.00	7,070.05	7,057.69	7,056.56	35.66	150.14	91.07	-766.57	-9,276.83	4,335.80	4,150.01	185.79	23.337	
12,000.00	7,069.72	7,057.36	7,056.23	35.96	150.13	91.04	-766.57	-9,276.83	4,237.35	4,051.27	186.08	22.771	
12,100.00	7,069.39	7,057.03	7,055.90	36.26	150.12	91.02	-766.57	-9,276.83	4,138.98	3,952.60	186.38	22.208	
12,200.00	7,069.06	7,056.70	7,055.58	36.56	150.11	90.99	-766.57	-9,276.83	4,040.69	3,854.02	186.67	21.646	
12,300.00	7,068.73	7,056.37	7,055.25	36.86	150.11	90.97	-766.57	-9,276.83	3,942.48	3,755.52	186.96	21.087	
12,400.00	7,068.41	7,056.04	7,054.92	37.16	150.10	90.94	-766.57	-9,276.83	3,844.36	3,657.11	187.25	20.530	
12,500.00	7,068.08	7,055.71	7,054.59	37.46	150.09	90.92	-766.57	-9,276.83	3,746.35	3,558.80	187.54	19.976	
12,600.00	7,067.75	7,055.39	7,054.26	37.76	150.08	90.89	-766.57	-9,276.83	3,648.44	3,460.60	187.83	19.424	
12,700.00	7,067.42	7,055.06	7,053.93	38.06	150.07	90.87	-766.57	-9,276.83	3,550.65	3,362.52	188.13	18.874	
12,800.00	7,067.09	7,054.73	7,053.60	38.36	150.06	90.84	-766.57	-9,276.83	3,452.98	3,264.56	188.42	18.326	
12,900.00	7,066.76	7,054.40	7,053.27	38.66	150.05	90.82	-766.57	-9,276.83	3,355.45	3,166.74	188.71	17.781	
13,000.00	7,066.43	7,054.07	7,052.95	38.96	150.05	90.79	-766.57	-9,276.83	3,258.07	3,069.07	189.00	17.238	
13,100.00	7,066.10	7,053.74	7,052.62	39.26	150.04	90.77	-766.57	-9,276.83	3,160.86	2,971.57	189.29	16.698	
13,200.00	7,065.77	7,053.41	7,052.29	39.56	150.03	90.74	-766.57	-9,276.83	3,063.82	2,874.24	189.58	16.161	
13,300.00	7,065.45	7,053.08	7,051.96	39.86	150.02	90.72	-766.57	-9,276.83	2,966.99	2,777.11	189.88	15.626	
13,400.00	7,065.12	7,052.76	7,051.63	40.16	150.01	90.69	-766.57	-9,276.83	2,870.36	2,680.20	190.17	15.094	
13,500.00	7,064.79	7,052.43	7,051.30	40.47	150.00	90.67	-766.57	-9,276.83	2,773.98	2,583.52	190.46	14.565	
13,600.00	7,064.46	7,052.10	7,050.97	40.77	150.00	90.64	-766.57	-9,276.83	2,677.86	2,487.11	190.75	14.039	
13,700.00	7,064.13	7,051.77	7,050.64	41.07	149.99	90.62	-766.57	-9,276.83	2,582.04	2,391.00	191.04	13.516	
13,800.00	7,063.80	7,051.44	7,050.31	41.37	149.98	90.59	-766.57	-9,276.83	2,486.55	2,295.22	191.33	12.996	
13,900.00	7,063.47	7,051.11	7,049.99	41.67	149.97	90.57	-766.57	-9,276.83	2,391.43	2,199.80	191.63	12.480	
14,000.00	7,063.14	7,050.78	7,049.66	41.97	149.96	90.54	-766.57	-9,276.83	2,296.72	2,104.80	191.92	11.967	
14,100.00	7,062.82	7,050.45	7,049.33	42.27	149.95	90.52	-766.57	-9,276.83	2,202.47	2,010.27	192.21	11.459	
14,200.00	7,062.49	7,050.12	7,049.00	42.57	149.94	90.49	-766.57	-9,276.83	2,108.76	1,916.26	192.50	10.955	
14,300.00	7,062.16	7,049.80	7,048.67	42.87	149.94	90.47	-766.57	-9,276.83	2,015.65	1,822.86	192.79	10.455	
14,400.00	7,061.83	7,049.47	7,048.34	43.17	149.93	90.44	-766.57	-9,276.83	1,923.24	1,730.16	193.08	9.961	
14,500.00	7,061.50	7,049.14	7,048.01	43.47	149.92	90.42	-766.57	-9,276.83	1,831.62	1,638.25	193.37	9.472	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.17	7,048.81	7,047.68	43.77	149.91	90.39	-766.57	-9,276.83	1,740.92	1,547.26	193.66	8.989	
14,700.00	7,060.84	7,048.48	7,047.36	44.07	149.90	90.37	-766.57	-9,276.83	1,651.30	1,457.35	193.95	8.514	
14,800.00	7,060.51	7,048.15	7,047.03	44.37	149.89	90.34	-766.57	-9,276.83	1,562.94	1,368.69	194.24	8.046	
14,900.00	7,060.18	7,047.82	7,046.70	44.67	149.89	90.32	-766.57	-9,276.83	1,476.06	1,281.53	194.53	7.588	
15,000.00	7,059.86	7,047.49	7,046.37	44.97	149.88	90.29	-766.57	-9,276.83	1,390.95	1,196.12	194.82	7.139	
15,100.00	7,059.53	7,047.17	7,046.04	45.27	149.87	90.27	-766.57	-9,276.83	1,307.95	1,112.83	195.11	6.703	
15,200.00	7,059.20	7,046.84	7,045.71	45.57	149.86	90.24	-766.57	-9,276.83	1,227.48	1,032.07	195.40	6.282	
15,300.00	7,058.87	7,046.51	7,045.38	45.87	149.85	90.22	-766.57	-9,276.83	1,150.08	954.39	195.69	5.877	
15,400.00	7,058.54	7,046.18	7,045.05	46.17	149.84	90.19	-766.57	-9,276.83	1,076.41	880.43	195.98	5.492	
15,500.00	7,058.21	7,045.85	7,044.72	46.47	149.84	90.17	-766.57	-9,276.83	1,007.30	811.03	196.27	5.132	
15,600.00	7,057.88	7,045.52	7,044.40	46.77	149.83	90.14	-766.57	-9,276.83	943.73	747.17	196.56	4.801	
15,700.00	7,057.55	7,045.19	7,044.07	47.07	149.82	90.12	-766.57	-9,276.83	886.91	690.06	196.85	4.506	
15,800.00	7,057.23	7,044.86	7,043.74	47.37	149.81	90.09	-766.57	-9,276.83	838.21	641.07	197.14	4.252	
15,900.00	7,056.90	7,044.53	7,043.41	47.67	149.80	90.07	-766.57	-9,276.83	799.11	601.68	197.43	4.048	
16,000.00	7,056.57	7,044.21	7,043.08	47.97	149.79	90.04	-766.57	-9,276.83	771.07	573.35	197.72	3.900	
16,100.00	7,056.24	7,043.88	7,042.75	48.27	149.78	90.02	-766.57	-9,276.83	755.34	557.33	198.01	3.815	
16,170.10	7,056.01	7,043.65	7,042.52	48.48	149.78	90.00	-766.57	-9,276.83	752.08	553.86	198.22	3.794	CC, ES, SF
16,200.00	7,055.91	7,043.55	7,042.42	48.57	149.78	89.99	-766.57	-9,276.83	752.67	554.37	198.30	3.796	
16,300.00	7,055.58	7,043.22	7,042.09	48.87	149.77	89.97	-766.57	-9,276.83	763.21	564.61	198.60	3.843	
16,400.00	7,055.25	7,042.89	7,041.77	49.17	149.76	89.94	-766.57	-9,276.83	786.43	587.54	198.90	3.954	
16,500.00	7,054.92	7,042.56	7,041.44	49.47	149.75	89.92	-766.57	-9,276.83	821.25	622.06	199.19	4.123	
16,600.00	7,054.59	7,042.23	7,041.11	49.77	149.74	89.89	-766.57	-9,276.83	866.28	666.79	199.49	4.342	
16,619.57	7,054.53	7,042.17	7,041.04	49.83	149.74	89.89	-766.57	-9,276.83	876.15	676.61	199.55	4.391	
16,700.00	7,054.27	7,041.90	7,040.78	50.07	149.73	89.87	-766.57	-9,276.83	920.01	720.22	199.78	4.605	
16,782.16	7,054.00	7,041.63	7,040.51	50.32	149.73	89.85	-766.57	-9,276.83	969.66	769.63	200.03	4.848	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-97.98	-1,295.71	-9,245.75	9,336.10				
100.00	100.00	89.51	89.51	0.23	0.95	-97.98	-1,295.71	-9,245.75	9,336.10	9,334.93	1.18	7,917.853	
192.04	192.04	181.55	181.54	0.50	2.47	-97.98	-1,295.45	-9,245.75	9,336.07	9,333.10	2.97	3,142.882	
200.00	200.00	188.24	188.23	0.53	2.60	-97.98	-1,295.46	-9,245.75	9,336.07	9,332.94	3.13	2,986.741	
300.00	300.00	289.53	289.51	0.83	4.67	-97.98	-1,295.71	-9,245.75	9,336.10	9,330.61	5.49	1,699.425	
380.00	380.00	369.35	369.33	1.07	6.36	-97.98	-1,295.44	-9,245.75	9,336.07	9,328.64	7.43	1,256.519	
400.00	400.00	388.48	388.47	1.13	6.77	-97.98	-1,295.45	-9,245.75	9,336.07	9,328.17	7.90	1,182.261	
500.00	500.00	484.14	484.12	1.43	8.80	-97.98	-1,295.69	-9,245.75	9,336.10	9,325.87	10.23	912.645	
600.00	599.98	589.55	589.49	1.73	11.13	76.46	-1,295.71	-9,245.75	9,335.70	9,322.84	12.86	726.062	
700.00	699.84	682.18	682.11	2.03	13.18	76.52	-1,294.99	-9,245.75	9,334.37	9,319.17	15.21	613.764	
800.00	799.45	789.08	788.97	2.33	15.55	76.61	-1,295.71	-9,245.75	9,332.44	9,314.56	17.88	522.073	
900.00	898.70	888.33	888.21	2.63	17.75	76.73	-1,295.71	-9,245.75	9,329.61	9,309.23	20.38	457.868	
1,000.00	997.47	987.09	986.98	2.93	19.94	76.90	-1,295.71	-9,245.75	9,326.00	9,303.13	22.87	407.856	
1,100.00	1,095.62	1,082.84	1,082.72	3.23	22.06	77.09	-1,294.97	-9,245.75	9,321.53	9,296.24	25.29	368.603	
1,207.25	1,200.09	1,184.15	1,184.03	3.55	24.31	77.34	-1,295.30	-9,245.75	9,316.07	9,288.21	27.86	334.429	
1,300.00	1,290.03	1,279.75	1,279.54	3.83	26.49	77.47	-1,295.71	-9,245.75	9,311.03	9,280.72	30.32	307.133	
1,400.00	1,386.99	1,376.72	1,376.51	4.13	28.91	77.62	-1,295.71	-9,245.75	9,305.61	9,272.57	33.04	281.649	
1,500.00	1,483.96	1,473.24	1,473.01	4.43	31.33	77.77	-1,294.35	-9,245.75	9,300.07	9,264.32	35.75	260.124	
1,600.00	1,580.93	1,563.91	1,563.68	4.73	33.59	77.90	-1,294.64	-9,245.75	9,294.81	9,256.49	38.32	242.564	
1,700.00	1,677.90	1,654.87	1,654.61	5.03	35.87	78.03	-1,295.45	-9,245.75	9,289.67	9,248.78	40.89	227.173	
1,800.00	1,774.87	1,764.73	1,764.38	5.33	38.62	78.19	-1,295.71	-9,245.75	9,284.51	9,240.56	43.95	211.259	
1,900.00	1,871.83	1,858.42	1,858.05	5.63	40.97	78.33	-1,294.81	-9,245.75	9,279.29	9,232.69	46.60	199.124	
2,000.00	1,968.80	1,947.44	1,947.05	5.93	43.21	78.46	-1,295.44	-9,245.75	9,274.31	9,225.17	49.14	188.750	
2,100.00	2,065.77	2,055.74	2,055.28	6.23	45.68	78.62	-1,295.71	-9,245.75	9,269.33	9,217.43	51.90	178.589	
2,200.00	2,162.74	2,152.71	2,152.25	6.53	47.83	78.76	-1,295.71	-9,245.75	9,264.40	9,210.04	54.35	170.447	
2,300.00	2,259.71	2,249.18	2,248.70	6.83	49.97	78.92	-1,293.96	-9,245.75	9,259.34	9,202.55	56.79	163.037	
2,400.00	2,356.67	2,342.03	2,341.54	7.13	52.03	79.05	-1,294.22	-9,245.75	9,254.56	9,195.41	59.15	156.454	
2,500.00	2,453.64	2,435.11	2,434.60	7.43	54.09	79.19	-1,294.90	-9,245.75	9,249.89	9,188.37	61.52	150.366	
2,600.00	2,550.61	2,540.69	2,540.12	7.73	56.33	79.34	-1,295.71	-9,245.75	9,245.27	9,181.21	64.06	144.321	
2,700.00	2,647.58	2,637.65	2,637.09	8.03	58.21	79.48	-1,295.71	-9,245.75	9,240.65	9,174.42	66.23	139.517	
2,800.00	2,744.55	2,734.62	2,734.06	8.33	60.08	79.63	-1,295.71	-9,245.75	9,236.09	9,167.68	68.41	135.019	
2,900.00	2,841.51	2,829.93	2,829.36	8.63	61.92	79.78	-1,294.99	-9,245.75	9,231.52	9,160.98	70.55	130.857	
3,000.00	2,938.48	2,924.99	2,924.42	8.93	63.76	79.92	-1,295.31	-9,245.75	9,227.11	9,154.43	72.68	126.951	
3,100.00	3,035.45	3,025.57	3,024.96	9.23	65.73	80.06	-1,295.71	-9,245.75	9,222.77	9,147.82	74.95	123.046	
3,200.00	3,132.42	3,122.54	3,121.93	9.53	67.70	80.21	-1,295.71	-9,245.75	9,218.46	9,141.23	77.22	119.371	
3,300.00	3,229.39	3,219.50	3,218.90	9.83	69.67	80.36	-1,295.71	-9,245.75	9,214.21	9,134.71	79.50	115.908	
3,400.00	3,326.35	3,315.39	3,314.78	10.13	71.62	80.50	-1,294.92	-9,245.75	9,209.96	9,128.22	81.75	112.666	
3,500.00	3,423.32	3,410.82	3,410.20	10.43	73.56	80.65	-1,295.19	-9,245.75	9,205.86	9,121.88	83.99	109.613	
3,600.00	3,520.29	3,506.36	3,505.74	10.73	75.50	80.79	-1,295.70	-9,245.75	9,201.84	9,115.61	86.23	106.716	
3,700.00	3,617.26	3,607.44	3,606.77	11.03	77.47	80.94	-1,295.71	-9,245.75	9,197.84	9,109.34	88.50	103.936	
3,800.00	3,714.23	3,702.28	3,701.60	11.33	79.31	81.08	-1,295.22	-9,245.75	9,193.87	9,103.23	90.64	101.434	
3,900.00	3,811.19	3,801.40	3,800.71	11.63	81.22	81.23	-1,295.71	-9,245.75	9,190.03	9,097.18	92.85	98.979	
4,000.00	3,908.16	3,898.36	3,897.68	11.93	83.02	81.38	-1,295.71	-9,245.75	9,186.22	9,091.27	94.95	96.747	
4,100.00	4,005.13	3,994.14	3,993.45	12.23	84.80	81.52	-1,295.50	-9,245.75	9,182.47	9,085.44	97.03	94.635	
4,200.00	4,102.10	4,092.32	4,091.61	12.53	86.94	81.67	-1,295.71	-9,245.75	9,178.80	9,079.33	99.47	92.280	
4,300.00	4,199.07	4,189.29	4,188.58	12.83	89.62	81.82	-1,295.71	-9,245.75	9,175.18	9,072.73	102.45	89.557	
4,400.00	4,296.03	4,286.25	4,285.55	13.13	92.31	81.96	-1,295.71	-9,245.75	9,171.63	9,066.19	105.43	86.989	
4,500.00	4,393.00	4,382.44	4,381.73	13.43	94.97	82.11	-1,294.96	-9,245.75	9,168.10	9,059.71	108.40	84.579	
4,600.00	4,489.97	4,478.50	4,477.78	13.73	97.63	82.26	-1,295.27	-9,245.75	9,164.69	9,053.34	111.36	82.301	
4,700.00	4,586.94	4,577.46	4,576.45	14.03	100.52	82.40	-1,295.71	-9,245.75	9,161.35	9,046.80	114.55	79.979	
4,800.00	4,683.91	4,669.75	4,668.64	14.33	103.80	82.54	-1,295.43	-9,245.75	9,158.04	9,039.92	118.12	77.531	
4,900.00	4,780.87	4,769.09	4,767.91	14.63	107.25	82.70	-1,295.12	-9,245.75	9,154.80	9,032.92	121.88	75.113	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,877.84	4,866.74	4,865.41	14.93	110.67	82.84	-1,295.15	-9,245.75	9,151.63	9,026.03	125.59	72.867	
5,100.00	4,974.81	4,965.50	4,964.07	15.23	114.08	82.99	-1,295.04	-9,245.75	9,148.52	9,019.22	129.30	70.753	
5,200.00	5,071.78	5,062.84	5,061.29	15.53	117.45	83.14	-1,295.71	-9,245.75	9,145.50	9,012.52	132.98	68.775	
5,300.00	5,168.75	5,159.94	5,158.26	15.83	120.87	83.29	-1,295.71	-9,245.75	9,142.52	9,005.82	136.70	66.881	
5,400.00	5,265.71	5,255.33	5,253.62	16.13	124.17	83.44	-1,294.83	-9,245.75	9,139.59	8,999.29	140.29	65.146	
5,500.00	5,362.68	5,354.05	5,352.20	16.43	127.54	83.58	-1,295.71	-9,245.75	9,136.76	8,992.79	143.97	63.465	
5,600.00	5,459.65	5,448.11	5,446.21	16.73	130.71	83.72	-1,295.65	-9,245.75	9,133.97	8,986.54	147.43	61.954	
5,700.00	5,556.62	5,547.83	5,545.82	17.03	134.18	83.88	-1,294.78	-9,245.75	9,131.24	8,980.04	151.20	60.391	
5,800.00	5,653.59	5,645.27	5,643.10	17.33	137.59	84.02	-1,295.71	-9,245.75	9,128.60	8,973.68	154.92	58.925	
5,900.00	5,750.55	5,741.47	5,739.27	17.63	141.06	84.18	-1,294.99	-9,245.75	9,126.00	8,967.32	158.69	57.509	
6,000.00	5,847.52	5,839.39	5,837.04	17.93	144.54	84.32	-1,295.71	-9,245.75	9,123.48	8,961.02	162.46	56.157	
6,100.00	5,944.49	5,936.12	5,933.71	18.23	147.93	84.47	-1,295.05	-9,245.75	9,121.02	8,954.86	166.16	54.894	
6,200.00	6,041.46	6,033.52	6,030.97	18.53	151.36	84.62	-1,295.71	-9,245.75	9,118.63	8,948.74	169.88	53.676	
6,300.00	6,138.43	6,131.15	6,128.55	18.83	154.79	84.77	-1,295.61	-9,245.75	9,116.30	8,942.68	173.62	52.507	
6,400.00	6,235.39	6,170.00	6,167.24	19.13	156.20	84.83	-1,295.71	-9,245.75	9,114.21	8,938.89	175.32	51.985	
6,500.00	6,332.36	6,170.00	6,167.24	19.43	156.20	84.83	-1,295.71	-9,245.75	9,113.14	8,937.53	175.61	51.895	
6,547.66	6,378.57	6,170.00	6,167.24	19.58	156.20	84.83	-1,295.71	-9,245.75	9,113.02	8,937.28	175.73	51.857	
6,600.00	6,429.33	6,170.00	6,167.24	19.73	156.20	84.83	-1,295.71	-9,245.75	9,113.17	8,937.30	175.87	51.818	
6,700.00	6,526.30	6,170.00	6,167.24	20.03	156.20	84.83	-1,295.71	-9,245.75	9,114.29	8,938.17	176.12	51.752	
6,715.28	6,541.12	6,170.00	6,167.24	20.08	156.20	84.83	-1,295.71	-9,245.75	9,114.56	8,938.41	176.15	51.743	
6,750.00	6,574.74	6,170.00	6,167.24	20.18	156.20	71.65	-1,295.71	-9,245.75	9,114.21	8,937.98	176.23	51.717	
6,800.00	6,622.83	6,170.00	6,167.24	20.33	156.20	55.92	-1,295.71	-9,245.75	9,110.25	8,933.91	176.34	51.662	
6,850.00	6,670.20	6,170.00	6,167.24	20.49	156.20	44.55	-1,295.71	-9,245.75	9,102.23	8,925.78	176.45	51.585	
6,900.00	6,716.50	6,170.00	6,167.24	20.64	156.20	36.58	-1,295.71	-9,245.75	9,090.20	8,913.65	176.56	51.486	
6,950.00	6,761.36	6,170.00	6,167.24	20.79	156.20	30.93	-1,295.71	-9,245.75	9,074.24	8,897.59	176.66	51.366	
7,000.00	6,804.45	6,170.00	6,167.24	20.94	156.20	26.82	-1,295.71	-9,245.75	9,054.45	8,877.69	176.76	51.225	
7,050.00	6,845.44	6,170.00	6,167.24	21.09	156.20	23.76	-1,295.71	-9,245.75	9,030.95	8,854.10	176.85	51.064	
7,100.00	6,884.01	6,170.00	6,167.24	21.24	156.20	21.43	-1,295.71	-9,245.75	9,003.90	8,826.95	176.95	50.883	
7,150.00	6,919.88	6,170.00	6,167.24	21.39	156.20	19.63	-1,295.71	-9,245.75	8,973.46	8,796.42	177.05	50.684	
7,200.00	6,952.78	6,170.00	6,167.24	21.54	156.20	18.22	-1,295.71	-9,245.75	8,939.85	8,762.70	177.15	50.466	
7,250.00	6,982.44	6,170.00	6,167.24	21.69	156.20	17.10	-1,295.71	-9,245.75	8,903.27	8,726.02	177.25	50.231	
7,300.00	7,008.65	6,170.00	6,167.24	21.84	156.20	16.22	-1,295.71	-9,245.75	8,863.97	8,686.63	177.35	49.981	
7,350.00	7,031.20	6,170.00	6,167.24	21.99	156.20	15.53	-1,295.71	-9,245.75	8,822.23	8,644.77	177.45	49.716	
7,400.00	7,049.92	6,170.00	6,167.24	22.14	156.20	15.01	-1,295.71	-9,245.75	8,778.31	8,600.75	177.56	49.437	
7,450.00	7,064.68	6,170.00	6,167.24	22.29	156.20	14.62	-1,295.71	-9,245.75	8,732.53	8,554.85	177.68	49.147	
7,500.00	7,075.36	6,170.00	6,167.24	22.44	156.20	14.36	-1,295.71	-9,245.75	8,685.21	8,507.41	177.80	48.848	
7,550.00	7,081.87	6,170.00	6,167.24	22.59	156.20	14.23	-1,295.71	-9,245.75	8,636.69	8,458.76	177.93	48.539	
7,604.16	7,084.18	6,170.00	6,167.24	22.75	156.20	14.25	-1,295.71	-9,245.75	8,583.18	8,405.10	178.08	48.199	
7,700.00	7,083.86	6,170.00	6,167.24	23.04	156.20	14.25	-1,295.71	-9,245.75	8,487.88	8,309.53	178.35	47.591	
7,800.00	7,083.53	6,170.00	6,167.24	23.34	156.20	14.25	-1,295.71	-9,245.75	8,388.46	8,209.83	178.63	46.960	
7,900.00	7,083.20	6,170.00	6,167.24	23.64	156.20	14.25	-1,295.71	-9,245.75	8,289.05	8,110.14	178.91	46.331	
8,000.00	7,082.87	6,170.00	6,167.24	23.94	156.20	14.25	-1,295.71	-9,245.75	8,189.66	8,010.47	179.19	45.704	
8,100.00	7,082.54	6,170.00	6,167.24	24.24	156.20	14.25	-1,295.71	-9,245.75	8,090.28	7,910.81	179.47	45.080	
8,200.00	7,082.22	6,170.00	6,167.24	24.54	156.20	14.25	-1,295.71	-9,245.75	7,990.92	7,811.17	179.74	44.457	
8,300.00	7,081.89	6,170.00	6,167.24	24.84	156.20	14.25	-1,295.71	-9,245.75	7,891.57	7,711.55	180.02	43.837	
8,400.00	7,081.56	6,170.00	6,167.24	25.14	156.20	14.25	-1,295.71	-9,245.75	7,792.24	7,611.94	180.30	43.219	
8,500.00	7,081.23	6,170.00	6,167.24	25.45	156.20	14.25	-1,295.71	-9,245.75	7,692.93	7,512.36	180.57	42.603	
8,600.00	7,080.90	6,170.00	6,167.24	25.75	156.20	14.25	-1,295.71	-9,245.75	7,593.63	7,412.79	180.84	41.990	
8,700.00	7,080.57	6,170.00	6,167.24	26.05	156.20	14.25	-1,295.71	-9,245.75	7,494.36	7,313.24	181.12	41.379	
8,800.00	7,080.24	6,170.00	6,167.24	26.35	156.20	14.25	-1,295.71	-9,245.75	7,395.10	7,213.71	181.39	40.770	
8,900.00	7,079.91	6,170.00	6,167.24	26.65	156.20	14.25	-1,295.71	-9,245.75	7,295.86	7,114.21	181.66	40.163	
9,000.00	7,079.59	6,170.00	6,167.24	26.95	156.20	14.25	-1,295.71	-9,245.75	7,196.65	7,014.72	181.93	39.558	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,079.26	6,170.00	6,167.24	27.25	156.20	14.25	-1,295.71	-9,245.75	7,097.46	6,915.26	182.19	38.956	
9,200.00	7,078.93	6,170.00	6,167.24	27.55	156.20	14.25	-1,295.71	-9,245.75	6,998.29	6,815.83	182.46	38.355	
9,300.00	7,078.60	6,170.00	6,167.24	27.85	156.20	14.25	-1,295.71	-9,245.75	6,899.14	6,716.42	182.72	37.757	
9,400.00	7,078.27	6,170.00	6,167.24	28.15	156.20	14.25	-1,295.71	-9,245.75	6,800.02	6,617.03	182.99	37.161	
9,500.00	7,077.94	6,170.00	6,167.24	28.45	156.20	14.25	-1,295.71	-9,245.75	6,700.93	6,517.68	183.25	36.568	
9,600.00	7,077.61	6,170.00	6,167.24	28.75	156.20	14.25	-1,295.71	-9,245.75	6,601.86	6,418.35	183.51	35.976	
9,700.00	7,077.28	6,170.00	6,167.24	29.05	156.20	14.25	-1,295.71	-9,245.75	6,502.82	6,319.06	183.76	35.387	
9,800.00	7,076.95	6,170.00	6,167.24	29.35	156.20	14.25	-1,295.71	-9,245.75	6,403.81	6,219.79	184.02	34.800	
9,900.00	7,076.63	6,170.00	6,167.24	29.65	156.20	14.25	-1,295.71	-9,245.75	6,304.83	6,120.56	184.27	34.215	
10,000.00	7,076.30	6,170.00	6,167.24	29.95	156.20	14.25	-1,295.71	-9,245.75	6,205.89	6,021.36	184.52	33.632	
10,100.00	7,075.97	6,170.00	6,167.24	30.25	156.20	14.25	-1,295.71	-9,245.75	6,106.98	5,922.21	184.77	33.051	
10,200.00	7,075.64	6,170.00	6,167.24	30.55	156.20	14.25	-1,295.71	-9,245.75	6,008.10	5,823.09	185.02	32.473	
10,300.00	7,075.31	6,170.00	6,167.24	30.85	156.20	14.25	-1,295.71	-9,245.75	5,909.27	5,724.01	185.26	31.897	
10,400.00	7,074.98	6,170.00	6,167.24	31.15	156.20	14.25	-1,295.71	-9,245.75	5,810.47	5,624.97	185.50	31.323	
10,500.00	7,074.65	6,170.00	6,167.24	31.46	156.20	14.25	-1,295.71	-9,245.75	5,711.72	5,525.98	185.74	30.751	
10,600.00	7,074.32	6,170.00	6,167.24	31.76	156.20	14.25	-1,295.71	-9,245.75	5,613.01	5,427.03	185.97	30.182	
10,700.00	7,074.00	6,170.00	6,167.24	32.06	156.20	14.25	-1,295.71	-9,245.75	5,514.34	5,328.14	186.20	29.615	
10,800.00	7,073.67	6,170.00	6,167.24	32.36	156.20	14.25	-1,295.71	-9,245.75	5,415.73	5,229.30	186.43	29.050	
10,900.00	7,073.34	6,170.00	6,167.24	32.66	156.20	14.25	-1,295.71	-9,245.75	5,317.16	5,130.51	186.65	28.487	
11,000.00	7,073.01	6,170.00	6,167.24	32.96	156.20	14.25	-1,295.71	-9,245.75	5,218.65	5,031.78	186.87	27.927	
11,100.00	7,072.68	6,170.00	6,167.24	33.26	156.20	14.25	-1,295.71	-9,245.75	5,120.20	4,933.12	187.08	27.369	
11,200.00	7,072.35	6,170.00	6,167.24	33.56	156.20	14.25	-1,295.71	-9,245.75	5,021.81	4,834.52	187.29	26.813	
11,300.00	7,072.02	6,170.00	6,167.24	33.86	156.20	14.25	-1,295.71	-9,245.75	4,923.49	4,735.99	187.49	26.260	
11,400.00	7,071.69	6,170.00	6,167.24	34.16	156.20	14.25	-1,295.71	-9,245.75	4,825.23	4,637.54	187.69	25.709	
11,500.00	7,071.36	6,170.00	6,167.24	34.46	156.20	14.25	-1,295.71	-9,245.75	4,727.05	4,539.17	187.88	25.160	
11,600.00	7,071.04	6,170.00	6,167.24	34.76	156.20	14.25	-1,295.71	-9,245.75	4,628.94	4,440.88	188.06	24.614	
11,700.00	7,070.71	6,170.00	6,167.24	35.06	156.20	14.25	-1,295.71	-9,245.75	4,530.92	4,342.68	188.24	24.070	
11,800.00	7,070.38	6,170.00	6,167.24	35.36	156.20	14.25	-1,295.71	-9,245.75	4,432.99	4,244.58	188.40	23.529	
11,900.00	7,070.05	6,170.00	6,167.24	35.66	156.20	14.25	-1,295.71	-9,245.75	4,335.15	4,146.59	188.56	22.991	
12,000.00	7,069.72	6,170.00	6,167.24	35.96	156.20	14.25	-1,295.71	-9,245.75	4,237.41	4,048.70	188.71	22.455	
12,100.00	7,069.39	6,170.00	6,167.24	36.26	156.20	14.25	-1,295.71	-9,245.75	4,139.78	3,950.93	188.84	21.922	
12,200.00	7,069.06	6,170.00	6,167.24	36.56	156.20	14.25	-1,295.71	-9,245.75	4,042.26	3,853.29	188.97	21.391	
12,300.00	7,068.73	6,170.00	6,167.24	36.86	156.20	14.25	-1,295.71	-9,245.75	3,944.87	3,755.79	189.08	20.863	
12,400.00	7,068.41	6,170.00	6,167.24	37.16	156.20	14.25	-1,295.71	-9,245.75	3,847.61	3,658.44	189.18	20.339	
12,500.00	7,068.08	6,170.00	6,167.24	37.46	156.20	14.25	-1,295.71	-9,245.75	3,750.50	3,561.24	189.26	19.817	
12,600.00	7,067.75	6,170.00	6,167.24	37.76	156.20	14.25	-1,295.71	-9,245.75	3,653.55	3,464.22	189.32	19.298	
12,700.00	7,067.42	6,170.00	6,167.24	38.06	156.20	14.25	-1,295.71	-9,245.75	3,556.76	3,367.39	189.37	18.782	
12,800.00	7,067.09	6,170.00	6,167.24	38.36	156.20	14.25	-1,295.71	-9,245.75	3,460.15	3,270.76	189.39	18.270	
12,900.00	7,066.76	6,170.00	6,167.24	38.66	156.20	14.25	-1,295.71	-9,245.75	3,363.74	3,174.36	189.39	17.761	
13,000.00	7,066.43	6,170.00	6,167.24	38.96	156.20	14.25	-1,295.71	-9,245.75	3,267.55	3,078.19	189.36	17.256	
13,100.00	7,066.10	6,170.00	6,167.24	39.26	156.20	14.25	-1,295.71	-9,245.75	3,171.60	2,982.30	189.30	16.754	
13,200.00	7,065.77	6,170.00	6,167.24	39.56	156.20	14.25	-1,295.71	-9,245.75	3,075.90	2,886.69	189.21	16.257	
13,300.00	7,065.45	6,170.00	6,167.24	39.86	156.20	14.25	-1,295.71	-9,245.75	2,980.49	2,791.41	189.08	15.763	
13,400.00	7,065.12	6,170.00	6,167.24	40.16	156.20	14.25	-1,295.71	-9,245.75	2,885.38	2,696.48	188.90	15.274	
13,500.00	7,064.79	6,170.00	6,167.24	40.47	156.20	14.25	-1,295.71	-9,245.75	2,790.62	2,601.94	188.68	14.790	
13,600.00	7,064.46	6,170.00	6,167.24	40.77	156.20	14.25	-1,295.71	-9,245.75	2,696.23	2,507.83	188.40	14.311	
13,700.00	7,064.13	6,170.00	6,167.24	41.07	156.20	14.25	-1,295.71	-9,245.75	2,602.27	2,414.21	188.06	13.837	
13,800.00	7,063.80	6,170.00	6,167.24	41.37	156.20	14.25	-1,295.71	-9,245.75	2,508.77	2,321.12	187.65	13.370	
13,900.00	7,063.47	6,170.00	6,167.24	41.67	156.20	14.25	-1,295.71	-9,245.75	2,415.79	2,228.64	187.15	12.908	
14,000.00	7,063.14	6,170.00	6,167.24	41.97	156.20	14.25	-1,295.71	-9,245.75	2,323.40	2,136.85	186.56	12.454	
14,100.00	7,062.82	6,170.00	6,167.24	42.27	156.20	14.25	-1,295.71	-9,245.75	2,231.66	2,045.81	185.85	12.008	
14,200.00	7,062.49	6,170.00	6,167.24	42.57	156.20	14.25	-1,295.71	-9,245.75	2,140.67	1,955.65	185.01	11.570	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,062.16	6,170.00	6,167.24	42.87	156.20	14.25	-1,295.71	-9,245.75	2,050.51	1,866.48	184.02	11.143	
14,400.00	7,061.83	6,170.00	6,167.24	43.17	156.20	14.25	-1,295.71	-9,245.75	1,961.30	1,778.45	182.85	10.726	
14,500.00	7,061.50	6,170.00	6,167.24	43.47	156.20	14.25	-1,295.71	-9,245.75	1,873.19	1,691.71	181.47	10.322	
14,600.00	7,061.17	6,170.00	6,167.24	43.77	156.20	14.25	-1,295.71	-9,245.75	1,786.33	1,606.48	179.85	9.933	
14,700.00	7,060.84	6,170.00	6,167.24	44.07	156.20	14.25	-1,295.71	-9,245.75	1,700.91	1,522.99	177.92	9.560	
14,800.00	7,060.51	6,170.00	6,167.24	44.37	156.20	14.25	-1,295.71	-9,245.75	1,617.16	1,441.52	175.65	9.207	
14,900.00	7,060.18	6,170.00	6,167.24	44.67	156.20	14.25	-1,295.71	-9,245.75	1,535.37	1,362.42	172.95	8.878	
15,000.00	7,059.86	6,170.00	6,167.24	44.97	156.20	14.25	-1,295.71	-9,245.75	1,455.84	1,286.09	169.75	8.576	
15,100.00	7,059.53	6,170.00	6,167.24	45.27	156.20	14.25	-1,295.71	-9,245.75	1,378.99	1,213.02	165.97	8.309	
15,200.00	7,059.20	6,170.00	6,167.24	45.57	156.20	14.25	-1,295.71	-9,245.75	1,305.27	1,143.79	161.48	8.083	
15,300.00	7,058.87	6,170.00	6,167.24	45.87	156.20	14.25	-1,295.71	-9,245.75	1,235.26	1,079.09	156.17	7.910	
15,400.00	7,058.54	6,170.00	6,167.24	46.17	156.20	14.25	-1,295.71	-9,245.75	1,169.61	1,019.69	149.93	7.801	
15,500.00	7,058.21	6,170.00	6,167.24	46.47	156.20	14.25	-1,295.71	-9,245.75	1,109.11	966.46	142.64	7.775	
15,600.00	7,057.88	6,170.00	6,167.24	46.77	156.20	14.25	-1,295.71	-9,245.75	1,054.63	920.36	134.28	7.854	
15,700.00	7,057.55	6,170.00	6,167.24	47.07	156.20	14.25	-1,295.71	-9,245.75	1,007.16	882.27	124.90	8.064	
15,800.00	7,057.23	6,170.00	6,167.24	47.37	156.20	14.25	-1,295.71	-9,245.75	967.73	852.92	114.81	8.429	
15,900.00	7,056.90	6,170.00	6,167.24	47.67	156.20	14.25	-1,295.71	-9,245.75	937.35	832.61	104.74	8.949	
16,000.00	7,056.57	6,170.00	6,167.24	47.97	156.20	14.25	-1,295.71	-9,245.75	916.93	820.76	96.17	9.535	
16,100.00	7,056.24	6,170.00	6,167.24	48.27	156.20	14.25	-1,295.71	-9,245.75	907.13	815.72	91.41	9.924	
16,139.36	7,056.11	6,170.00	6,167.24	48.39	156.20	14.25	-1,295.71	-9,245.75	906.28	815.17	91.11	9.947	CC, ES
16,200.00	7,055.91	6,170.00	6,167.24	48.57	156.20	14.25	-1,295.71	-9,245.75	908.30	815.74	92.57	9.812	
16,300.00	7,055.58	6,170.00	6,167.24	48.87	156.20	14.25	-1,295.71	-9,245.75	920.40	821.16	99.25	9.274	
16,400.00	7,055.25	6,170.00	6,167.24	49.17	156.20	14.25	-1,295.71	-9,245.75	943.01	833.94	109.07	8.646	
16,500.00	7,054.92	6,170.00	6,167.24	49.47	156.20	14.25	-1,295.71	-9,245.75	975.40	855.50	119.90	8.135	
16,600.00	7,054.59	6,170.00	6,167.24	49.77	156.20	14.25	-1,295.71	-9,245.75	1,016.63	886.13	130.50	7.791	
16,619.57	7,054.53	6,170.00	6,167.24	49.83	156.20	14.25	-1,295.71	-9,245.75	1,025.64	893.16	132.48	7.742	
16,700.00	7,054.27	6,170.00	6,167.24	50.07	156.20	14.25	-1,295.71	-9,245.75	1,065.67	925.41	140.27	7.597	
16,782.16	7,054.00	6,170.00	6,167.24	50.32	156.20	14.25	-1,295.71	-9,245.75	1,111.10	963.59	147.51	7.532	SF

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-96.10	-772.71	-7,227.72	7,269.11				
100.00	100.00	45.51	45.51	0.23	0.42	-96.10	-772.71	-7,227.72	7,268.91	7,268.26	0.65	N/A	
200.00	200.00	145.51	145.51	0.53	1.35	-96.10	-772.71	-7,227.72	7,268.91	7,267.03	1.87	3,883.926	
300.00	300.00	340.48	245.51	0.83	3.61	-96.10	-772.71	-7,227.72	7,268.91	7,264.47	4.44	1,637.813	
400.00	400.00	345.52	345.51	1.13	3.71	-96.10	-772.71	-7,227.72	7,268.91	7,264.07	4.83	1,503.715	
500.00	500.00	445.52	445.51	1.43	5.61	-96.10	-772.71	-7,227.72	7,268.91	7,261.87	7.04	1,032.972	
600.00	599.98	545.43	545.42	1.73	7.51	78.34	-772.17	-7,227.72	7,268.49	7,259.26	9.24	786.792	
700.00	699.84	643.96	643.95	2.03	9.39	78.40	-772.26	-7,227.72	7,267.45	7,256.04	11.41	636.765	
800.00	799.45	742.28	742.27	2.33	11.26	78.50	-772.53	-7,227.72	7,265.72	7,252.14	13.58	534.871	
900.00	898.70	844.25	844.21	2.63	13.27	78.64	-772.71	-7,227.72	7,263.31	7,247.41	15.90	456.900	
1,000.00	997.47	943.01	942.98	2.93	15.28	78.82	-772.71	-7,227.72	7,260.22	7,242.01	18.20	398.833	
1,100.00	1,095.62	1,041.05	1,041.01	3.23	17.27	79.04	-771.90	-7,227.72	7,256.41	7,235.91	20.50	354.048	
1,207.25	1,200.09	1,143.65	1,143.61	3.55	19.35	79.32	-772.06	-7,227.72	7,251.75	7,228.85	22.90	316.641	
1,300.00	1,290.03	1,232.11	1,232.06	3.83	21.15	79.48	-772.42	-7,227.72	7,247.49	7,222.51	24.98	290.161	
1,400.00	1,386.99	1,332.60	1,332.51	4.13	23.23	79.67	-772.71	-7,227.72	7,242.96	7,215.60	27.36	264.715	
1,500.00	1,483.96	1,429.57	1,429.47	4.43	25.28	79.85	-772.71	-7,227.72	7,238.49	7,208.78	29.71	243.634	
1,600.00	1,580.93	1,526.53	1,526.44	4.73	27.33	80.04	-772.71	-7,227.72	7,234.09	7,202.03	32.06	225.645	
1,700.00	1,677.90	1,621.72	1,621.61	5.03	29.34	80.23	-771.76	-7,227.72	7,229.70	7,195.33	34.37	210.343	
1,800.00	1,774.87	1,716.98	1,716.87	5.33	31.36	80.41	-772.22	-7,227.72	7,225.51	7,188.82	36.68	196.966	
1,900.00	1,871.83	1,817.51	1,817.35	5.63	33.48	80.59	-772.71	-7,227.72	7,221.39	7,182.28	39.11	184.637	
2,000.00	1,968.80	1,914.48	1,914.31	5.93	35.54	80.78	-772.71	-7,227.72	7,217.31	7,175.85	41.47	174.047	
2,100.00	2,065.77	2,011.45	2,011.28	6.23	37.60	80.97	-772.71	-7,227.72	7,213.32	7,169.50	43.82	164.597	
2,200.00	2,162.74	2,107.41	2,107.23	6.53	39.63	81.16	-771.66	-7,227.72	7,209.34	7,163.18	46.16	156.185	
2,300.00	2,259.71	2,203.09	2,202.90	6.83	41.66	81.34	-772.03	-7,227.72	7,205.53	7,157.05	48.49	148.604	
2,400.00	2,356.67	2,302.43	2,302.19	7.13	43.77	81.53	-772.71	-7,227.72	7,201.82	7,150.93	50.89	141.504	
2,500.00	2,453.64	2,399.40	2,399.15	7.43	45.83	81.71	-772.71	-7,227.72	7,198.15	7,144.90	53.25	135.166	
2,600.00	2,550.61	2,496.37	2,496.12	7.73	47.89	81.90	-772.71	-7,227.72	7,194.56	7,138.95	55.61	129.367	
2,700.00	2,647.58	2,592.85	2,592.59	8.03	49.94	82.09	-771.65	-7,227.72	7,191.00	7,133.04	57.96	124.063	
2,800.00	2,744.55	2,688.87	2,688.61	8.33	51.98	82.28	-771.95	-7,227.72	7,187.59	7,127.29	60.30	119.194	
2,900.00	2,841.51	2,785.06	2,784.79	8.63	54.02	82.46	-772.58	-7,227.72	7,184.28	7,121.63	62.64	114.683	
3,000.00	2,938.48	2,884.32	2,884.00	8.93	56.20	82.65	-772.71	-7,227.72	7,181.02	7,115.89	65.12	110.269	
3,100.00	3,035.45	2,981.29	2,980.96	9.23	58.34	82.84	-772.71	-7,227.72	7,177.83	7,110.27	67.56	106.240	
3,200.00	3,132.42	3,078.03	3,077.69	9.53	60.47	83.03	-771.65	-7,227.72	7,174.70	7,104.71	70.00	102.500	
3,300.00	3,229.39	3,174.43	3,174.09	9.83	62.60	83.22	-771.93	-7,227.72	7,171.69	7,099.27	72.42	99.023	
3,400.00	3,326.35	3,271.01	3,270.66	10.13	64.73	83.40	-772.53	-7,227.72	7,168.77	7,093.92	74.86	95.768	
3,500.00	3,423.32	3,369.25	3,368.84	10.43	66.90	83.59	-772.71	-7,227.72	7,165.92	7,088.60	77.33	92.671	
3,600.00	3,520.29	3,466.22	3,465.80	10.73	69.04	83.78	-772.71	-7,227.72	7,163.15	7,083.38	79.77	89.798	
3,700.00	3,617.26	3,563.12	3,562.69	11.03	71.18	83.98	-771.35	-7,227.72	7,160.45	7,078.24	82.21	87.098	
3,800.00	3,714.23	3,659.90	3,659.46	11.33	73.32	84.16	-771.63	-7,227.72	7,157.85	7,073.20	84.65	84.558	
3,900.00	3,811.19	3,756.90	3,756.45	11.63	75.47	84.35	-772.32	-7,227.72	7,155.33	7,068.23	87.09	82.156	
4,000.00	3,908.16	3,854.19	3,853.68	11.93	77.47	84.53	-772.71	-7,227.72	7,152.89	7,063.49	89.40	80.013	
4,100.00	4,005.13	3,951.16	3,950.64	12.23	79.37	84.72	-772.71	-7,227.72	7,150.53	7,058.93	91.60	78.064	
4,200.00	4,102.10	4,048.14	4,047.61	12.53	81.27	84.92	-771.63	-7,227.72	7,148.26	7,054.46	93.80	76.207	
4,300.00	4,199.07	4,145.35	4,144.82	12.83	83.18	85.11	-771.81	-7,227.72	7,146.07	7,050.06	96.01	74.433	
4,400.00	4,296.03	4,337.89	4,241.55	13.13	87.04	85.29	-772.71	-7,227.72	7,143.95	7,043.78	100.16	71.324	
4,500.00	4,393.00	4,340.29	4,339.75	13.43	87.00	85.48	-773.19	-7,227.72	7,141.91	7,041.48	100.43	71.114	
4,600.00	4,489.97	4,436.04	4,435.48	13.73	89.12	85.67	-772.71	-7,227.72	7,139.97	7,037.12	102.85	69.422	
4,700.00	4,586.94	4,533.01	4,532.45	14.03	91.19	85.86	-772.71	-7,227.72	7,138.11	7,032.90	105.21	67.845	
4,800.00	4,683.91	4,630.19	4,629.63	14.33	93.25	86.05	-772.16	-7,227.72	7,136.35	7,028.77	107.58	66.336	
4,900.00	4,780.87	4,727.53	4,726.96	14.63	95.32	86.24	-772.35	-7,227.72	7,134.65	7,024.70	109.95	64.891	
5,000.00	4,877.84	4,836.00	4,823.36	14.93	97.66	86.43	-772.71	-7,227.72	7,133.03	7,020.44	112.58	63.359	
5,100.00	4,974.81	4,920.97	4,920.32	15.23	99.82	86.62	-772.71	-7,227.72	7,131.50	7,016.45	115.05	61.986	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	5,071.78	5,017.94	5,017.29	15.53	102.30	86.81	-772.71	-7,227.72	7,130.05	7,012.23	117.83	60.513	
5,300.00	5,168.75	5,115.71	5,115.04	15.83	104.80	87.01	-771.20	-7,227.72	7,128.75	7,008.13	120.62	59.100	
5,400.00	5,265.71	5,214.59	5,213.91	16.13	107.32	87.20	-771.73	-7,227.72	7,127.46	7,004.01	123.45	57.737	
5,500.00	5,362.68	5,313.76	5,313.05	16.43	109.85	87.39	-772.79	-7,227.72	7,126.21	6,999.94	126.28	56.433	
5,600.00	5,459.65	5,406.00	5,405.16	16.73	112.58	87.57	-772.71	-7,227.72	7,125.11	6,995.80	129.31	55.102	
5,700.00	5,556.62	5,502.97	5,502.13	17.03	115.43	87.76	-772.71	-7,227.72	7,124.08	6,991.63	132.45	53.785	
5,800.00	5,653.59	5,601.25	5,600.37	17.33	118.31	87.97	-770.91	-7,227.72	7,123.24	6,987.61	135.64	52.517	
5,900.00	5,750.55	5,701.18	5,700.29	17.63	121.24	88.16	-771.52	-7,227.72	7,122.35	6,983.48	138.87	51.288	
6,000.00	5,847.52	5,803.78	5,793.04	17.93	124.27	88.33	-772.71	-7,227.72	7,121.50	6,979.30	142.20	50.082	
6,100.00	5,944.49	5,891.19	5,890.00	18.23	127.12	88.52	-772.71	-7,227.72	7,120.81	6,975.46	145.35	48.991	
6,200.00	6,041.46	5,988.15	5,986.97	18.53	130.29	88.71	-772.71	-7,227.72	7,120.20	6,971.39	148.81	47.847	
6,300.00	6,138.43	6,085.12	6,083.94	18.83	133.45	88.90	-772.71	-7,227.72	7,119.67	6,967.40	152.27	46.755	
6,400.00	6,235.39	6,182.09	6,180.91	19.13	136.61	89.09	-772.71	-7,227.72	7,119.23	6,963.49	155.74	45.713	
6,470.32	6,303.58	6,250.28	6,249.10	19.35	138.84	89.23	-772.71	-7,227.72	7,118.97	6,960.80	158.17	45.007	
6,500.00	6,332.36	6,210.00	6,208.43	19.43	137.52	89.15	-772.71	-7,227.72	7,119.21	6,962.27	156.94	45.362	
6,600.00	6,429.33	6,210.00	6,208.43	19.73	137.52	89.15	-772.71	-7,227.72	7,120.55	6,963.34	157.21	45.293	
6,700.00	6,526.30	6,210.00	6,208.43	20.03	137.52	89.15	-772.71	-7,227.72	7,123.28	6,965.83	157.46	45.240	
6,715.28	6,541.12	6,210.00	6,208.43	20.08	137.52	89.15	-772.71	-7,227.72	7,123.83	6,966.33	157.49	45.233	
6,750.00	6,574.74	6,210.00	6,208.43	20.18	137.52	75.97	-772.71	-7,227.72	7,124.13	6,966.56	157.57	45.213	
6,800.00	6,622.83	6,210.00	6,208.43	20.33	137.52	60.27	-772.71	-7,227.72	7,121.18	6,963.51	157.68	45.164	
6,850.00	6,670.20	6,210.00	6,208.43	20.49	137.52	48.94	-772.71	-7,227.72	7,114.25	6,956.48	157.78	45.091	
6,900.00	6,716.50	6,210.00	6,208.43	20.64	137.52	41.06	-772.71	-7,227.72	7,103.39	6,945.51	157.87	44.995	
6,950.00	6,761.36	6,210.00	6,208.43	20.79	137.52	35.53	-772.71	-7,227.72	7,088.64	6,930.68	157.96	44.875	
7,000.00	6,804.45	6,210.00	6,208.43	20.94	137.52	31.59	-772.71	-7,227.72	7,070.12	6,912.07	158.05	44.733	
7,050.00	6,845.44	6,210.00	6,208.43	21.09	137.52	28.74	-772.71	-7,227.72	7,047.92	6,889.78	158.13	44.569	
7,100.00	6,884.01	6,210.00	6,208.43	21.24	137.52	26.68	-772.71	-7,227.72	7,022.18	6,863.96	158.22	44.383	
7,150.00	6,919.88	6,210.00	6,208.43	21.39	137.52	25.21	-772.71	-7,227.72	6,993.06	6,834.76	158.30	44.176	
7,200.00	6,952.78	6,210.00	6,208.43	21.54	137.52	24.23	-772.71	-7,227.72	6,960.74	6,802.36	158.38	43.949	
7,250.00	6,982.44	6,210.00	6,208.43	21.69	137.52	23.66	-772.71	-7,227.72	6,925.43	6,766.96	158.46	43.703	
7,300.00	7,008.65	6,210.00	6,208.43	21.84	137.52	23.49	-772.71	-7,227.72	6,887.34	6,728.79	158.55	43.439	
7,350.00	7,031.20	6,210.00	6,208.43	21.99	137.52	23.74	-772.71	-7,227.72	6,846.72	6,688.08	158.64	43.158	
7,400.00	7,049.92	6,210.00	6,208.43	22.14	137.52	24.49	-772.71	-7,227.72	6,803.85	6,645.11	158.74	42.862	
7,450.00	7,064.68	6,210.00	6,208.43	22.29	137.52	25.94	-772.71	-7,227.72	6,759.01	6,600.16	158.84	42.552	
7,500.00	7,075.36	6,210.00	6,208.43	22.44	137.52	28.48	-772.71	-7,227.72	6,712.49	6,553.54	158.95	42.229	
7,550.00	7,081.87	6,210.00	6,208.43	22.59	137.52	33.03	-772.71	-7,227.72	6,664.63	6,505.56	159.07	41.897	
7,604.16	7,084.18	6,210.00	6,208.43	22.75	137.52	43.38	-772.71	-7,227.72	6,611.67	6,452.46	159.21	41.527	
7,700.00	7,083.86	6,210.00	6,208.43	23.04	137.52	43.38	-772.71	-7,227.72	6,517.19	6,357.72	159.47	40.867	
7,800.00	7,083.53	6,210.00	6,208.43	23.34	137.52	43.38	-772.71	-7,227.72	6,418.65	6,258.91	159.74	40.182	
7,900.00	7,083.20	6,210.00	6,208.43	23.64	137.52	43.38	-772.71	-7,227.72	6,320.15	6,160.14	160.01	39.499	
8,000.00	7,082.87	6,210.00	6,208.43	23.94	137.52	43.38	-772.71	-7,227.72	6,221.70	6,061.43	160.27	38.820	
8,100.00	7,082.54	6,210.00	6,208.43	24.24	137.52	43.38	-772.71	-7,227.72	6,123.30	5,962.77	160.54	38.143	
8,200.00	7,082.22	6,210.00	6,208.43	24.54	137.52	43.38	-772.71	-7,227.72	6,024.96	5,864.16	160.80	37.469	
8,300.00	7,081.89	6,210.00	6,208.43	24.84	137.52	43.38	-772.71	-7,227.72	5,926.67	5,765.61	161.06	36.799	
8,400.00	7,081.56	6,210.00	6,208.43	25.14	137.52	43.38	-772.71	-7,227.72	5,828.44	5,667.12	161.31	36.131	
8,500.00	7,081.23	6,210.00	6,208.43	25.45	137.52	43.38	-772.71	-7,227.72	5,730.27	5,568.70	161.57	35.466	
8,600.00	7,080.90	6,210.00	6,208.43	25.75	137.52	43.38	-772.71	-7,227.72	5,632.16	5,470.34	161.82	34.804	
8,700.00	7,080.57	6,210.00	6,208.43	26.05	137.52	43.38	-772.71	-7,227.72	5,534.12	5,372.05	162.07	34.146	
8,800.00	7,080.24	6,210.00	6,208.43	26.35	137.52	43.38	-772.71	-7,227.72	5,436.16	5,273.84	162.32	33.490	
8,900.00	7,079.91	6,210.00	6,208.43	26.65	137.52	43.38	-772.71	-7,227.72	5,338.27	5,175.70	162.57	32.837	
9,000.00	7,079.59	6,210.00	6,208.43	26.95	137.52	43.38	-772.71	-7,227.72	5,240.45	5,077.65	162.81	32.188	
9,100.00	7,079.26	6,210.00	6,208.43	27.25	137.52	43.38	-772.71	-7,227.72	5,142.73	4,979.68	163.05	31.541	
9,200.00	7,078.93	6,210.00	6,208.43	27.55	137.52	43.38	-772.71	-7,227.72	5,045.09	4,881.81	163.28	30.898	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	6,210.00	6,208.43	27.85	137.52	43.38	-772.71	-7,227.72	4,947.54	4,784.03	163.51	30.258	
9,400.00	7,078.27	6,210.00	6,208.43	28.15	137.52	43.38	-772.71	-7,227.72	4,850.10	4,686.36	163.74	29.621	
9,500.00	7,077.94	6,210.00	6,208.43	28.45	137.52	43.38	-772.71	-7,227.72	4,752.76	4,588.80	163.96	28.987	
9,600.00	7,077.61	6,210.00	6,208.43	28.75	137.52	43.38	-772.71	-7,227.72	4,655.54	4,491.36	164.18	28.357	
9,700.00	7,077.28	6,210.00	6,208.43	29.05	137.52	43.38	-772.71	-7,227.72	4,558.43	4,394.04	164.39	27.729	
9,800.00	7,076.95	6,210.00	6,208.43	29.35	137.52	43.38	-772.71	-7,227.72	4,461.46	4,296.86	164.60	27.105	
9,900.00	7,076.63	6,210.00	6,208.43	29.65	137.52	43.38	-772.71	-7,227.72	4,364.62	4,199.82	164.80	26.485	
10,000.00	7,076.30	6,210.00	6,208.43	29.95	137.52	43.38	-772.71	-7,227.72	4,267.92	4,102.93	164.99	25.868	
10,100.00	7,075.97	6,210.00	6,208.43	30.25	137.52	43.38	-772.71	-7,227.72	4,171.38	4,006.21	165.18	25.254	
10,200.00	7,075.64	6,210.00	6,208.43	30.55	137.52	43.38	-772.71	-7,227.72	4,075.01	3,909.66	165.35	24.644	
10,300.00	7,075.31	6,210.00	6,208.43	30.85	137.52	43.38	-772.71	-7,227.72	3,978.82	3,813.30	165.52	24.038	
10,400.00	7,074.98	6,210.00	6,208.43	31.15	137.52	43.38	-772.71	-7,227.72	3,882.82	3,717.14	165.68	23.436	
10,500.00	7,074.65	6,210.00	6,208.43	31.46	137.52	43.38	-772.71	-7,227.72	3,787.02	3,621.19	165.83	22.837	
10,600.00	7,074.32	6,210.00	6,208.43	31.76	137.52	43.38	-772.71	-7,227.72	3,691.45	3,525.49	165.97	22.242	
10,700.00	7,074.00	6,210.00	6,208.43	32.06	137.52	43.38	-772.71	-7,227.72	3,596.12	3,430.03	166.09	21.652	
10,800.00	7,073.67	6,210.00	6,208.43	32.36	137.52	43.38	-772.71	-7,227.72	3,501.05	3,334.86	166.20	21.066	
10,900.00	7,073.34	6,210.00	6,208.43	32.66	137.52	43.38	-772.71	-7,227.72	3,406.27	3,239.98	166.29	20.484	
11,000.00	7,073.01	6,210.00	6,208.43	32.96	137.52	43.38	-772.71	-7,227.72	3,311.79	3,145.42	166.37	19.906	
11,100.00	7,072.68	6,210.00	6,208.43	33.26	137.52	43.38	-772.71	-7,227.72	3,217.64	3,051.22	166.42	19.334	
11,200.00	7,072.35	6,210.00	6,208.43	33.56	137.52	43.38	-772.71	-7,227.72	3,123.86	2,957.40	166.46	18.766	
11,300.00	7,072.02	6,210.00	6,208.43	33.86	137.52	43.38	-772.71	-7,227.72	3,030.47	2,864.00	166.47	18.204	
11,400.00	7,071.69	6,210.00	6,208.43	34.16	137.52	43.38	-772.71	-7,227.72	2,937.52	2,771.07	166.45	17.648	
11,500.00	7,071.36	6,210.00	6,208.43	34.46	137.52	43.38	-772.71	-7,227.72	2,845.05	2,678.65	166.41	17.097	
11,600.00	7,071.04	6,210.00	6,208.43	34.76	137.52	43.38	-772.71	-7,227.72	2,753.11	2,586.78	166.33	16.553	
11,700.00	7,070.71	6,210.00	6,208.43	35.06	137.52	43.38	-772.71	-7,227.72	2,661.75	2,495.54	166.21	16.015	
11,800.00	7,070.38	6,210.00	6,208.43	35.36	137.52	43.38	-772.71	-7,227.72	2,571.02	2,404.98	166.04	15.484	
11,900.00	7,070.05	6,210.00	6,208.43	35.66	137.52	43.38	-772.71	-7,227.72	2,481.02	2,315.19	165.83	14.961	
12,000.00	7,069.72	6,210.00	6,208.43	35.96	137.52	43.38	-772.71	-7,227.72	2,391.80	2,226.24	165.56	14.446	
12,100.00	7,069.39	6,210.00	6,208.43	36.26	137.52	43.38	-772.71	-7,227.72	2,303.48	2,138.24	165.23	13.941	
12,200.00	7,069.06	6,210.00	6,208.43	36.56	137.52	43.38	-772.71	-7,227.72	2,216.14	2,051.31	164.83	13.445	
12,300.00	7,068.73	6,210.00	6,208.43	36.86	137.52	43.38	-772.71	-7,227.72	2,129.92	1,965.58	164.34	12.960	
12,400.00	7,068.41	6,210.00	6,208.43	37.16	137.52	43.38	-772.71	-7,227.72	2,044.96	1,881.19	163.77	12.487	
12,500.00	7,068.08	6,210.00	6,208.43	37.46	137.52	43.38	-772.71	-7,227.72	1,961.41	1,798.32	163.08	12.027	
12,600.00	7,067.75	6,210.00	6,208.43	37.76	137.52	43.38	-772.71	-7,227.72	1,879.47	1,717.19	162.28	11.582	
12,700.00	7,067.42	6,210.00	6,208.43	38.06	137.52	43.38	-772.71	-7,227.72	1,799.36	1,638.01	161.34	11.152	
12,800.00	7,067.09	6,210.00	6,208.43	38.36	137.52	43.38	-772.71	-7,227.72	1,721.32	1,561.07	160.25	10.741	
12,900.00	7,066.76	6,210.00	6,208.43	38.66	137.52	43.38	-772.71	-7,227.72	1,645.67	1,486.68	159.00	10.350	
13,000.00	7,066.43	6,210.00	6,208.43	38.96	137.52	43.38	-772.71	-7,227.72	1,572.74	1,415.19	157.55	9.982	
13,100.00	7,066.10	6,210.00	6,208.43	39.26	137.52	43.38	-772.71	-7,227.72	1,502.93	1,347.01	155.92	9.639	
13,200.00	7,065.77	6,210.00	6,208.43	39.56	137.52	43.38	-772.71	-7,227.72	1,436.69	1,282.61	154.07	9.325	
13,300.00	7,065.45	6,210.00	6,208.43	39.86	137.52	43.38	-772.71	-7,227.72	1,374.54	1,222.50	152.03	9.041	
13,400.00	7,065.12	6,210.00	6,208.43	40.16	137.52	43.38	-772.71	-7,227.72	1,317.05	1,167.24	149.82	8.791	
13,500.00	7,064.79	6,210.00	6,208.43	40.47	137.52	43.38	-772.71	-7,227.72	1,264.88	1,117.41	147.47	8.577	
13,600.00	7,064.46	6,210.00	6,208.43	40.77	137.52	43.38	-772.71	-7,227.72	1,218.68	1,073.61	145.08	8.400	
13,700.00	7,064.13	6,210.00	6,208.43	41.07	137.52	43.38	-772.71	-7,227.72	1,179.18	1,036.43	142.76	8.260	
13,800.00	7,063.80	6,210.00	6,208.43	41.37	137.52	43.38	-772.71	-7,227.72	1,147.06	1,006.39	140.67	8.154	
13,900.00	7,063.47	6,210.00	6,208.43	41.67	137.52	43.38	-772.71	-7,227.72	1,122.96	983.94	139.02	8.078	
14,000.00	7,063.14	6,210.00	6,208.43	41.97	137.52	43.38	-772.71	-7,227.72	1,107.39	969.41	137.98	8.026	
14,100.00	7,062.82	6,210.00	6,208.43	42.27	137.52	43.38	-772.71	-7,227.72	1,100.72	963.01	137.71	7.993	
14,123.61	7,062.74	6,210.00	6,208.43	42.34	137.52	43.38	-772.71	-7,227.72	1,100.47	962.70	137.77	7.988	CC, ES
14,200.00	7,062.49	6,210.00	6,208.43	42.57	137.52	43.38	-772.71	-7,227.72	1,103.12	964.84	138.27	7.978	SF
14,300.00	7,062.16	6,210.00	6,208.43	42.87	137.52	43.38	-772.71	-7,227.72	1,114.52	974.87	139.65	7.981	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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

Survey Program: 293-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,400.00	7,061.83	6,210.00	6,208.43	43.17	137.52	43.38	-772.71	-7,227.72	1,134.65	992.94	141.70	8.007	
14,500.00	7,061.50	6,210.00	6,208.43	43.47	137.52	43.38	-772.71	-7,227.72	1,163.06	1,018.79	144.27	8.062	
14,600.00	7,061.17	6,210.00	6,208.43	43.77	137.52	43.38	-772.71	-7,227.72	1,199.16	1,052.02	147.14	8.150	
14,700.00	7,060.84	6,210.00	6,208.43	44.07	137.52	43.38	-772.71	-7,227.72	1,242.28	1,092.13	150.15	8.274	
14,800.00	7,060.51	6,210.00	6,208.43	44.37	137.52	43.38	-772.71	-7,227.72	1,291.72	1,138.57	153.15	8.434	
14,900.00	7,060.18	6,210.00	6,208.43	44.67	137.52	43.38	-772.71	-7,227.72	1,346.78	1,190.73	156.05	8.630	
15,000.00	7,059.86	6,210.00	6,208.43	44.97	137.52	43.38	-772.71	-7,227.72	1,406.80	1,248.02	158.79	8.860	
15,100.00	7,059.53	6,210.00	6,208.43	45.27	137.52	43.38	-772.71	-7,227.72	1,471.18	1,309.86	161.32	9.119	
15,200.00	7,059.20	6,210.00	6,208.43	45.57	137.52	43.38	-772.71	-7,227.72	1,539.37	1,375.71	163.65	9.406	
15,300.00	7,058.87	6,210.00	6,208.43	45.87	137.52	43.38	-772.71	-7,227.72	1,610.88	1,445.10	165.78	9.717	
15,400.00	7,058.54	6,210.00	6,208.43	46.17	137.52	43.38	-772.71	-7,227.72	1,685.29	1,517.58	167.72	10.048	
15,500.00	7,058.21	6,210.00	6,208.43	46.47	137.52	43.38	-772.71	-7,227.72	1,762.24	1,592.77	169.48	10.398	
15,600.00	7,057.88	6,210.00	6,208.43	46.77	137.52	43.38	-772.71	-7,227.72	1,841.40	1,670.33	171.07	10.764	
15,700.00	7,057.55	6,210.00	6,208.43	47.07	137.52	43.38	-772.71	-7,227.72	1,922.51	1,749.98	172.53	11.143	
15,800.00	7,057.23	6,210.00	6,208.43	47.37	137.52	43.38	-772.71	-7,227.72	2,005.33	1,831.47	173.86	11.534	
15,900.00	7,056.90	6,210.00	6,208.43	47.67	137.52	43.38	-772.71	-7,227.72	2,089.64	1,914.57	175.07	11.936	
16,000.00	7,056.57	6,210.00	6,208.43	47.97	137.52	43.38	-772.71	-7,227.72	2,175.29	1,999.10	176.19	12.346	
16,100.00	7,056.24	6,210.00	6,208.43	48.27	137.52	43.38	-772.71	-7,227.72	2,262.12	2,084.89	177.22	12.764	
16,200.00	7,055.91	6,210.00	6,208.43	48.57	137.52	43.38	-772.71	-7,227.72	2,349.99	2,171.81	178.18	13.189	
16,300.00	7,055.58	6,210.00	6,208.43	48.87	137.52	43.38	-772.71	-7,227.72	2,438.80	2,259.73	179.06	13.620	
16,400.00	7,055.25	6,210.00	6,208.43	49.17	137.52	43.38	-772.71	-7,227.72	2,528.44	2,348.55	179.89	14.055	
16,500.00	7,054.92	6,210.00	6,208.43	49.47	137.52	43.38	-772.71	-7,227.72	2,618.83	2,438.16	180.67	14.495	
16,600.00	7,054.59	6,210.00	6,208.43	49.77	137.52	43.38	-772.71	-7,227.72	2,709.90	2,528.50	181.40	14.939	
16,619.57	7,054.53	6,210.00	6,208.43	49.83	137.52	43.38	-772.71	-7,227.72	2,727.80	2,546.26	181.54	15.026	
16,700.00	7,054.27	6,210.00	6,208.43	50.07	137.52	43.38	-772.71	-7,227.72	2,801.58	2,619.48	182.10	15.385	
16,782.16	7,054.00	6,210.00	6,208.43	50.32	137.52	43.38	-772.71	-7,227.72	2,877.32	2,694.68	182.64	15.754	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-106.79	-1,957.56	-6,489.16	6,778.76				
100.00	100.00	1.49	-1.49	0.23	0.01	-106.79	-1,957.56	-6,489.16	6,778.00	6,777.76	0.24	N/A	
200.00	200.00	98.51	98.51	0.53	0.91	-106.79	-1,957.56	-6,489.16	6,778.00	6,776.56	1.44	4,716.238	
300.00	300.00	198.51	198.51	0.83	1.83	-106.79	-1,957.56	-6,489.16	6,778.00	6,775.34	2.66	2,546.812	
400.00	400.00	301.48	298.51	1.13	2.80	-106.79	-1,957.56	-6,489.16	6,778.00	6,774.07	3.93	1,726.119	
500.00	500.00	398.52	398.51	1.43	4.59	-106.79	-1,957.56	-6,489.16	6,778.00	6,771.98	6.02	1,125.832	
600.00	599.98	498.50	498.49	1.73	6.44	67.66	-1,957.56	-6,489.16	6,777.34	6,769.17	8.17	829.681	
700.00	699.84	595.63	595.63	2.03	8.24	67.74	-1,957.12	-6,489.16	6,775.22	6,764.96	10.26	660.080	
800.00	799.45	691.63	691.62	2.33	10.01	67.86	-1,957.35	-6,489.16	6,771.99	6,759.65	12.34	548.835	
900.00	898.70	797.24	797.21	2.63	11.99	68.04	-1,957.56	-6,489.16	6,767.44	6,752.82	14.62	462.986	
1,000.00	997.47	896.00	895.98	2.93	13.87	68.28	-1,957.56	-6,489.16	6,761.56	6,744.76	16.79	402.601	
1,100.00	1,095.62	994.15	994.13	3.23	15.73	68.56	-1,957.03	-6,489.16	6,754.27	6,735.31	18.96	356.222	
1,207.25	1,200.09	1,095.26	1,095.24	3.55	17.66	68.91	-1,957.12	-6,489.16	6,745.30	6,724.10	21.21	318.099	
1,300.00	1,290.03	1,182.39	1,182.36	3.83	19.31	69.08	-1,957.34	-6,489.16	6,737.02	6,713.88	23.14	291.145	
1,400.00	1,386.99	1,285.56	1,285.51	4.13	21.30	69.28	-1,957.56	-6,489.16	6,728.16	6,702.73	25.43	264.588	
1,500.00	1,483.96	1,382.53	1,382.47	4.43	23.20	69.47	-1,957.56	-6,489.16	6,719.32	6,691.68	27.63	243.180	
1,600.00	1,580.93	1,479.49	1,479.44	4.73	25.11	69.66	-1,957.56	-6,489.16	6,710.55	6,680.72	29.83	224.935	
1,700.00	1,677.90	1,572.93	1,572.88	5.03	26.94	69.85	-1,956.81	-6,489.16	6,701.66	6,669.70	31.97	209.648	
1,800.00	1,774.87	1,665.83	1,665.77	5.33	28.76	70.03	-1,957.11	-6,489.16	6,693.14	6,659.05	34.09	196.344	
1,900.00	1,871.83	1,770.44	1,770.35	5.63	30.81	70.23	-1,957.56	-6,489.16	6,684.72	6,648.27	36.44	183.436	
2,000.00	1,968.80	1,867.41	1,867.31	5.93	32.72	70.42	-1,957.56	-6,489.16	6,676.26	6,637.61	38.65	172.746	
2,100.00	2,065.77	1,964.38	1,964.28	6.23	34.63	70.61	-1,957.56	-6,489.16	6,667.89	6,627.03	40.85	163.212	
2,200.00	2,162.74	2,058.80	2,058.70	6.53	36.48	70.81	-1,956.79	-6,489.16	6,659.40	6,616.39	43.01	154.833	
2,300.00	2,259.71	2,151.90	2,151.80	6.83	38.31	70.99	-1,957.05	-6,489.16	6,651.25	6,606.11	45.14	147.346	
2,400.00	2,356.67	2,255.32	2,255.19	7.13	40.35	71.20	-1,957.56	-6,489.16	6,643.24	6,595.76	47.48	139.923	
2,500.00	2,453.64	2,352.29	2,352.15	7.43	42.32	71.39	-1,957.56	-6,489.16	6,635.18	6,585.43	49.75	133.373	
2,600.00	2,550.61	2,449.26	2,449.12	7.73	44.29	71.58	-1,957.56	-6,489.16	6,627.20	6,575.18	52.02	127.397	
2,700.00	2,647.58	2,545.11	2,544.97	8.03	46.24	71.78	-1,956.70	-6,489.16	6,619.11	6,564.84	54.27	121.969	
2,800.00	2,744.55	2,638.69	2,638.54	8.33	48.14	71.97	-1,956.88	-6,489.16	6,611.34	6,554.87	56.47	117.075	
2,900.00	2,841.51	2,732.38	2,732.23	8.63	50.05	72.16	-1,957.27	-6,489.16	6,603.70	6,545.02	58.68	112.546	
3,000.00	2,938.48	2,837.19	2,837.00	8.93	52.30	72.37	-1,957.56	-6,489.16	6,596.11	6,534.88	61.23	107.730	
3,100.00	3,035.45	2,934.16	2,933.96	9.23	54.48	72.56	-1,957.56	-6,489.16	6,588.53	6,524.83	63.71	103.417	
3,200.00	3,132.42	3,030.47	3,030.26	9.53	56.65	72.77	-1,956.53	-6,489.16	6,580.83	6,514.65	66.17	99.447	
3,300.00	3,229.39	3,122.82	3,122.60	9.83	58.72	72.96	-1,956.74	-6,489.16	6,573.47	6,504.92	68.55	95.891	
3,400.00	3,326.35	3,215.33	3,215.11	10.13	60.81	73.14	-1,957.25	-6,489.16	6,566.26	6,495.33	70.93	92.571	
3,500.00	3,423.32	3,322.15	3,321.84	10.43	63.17	73.36	-1,957.56	-6,489.16	6,559.07	6,485.48	73.60	89.123	
3,600.00	3,520.29	3,419.12	3,418.80	10.73	65.29	73.56	-1,957.56	-6,489.16	6,551.92	6,475.90	76.02	86.185	
3,700.00	3,617.26	3,514.31	3,513.97	11.03	67.38	73.76	-1,956.04	-6,489.16	6,544.55	6,466.14	78.41	83.467	
3,800.00	3,714.23	3,605.07	3,604.73	11.33	69.37	73.95	-1,956.40	-6,489.16	6,537.64	6,456.94	80.70	81.013	
3,900.00	3,811.19	3,696.09	3,695.73	11.63	71.37	74.13	-1,957.22	-6,489.16	6,530.90	6,447.90	82.99	78.692	
4,000.00	3,908.16	3,807.08	3,806.68	11.93	73.74	74.36	-1,957.56	-6,489.16	6,524.12	6,438.45	85.67	76.155	
4,100.00	4,005.13	3,904.05	3,903.64	12.23	75.80	74.56	-1,957.56	-6,489.16	6,517.38	6,429.36	88.03	74.039	
4,200.00	4,102.10	4,001.02	4,000.61	12.53	77.86	74.76	-1,957.56	-6,489.16	6,510.73	6,420.35	90.38	72.033	
4,300.00	4,199.07	4,097.99	4,097.58	12.83	79.92	74.96	-1,957.56	-6,489.16	6,504.16	6,411.42	92.74	70.131	
4,400.00	4,296.03	4,194.95	4,194.55	13.13	81.97	75.16	-1,957.56	-6,489.16	6,497.68	6,402.58	95.10	68.324	
4,500.00	4,393.00	4,291.92	4,291.52	13.43	84.03	75.37	-1,957.56	-6,489.16	6,491.28	6,393.82	97.46	66.605	
4,600.00	4,489.97	4,387.98	4,387.56	13.73	86.07	75.58	-1,955.68	-6,489.16	6,484.67	6,384.87	99.80	64.978	
4,700.00	4,586.94	4,483.89	4,483.46	14.03	88.11	75.78	-1,955.81	-6,489.16	6,478.47	6,376.34	102.13	63.432	
4,800.00	4,683.91	4,579.85	4,579.42	14.33	90.14	75.98	-1,956.05	-6,489.16	6,472.37	6,367.90	104.47	61.955	
4,900.00	4,780.87	4,675.86	4,675.43	14.63	92.18	76.18	-1,956.39	-6,489.16	6,466.38	6,359.57	106.81	60.543	
5,000.00	4,877.84	4,771.92	4,771.49	14.93	94.22	76.38	-1,956.84	-6,489.16	6,460.48	6,351.34	109.15	59.191	
5,100.00	4,974.81	4,868.04	4,867.60	15.23	96.26	76.58	-1,957.38	-6,489.16	6,454.68	6,343.20	111.49	57.897	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	5,071.78	4,970.88	4,970.29	15.53	98.50	76.79	-1,957.56	-6,489.16	6,448.92	6,334.88	114.03	56.554	
5,300.00	5,168.75	5,067.85	5,067.26	15.83	100.64	77.00	-1,957.56	-6,489.16	6,443.21	6,326.74	116.47	55.320	
5,400.00	5,265.71	5,164.82	5,164.23	16.13	102.78	77.20	-1,957.56	-6,489.16	6,437.59	6,318.68	118.91	54.138	
5,500.00	5,362.68	5,261.79	5,261.20	16.43	104.92	77.41	-1,957.56	-6,489.16	6,432.07	6,310.72	121.35	53.004	
5,600.00	5,459.65	5,358.75	5,358.16	16.73	107.06	77.62	-1,957.56	-6,489.16	6,426.63	6,302.84	123.79	51.916	
5,700.00	5,556.62	5,455.72	5,455.13	17.03	109.20	77.82	-1,957.56	-6,489.16	6,421.27	6,295.04	126.23	50.870	
5,800.00	5,653.59	5,552.69	5,552.10	17.33	111.34	78.03	-1,957.56	-6,489.16	6,416.01	6,287.34	128.67	49.865	
5,900.00	5,750.55	5,649.66	5,649.07	17.63	113.48	78.24	-1,957.56	-6,489.16	6,410.84	6,279.73	131.11	48.897	
6,000.00	5,847.52	5,746.63	5,746.04	17.93	115.62	78.45	-1,957.56	-6,489.16	6,405.75	6,272.20	133.55	47.966	
6,100.00	5,944.49	5,843.59	5,843.00	18.23	117.76	78.65	-1,957.56	-6,489.16	6,400.75	6,264.77	135.99	47.069	
6,200.00	6,041.46	5,940.56	5,939.97	18.53	119.90	78.86	-1,957.56	-6,489.16	6,395.85	6,257.42	138.43	46.204	
6,300.00	6,138.43	6,037.53	6,036.94	18.83	122.04	79.07	-1,957.56	-6,489.16	6,391.03	6,250.16	140.87	45.370	
6,400.00	6,235.39	6,134.50	6,133.91	19.13	124.18	79.28	-1,957.56	-6,489.16	6,386.30	6,243.00	143.31	44.564	
6,500.00	6,332.36	6,231.47	6,230.88	19.43	126.32	79.49	-1,957.56	-6,489.16	6,381.66	6,235.92	145.74	43.787	
6,600.00	6,429.33	6,165.00	6,164.16	19.73	124.85	79.35	-1,957.56	-6,489.16	6,379.22	6,234.68	144.54	44.135	
6,700.00	6,526.30	6,165.00	6,164.16	20.03	124.85	79.35	-1,957.56	-6,489.16	6,377.99	6,233.21	144.78	44.054	
6,715.28	6,541.12	6,165.00	6,164.16	20.08	124.85	79.35	-1,957.56	-6,489.16	6,377.94	6,233.13	144.81	44.043	
6,750.00	6,574.74	6,165.00	6,164.16	20.18	124.85	66.16	-1,957.56	-6,489.16	6,376.92	6,232.03	144.89	44.014	
6,800.00	6,622.83	6,165.00	6,164.16	20.33	124.85	50.39	-1,957.56	-6,489.16	6,372.10	6,227.12	144.99	43.950	
6,850.00	6,670.20	6,165.00	6,164.16	20.49	124.85	38.92	-1,957.56	-6,489.16	6,363.37	6,218.29	145.08	43.861	
6,900.00	6,716.50	6,165.00	6,164.16	20.64	124.85	30.82	-1,957.56	-6,489.16	6,350.78	6,205.61	145.17	43.747	
6,950.00	6,761.36	6,165.00	6,164.16	20.79	124.85	25.00	-1,957.56	-6,489.16	6,334.39	6,189.13	145.25	43.609	
7,000.00	6,804.45	6,165.00	6,164.16	20.94	124.85	20.66	-1,957.56	-6,489.16	6,314.30	6,168.97	145.33	43.447	
7,050.00	6,845.44	6,165.00	6,164.16	21.09	124.85	17.31	-1,957.56	-6,489.16	6,290.64	6,145.23	145.41	43.262	
7,100.00	6,884.01	6,165.00	6,164.16	21.24	124.85	14.61	-1,957.56	-6,489.16	6,263.54	6,118.06	145.48	43.054	
7,150.00	6,919.88	6,165.00	6,164.16	21.39	124.85	12.33	-1,957.56	-6,489.16	6,233.16	6,087.61	145.55	42.824	
7,200.00	6,952.78	6,165.00	6,164.16	21.54	124.85	10.32	-1,957.56	-6,489.16	6,199.70	6,054.07	145.63	42.573	
7,250.00	6,982.44	6,165.00	6,164.16	21.69	124.85	8.44	-1,957.56	-6,489.16	6,163.35	6,017.65	145.70	42.302	
7,300.00	7,008.65	6,165.00	6,164.16	21.84	124.85	6.57	-1,957.56	-6,489.16	6,124.35	5,978.57	145.78	42.012	
7,350.00	7,031.20	6,165.00	6,164.16	21.99	124.85	4.56	-1,957.56	-6,489.16	6,082.93	5,937.08	145.86	41.705	
7,400.00	7,049.92	6,165.00	6,164.16	22.14	124.85	2.21	-1,957.56	-6,489.16	6,039.39	5,893.44	145.94	41.381	
7,450.00	7,064.68	6,165.00	6,164.16	22.29	124.85	-0.83	-1,957.56	-6,489.16	5,993.99	5,847.95	146.04	41.044	
7,500.00	7,075.36	6,165.00	6,164.16	22.44	124.85	-5.20	-1,957.56	-6,489.16	5,947.05	5,800.91	146.14	40.694	
7,550.00	7,081.87	6,165.00	6,164.16	22.59	124.85	-12.38	-1,957.56	-6,489.16	5,898.89	5,752.63	146.25	40.333	
7,604.16	7,084.18	6,165.00	6,164.16	22.75	124.85	-28.02	-1,957.56	-6,489.16	5,845.75	5,699.36	146.39	39.933	
7,700.00	7,083.86	6,165.00	6,164.16	23.04	124.85	-28.02	-1,957.56	-6,489.16	5,751.08	5,604.45	146.64	39.219	
7,800.00	7,083.53	6,165.00	6,164.16	23.34	124.85	-28.02	-1,957.56	-6,489.16	5,652.35	5,505.46	146.90	38.478	
7,900.00	7,083.20	6,165.00	6,164.16	23.64	124.85	-28.02	-1,957.56	-6,489.16	5,553.67	5,406.52	147.15	37.741	
8,000.00	7,082.87	6,165.00	6,164.16	23.94	124.85	-28.02	-1,957.56	-6,489.16	5,455.03	5,307.63	147.41	37.007	
8,100.00	7,082.54	6,165.00	6,164.16	24.24	124.85	-28.02	-1,957.56	-6,489.16	5,356.45	5,208.79	147.66	36.276	
8,200.00	7,082.22	6,165.00	6,164.16	24.54	124.85	-28.02	-1,957.56	-6,489.16	5,257.91	5,110.01	147.90	35.549	
8,300.00	7,081.89	6,165.00	6,164.16	24.84	124.85	-28.02	-1,957.56	-6,489.16	5,159.44	5,011.29	148.15	34.826	
8,400.00	7,081.56	6,165.00	6,164.16	25.14	124.85	-28.02	-1,957.56	-6,489.16	5,061.02	4,912.63	148.39	34.106	
8,500.00	7,081.23	6,165.00	6,164.16	25.45	124.85	-28.02	-1,957.56	-6,489.16	4,962.67	4,814.04	148.63	33.390	
8,600.00	7,080.90	6,165.00	6,164.16	25.75	124.85	-28.02	-1,957.56	-6,489.16	4,864.38	4,715.52	148.86	32.677	
8,700.00	7,080.57	6,165.00	6,164.16	26.05	124.85	-28.02	-1,957.56	-6,489.16	4,766.16	4,617.07	149.09	31.968	
8,800.00	7,080.24	6,165.00	6,164.16	26.35	124.85	-28.02	-1,957.56	-6,489.16	4,668.03	4,518.71	149.32	31.262	
8,900.00	7,079.91	6,165.00	6,164.16	26.65	124.85	-28.02	-1,957.56	-6,489.16	4,569.97	4,420.43	149.54	30.560	
9,000.00	7,079.59	6,165.00	6,164.16	26.95	124.85	-28.02	-1,957.56	-6,489.16	4,471.99	4,322.24	149.75	29.862	
9,100.00	7,079.26	6,165.00	6,164.16	27.25	124.85	-28.02	-1,957.56	-6,489.16	4,374.11	4,224.15	149.96	29.168	
9,200.00	7,078.93	6,165.00	6,164.16	27.55	124.85	-28.02	-1,957.56	-6,489.16	4,276.33	4,126.16	150.17	28.477	
9,300.00	7,078.60	6,165.00	6,164.16	27.85	124.85	-28.02	-1,957.56	-6,489.16	4,178.65	4,028.29	150.36	27.790	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
9,400.00	7,078.27	6,165.00	6,164.16	28.15	124.85	-28.02	-1,957.56	-6,489.16	4,081.09	3,930.53	150.55	27.107	
9,500.00	7,077.94	6,165.00	6,164.16	28.45	124.85	-28.02	-1,957.56	-6,489.16	3,983.64	3,832.91	150.73	26.428	
9,600.00	7,077.61	6,165.00	6,164.16	28.75	124.85	-28.02	-1,957.56	-6,489.16	3,886.33	3,735.42	150.90	25.754	
9,700.00	7,077.28	6,165.00	6,164.16	29.05	124.85	-28.02	-1,957.56	-6,489.16	3,789.15	3,638.09	151.07	25.083	
9,800.00	7,076.95	6,165.00	6,164.16	29.35	124.85	-28.02	-1,957.56	-6,489.16	3,692.13	3,540.91	151.22	24.416	
9,900.00	7,076.63	6,165.00	6,164.16	29.65	124.85	-28.02	-1,957.56	-6,489.16	3,595.27	3,443.91	151.36	23.754	
10,000.00	7,076.30	6,165.00	6,164.16	29.95	124.85	-28.02	-1,957.56	-6,489.16	3,498.58	3,347.10	151.48	23.096	
10,100.00	7,075.97	6,165.00	6,164.16	30.25	124.85	-28.02	-1,957.56	-6,489.16	3,402.09	3,250.50	151.59	22.443	
10,200.00	7,075.64	6,165.00	6,164.16	30.55	124.85	-28.02	-1,957.56	-6,489.16	3,305.81	3,154.12	151.68	21.794	
10,300.00	7,075.31	6,165.00	6,164.16	30.85	124.85	-28.02	-1,957.56	-6,489.16	3,209.75	3,057.99	151.76	21.150	
10,400.00	7,074.98	6,165.00	6,164.16	31.15	124.85	-28.02	-1,957.56	-6,489.16	3,113.94	2,962.13	151.81	20.512	
10,500.00	7,074.65	6,165.00	6,164.16	31.46	124.85	-28.02	-1,957.56	-6,489.16	3,018.40	2,866.56	151.84	19.879	
10,600.00	7,074.32	6,165.00	6,164.16	31.76	124.85	-28.02	-1,957.56	-6,489.16	2,923.16	2,771.32	151.85	19.251	
10,700.00	7,074.00	6,165.00	6,164.16	32.06	124.85	-28.02	-1,957.56	-6,489.16	2,828.25	2,676.44	151.82	18.629	
10,800.00	7,073.67	6,165.00	6,164.16	32.36	124.85	-28.02	-1,957.56	-6,489.16	2,733.71	2,581.95	151.76	18.014	
10,900.00	7,073.34	6,165.00	6,164.16	32.66	124.85	-28.02	-1,957.56	-6,489.16	2,639.56	2,487.90	151.66	17.405	
11,000.00	7,073.01	6,165.00	6,164.16	32.96	124.85	-28.02	-1,957.56	-6,489.16	2,545.87	2,394.35	151.51	16.803	
11,100.00	7,072.68	6,165.00	6,164.16	33.26	124.85	-28.02	-1,957.56	-6,489.16	2,452.66	2,301.34	151.32	16.208	
11,200.00	7,072.35	6,165.00	6,164.16	33.56	124.85	-28.02	-1,957.56	-6,489.16	2,360.02	2,208.95	151.07	15.622	
11,300.00	7,072.02	6,165.00	6,164.16	33.86	124.85	-28.02	-1,957.56	-6,489.16	2,268.00	2,117.26	150.75	15.045	
11,400.00	7,071.69	6,165.00	6,164.16	34.16	124.85	-28.02	-1,957.56	-6,489.16	2,176.69	2,026.34	150.35	14.478	
11,500.00	7,071.36	6,165.00	6,164.16	34.46	124.85	-28.02	-1,957.56	-6,489.16	2,086.17	1,936.31	149.86	13.921	
11,600.00	7,071.04	6,165.00	6,164.16	34.76	124.85	-28.02	-1,957.56	-6,489.16	1,996.56	1,847.30	149.26	13.376	
11,700.00	7,070.71	6,165.00	6,164.16	35.06	124.85	-28.02	-1,957.56	-6,489.16	1,907.98	1,759.44	148.54	12.845	
11,800.00	7,070.38	6,165.00	6,164.16	35.36	124.85	-28.02	-1,957.56	-6,489.16	1,820.58	1,672.91	147.67	12.329	
11,900.00	7,070.05	6,165.00	6,164.16	35.66	124.85	-28.02	-1,957.56	-6,489.16	1,734.54	1,587.92	146.63	11.830	
12,000.00	7,069.72	6,165.00	6,164.16	35.96	124.85	-28.02	-1,957.56	-6,489.16	1,650.09	1,504.70	145.38	11.350	
12,100.00	7,069.39	6,165.00	6,164.16	36.26	124.85	-28.02	-1,957.56	-6,489.16	1,567.46	1,423.56	143.90	10.893	
12,200.00	7,069.06	6,165.00	6,164.16	36.56	124.85	-28.02	-1,957.56	-6,489.16	1,486.96	1,344.83	142.13	10.462	
12,300.00	7,068.73	6,165.00	6,164.16	36.86	124.85	-28.02	-1,957.56	-6,489.16	1,408.97	1,268.94	140.03	10.062	
12,400.00	7,068.41	6,165.00	6,164.16	37.16	124.85	-28.02	-1,957.56	-6,489.16	1,333.91	1,196.37	137.54	9.698	
12,500.00	7,068.08	6,165.00	6,164.16	37.46	124.85	-28.02	-1,957.56	-6,489.16	1,262.32	1,127.71	134.61	9.377	
12,600.00	7,067.75	6,165.00	6,164.16	37.76	124.85	-28.02	-1,957.56	-6,489.16	1,194.82	1,063.62	131.20	9.107	
12,700.00	7,067.42	6,165.00	6,164.16	38.06	124.85	-28.02	-1,957.56	-6,489.16	1,132.13	1,004.87	127.26	8.896	
12,800.00	7,067.09	6,165.00	6,164.16	38.36	124.85	-28.02	-1,957.56	-6,489.16	1,075.11	952.29	122.82	8.754	
12,900.00	7,066.76	6,165.00	6,164.16	38.66	124.85	-28.02	-1,957.56	-6,489.16	1,024.69	906.73	117.96	8.687	
13,000.00	7,066.43	6,165.00	6,164.16	38.96	124.85	-28.02	-1,957.56	-6,489.16	981.90	868.98	112.92	8.696	
13,100.00	7,066.10	6,165.00	6,164.16	39.26	124.85	-28.02	-1,957.56	-6,489.16	947.77	839.68	108.09	8.768	
13,200.00	7,065.77	6,165.00	6,164.16	39.56	124.85	-28.02	-1,957.56	-6,489.16	923.26	819.17	104.08	8.870	
13,300.00	7,065.45	6,165.00	6,164.16	39.86	124.85	-28.02	-1,957.56	-6,489.16	909.14	807.51	101.63	8.945	
13,379.32	7,065.18	6,165.00	6,164.16	40.10	124.85	-28.02	-1,957.56	-6,489.16	905.67	804.47	101.20	8.949	CC, ES
13,400.00	7,065.12	6,165.00	6,164.16	40.16	124.85	-28.02	-1,957.56	-6,489.16	905.91	804.58	101.33	8.940	
13,500.00	7,064.79	6,165.00	6,164.16	40.47	124.85	-28.02	-1,957.56	-6,489.16	913.68	810.36	103.32	8.843	
13,600.00	7,064.46	6,165.00	6,164.16	40.77	124.85	-28.02	-1,957.56	-6,489.16	932.17	824.95	107.22	8.694	
13,700.00	7,064.13	6,165.00	6,164.16	41.07	124.85	-28.02	-1,957.56	-6,489.16	960.77	848.43	112.34	8.553	
13,800.00	7,063.80	6,165.00	6,164.16	41.37	124.85	-28.02	-1,957.56	-6,489.16	998.61	880.64	117.97	8.465	
13,900.00	7,063.47	6,165.00	6,164.16	41.67	124.85	-28.02	-1,957.56	-6,489.16	1,044.68	921.08	123.60	8.452	SF
14,000.00	7,063.14	6,165.00	6,164.16	41.97	124.85	-28.02	-1,957.56	-6,489.16	1,097.94	969.04	128.91	8.517	
14,100.00	7,062.82	6,165.00	6,164.16	42.27	124.85	-28.02	-1,957.56	-6,489.16	1,157.42	1,023.67	133.74	8.654	
14,200.00	7,062.49	6,165.00	6,164.16	42.57	124.85	-28.02	-1,957.56	-6,489.16	1,222.19	1,084.14	138.05	8.853	
14,300.00	7,062.16	6,165.00	6,164.16	42.87	124.85	-28.02	-1,957.56	-6,489.16	1,291.47	1,149.62	141.85	9.104	
14,400.00	7,061.83	6,165.00	6,164.16	43.17	124.85	-28.02	-1,957.56	-6,489.16	1,364.56	1,219.39	145.17	9.399	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,500.00	7,061.50	6,165.00	6,164.16	43.47	124.85	-28.02	-1,957.56	-6,489.16	1,440.89	1,292.81	148.08	9.731	
14,600.00	7,061.17	6,165.00	6,164.16	43.77	124.85	-28.02	-1,957.56	-6,489.16	1,519.96	1,369.35	150.62	10.091	
14,700.00	7,060.84	6,165.00	6,164.16	44.07	124.85	-28.02	-1,957.56	-6,489.16	1,601.38	1,448.53	152.85	10.477	
14,800.00	7,060.51	6,165.00	6,164.16	44.37	124.85	-28.02	-1,957.56	-6,489.16	1,684.80	1,529.99	154.81	10.883	
14,900.00	7,060.18	6,165.00	6,164.16	44.67	124.85	-28.02	-1,957.56	-6,489.16	1,769.94	1,613.39	156.56	11.305	
15,000.00	7,059.86	6,165.00	6,164.16	44.97	124.85	-28.02	-1,957.56	-6,489.16	1,856.57	1,698.46	158.11	11.742	
15,100.00	7,059.53	6,165.00	6,164.16	45.27	124.85	-28.02	-1,957.56	-6,489.16	1,944.47	1,784.97	159.50	12.191	
15,200.00	7,059.20	6,165.00	6,164.16	45.57	124.85	-28.02	-1,957.56	-6,489.16	2,033.50	1,872.74	160.76	12.650	
15,300.00	7,058.87	6,165.00	6,164.16	45.87	124.85	-28.02	-1,957.56	-6,489.16	2,123.50	1,961.60	161.90	13.116	
15,400.00	7,058.54	6,165.00	6,164.16	46.17	124.85	-28.02	-1,957.56	-6,489.16	2,214.36	2,051.42	162.94	13.590	
15,500.00	7,058.21	6,165.00	6,164.16	46.47	124.85	-28.02	-1,957.56	-6,489.16	2,305.97	2,142.08	163.89	14.070	
15,600.00	7,057.88	6,165.00	6,164.16	46.77	124.85	-28.02	-1,957.56	-6,489.16	2,398.26	2,233.48	164.77	14.555	
15,700.00	7,057.55	6,165.00	6,164.16	47.07	124.85	-28.02	-1,957.56	-6,489.16	2,491.14	2,325.55	165.59	15.044	
15,800.00	7,057.23	6,165.00	6,164.16	47.37	124.85	-28.02	-1,957.56	-6,489.16	2,584.55	2,418.19	166.36	15.536	
15,900.00	7,056.90	6,165.00	6,164.16	47.67	124.85	-28.02	-1,957.56	-6,489.16	2,678.44	2,511.37	167.08	16.031	
16,000.00	7,056.57	6,165.00	6,164.16	47.97	124.85	-28.02	-1,957.56	-6,489.16	2,772.76	2,605.01	167.75	16.529	
16,100.00	7,056.24	6,165.00	6,164.16	48.27	124.85	-28.02	-1,957.56	-6,489.16	2,867.46	2,699.07	168.39	17.029	
16,200.00	7,055.91	6,165.00	6,164.16	48.57	124.85	-28.02	-1,957.56	-6,489.16	2,962.51	2,793.51	169.00	17.530	
16,300.00	7,055.58	6,165.00	6,164.16	48.87	124.85	-28.02	-1,957.56	-6,489.16	3,057.87	2,888.29	169.58	18.032	
16,400.00	7,055.25	6,165.00	6,164.16	49.17	124.85	-28.02	-1,957.56	-6,489.16	3,153.53	2,983.39	170.13	18.536	
16,500.00	7,054.92	6,165.00	6,164.16	49.47	124.85	-28.02	-1,957.56	-6,489.16	3,249.44	3,078.77	170.67	19.040	
16,600.00	7,054.59	6,165.00	6,164.16	49.77	124.85	-28.02	-1,957.56	-6,489.16	3,345.59	3,174.41	171.18	19.544	
16,619.57	7,054.53	6,165.00	6,164.16	49.83	124.85	-28.02	-1,957.56	-6,489.16	3,364.44	3,193.16	171.28	19.643	
16,700.00	7,054.27	6,165.00	6,164.16	50.07	124.85	-28.02	-1,957.56	-6,489.16	3,441.97	3,270.29	171.67	20.049	
16,782.16	7,054.00	6,165.00	6,164.16	50.32	124.85	-28.02	-1,957.56	-6,489.16	3,521.30	3,349.23	172.07	20.464	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-102.68	-1,890.06	-8,398.51	8,609.11				
100.00	100.00	4.27	4.27	0.23	0.00	-102.68	-1,890.06	-8,398.51	8,608.56	8,608.34	0.23	N/A	
200.00	200.00	125.21	125.21	0.53	0.09	-102.68	-1,890.21	-8,398.32	8,608.43	8,607.84	0.60	N/A	
296.49	296.49	200.00	200.00	0.82	0.19	-102.69	-1,890.44	-8,398.06	8,608.21	8,607.25	0.95	9,023.395	
300.00	300.00	200.00	200.00	0.83	0.19	-102.69	-1,890.44	-8,398.06	8,608.21	8,607.24	0.96	8,924.753	
400.00	400.00	400.00	237.59	1.13	0.33	-102.69	-1,890.61	-8,398.24	8,608.67	8,607.38	1.29	6,681.423	
500.00	500.00	300.00	299.99	1.43	0.23	-102.69	-1,890.84	-8,398.79	8,609.63	8,608.03	1.60	5,393.831	
600.00	599.98	350.00	349.99	1.73	0.27	71.72	-1,891.13	-8,399.48	8,610.56	8,608.62	1.94	4,443.236	
700.00	699.84	436.35	436.32	2.03	0.36	71.74	-1,892.05	-8,400.99	8,610.85	8,608.52	2.33	3,699.182	
800.00	799.45	540.55	540.50	2.33	0.49	71.81	-1,893.23	-8,402.76	8,610.02	8,607.27	2.75	3,134.409	
900.00	898.70	628.35	628.27	2.63	0.60	71.90	-1,894.40	-8,404.28	8,608.19	8,605.04	3.15	2,733.236	
1,000.00	997.47	706.19	706.10	2.93	0.69	72.03	-1,895.52	-8,405.76	8,605.48	8,601.94	3.54	2,429.888	
1,100.00	1,095.62	778.39	778.27	3.23	0.79	72.18	-1,896.65	-8,407.27	8,601.94	8,598.02	3.93	2,190.207	
1,207.25	1,200.09	876.36	876.20	3.55	0.91	72.40	-1,898.60	-8,409.52	8,597.30	8,592.94	4.36	1,970.157	
1,300.00	1,290.03	968.93	968.72	3.83	1.03	72.53	-1,900.55	-8,411.56	8,592.75	8,588.01	4.75	1,809.549	
1,400.00	1,386.99	1,056.43	1,056.17	4.13	1.14	72.66	-1,902.50	-8,413.56	8,588.01	8,582.86	5.15	1,667.965	
1,500.00	1,483.96	1,147.83	1,147.54	4.43	1.26	72.79	-1,904.57	-8,415.61	8,583.28	8,577.73	5.55	1,545.759	
1,600.00	1,580.93	1,241.16	1,240.81	4.73	1.38	72.93	-1,906.74	-8,417.87	8,578.79	8,572.83	5.96	1,439.477	
1,700.00	1,677.90	1,354.67	1,354.26	5.03	1.53	73.09	-1,909.33	-8,420.47	8,574.21	8,567.82	6.39	1,342.018	
1,800.00	1,774.87	1,444.15	1,443.70	5.33	1.65	73.22	-1,911.35	-8,422.53	8,569.70	8,562.91	6.79	1,261.955	
1,900.00	1,871.83	1,600.00	1,599.47	5.63	1.85	73.45	-1,914.90	-8,425.77	8,565.09	8,557.83	7.26	1,179.146	
2,000.00	1,968.80	1,678.54	1,677.97	5.93	1.95	73.56	-1,916.53	-8,427.27	8,560.25	8,552.60	7.65	1,118.894	
2,100.00	2,065.77	2,100.00	1,742.98	6.23	2.50	73.66	-1,917.89	-8,428.61	8,555.66	8,547.23	8.44	1,014.187	
2,200.00	2,162.74	1,843.29	1,842.65	6.53	2.17	73.80	-1,920.04	-8,430.87	8,551.33	8,542.89	8.44	1,013.601	
2,300.00	2,259.71	1,998.41	1,997.71	6.83	2.37	74.03	-1,922.73	-8,434.08	8,546.82	8,537.90	8.92	958.385	
2,400.00	2,356.67	2,114.74	2,114.01	7.13	2.52	74.21	-1,924.63	-8,435.88	8,541.80	8,532.46	9.35	913.828	
2,500.00	2,453.64	2,203.75	2,203.00	7.43	2.63	74.34	-1,926.12	-8,437.29	8,536.88	8,527.14	9.75	875.978	
2,600.00	2,550.61	2,293.57	2,292.79	7.73	2.75	74.47	-1,927.64	-8,438.70	8,532.03	8,521.88	10.14	841.072	
2,700.00	2,647.58	2,396.90	2,396.10	8.03	2.89	74.63	-1,929.14	-8,440.38	8,527.23	8,516.67	10.56	807.340	
2,800.00	2,744.55	2,484.32	2,483.50	8.33	3.00	74.76	-1,930.46	-8,441.84	8,522.55	8,511.59	10.96	777.524	
2,900.00	2,841.51	2,588.30	2,587.45	8.63	3.13	74.92	-1,931.72	-8,443.65	8,517.94	8,506.56	11.38	748.214	
3,000.00	2,938.48	2,743.68	2,742.81	8.93	3.34	75.16	-1,933.48	-8,445.88	8,513.15	8,501.29	11.87	717.428	
3,100.00	3,035.45	2,844.68	2,843.80	9.23	3.47	75.31	-1,934.42	-8,446.91	8,507.93	8,495.65	12.28	692.816	
3,200.00	3,132.42	2,945.17	2,944.28	9.53	3.60	75.47	-1,935.34	-8,447.87	8,502.71	8,490.02	12.69	669.906	
3,300.00	3,229.39	3,041.43	3,040.53	9.83	3.73	75.62	-1,936.23	-8,448.78	8,497.54	8,484.44	13.10	648.739	
3,400.00	3,326.35	3,131.14	3,130.24	10.13	3.84	75.76	-1,937.26	-8,449.61	8,492.44	8,478.95	13.49	629.463	
3,500.00	3,423.32	3,200.00	3,199.08	10.43	3.93	75.86	-1,938.21	-8,450.40	8,487.66	8,473.80	13.86	612.285	
3,600.00	3,520.29	3,285.12	3,284.18	10.73	4.04	75.99	-1,939.44	-8,451.56	8,483.15	8,468.90	14.25	595.171	
3,700.00	3,617.26	3,378.27	3,377.32	11.03	4.17	76.13	-1,940.91	-8,452.92	8,478.82	8,464.17	14.65	578.652	
3,800.00	3,714.23	3,508.97	3,507.99	11.33	4.34	76.33	-1,942.93	-8,454.61	8,474.38	8,459.29	15.09	561.599	
3,900.00	3,811.19	3,592.73	3,591.73	11.63	4.45	76.46	-1,944.05	-8,455.65	8,469.92	8,454.44	15.48	547.226	
4,000.00	3,908.16	3,722.72	3,721.71	11.93	4.61	76.66	-1,945.76	-8,457.02	8,465.32	8,449.41	15.91	532.012	
4,100.00	4,005.13	3,900.00	3,898.97	12.23	4.82	76.93	-1,948.16	-8,457.61	8,460.06	8,443.71	16.34	517.710	
4,200.00	4,102.10	4,021.84	4,020.78	12.53	4.94	77.11	-1,950.47	-8,457.17	8,454.28	8,437.60	16.69	506.603	
4,300.00	4,199.07	4,125.53	4,124.44	12.83	5.03	77.26	-1,952.96	-8,456.58	8,448.45	8,431.43	17.02	496.286	
4,400.00	4,296.03	4,229.34	4,228.22	13.13	5.13	77.41	-1,955.62	-8,455.95	8,442.66	8,425.30	17.36	486.348	
4,500.00	4,393.00	4,309.80	4,308.64	13.43	5.21	77.53	-1,957.65	-8,455.52	8,436.98	8,419.29	17.69	476.988	
4,600.00	4,489.97	4,384.98	4,383.81	13.73	5.29	77.64	-1,959.23	-8,455.33	8,431.57	8,413.55	18.02	467.913	
4,700.00	4,586.94	4,476.36	4,475.17	14.03	5.39	77.78	-1,961.04	-8,455.24	8,426.36	8,408.00	18.36	458.851	
4,800.00	4,683.91	4,571.20	4,570.00	14.33	5.49	77.92	-1,962.93	-8,455.17	8,421.24	8,402.53	18.71	450.048	
4,900.00	4,780.87	4,661.95	4,660.73	14.63	5.60	78.05	-1,964.70	-8,455.24	8,416.31	8,397.24	19.06	441.517	
5,000.00	4,877.84	4,762.50	4,761.26	14.93	5.71	78.20	-1,966.62	-8,455.31	8,411.43	8,392.01	19.42	433.151	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	4,852.00	4,850.74	15.23	5.82	78.34	-1,968.35	-8,455.38	8,406.62	8,386.85	19.77	425.245	
5,200.00	5,071.78	4,963.78	4,962.50	15.53	5.95	78.51	-1,970.57	-8,455.43	8,401.84	8,381.71	20.13	417.347	
5,300.00	5,168.75	5,060.28	5,058.98	15.83	6.06	78.65	-1,972.51	-8,455.37	8,397.01	8,376.53	20.48	409.995	
5,400.00	5,265.71	5,147.28	5,145.96	16.13	6.16	78.78	-1,974.22	-8,455.40	8,392.33	8,371.50	20.83	402.946	
5,500.00	5,362.68	5,275.95	5,274.60	16.43	6.31	78.98	-1,976.72	-8,455.31	8,387.62	8,366.42	21.20	395.732	
5,600.00	5,459.65	5,368.99	5,367.63	16.73	6.42	79.12	-1,978.48	-8,455.10	8,382.79	8,361.26	21.54	389.229	
5,700.00	5,556.62	5,469.13	5,467.75	17.03	6.53	79.27	-1,980.47	-8,454.82	8,377.99	8,356.11	21.88	382.886	
5,800.00	5,653.59	5,590.34	5,588.93	17.33	6.66	79.45	-1,983.21	-8,454.32	8,373.14	8,350.91	22.23	376.597	
5,900.00	5,750.55	5,690.56	5,689.11	17.63	6.77	79.60	-1,985.98	-8,453.69	8,368.19	8,345.61	22.57	370.707	
6,000.00	5,847.52	5,769.34	5,767.86	17.93	6.86	79.71	-1,988.21	-8,453.22	8,363.32	8,340.42	22.90	365.143	
6,100.00	5,944.49	5,839.43	5,837.93	18.23	6.94	79.82	-1,989.96	-8,452.98	8,358.74	8,335.51	23.23	359.762	
6,200.00	6,041.46	5,915.25	5,913.72	18.53	7.03	79.93	-1,991.70	-8,453.07	8,354.61	8,331.04	23.58	354.375	
6,300.00	6,138.43	6,005.55	6,004.00	18.83	7.14	80.07	-1,993.62	-8,453.26	8,350.64	8,326.71	23.93	348.960	
6,400.00	6,235.39	6,092.78	6,091.21	19.13	7.25	80.20	-1,995.40	-8,453.56	8,346.85	8,322.56	24.29	343.694	
6,500.00	6,332.36	6,191.49	6,189.91	19.43	7.38	80.35	-1,997.51	-8,453.97	8,343.19	8,318.54	24.65	338.451	
6,600.00	6,429.33	6,278.73	6,277.12	19.73	7.49	80.48	-1,999.20	-8,454.48	8,339.72	8,314.71	25.01	333.417	
6,700.00	6,526.30	6,366.65	6,365.03	20.03	7.60	80.62	-2,000.59	-8,454.95	8,336.27	8,310.89	25.38	328.500	
6,715.28	6,541.12	6,715.28	6,381.10	20.08	8.06	80.64	-2,000.82	-8,455.07	8,335.77	8,310.04	25.73	324.001	
6,750.00	6,574.74	6,438.60	6,436.98	20.18	7.70	67.54	-2,001.55	-8,455.33	8,333.49	8,307.91	25.58	325.749	
6,800.00	6,622.83	6,467.34	6,465.72	20.33	7.74	51.81	-2,001.88	-8,455.48	8,326.61	8,300.85	25.75	323.319	
6,850.00	6,670.20	6,517.93	6,516.30	20.49	7.80	40.43	-2,002.45	-8,455.80	8,315.51	8,289.56	25.95	320.489	
6,900.00	6,716.50	6,550.00	6,548.36	20.64	7.84	32.39	-2,002.73	-8,456.04	8,300.26	8,274.13	26.12	317.717	
6,950.00	6,761.36	6,593.17	6,591.53	20.79	7.90	26.65	-2,003.05	-8,456.38	8,280.97	8,254.65	26.32	314.659	
7,000.00	6,804.45	6,637.00	6,635.36	20.94	7.95	22.42	-2,003.33	-8,456.75	8,257.77	8,231.26	26.51	311.471	
7,050.00	6,845.44	6,674.27	6,672.63	21.09	7.99	19.17	-2,003.57	-8,457.07	8,230.84	8,204.14	26.70	308.266	
7,100.00	6,884.01	6,708.90	6,707.26	21.24	8.04	16.58	-2,003.78	-8,457.40	8,200.38	8,173.49	26.89	304.996	
7,150.00	6,919.88	6,756.87	6,755.22	21.39	8.09	14.46	-2,004.07	-8,457.81	8,166.56	8,139.48	27.09	301.484	
7,200.00	6,952.78	6,776.59	6,774.94	21.54	8.12	12.57	-2,004.19	-8,457.98	8,129.70	8,102.44	27.26	298.249	
7,250.00	6,982.44	6,818.52	6,816.87	21.69	8.17	10.85	-2,004.44	-8,458.34	8,090.04	8,062.59	27.45	294.684	
7,300.00	7,008.65	6,842.48	6,840.82	21.84	8.19	9.11	-2,004.57	-8,458.54	8,047.89	8,020.26	27.63	291.282	
7,350.00	7,031.20	6,869.31	6,867.66	21.99	8.23	7.18	-2,004.72	-8,458.77	8,003.58	7,975.77	27.81	287.809	
7,400.00	7,049.92	6,895.48	6,893.82	22.14	8.26	4.76	-2,004.87	-8,458.97	7,957.43	7,929.44	27.99	284.321	
7,450.00	7,064.68	6,916.65	6,914.99	22.29	8.28	1.16	-2,004.98	-8,459.11	7,909.78	7,881.62	28.16	280.878	
7,500.00	7,075.36	6,928.29	6,926.64	22.44	8.30	-5.44	-2,005.05	-8,459.19	7,861.02	7,832.70	28.32	277.537	
7,550.00	7,081.87	6,932.76	6,931.10	22.59	8.30	-22.19	-2,005.07	-8,459.21	7,811.53	7,783.05	28.48	274.279	
7,604.16	7,084.18	6,934.50	6,932.85	22.75	8.31	-86.52	-2,005.08	-8,459.23	7,757.53	7,728.88	28.65	270.803	
7,700.00	7,083.86	6,934.72	6,933.06	23.04	8.31	-86.54	-2,005.08	-8,459.23	7,661.88	7,632.94	28.94	264.772	
7,800.00	7,083.53	6,934.95	6,933.29	23.34	8.31	-86.57	-2,005.08	-8,459.23	7,562.08	7,532.84	29.24	258.607	
7,900.00	7,083.20	6,935.18	6,933.52	23.64	8.31	-86.60	-2,005.09	-8,459.23	7,462.28	7,432.74	29.55	252.569	
8,000.00	7,082.87	6,935.41	6,933.76	23.94	8.31	-86.62	-2,005.09	-8,459.23	7,362.50	7,332.65	29.85	246.653	
8,100.00	7,082.54	6,935.65	6,933.99	24.24	8.31	-86.65	-2,005.09	-8,459.23	7,262.72	7,232.56	30.15	240.856	
8,200.00	7,082.22	6,935.89	6,934.23	24.54	8.31	-86.68	-2,005.09	-8,459.24	7,162.94	7,132.48	30.46	235.174	
8,300.00	7,081.89	6,936.12	6,934.47	24.84	8.31	-86.71	-2,005.09	-8,459.24	7,063.17	7,032.41	30.76	229.605	
8,400.00	7,081.56	6,936.37	6,934.71	25.14	8.31	-86.74	-2,005.09	-8,459.24	6,963.41	6,932.34	31.07	224.144	
8,500.00	7,081.23	6,936.61	6,934.96	25.45	8.31	-86.76	-2,005.09	-8,459.24	6,863.65	6,832.28	31.37	218.789	
8,600.00	7,080.90	6,936.86	6,935.20	25.75	8.31	-86.79	-2,005.10	-8,459.24	6,763.91	6,732.23	31.68	213.537	
8,700.00	7,080.57	6,937.11	6,935.45	26.05	8.31	-86.82	-2,005.10	-8,459.24	6,664.16	6,632.18	31.98	208.384	
8,800.00	7,080.24	6,937.36	6,935.70	26.35	8.31	-86.85	-2,005.10	-8,459.25	6,564.43	6,532.15	32.28	203.328	
8,900.00	7,079.91	6,937.61	6,935.96	26.65	8.31	-86.88	-2,005.10	-8,459.25	6,464.71	6,432.12	32.59	198.366	
9,000.00	7,079.59	6,937.87	6,936.21	26.95	8.31	-86.91	-2,005.10	-8,459.25	6,364.99	6,332.10	32.89	193.496	
9,100.00	7,079.26	6,938.13	6,936.47	27.25	8.31	-86.94	-2,005.10	-8,459.25	6,265.28	6,232.09	33.20	188.715	
9,200.00	7,078.93	6,938.39	6,936.73	27.55	8.31	-86.98	-2,005.10	-8,459.25	6,165.59	6,132.08	33.50	184.020	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	6,938.66	6,937.00	27.85	8.31	-87.01	-2,005.10	-8,459.26	6,065.90	6,032.09	33.81	179.410	
9,400.00	7,078.27	6,938.92	6,937.27	28.15	8.31	-87.04	-2,005.11	-8,459.26	5,966.22	5,932.11	34.12	174.882	
9,500.00	7,077.94	6,939.19	6,937.54	28.45	8.31	-87.07	-2,005.11	-8,459.26	5,866.56	5,832.14	34.42	170.434	
9,600.00	7,077.61	6,939.46	6,937.81	28.75	8.31	-87.10	-2,005.11	-8,459.26	5,766.90	5,732.18	34.73	166.063	
9,700.00	7,077.28	6,939.74	6,938.08	29.05	8.31	-87.14	-2,005.11	-8,459.26	5,667.26	5,632.23	35.03	161.769	
9,800.00	7,076.95	6,940.02	6,938.36	29.35	8.31	-87.17	-2,005.11	-8,459.27	5,567.63	5,532.29	35.34	157.548	
9,900.00	7,076.63	6,940.30	6,938.64	29.65	8.31	-87.20	-2,005.11	-8,459.27	5,468.01	5,432.37	35.65	153.400	
10,000.00	7,076.30	6,940.58	6,938.93	29.95	8.31	-87.24	-2,005.12	-8,459.27	5,368.41	5,332.46	35.95	149.322	
10,100.00	7,075.97	6,940.87	6,939.21	30.25	8.31	-87.27	-2,005.12	-8,459.27	5,268.83	5,232.57	36.26	145.312	
10,200.00	7,075.64	6,941.16	6,939.50	30.55	8.31	-87.30	-2,005.12	-8,459.27	5,169.26	5,132.69	36.57	141.369	
10,300.00	7,075.31	6,941.45	6,939.80	30.85	8.31	-87.34	-2,005.12	-8,459.28	5,069.70	5,032.83	36.87	137.492	
10,400.00	7,074.98	6,941.75	6,940.09	31.15	8.32	-87.37	-2,005.12	-8,459.28	4,970.17	4,932.99	37.18	133.678	
10,500.00	7,074.65	6,942.05	6,940.39	31.46	8.32	-87.41	-2,005.12	-8,459.28	4,870.65	4,833.16	37.49	129.926	
10,600.00	7,074.32	6,942.35	6,940.70	31.76	8.32	-87.44	-2,005.12	-8,459.28	4,771.15	4,733.36	37.80	126.235	
10,700.00	7,074.00	6,942.66	6,941.00	32.06	8.32	-87.48	-2,005.13	-8,459.28	4,671.68	4,633.57	38.10	122.603	
10,800.00	7,073.67	6,942.97	6,941.31	32.36	8.32	-87.52	-2,005.13	-8,459.29	4,572.22	4,533.81	38.41	119.029	
10,900.00	7,073.34	6,943.28	6,941.62	32.66	8.32	-87.55	-2,005.13	-8,459.29	4,472.80	4,434.07	38.72	115.511	
11,000.00	7,073.01	6,943.60	6,941.94	32.96	8.32	-87.59	-2,005.13	-8,459.29	4,373.39	4,334.36	39.03	112.049	
11,100.00	7,072.68	6,943.92	6,942.26	33.26	8.32	-87.63	-2,005.13	-8,459.29	4,274.02	4,234.68	39.34	108.641	
11,200.00	7,072.35	6,944.24	6,942.58	33.56	8.32	-87.67	-2,005.13	-8,459.30	4,174.68	4,135.02	39.65	105.285	
11,300.00	7,072.02	6,944.57	6,942.91	33.86	8.32	-87.71	-2,005.14	-8,459.30	4,075.36	4,035.40	39.96	101.982	
11,400.00	7,071.69	6,944.90	6,943.24	34.16	8.32	-87.75	-2,005.14	-8,459.30	3,976.09	3,935.81	40.27	98.729	
11,500.00	7,071.36	6,945.23	6,943.57	34.46	8.32	-87.79	-2,005.14	-8,459.30	3,876.84	3,836.26	40.58	95.525	
11,600.00	7,071.04	6,945.57	6,943.91	34.76	8.32	-87.83	-2,005.14	-8,459.31	3,777.64	3,736.75	40.90	92.370	
11,700.00	7,070.71	6,945.91	6,944.25	35.06	8.32	-87.87	-2,005.14	-8,459.31	3,678.49	3,637.28	41.21	89.263	
11,800.00	7,070.38	6,946.26	6,944.60	35.36	8.32	-87.91	-2,005.14	-8,459.31	3,579.38	3,537.85	41.52	86.202	
11,900.00	7,070.05	6,946.61	6,944.95	35.66	8.32	-87.95	-2,005.15	-8,459.31	3,480.32	3,438.48	41.84	83.186	
12,000.00	7,069.72	6,946.96	6,945.30	35.96	8.32	-87.99	-2,005.15	-8,459.32	3,381.31	3,339.16	42.15	80.216	
12,100.00	7,069.39	6,947.32	6,945.66	36.26	8.32	-88.03	-2,005.15	-8,459.32	3,282.37	3,239.90	42.47	77.289	
12,200.00	7,069.06	6,947.68	6,946.02	36.56	8.32	-88.08	-2,005.15	-8,459.32	3,183.49	3,140.70	42.79	74.406	
12,300.00	7,068.73	6,948.05	6,946.39	36.86	8.32	-88.12	-2,005.15	-8,459.32	3,084.68	3,041.58	43.10	71.564	
12,400.00	7,068.41	6,948.42	6,946.76	37.16	8.32	-88.16	-2,005.16	-8,459.33	2,985.96	2,942.53	43.42	68.765	
12,500.00	7,068.08	6,948.79	6,947.14	37.46	8.32	-88.21	-2,005.16	-8,459.33	2,887.32	2,843.57	43.74	66.006	
12,600.00	7,067.75	6,949.17	6,947.52	37.76	8.32	-88.25	-2,005.16	-8,459.33	2,788.78	2,744.71	44.06	63.288	
12,700.00	7,067.42	6,949.56	6,947.90	38.06	8.32	-88.30	-2,005.16	-8,459.34	2,690.34	2,645.95	44.39	60.609	
12,800.00	7,067.09	6,949.95	6,948.29	38.36	8.33	-88.35	-2,005.16	-8,459.34	2,592.03	2,547.31	44.71	57.970	
12,900.00	7,066.76	6,950.39	6,948.73	38.66	8.33	-88.40	-2,005.17	-8,459.34	2,493.85	2,448.81	45.04	55.369	
13,000.00	7,066.43	6,950.84	6,949.18	38.96	8.33	-88.45	-2,005.17	-8,459.35	2,395.82	2,350.45	45.37	52.807	
13,100.00	7,066.10	6,951.29	6,949.63	39.26	8.33	-88.50	-2,005.17	-8,459.35	2,297.95	2,252.25	45.70	50.282	
13,200.00	7,065.77	6,951.74	6,950.08	39.56	8.33	-88.56	-2,005.17	-8,459.35	2,200.29	2,154.25	46.04	47.796	
13,300.00	7,065.45	6,952.19	6,950.53	39.86	8.33	-88.61	-2,005.17	-8,459.36	2,102.84	2,056.46	46.37	45.347	
13,400.00	7,065.12	6,952.64	6,950.98	40.16	8.33	-88.66	-2,005.18	-8,459.36	2,005.64	1,958.92	46.71	42.935	
13,500.00	7,064.79	6,953.09	6,951.43	40.47	8.33	-88.72	-2,005.18	-8,459.36	1,908.73	1,861.67	47.06	40.561	
13,600.00	7,064.46	6,953.54	6,951.88	40.77	8.33	-88.77	-2,005.18	-8,459.37	1,812.16	1,764.75	47.41	38.226	
13,700.00	7,064.13	6,953.99	6,952.33	41.07	8.33	-88.82	-2,005.18	-8,459.37	1,715.97	1,668.21	47.76	35.928	
13,800.00	7,063.80	6,954.44	6,952.78	41.37	8.33	-88.88	-2,005.19	-8,459.37	1,620.26	1,572.14	48.12	33.670	
13,900.00	7,063.47	6,954.88	6,953.23	41.67	8.33	-88.93	-2,005.19	-8,459.38	1,525.09	1,476.60	48.49	31.453	
14,000.00	7,063.14	6,955.33	6,953.68	41.97	8.33	-88.98	-2,005.19	-8,459.38	1,430.58	1,381.71	48.86	29.277	
14,100.00	7,062.82	6,955.78	6,954.12	42.27	8.33	-89.04	-2,005.19	-8,459.39	1,336.87	1,287.62	49.25	27.146	
14,200.00	7,062.49	6,956.23	6,954.57	42.57	8.33	-89.09	-2,005.19	-8,459.39	1,244.13	1,194.49	49.64	25.062	
14,300.00	7,062.16	6,956.68	6,955.02	42.87	8.33	-89.14	-2,005.20	-8,459.39	1,152.62	1,102.57	50.05	23.030	
14,400.00	7,061.83	6,957.13	6,955.47	43.17	8.33	-89.20	-2,005.20	-8,459.40	1,062.63	1,012.16	50.47	21.055	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.50	6,957.57	6,955.92	43.47	8.33	-89.25	-2,005.20	-8,459.40	974.60	923.69	50.91	19.145	
14,600.00	7,061.17	6,958.02	6,956.36	43.77	8.33	-89.30	-2,005.20	-8,459.40	889.10	837.74	51.36	17.311	
14,700.00	7,060.84	6,958.47	6,956.81	44.07	8.34	-89.36	-2,005.21	-8,459.41	806.95	755.12	51.83	15.570	
14,800.00	7,060.51	6,958.92	6,957.26	44.37	8.34	-89.41	-2,005.21	-8,459.41	729.26	676.96	52.30	13.942	
14,900.00	7,060.18	6,959.36	6,957.71	44.67	8.34	-89.46	-2,005.21	-8,459.41	657.63	604.85	52.78	12.460	
15,000.00	7,059.86	6,959.81	6,958.15	44.97	8.34	-89.52	-2,005.21	-8,459.42	594.25	541.03	53.22	11.166	
15,100.00	7,059.53	6,960.26	6,958.60	45.27	8.34	-89.57	-2,005.21	-8,459.42	542.02	488.44	53.58	10.116	
15,200.00	7,059.20	6,960.70	6,959.05	45.57	8.34	-89.62	-2,005.22	-8,459.42	504.43	450.63	53.79	9.377	
15,300.00	7,058.87	6,961.15	6,959.49	45.87	8.34	-89.68	-2,005.22	-8,459.43	484.87	431.08	53.79	9.013	
15,346.73	7,058.72	6,961.36	6,959.70	46.01	8.34	-89.70	-2,005.22	-8,459.43	482.61	428.89	53.72	8.983	CC, ES, SF
15,400.00	7,058.54	6,961.60	6,959.94	46.17	8.34	-89.73	-2,005.22	-8,459.43	485.55	431.95	53.59	9.060	
15,500.00	7,058.21	6,962.04	6,960.39	46.47	8.34	-89.78	-2,005.22	-8,459.43	506.37	453.09	53.27	9.505	
15,600.00	7,057.88	6,962.49	6,960.83	46.77	8.34	-89.83	-2,005.23	-8,459.44	545.03	492.07	52.97	10.290	
15,700.00	7,057.55	6,962.94	6,961.28	47.07	8.34	-89.89	-2,005.23	-8,459.44	598.09	545.33	52.76	11.335	
15,800.00	7,057.23	6,963.38	6,961.73	47.37	8.34	-89.94	-2,005.23	-8,459.44	662.09	609.40	52.70	12.564	
15,900.00	7,056.90	6,963.83	6,962.17	47.67	8.34	-89.99	-2,005.23	-8,459.45	734.18	681.42	52.76	13.916	
16,000.00	7,056.57	6,964.27	6,962.62	47.97	8.34	-90.05	-2,005.24	-8,459.45	812.20	759.29	52.91	15.351	
16,100.00	7,056.24	6,964.72	6,963.06	48.27	8.34	-90.10	-2,005.24	-8,459.46	894.61	841.48	53.13	16.838	
16,200.00	7,055.91	6,965.16	6,963.51	48.57	8.34	-90.15	-2,005.24	-8,459.46	980.29	926.90	53.39	18.359	
16,300.00	7,055.58	6,965.61	6,963.95	48.87	8.34	-90.20	-2,005.24	-8,459.46	1,068.47	1,014.78	53.69	19.902	
16,400.00	7,055.25	6,966.06	6,964.40	49.17	8.34	-90.26	-2,005.25	-8,459.47	1,158.57	1,104.57	54.00	21.456	
16,500.00	7,054.92	6,966.50	6,964.84	49.47	8.35	-90.31	-2,005.25	-8,459.47	1,250.17	1,195.86	54.32	23.017	
16,600.00	7,054.59	6,966.94	6,965.29	49.77	8.35	-90.36	-2,005.25	-8,459.47	1,342.97	1,288.33	54.64	24.578	
16,619.57	7,054.53	6,967.03	6,965.37	49.83	8.35	-90.37	-2,005.25	-8,459.47	1,361.26	1,306.55	54.71	24.883	
16,700.00	7,054.27	6,967.39	6,965.73	50.07	8.35	-90.42	-2,005.25	-8,459.48	1,436.74	1,381.77	54.97	26.137	
16,782.16	7,054.00	6,967.75	6,966.10	50.32	8.35	-90.46	-2,005.25	-8,459.48	1,514.38	1,459.14	55.24	27.414	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	97.50	-1,100.17	8,359.44	8,431.53				
100.00	100.00	120.51	120.51	0.23	1.11	97.50	-1,100.17	8,359.44	8,431.53	8,430.19	1.34	6,289.907	
200.00	200.00	220.51	220.51	0.53	2.04	97.50	-1,100.17	8,359.44	8,431.53	8,428.96	2.56	3,287.546	
300.00	300.00	320.52	320.51	0.83	3.22	97.50	-1,100.17	8,359.44	8,431.53	8,427.48	4.04	2,085.323	
400.00	400.00	420.52	420.51	1.13	5.07	97.50	-1,100.17	8,359.44	8,431.53	8,425.33	6.19	1,361.722	
500.00	500.00	520.52	520.51	1.43	6.91	97.50	-1,100.17	8,359.44	8,431.53	8,423.19	8.34	1,010.932	
600.00	599.98	619.04	619.03	1.73	8.74	-88.10	-1,099.68	8,359.44	8,431.40	8,420.94	10.46	805.940	
700.00	699.84	717.04	717.03	2.03	10.55	-88.14	-1,099.89	8,359.44	8,431.26	8,418.69	12.57	670.580	
800.00	799.45	819.99	819.97	2.33	12.48	-88.20	-1,100.17	8,359.44	8,431.02	8,416.21	14.81	569.438	
900.00	898.70	919.24	919.21	2.63	14.42	-88.29	-1,100.17	8,359.44	8,430.64	8,413.59	17.05	494.476	
1,000.00	997.47	1,018.00	1,017.98	2.93	16.36	-88.40	-1,100.17	8,359.44	8,430.18	8,410.90	19.28	437.162	
1,100.00	1,095.62	1,114.99	1,114.97	3.23	18.26	-88.54	-1,099.65	8,359.44	8,429.60	8,408.12	21.48	392.377	
1,207.25	1,200.09	1,217.71	1,217.68	3.55	20.27	-88.71	-1,099.86	8,359.44	8,429.03	8,405.22	23.82	353.909	
1,300.00	1,290.03	1,310.61	1,310.54	3.83	22.10	-88.86	-1,100.17	8,359.44	8,428.58	8,402.65	25.93	325.096	
1,400.00	1,386.99	1,407.57	1,407.51	4.13	24.20	-89.03	-1,100.17	8,359.44	8,428.11	8,399.78	28.33	297.485	
1,500.00	1,483.96	1,504.54	1,504.47	4.43	26.31	-89.19	-1,100.17	8,359.44	8,427.72	8,396.98	30.74	274.198	
1,600.00	1,580.93	1,601.29	1,601.21	4.73	28.41	-89.36	-1,098.91	8,359.44	8,427.26	8,394.12	33.14	254.324	
1,700.00	1,677.90	1,695.73	1,695.64	5.03	30.46	-89.51	-1,099.07	8,359.44	8,427.03	8,391.54	35.49	237.477	
1,800.00	1,774.87	1,790.30	1,790.21	5.33	32.51	-89.67	-1,099.50	8,359.44	8,426.90	8,389.06	37.84	222.707	
1,900.00	1,871.83	1,892.53	1,892.35	5.63	34.72	-89.83	-1,100.17	8,359.44	8,426.85	8,386.51	40.34	208.875	
2,000.00	1,968.80	1,989.49	1,989.31	5.93	36.70	-89.99	-1,100.17	8,359.44	8,426.81	8,384.19	42.63	197.696	
2,005.10	1,973.74	1,994.44	1,994.26	5.95	36.80	-90.00	-1,100.17	8,359.44	8,426.81	8,384.07	42.74	197.158	
2,100.00	2,065.77	2,086.46	2,086.28	6.23	38.68	-90.15	-1,100.17	8,359.44	8,426.85	8,381.94	44.91	187.654	
2,140.74	2,105.28	2,125.97	2,125.78	6.35	39.49	-90.23	-1,098.84	8,359.44	8,426.76	8,380.92	45.84	183.847	CC
2,200.00	2,162.74	2,181.52	2,181.32	6.53	40.62	-90.32	-1,098.91	8,359.44	8,426.83	8,379.69	47.15	178.730	
2,300.00	2,259.71	2,275.44	2,275.23	6.83	42.54	-90.47	-1,099.34	8,359.44	8,427.05	8,377.68	49.37	170.702	
2,400.00	2,356.67	2,377.43	2,377.19	7.13	44.63	-90.64	-1,100.17	8,359.44	8,427.37	8,375.61	51.76	162.827	
2,500.00	2,453.64	2,474.40	2,474.15	7.43	46.69	-90.80	-1,100.17	8,359.44	8,427.68	8,373.57	54.11	155.742	
2,600.00	2,550.61	2,571.36	2,571.12	7.73	48.74	-90.96	-1,100.17	8,359.44	8,428.07	8,371.60	56.47	149.250	
2,700.00	2,647.58	2,668.33	2,668.09	8.03	50.80	-91.12	-1,100.17	8,359.44	8,428.53	8,369.70	58.83	143.280	
2,800.00	2,744.55	2,765.25	2,765.01	8.33	52.85	-91.29	-1,099.32	8,359.44	8,428.99	8,367.81	61.18	137.771	
2,900.00	2,841.51	2,861.58	2,861.33	8.63	54.90	-91.45	-1,099.38	8,359.44	8,429.60	8,366.07	63.52	132.700	
3,000.00	2,938.48	2,957.95	2,957.70	8.93	56.94	-91.60	-1,099.55	8,359.44	8,430.28	8,364.41	65.87	127.989	
3,100.00	3,035.45	3,054.38	3,054.13	9.23	58.99	-91.76	-1,099.81	8,359.44	8,431.04	8,362.83	68.21	123.600	
3,200.00	3,132.42	3,153.30	3,152.93	9.53	61.10	-91.92	-1,100.17	8,359.44	8,431.87	8,361.24	70.63	119.385	
3,300.00	3,229.39	3,250.27	3,249.90	9.83	63.48	-92.09	-1,100.17	8,359.44	8,432.75	8,359.45	73.30	115.040	
3,400.00	3,326.35	3,347.24	3,346.87	10.13	65.85	-92.25	-1,100.17	8,359.44	8,433.71	8,357.73	75.98	111.001	
3,500.00	3,423.32	3,443.02	3,442.63	10.43	68.20	-92.42	-1,098.63	8,359.44	8,434.65	8,356.02	78.62	107.277	
3,600.00	3,520.29	3,537.91	3,537.51	10.73	70.52	-92.57	-1,099.11	8,359.44	8,435.77	8,354.52	81.25	103.826	
3,700.00	3,617.26	3,633.06	3,632.64	11.03	72.85	-92.72	-1,100.08	8,359.44	8,436.99	8,353.10	83.88	100.584	
3,800.00	3,714.23	3,735.28	3,734.74	11.33	75.21	-92.89	-1,100.17	8,359.44	8,438.22	8,351.68	86.54	97.508	
3,900.00	3,811.19	3,830.03	3,829.48	11.63	77.39	-93.05	-1,099.52	8,359.44	8,439.50	8,350.49	89.01	94.810	
4,000.00	3,908.16	3,929.27	3,928.68	11.93	79.61	-93.21	-1,100.17	8,359.44	8,440.90	8,349.36	91.54	92.209	
4,100.00	4,005.13	4,026.24	4,025.64	12.23	81.68	-93.37	-1,100.17	8,359.44	8,442.35	8,348.45	93.90	89.903	
4,200.00	4,102.10	4,123.21	4,122.61	12.53	83.74	-93.53	-1,100.17	8,359.44	8,443.87	8,347.60	96.27	87.712	
4,300.00	4,199.07	4,220.18	4,219.58	12.83	85.81	-93.69	-1,100.17	8,359.44	8,445.46	8,346.82	98.63	85.626	
4,400.00	4,296.03	4,317.15	4,316.55	13.13	87.87	-93.85	-1,100.17	8,359.44	8,447.11	8,346.12	101.00	83.639	
4,500.00	4,393.00	4,414.11	4,413.52	13.43	89.93	-94.01	-1,100.17	8,359.44	8,448.84	8,345.48	103.36	81.743	
4,600.00	4,489.97	4,511.07	4,510.44	13.73	92.00	-94.19	-1,097.53	8,359.44	8,450.58	8,344.86	105.72	79.932	
4,700.00	4,586.94	4,607.82	4,607.19	14.03	94.06	-94.35	-1,097.60	8,359.44	8,452.46	8,344.38	108.08	78.205	
4,800.00	4,683.91	4,704.65	4,704.02	14.33	96.12	-94.51	-1,097.81	8,359.44	8,454.41	8,343.97	110.44	76.551	
4,900.00	4,780.87	4,801.54	4,800.91	14.63	98.18	-94.67	-1,098.16	8,359.44	8,456.43	8,343.63	112.80	74.966	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
5,000.00	4,877.84	4,898.51	4,897.87	14.93	100.24	-94.82	-1,098.64	8,359.44	8,458.52	8,343.35	115.17	73.445	
5,100.00	4,974.81	4,995.55	4,994.90	15.23	102.31	-94.98	-1,099.26	8,359.44	8,460.68	8,343.15	117.53	71.986	
5,200.00	5,071.78	5,092.66	5,092.00	15.53	104.37	-95.13	-1,100.02	8,359.44	8,462.91	8,343.01	119.90	70.583	
5,300.00	5,168.75	5,190.04	5,189.26	15.83	106.38	-95.29	-1,100.17	8,359.44	8,465.20	8,342.99	122.20	69.271 ES	
5,400.00	5,265.71	5,287.01	5,286.23	16.13	108.36	-95.45	-1,100.17	8,359.44	8,467.56	8,343.07	124.49	68.020	
5,500.00	5,362.68	5,383.98	5,383.20	16.43	110.34	-95.61	-1,100.17	8,359.44	8,469.99	8,343.22	126.77	66.816	
5,600.00	5,459.65	5,480.95	5,480.16	16.73	112.32	-95.77	-1,100.17	8,359.44	8,472.48	8,343.44	129.05	65.654	
5,700.00	5,556.62	5,577.92	5,577.13	17.03	114.30	-95.93	-1,100.17	8,359.44	8,475.05	8,343.72	131.33	64.533	
5,800.00	5,653.59	5,674.88	5,674.10	17.33	116.28	-96.09	-1,100.17	8,359.44	8,477.69	8,344.08	133.61	63.451	
5,900.00	5,750.55	5,771.99	5,771.18	17.63	118.27	-96.27	-1,097.61	8,359.44	8,480.44	8,344.54	135.89	62.405	
6,000.00	5,847.52	5,869.21	5,868.40	17.93	120.25	-96.43	-1,097.78	8,359.44	8,483.22	8,345.04	138.18	61.392	
6,100.00	5,944.49	5,966.51	5,965.69	18.23	122.24	-96.58	-1,098.08	8,359.44	8,486.07	8,345.60	140.47	60.413	
6,200.00	6,041.46	6,063.88	6,063.05	18.53	124.23	-96.74	-1,098.52	8,359.44	8,488.98	8,346.22	142.76	59.464	
6,300.00	6,138.43	6,161.32	6,160.49	18.83	126.22	-96.90	-1,099.10	8,359.44	8,491.95	8,346.91	145.05	58.546	
6,400.00	6,235.39	6,258.83	6,257.99	19.13	128.21	-97.05	-1,099.83	8,359.44	8,494.99	8,347.65	147.34	57.656	
6,500.00	6,332.36	6,356.42	6,355.57	19.43	130.21	-97.20	-1,100.69	8,359.44	8,498.09	8,348.46	149.63	56.792 SF	
6,600.00	6,429.33	6,308.00	6,307.08	19.73	129.21	-97.13	-1,100.17	8,359.44	8,502.50	8,353.58	148.92	57.094	
6,700.00	6,526.30	6,308.00	6,307.08	20.03	129.21	-97.13	-1,100.17	8,359.44	8,507.94	8,358.75	149.19	57.028	
6,715.28	6,541.12	6,308.00	6,307.08	20.08	129.21	-97.13	-1,100.17	8,359.44	8,508.87	8,359.65	149.23	57.019	
6,750.00	6,574.74	6,308.00	6,307.08	20.18	129.21	-110.31	-1,100.17	8,359.44	8,512.15	8,362.83	149.32	57.008	
6,800.00	6,622.83	6,308.00	6,307.08	20.33	129.21	-126.07	-1,100.17	8,359.44	8,520.76	8,371.32	149.44	57.018	
6,850.00	6,670.20	6,308.00	6,307.08	20.49	129.21	-137.50	-1,100.17	8,359.44	8,533.91	8,384.35	149.56	57.059	
6,900.00	6,716.50	6,308.00	6,307.08	20.64	129.21	-145.54	-1,100.17	8,359.44	8,551.47	8,401.79	149.68	57.131	
6,950.00	6,761.36	6,308.00	6,307.08	20.79	129.21	-151.28	-1,100.17	8,359.44	8,573.28	8,423.48	149.80	57.233	
7,000.00	6,804.45	6,308.00	6,307.08	20.94	129.21	-155.50	-1,100.17	8,359.44	8,599.14	8,449.23	149.91	57.361	
7,050.00	6,845.44	6,308.00	6,307.08	21.09	129.21	-158.71	-1,100.17	8,359.44	8,628.83	8,478.80	150.03	57.515	
7,100.00	6,884.01	6,308.00	6,307.08	21.24	129.21	-161.24	-1,100.17	8,359.44	8,662.07	8,511.92	150.14	57.692	
7,150.00	6,919.88	6,308.00	6,307.08	21.39	129.21	-163.31	-1,100.17	8,359.44	8,698.57	8,548.31	150.26	57.890	
7,200.00	6,952.78	6,308.00	6,307.08	21.54	129.21	-165.07	-1,100.17	8,359.44	8,738.03	8,587.65	150.38	58.107	
7,250.00	6,982.44	6,308.00	6,307.08	21.69	129.21	-166.66	-1,100.17	8,359.44	8,780.09	8,629.59	150.50	58.340	
7,300.00	7,008.65	6,308.00	6,307.08	21.84	129.21	-168.23	-1,100.17	8,359.44	8,824.41	8,673.79	150.62	58.586	
7,350.00	7,031.20	6,308.00	6,307.08	21.99	129.21	-169.96	-1,100.17	8,359.44	8,870.61	8,719.86	150.75	58.842	
7,400.00	7,049.92	6,308.00	6,307.08	22.14	129.21	-172.27	-1,100.17	8,359.44	8,918.33	8,767.44	150.89	59.107	
7,450.00	7,064.68	6,308.00	6,307.08	22.29	129.21	-176.28	-1,100.17	8,359.44	8,967.17	8,816.14	151.02	59.376	
7,500.00	7,075.36	6,308.00	6,307.08	22.44	129.21	172.56	-1,100.17	8,359.44	9,016.74	8,865.58	151.17	59.648	
7,550.00	7,081.87	6,308.00	6,307.08	22.59	129.21	90.90	-1,100.17	8,359.44	9,066.67	8,915.35	151.31	59.920	
7,604.16	7,084.18	6,308.00	6,307.08	22.75	129.21	31.33	-1,100.17	8,359.44	9,120.70	8,969.22	151.48	60.211	
7,700.00	7,083.86	6,308.00	6,307.08	23.04	129.21	31.33	-1,100.17	8,359.44	9,216.00	9,064.23	151.78	60.720	
7,800.00	7,083.53	6,308.00	6,307.08	23.34	129.21	31.33	-1,100.17	8,359.44	9,315.46	9,163.37	152.09	61.250	
7,900.00	7,083.20	6,308.00	6,307.08	23.64	129.21	31.33	-1,100.17	8,359.44	9,414.92	9,262.52	152.40	61.778	
8,000.00	7,082.87	6,308.00	6,307.08	23.94	129.21	31.33	-1,100.17	8,359.44	9,514.39	9,361.68	152.71	62.303	
8,100.00	7,082.54	6,308.00	6,307.08	24.24	129.21	31.33	-1,100.17	8,359.44	9,613.88	9,460.86	153.02	62.827	
8,200.00	7,082.22	6,308.00	6,307.08	24.54	129.21	31.33	-1,100.17	8,359.44	9,713.38	9,560.05	153.33	63.349	
8,300.00	7,081.89	6,308.00	6,307.08	24.84	129.21	31.33	-1,100.17	8,359.44	9,812.88	9,659.24	153.64	63.869	
8,400.00	7,081.56	6,308.00	6,307.08	25.14	129.21	31.33	-1,100.17	8,359.44	9,912.40	9,758.45	153.95	64.388	
8,500.00	7,081.23	6,308.00	6,307.08	25.45	129.21	31.33	-1,100.17	8,359.44	10,011.92	9,857.67	154.26	64.904	
8,600.00	7,080.90	6,308.00	6,307.08	25.75	129.21	31.33	-1,100.17	8,359.44	10,111.46	9,956.89	154.57	65.418	
8,700.00	7,080.57	6,308.00	6,307.08	26.05	129.21	31.33	-1,100.17	8,359.44	10,211.00	10,056.13	154.88	65.931	
8,800.00	7,080.24	6,308.00	6,307.08	26.35	129.21	31.33	-1,100.17	8,359.44	10,310.56	10,155.37	155.18	66.441	
8,900.00	7,079.91	6,308.00	6,307.08	26.65	129.21	31.33	-1,100.17	8,359.44	10,410.12	10,254.63	155.49	66.950	
9,000.00	7,079.59	6,308.00	6,307.08	26.95	129.21	31.33	-1,100.17	8,359.44	10,509.69	10,353.89	155.80	67.457	
9,100.00	7,079.26	6,308.00	6,307.08	27.25	129.21	31.33	-1,100.17	8,359.44	10,609.27	10,453.16	156.11	67.962	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
9,200.00	7,078.93	6,308.00	6,307.08	27.55	129.21	31.33	-1,100.17	8,359.44	10,708.85	10,552.44	156.41	68.465	
9,300.00	7,078.60	6,308.00	6,307.08	27.85	129.21	31.33	-1,100.17	8,359.44	10,808.45	10,651.73	156.72	68.966	
9,400.00	7,078.27	6,308.00	6,307.08	28.15	129.21	31.33	-1,100.17	8,359.44	10,908.05	10,751.02	157.03	69.466	
9,500.00	7,077.94	6,308.00	6,307.08	28.45	129.21	31.33	-1,100.17	8,359.44	11,007.66	10,850.32	157.33	69.963	
9,600.00	7,077.61	6,308.00	6,307.08	28.75	129.21	31.33	-1,100.17	8,359.44	11,107.27	10,949.63	157.64	70.459	
9,700.00	7,077.28	6,308.00	6,307.08	29.05	129.21	31.33	-1,100.17	8,359.44	11,206.90	11,048.95	157.95	70.953	
9,800.00	7,076.95	6,308.00	6,307.08	29.35	129.21	31.33	-1,100.17	8,359.44	11,306.52	11,148.27	158.25	71.445	
9,900.00	7,076.63	6,308.00	6,307.08	29.65	129.21	31.33	-1,100.17	8,359.44	11,406.16	11,247.60	158.56	71.936	
10,000.00	7,076.30	6,308.00	6,307.08	29.95	129.21	31.33	-1,100.17	8,359.44	11,505.80	11,346.94	158.87	72.425	
10,100.00	7,075.97	6,308.00	6,307.08	30.25	129.21	31.33	-1,100.17	8,359.44	11,605.45	11,446.28	159.17	72.912	
10,200.00	7,075.64	6,308.00	6,307.08	30.55	129.21	31.33	-1,100.17	8,359.44	11,705.10	11,545.63	159.48	73.397	
10,300.00	7,075.31	6,308.00	6,307.08	30.85	129.21	31.33	-1,100.17	8,359.44	11,804.76	11,644.98	159.78	73.880	
10,400.00	7,074.98	6,308.00	6,307.08	31.15	129.21	31.33	-1,100.17	8,359.44	11,904.43	11,744.34	160.09	74.362	
10,500.00	7,074.65	6,308.00	6,307.08	31.46	129.21	31.33	-1,100.17	8,359.44	12,004.10	11,843.71	160.39	74.842	
10,600.00	7,074.32	6,308.00	6,307.08	31.76	129.21	31.33	-1,100.17	8,359.44	12,103.78	11,943.08	160.70	75.320	
10,700.00	7,074.00	6,308.00	6,307.08	32.06	129.21	31.33	-1,100.17	8,359.44	12,203.46	12,042.46	161.00	75.796	
10,800.00	7,073.67	6,308.00	6,307.08	32.36	129.21	31.33	-1,100.17	8,359.44	12,303.15	12,141.84	161.31	76.271	
10,900.00	7,073.34	6,308.00	6,307.08	32.66	129.21	31.33	-1,100.17	8,359.44	12,402.84	12,241.23	161.61	76.744	
11,000.00	7,073.01	6,308.00	6,307.08	32.96	129.21	31.33	-1,100.17	8,359.44	12,502.54	12,340.62	161.92	77.216	
11,100.00	7,072.68	6,308.00	6,307.08	33.26	129.21	31.33	-1,100.17	8,359.44	12,602.24	12,440.01	162.22	77.685	
11,200.00	7,072.35	6,308.00	6,307.08	33.56	129.21	31.33	-1,100.17	8,359.44	12,701.94	12,539.42	162.53	78.153	
11,300.00	7,072.02	6,308.00	6,307.08	33.86	129.21	31.33	-1,100.17	8,359.44	12,801.65	12,638.82	162.83	78.619	
11,400.00	7,071.69	6,308.00	6,307.08	34.16	129.21	31.33	-1,100.17	8,359.44	12,901.37	12,738.23	163.13	79.084	
11,500.00	7,071.36	6,308.00	6,307.08	34.46	129.21	31.33	-1,100.17	8,359.44	13,001.09	12,837.65	163.44	79.547	
11,600.00	7,071.04	6,308.00	6,307.08	34.76	129.21	31.33	-1,100.17	8,359.44	13,100.81	12,937.07	163.74	80.008	
11,700.00	7,070.71	6,308.00	6,307.08	35.06	129.21	31.33	-1,100.17	8,359.44	13,200.54	13,036.50	164.05	80.468	
11,800.00	7,070.38	6,308.00	6,307.08	35.36	129.21	31.33	-1,100.17	8,359.44	13,300.27	13,135.92	164.35	80.926	
11,900.00	7,070.05	6,308.00	6,307.08	35.66	129.21	31.33	-1,100.17	8,359.44	13,400.01	13,235.36	164.65	81.383	
12,000.00	7,069.72	6,308.00	6,307.08	35.96	129.21	31.33	-1,100.17	8,359.44	13,499.75	13,334.79	164.96	81.837	
12,100.00	7,069.39	6,308.00	6,307.08	36.26	129.21	31.33	-1,100.17	8,359.44	13,599.50	13,434.23	165.26	82.291	
12,200.00	7,069.06	6,308.00	6,307.08	36.56	129.21	31.33	-1,100.17	8,359.44	13,699.24	13,533.68	165.57	82.742	
12,300.00	7,068.73	6,308.00	6,307.08	36.86	129.21	31.33	-1,100.17	8,359.44	13,798.99	13,633.13	165.87	83.192	
12,400.00	7,068.41	6,308.00	6,307.08	37.16	129.21	31.33	-1,100.17	8,359.44	13,898.75	13,732.58	166.17	83.641	
12,500.00	7,068.08	6,308.00	6,307.08	37.46	129.21	31.33	-1,100.17	8,359.44	13,998.51	13,832.03	166.48	84.088	
12,600.00	7,067.75	6,308.00	6,307.08	37.76	129.21	31.33	-1,100.17	8,359.44	14,098.27	13,931.49	166.78	84.533	
12,700.00	7,067.42	6,308.00	6,307.08	38.06	129.21	31.33	-1,100.17	8,359.44	14,198.04	14,030.95	167.08	84.977	
12,800.00	7,067.09	6,308.00	6,307.08	38.36	129.21	31.33	-1,100.17	8,359.44	14,297.80	14,130.42	167.38	85.419	
12,900.00	7,066.76	6,308.00	6,307.08	38.66	129.21	31.33	-1,100.17	8,359.44	14,397.58	14,229.89	167.69	85.859	
13,000.00	7,066.43	6,308.00	6,307.08	38.96	129.21	31.33	-1,100.17	8,359.44	14,497.35	14,329.36	167.99	86.299	
13,100.00	7,066.10	6,308.00	6,307.08	39.26	129.21	31.33	-1,100.17	8,359.44	14,597.13	14,428.84	168.29	86.736	
13,200.00	7,065.77	6,308.00	6,307.08	39.56	129.21	31.33	-1,100.17	8,359.44	14,696.91	14,528.31	168.60	87.172	
13,300.00	7,065.45	6,308.00	6,307.08	39.86	129.21	31.33	-1,100.17	8,359.44	14,796.69	14,627.79	168.90	87.607	
13,400.00	7,065.12	6,308.00	6,307.08	40.16	129.21	31.33	-1,100.17	8,359.44	14,896.48	14,727.28	169.20	88.040	
13,500.00	7,064.79	6,308.00	6,307.08	40.47	129.21	31.33	-1,100.17	8,359.44	14,996.27	14,826.77	169.50	88.471	
13,600.00	7,064.46	6,308.00	6,307.08	40.77	129.21	31.33	-1,100.17	8,359.44	15,096.06	14,926.26	169.81	88.901	
13,700.00	7,064.13	6,308.00	6,307.08	41.07	129.21	31.33	-1,100.17	8,359.44	15,195.86	15,025.75	170.11	89.330	
13,800.00	7,063.80	6,308.00	6,307.08	41.37	129.21	31.33	-1,100.17	8,359.44	15,295.66	15,125.24	170.41	89.757	
13,900.00	7,063.47	6,308.00	6,307.08	41.67	129.21	31.33	-1,100.17	8,359.44	15,395.46	15,224.74	170.71	90.182	
14,000.00	7,063.14	6,308.00	6,307.08	41.97	129.21	31.33	-1,100.17	8,359.44	15,495.26	15,324.24	171.02	90.606	
14,100.00	7,062.82	6,308.00	6,307.08	42.27	129.21	31.33	-1,100.17	8,359.44	15,595.07	15,423.75	171.32	91.029	
14,200.00	7,062.49	6,308.00	6,307.08	42.57	129.21	31.33	-1,100.17	8,359.44	15,694.87	15,523.25	171.62	91.450	
14,300.00	7,062.16	6,308.00	6,307.08	42.87	129.21	31.33	-1,100.17	8,359.44	15,794.68	15,622.76	171.92	91.870	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 293-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,400.00	7,061.83	6,308.00	6,307.08	43.17	129.21	31.33	-1,100.17	8,359.44	15,894.50	15,722.27	172.23	92.288	
14,500.00	7,061.50	6,308.00	6,307.08	43.47	129.21	31.33	-1,100.17	8,359.44	15,994.31	15,821.78	172.53	92.705	
14,600.00	7,061.17	6,308.00	6,307.08	43.77	129.21	31.33	-1,100.17	8,359.44	16,094.13	15,921.30	172.83	93.121	
14,700.00	7,060.84	6,308.00	6,307.08	44.07	129.21	31.33	-1,100.17	8,359.44	16,193.95	16,020.82	173.13	93.535	
14,800.00	7,060.51	6,308.00	6,307.08	44.37	129.21	31.33	-1,100.17	8,359.44	16,293.77	16,120.34	173.44	93.947	
14,900.00	7,060.18	6,308.00	6,307.08	44.67	129.21	31.33	-1,100.17	8,359.44	16,393.60	16,219.86	173.74	94.359	
15,000.00	7,059.86	6,308.00	6,307.08	44.97	129.21	31.33	-1,100.17	8,359.44	16,493.42	16,319.38	174.04	94.768	
15,100.00	7,059.53	6,308.00	6,307.08	45.27	129.21	31.33	-1,100.17	8,359.44	16,593.25	16,418.91	174.34	95.177	
15,200.00	7,059.20	6,308.00	6,307.08	45.57	129.21	31.33	-1,100.17	8,359.44	16,693.08	16,518.44	174.64	95.584	
15,300.00	7,058.87	6,308.00	6,307.08	45.87	129.21	31.33	-1,100.17	8,359.44	16,792.91	16,617.97	174.95	95.990	
15,400.00	7,058.54	6,308.00	6,307.08	46.17	129.21	31.33	-1,100.17	8,359.44	16,892.75	16,717.50	175.25	96.394	
15,500.00	7,058.21	6,308.00	6,307.08	46.47	129.21	31.33	-1,100.17	8,359.44	16,992.58	16,817.04	175.55	96.797	
15,600.00	7,057.88	6,308.00	6,307.08	46.77	129.21	31.33	-1,100.17	8,359.44	17,092.42	16,916.57	175.85	97.198	
15,700.00	7,057.55	6,308.00	6,307.08	47.07	129.21	31.33	-1,100.17	8,359.44	17,192.26	17,016.11	176.15	97.599	
15,800.00	7,057.23	6,308.00	6,307.08	47.37	129.21	31.33	-1,100.17	8,359.44	17,292.10	17,115.65	176.45	97.998	
15,900.00	7,056.90	6,308.00	6,307.08	47.67	129.21	31.33	-1,100.17	8,359.44	17,391.95	17,215.19	176.76	98.395	
16,000.00	7,056.57	6,308.00	6,307.08	47.97	129.21	31.33	-1,100.17	8,359.44	17,491.79	17,314.74	177.06	98.791	
16,100.00	7,056.24	6,308.00	6,307.08	48.27	129.21	31.33	-1,100.17	8,359.44	17,591.64	17,414.28	177.36	99.186	
16,200.00	7,055.91	6,308.00	6,307.08	48.57	129.21	31.33	-1,100.17	8,359.44	17,691.49	17,513.83	177.66	99.580	
16,300.00	7,055.58	6,308.00	6,307.08	48.87	129.21	31.33	-1,100.17	8,359.44	17,791.34	17,613.38	177.96	99.972	
16,400.00	7,055.25	6,308.00	6,307.08	49.17	129.21	31.33	-1,100.17	8,359.44	17,891.19	17,712.93	178.26	100.363	
16,500.00	7,054.92	6,308.00	6,307.08	49.47	129.21	31.33	-1,100.17	8,359.44	17,991.05	17,812.48	178.57	100.753	
16,600.00	7,054.59	6,308.00	6,307.08	49.77	129.21	31.33	-1,100.17	8,359.44	18,090.90	17,912.04	178.87	101.141	
16,619.57	7,054.53	6,308.00	6,307.08	49.83	129.21	31.33	-1,100.17	8,359.44	18,110.45	17,931.52	178.93	101.217	
16,700.00	7,054.27	6,308.00	6,307.08	50.07	129.21	31.33	-1,100.17	8,359.44	18,190.76	18,011.59	179.17	101.529	
16,782.16	7,054.00	6,308.00	6,307.08	50.32	129.21	31.33	-1,100.17	8,359.44	18,272.81	18,093.39	179.42	101.846	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	101.83	-1,960.91	9,359.75	9,562.96				
100.00	100.00	110.51	110.51	0.23	1.18	101.83	-1,960.91	9,359.75	9,562.96	9,561.56	1.40	6,817.649	
200.00	200.00	210.51	210.51	0.53	2.24	101.83	-1,960.91	9,359.75	9,562.96	9,560.19	2.77	3,456.346	
300.00	300.00	389.47	310.51	0.83	4.53	101.83	-1,960.91	9,359.75	9,562.96	9,557.60	5.36	1,784.838	
400.00	400.00	410.53	410.51	1.13	4.96	101.83	-1,960.91	9,359.75	9,562.96	9,556.87	6.09	1,570.678	
500.00	500.00	510.53	510.51	1.43	7.01	101.83	-1,960.91	9,359.75	9,562.96	9,554.53	8.43	1,134.047	
600.00	599.98	610.51	610.49	1.73	9.05	-83.76	-1,960.91	9,359.75	9,562.77	9,551.99	10.78	887.384	
700.00	699.84	708.61	708.57	2.03	11.06	-83.81	-1,959.51	9,359.75	9,561.91	9,548.83	13.08	730.944	
800.00	799.45	803.29	803.26	2.33	12.99	-83.88	-1,959.72	9,359.75	9,561.02	9,545.70	15.32	624.202	
900.00	898.70	897.70	897.66	2.63	14.92	-83.97	-1,960.16	9,359.75	9,559.82	9,542.27	17.55	544.810	
1,000.00	997.47	991.74	991.69	2.93	16.84	-84.08	-1,960.84	9,359.75	9,558.32	9,538.55	19.77	483.492	
1,100.00	1,095.62	1,106.23	1,106.14	3.23	20.18	-84.25	-1,960.91	9,359.75	9,556.35	9,532.94	23.40	408.322	
1,207.25	1,200.09	1,210.70	1,210.60	3.55	23.29	-84.44	-1,960.91	9,359.75	9,553.89	9,527.05	26.84	355.972	
1,300.00	1,290.03	1,298.28	1,298.18	3.83	25.90	-84.57	-1,960.13	9,359.75	9,551.50	9,521.77	29.73	321.304	
1,400.00	1,386.99	1,390.85	1,390.75	4.13	28.66	-84.71	-1,960.36	9,359.75	9,549.20	9,516.41	32.79	291.259	
1,500.00	1,483.96	1,483.54	1,483.43	4.43	31.42	-84.84	-1,960.81	9,359.75	9,547.00	9,511.15	35.85	266.318	
1,600.00	1,580.93	1,592.21	1,591.44	4.73	37.09	-85.00	-1,960.91	9,359.75	9,544.78	9,502.97	41.82	228.253	
1,700.00	1,677.90	1,689.18	1,688.41	5.03	44.27	-85.14	-1,960.91	9,359.75	9,542.62	9,493.32	49.29	193.596	
1,800.00	1,774.87	1,759.15	1,758.13	5.33	49.44	-85.26	-1,957.64	9,359.75	9,539.96	9,485.19	54.77	174.187	
1,900.00	1,871.83	1,884.90	1,882.35	5.63	59.02	-85.42	-1,960.91	9,359.75	9,538.47	9,473.82	64.65	147.541	
2,000.00	1,968.80	1,981.87	1,979.31	5.93	67.16	-85.56	-1,960.91	9,359.75	9,536.49	9,463.40	73.09	130.484	
2,100.00	2,065.77	2,078.83	2,076.28	6.23	75.30	-85.71	-1,960.91	9,359.75	9,534.57	9,453.05	81.52	116.957	
2,200.00	2,162.74	2,152.97	2,149.86	6.53	81.52	-85.85	-1,954.00	9,359.75	9,531.56	9,443.52	88.04	108.262	
2,300.00	2,259.71	2,222.69	2,219.40	6.83	87.37	-85.95	-1,955.61	9,359.75	9,530.16	9,435.97	94.19	101.179	
2,400.00	2,356.67	2,293.21	2,289.66	7.13	93.28	-86.03	-1,958.47	9,359.75	9,529.10	9,428.69	100.41	94.906	
2,500.00	2,453.64	2,470.31	2,464.15	7.43	105.41	-86.27	-1,960.91	9,359.75	9,527.52	9,414.69	112.83	84.439	
2,600.00	2,550.61	2,567.27	2,561.12	7.73	111.51	-86.42	-1,960.91	9,359.75	9,525.92	9,406.68	119.23	79.893	
2,700.00	2,647.58	2,655.07	2,648.33	8.03	117.03	-86.59	-1,952.29	9,359.75	9,523.01	9,397.95	125.06	76.149	
2,800.00	2,744.55	2,729.42	2,722.51	8.33	121.71	-86.70	-1,953.33	9,359.75	9,521.76	9,391.73	130.03	73.225	
2,900.00	2,841.51	2,804.56	2,797.43	8.63	126.44	-86.79	-1,955.58	9,359.75	9,520.81	9,385.75	135.06	70.493	
3,000.00	2,938.48	2,957.45	2,949.00	8.93	134.95	-86.99	-1,960.91	9,359.75	9,520.11	9,376.24	143.88	66.168	
3,100.00	3,035.45	3,054.41	3,045.96	9.23	138.59	-87.13	-1,960.91	9,359.75	9,518.82	9,371.00	147.82	64.395	
3,200.00	3,132.42	3,151.38	3,142.93	9.53	142.23	-87.27	-1,960.91	9,359.75	9,517.59	9,365.83	151.76	62.715	
3,300.00	3,229.39	3,240.07	3,231.50	9.83	145.56	-87.42	-1,957.65	9,359.75	9,515.95	9,360.57	155.39	61.239	
3,400.00	3,326.35	3,325.95	3,317.34	10.13	148.79	-87.54	-1,958.54	9,359.75	9,515.00	9,356.09	158.91	59.875	
3,500.00	3,423.32	3,412.24	3,403.57	10.43	152.03	-87.66	-1,960.16	9,359.75	9,514.22	9,351.76	162.45	58.566	
3,600.00	3,520.29	3,539.87	3,530.80	10.73	156.28	-87.84	-1,960.91	9,359.75	9,513.29	9,346.28	167.01	56.964	
3,700.00	3,617.26	3,636.83	3,627.77	11.03	159.38	-87.98	-1,960.91	9,359.75	9,512.37	9,341.97	170.41	55.821	
3,800.00	3,714.23	3,729.36	3,720.23	11.33	162.34	-88.13	-1,958.31	9,359.75	9,511.18	9,337.51	173.67	54.767	
3,900.00	3,811.19	3,817.04	3,807.88	11.63	165.14	-88.26	-1,958.96	9,359.75	9,510.48	9,333.71	176.77	53.802	
4,000.00	3,908.16	3,905.09	3,895.89	11.93	167.96	-88.38	-1,960.31	9,359.75	9,509.95	9,330.06	179.88	52.867	
4,100.00	4,005.13	4,025.09	4,015.64	12.23	171.56	-88.55	-1,960.91	9,359.75	9,509.33	9,325.54	183.78	51.742	
4,200.00	4,102.10	4,122.05	4,112.61	12.53	174.40	-88.70	-1,960.91	9,359.75	9,508.72	9,321.80	186.93	50.869	
4,300.00	4,199.07	4,219.02	4,209.58	12.83	177.24	-88.84	-1,960.91	9,359.75	9,508.18	9,318.11	190.07	50.025	
4,400.00	4,296.03	4,315.99	4,306.55	13.13	180.09	-88.98	-1,960.91	9,359.75	9,507.70	9,314.49	193.21	49.208	
4,500.00	4,393.00	4,412.19	4,402.68	13.43	182.91	-89.15	-1,956.92	9,359.75	9,506.83	9,310.50	196.33	48.422	
4,600.00	4,489.97	4,505.51	4,495.98	13.73	185.65	-89.28	-1,957.16	9,359.75	9,506.52	9,307.15	199.37	47.683	
4,700.00	4,586.94	4,599.01	4,589.46	14.03	188.39	-89.42	-1,957.72	9,359.75	9,506.30	9,303.89	202.41	46.965	
4,800.00	4,683.91	4,692.69	4,683.11	14.33	191.13	-89.55	-1,958.62	9,359.75	9,506.18	9,300.72	205.46	46.268	
4,879.70	4,761.19	4,767.48	4,757.88	14.57	193.33	-89.66	-1,959.58	9,359.75	9,506.15	9,298.26	207.89	45.727	
4,900.00	4,780.87	4,786.55	4,776.94	14.63	193.89	-89.68	-1,959.86	9,359.75	9,506.15	9,297.64	208.51	45.591	
5,000.00	4,877.84	4,898.36	4,888.36	14.93	196.86	-89.84	-1,960.91	9,359.75	9,506.15	9,294.36	211.78	44.886	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	4,995.33	4,985.32	15.23	199.06	-89.98	-1,960.91	9,359.75	9,506.11	9,291.82	214.29	44.361	
5,112.42	4,986.86	5,007.37	4,997.37	15.27	199.34	-90.00	-1,960.91	9,359.75	9,506.11	9,291.51	214.60	44.297	CC
5,200.00	5,071.78	5,092.29	5,082.29	15.53	201.27	-90.13	-1,960.91	9,359.75	9,506.13	9,289.34	216.79	43.849	
5,300.00	5,168.75	5,189.26	5,179.26	15.83	203.47	-90.27	-1,960.91	9,359.75	9,506.22	9,286.92	219.30	43.348	
5,400.00	5,265.71	5,286.23	5,276.23	16.13	205.68	-90.41	-1,960.91	9,359.75	9,506.37	9,284.56	221.80	42.859	
5,500.00	5,362.68	5,383.20	5,373.20	16.43	207.88	-90.55	-1,960.91	9,359.75	9,506.58	9,282.27	224.31	42.382	
5,600.00	5,459.65	5,480.17	5,470.16	16.73	210.09	-90.70	-1,960.91	9,359.75	9,506.85	9,280.04	226.81	41.915	
5,680.56	5,537.77	5,558.29	5,548.18	16.98	211.86	-90.85	-1,954.75	9,359.75	9,506.61	9,277.78	228.83	41.544	
5,700.00	5,556.62	5,576.79	5,566.67	17.03	212.28	-90.87	-1,954.76	9,359.75	9,506.69	9,277.38	229.31	41.458	
5,800.00	5,653.59	5,672.04	5,661.91	17.33	214.45	-91.01	-1,954.91	9,359.75	9,507.11	9,275.34	231.78	41.019	
5,900.00	5,750.55	5,767.42	5,757.28	17.63	216.62	-91.15	-1,955.29	9,359.75	9,507.62	9,273.38	234.24	40.589	
6,000.00	5,847.52	5,862.93	5,852.76	17.93	218.79	-91.29	-1,955.90	9,359.75	9,508.21	9,271.49	236.72	40.167	
6,100.00	5,944.49	5,958.55	5,948.37	18.23	220.97	-91.42	-1,956.73	9,359.75	9,508.87	9,269.68	239.19	39.755	
6,200.00	6,041.46	6,054.30	6,044.09	18.53	223.14	-91.56	-1,957.79	9,359.75	9,509.61	9,267.94	241.67	39.350	
6,300.00	6,138.43	6,150.17	6,139.93	18.83	225.32	-91.69	-1,959.08	9,359.75	9,510.42	9,266.27	244.15	38.954	
6,400.00	6,235.39	6,246.16	6,235.88	19.13	227.50	-91.83	-1,960.59	9,359.75	9,511.30	9,264.67	246.63	38.565	
6,500.00	6,332.36	6,342.27	6,331.95	19.43	229.69	-91.96	-1,962.34	9,359.75	9,512.25	9,263.13	249.11	38.184	ES, SF
6,600.00	6,429.33	6,298.00	6,287.56	19.73	228.47	-91.90	-1,960.91	9,359.75	9,514.28	9,266.11	248.16	38.339	
6,700.00	6,526.30	6,298.00	6,287.56	20.03	228.47	-91.90	-1,960.91	9,359.75	9,517.29	9,268.87	248.41	38.312	
6,715.28	6,541.12	6,298.00	6,287.56	20.08	228.47	-91.90	-1,960.91	9,359.75	9,517.84	9,269.39	248.45	38.309	
6,750.00	6,574.74	6,298.00	6,287.56	20.18	228.47	-105.06	-1,960.91	9,359.75	9,520.23	9,271.70	248.53	38.306	
6,800.00	6,622.83	6,298.00	6,287.56	20.33	228.47	-120.74	-1,960.91	9,359.75	9,527.57	9,278.92	248.64	38.318	
6,850.00	6,670.20	6,298.00	6,287.56	20.49	228.47	-132.05	-1,960.91	9,359.75	9,539.43	9,290.67	248.75	38.349	
6,900.00	6,716.50	6,298.00	6,287.56	20.64	228.47	-139.92	-1,960.91	9,359.75	9,555.70	9,306.85	248.85	38.399	
6,950.00	6,761.36	6,298.00	6,287.56	20.79	228.47	-145.42	-1,960.91	9,359.75	9,576.25	9,327.29	248.95	38.466	
7,000.00	6,804.45	6,298.00	6,287.56	20.94	228.47	-149.34	-1,960.91	9,359.75	9,600.88	9,351.83	249.05	38.550	
7,050.00	6,845.44	6,298.00	6,287.56	21.09	228.47	-152.16	-1,960.91	9,359.75	9,629.38	9,380.23	249.15	38.649	
7,100.00	6,884.01	6,298.00	6,287.56	21.24	228.47	-154.18	-1,960.91	9,359.75	9,661.51	9,412.26	249.25	38.762	
7,150.00	6,919.88	6,298.00	6,287.56	21.39	228.47	-155.58	-1,960.91	9,359.75	9,696.97	9,447.62	249.35	38.889	
7,200.00	6,952.78	6,298.00	6,287.56	21.54	228.47	-156.47	-1,960.91	9,359.75	9,735.47	9,486.02	249.45	39.027	
7,250.00	6,982.44	6,298.00	6,287.56	21.69	228.47	-156.86	-1,960.91	9,359.75	9,776.68	9,527.12	249.56	39.176	
7,300.00	7,008.65	6,298.00	6,287.56	21.84	228.47	-156.72	-1,960.91	9,359.75	9,820.25	9,570.58	249.67	39.333	
7,350.00	7,031.20	6,298.00	6,287.56	21.99	228.47	-155.90	-1,960.91	9,359.75	9,865.83	9,616.04	249.79	39.497	
7,400.00	7,049.92	6,298.00	6,287.56	22.14	228.47	-153.97	-1,960.91	9,359.75	9,913.03	9,663.12	249.91	39.666	
7,450.00	7,064.68	6,298.00	6,287.56	22.29	228.47	-149.81	-1,960.91	9,359.75	9,961.48	9,711.44	250.04	39.839	
7,500.00	7,075.36	6,298.00	6,287.56	22.44	228.47	-139.18	-1,960.91	9,359.75	10,010.80	9,760.62	250.18	40.014	
7,550.00	7,081.87	6,298.00	6,287.56	22.59	228.47	-98.00	-1,960.91	9,359.75	10,060.61	9,810.28	250.33	40.190	
7,604.16	7,084.18	6,298.00	6,287.56	22.75	228.47	-22.74	-1,960.91	9,359.75	10,114.65	9,864.16	250.49	40.379	
7,700.00	7,083.86	6,298.00	6,287.56	23.04	228.47	-22.74	-1,960.91	9,359.75	10,210.10	9,959.31	250.80	40.711	
7,800.00	7,083.53	6,298.00	6,287.56	23.34	228.47	-22.74	-1,960.91	9,359.75	10,309.71	10,058.60	251.11	41.057	
7,900.00	7,083.20	6,298.00	6,287.56	23.64	228.47	-22.74	-1,960.91	9,359.75	10,409.32	10,157.90	251.42	41.401	
8,000.00	7,082.87	6,298.00	6,287.56	23.94	228.47	-22.74	-1,960.91	9,359.75	10,508.94	10,257.20	251.74	41.745	
8,100.00	7,082.54	6,298.00	6,287.56	24.24	228.47	-22.74	-1,960.91	9,359.75	10,608.57	10,356.52	252.05	42.089	
8,200.00	7,082.22	6,298.00	6,287.56	24.54	228.47	-22.74	-1,960.91	9,359.75	10,708.20	10,455.84	252.37	42.431	
8,300.00	7,081.89	6,298.00	6,287.56	24.84	228.47	-22.74	-1,960.91	9,359.75	10,807.84	10,555.16	252.68	42.773	
8,400.00	7,081.56	6,298.00	6,287.56	25.14	228.47	-22.74	-1,960.91	9,359.75	10,907.49	10,654.50	252.99	43.114	
8,500.00	7,081.23	6,298.00	6,287.56	25.45	228.47	-22.74	-1,960.91	9,359.75	11,007.14	10,753.84	253.30	43.454	
8,600.00	7,080.90	6,298.00	6,287.56	25.75	228.47	-22.74	-1,960.91	9,359.75	11,106.80	10,853.19	253.62	43.794	
8,700.00	7,080.57	6,298.00	6,287.56	26.05	228.47	-22.74	-1,960.91	9,359.75	11,206.47	10,952.54	253.93	44.133	
8,800.00	7,080.24	6,298.00	6,287.56	26.35	228.47	-22.74	-1,960.91	9,359.75	11,306.14	11,051.90	254.24	44.471	
8,900.00	7,079.91	6,298.00	6,287.56	26.65	228.47	-22.74	-1,960.91	9,359.75	11,405.82	11,151.27	254.55	44.808	
9,000.00	7,079.59	6,298.00	6,287.56	26.95	228.47	-22.74	-1,960.91	9,359.75	11,505.50	11,250.64	254.86	45.144	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
9,100.00	7,079.26	6,298.00	6,287.56	27.25	228.47	-22.74	-1,960.91	9,359.75	11,605.19	11,350.02	255.17	45.480	
9,200.00	7,078.93	6,298.00	6,287.56	27.55	228.47	-22.74	-1,960.91	9,359.75	11,704.89	11,449.41	255.48	45.815	
9,300.00	7,078.60	6,298.00	6,287.56	27.85	228.47	-22.74	-1,960.91	9,359.75	11,804.59	11,548.79	255.79	46.149	
9,400.00	7,078.27	6,298.00	6,287.56	28.15	228.47	-22.74	-1,960.91	9,359.75	11,904.29	11,648.19	256.10	46.483	
9,500.00	7,077.94	6,298.00	6,287.56	28.45	228.47	-22.74	-1,960.91	9,359.75	12,004.00	11,747.59	256.41	46.816	
9,600.00	7,077.61	6,298.00	6,287.56	28.75	228.47	-22.74	-1,960.91	9,359.75	12,103.71	11,846.99	256.72	47.148	
9,700.00	7,077.28	6,298.00	6,287.56	29.05	228.47	-22.74	-1,960.91	9,359.75	12,203.43	11,946.40	257.03	47.479	
9,800.00	7,076.95	6,298.00	6,287.56	29.35	228.47	-22.74	-1,960.91	9,359.75	12,303.15	12,045.82	257.34	47.810	
9,900.00	7,076.63	6,298.00	6,287.56	29.65	228.47	-22.74	-1,960.91	9,359.75	12,402.88	12,145.24	257.64	48.139	
10,000.00	7,076.30	6,298.00	6,287.56	29.95	228.47	-22.74	-1,960.91	9,359.75	12,502.61	12,244.66	257.95	48.469	
10,100.00	7,075.97	6,298.00	6,287.56	30.25	228.47	-22.74	-1,960.91	9,359.75	12,602.35	12,344.09	258.26	48.797	
10,200.00	7,075.64	6,298.00	6,287.56	30.55	228.47	-22.74	-1,960.91	9,359.75	12,702.09	12,443.52	258.57	49.125	
10,300.00	7,075.31	6,298.00	6,287.56	30.85	228.47	-22.74	-1,960.91	9,359.75	12,801.84	12,542.96	258.88	49.451	
10,400.00	7,074.98	6,298.00	6,287.56	31.15	228.47	-22.74	-1,960.91	9,359.75	12,901.58	12,642.40	259.18	49.778	
10,500.00	7,074.65	6,298.00	6,287.56	31.46	228.47	-22.74	-1,960.91	9,359.75	13,001.34	12,741.84	259.49	50.103	
10,600.00	7,074.32	6,298.00	6,287.56	31.76	228.47	-22.74	-1,960.91	9,359.75	13,101.09	12,841.29	259.80	50.428	
10,700.00	7,074.00	6,298.00	6,287.56	32.06	228.47	-22.74	-1,960.91	9,359.75	13,200.85	12,940.75	260.11	50.752	
10,800.00	7,073.67	6,298.00	6,287.56	32.36	228.47	-22.74	-1,960.91	9,359.75	13,300.61	13,040.20	260.41	51.075	
10,900.00	7,073.34	6,298.00	6,287.56	32.66	228.47	-22.74	-1,960.91	9,359.75	13,400.38	13,139.66	260.72	51.398	
11,000.00	7,073.01	6,298.00	6,287.56	32.96	228.47	-22.74	-1,960.91	9,359.75	13,500.15	13,239.13	261.03	51.720	
11,100.00	7,072.68	6,298.00	6,287.56	33.26	228.47	-22.74	-1,960.91	9,359.75	13,599.93	13,338.59	261.33	52.041	
11,200.00	7,072.35	6,298.00	6,287.56	33.56	228.47	-22.74	-1,960.91	9,359.75	13,699.70	13,438.06	261.64	52.361	
11,300.00	7,072.02	6,298.00	6,287.56	33.86	228.47	-22.74	-1,960.91	9,359.75	13,799.48	13,537.54	261.95	52.681	
11,400.00	7,071.69	6,298.00	6,287.56	34.16	228.47	-22.74	-1,960.91	9,359.75	13,899.27	13,637.02	262.25	53.000	
11,500.00	7,071.36	6,298.00	6,287.56	34.46	228.47	-22.74	-1,960.91	9,359.75	13,999.05	13,736.50	262.56	53.318	
11,600.00	7,071.04	6,298.00	6,287.56	34.76	228.47	-22.74	-1,960.91	9,359.75	14,098.84	13,835.98	262.86	53.636	
11,700.00	7,070.71	6,298.00	6,287.56	35.06	228.47	-22.74	-1,960.91	9,359.75	14,198.63	13,935.47	263.17	53.953	
11,800.00	7,070.38	6,298.00	6,287.56	35.36	228.47	-22.74	-1,960.91	9,359.75	14,298.43	14,034.96	263.47	54.269	
11,900.00	7,070.05	6,298.00	6,287.56	35.66	228.47	-22.74	-1,960.91	9,359.75	14,398.23	14,134.45	263.78	54.584	
12,000.00	7,069.72	6,298.00	6,287.56	35.96	228.47	-22.74	-1,960.91	9,359.75	14,498.03	14,233.94	264.09	54.899	
12,100.00	7,069.39	6,298.00	6,287.56	36.26	228.47	-22.74	-1,960.91	9,359.75	14,597.83	14,333.44	264.39	55.213	
12,200.00	7,069.06	6,298.00	6,287.56	36.56	228.47	-22.74	-1,960.91	9,359.75	14,697.64	14,432.94	264.70	55.527	
12,300.00	7,068.73	6,298.00	6,287.56	36.86	228.47	-22.74	-1,960.91	9,359.75	14,797.45	14,532.45	265.00	55.839	
12,400.00	7,068.41	6,298.00	6,287.56	37.16	228.47	-22.74	-1,960.91	9,359.75	14,897.26	14,631.95	265.31	56.151	
12,500.00	7,068.08	6,298.00	6,287.56	37.46	228.47	-22.74	-1,960.91	9,359.75	14,997.07	14,731.46	265.61	56.463	
12,600.00	7,067.75	6,298.00	6,287.56	37.76	228.47	-22.74	-1,960.91	9,359.75	15,096.89	14,830.98	265.91	56.773	
12,700.00	7,067.42	6,298.00	6,287.56	38.06	228.47	-22.74	-1,960.91	9,359.75	15,196.71	14,930.49	266.22	57.083	
12,800.00	7,067.09	6,298.00	6,287.56	38.36	228.47	-22.74	-1,960.91	9,359.75	15,296.53	15,030.01	266.52	57.393	
12,900.00	7,066.76	6,298.00	6,287.56	38.66	228.47	-22.74	-1,960.91	9,359.75	15,396.35	15,129.53	266.83	57.701	
13,000.00	7,066.43	6,298.00	6,287.56	38.96	228.47	-22.74	-1,960.91	9,359.75	15,496.18	15,229.05	267.13	58.009	
13,100.00	7,066.10	6,298.00	6,287.56	39.26	228.47	-22.74	-1,960.91	9,359.75	15,596.01	15,328.57	267.44	58.317	
13,200.00	7,065.77	6,298.00	6,287.56	39.56	228.47	-22.74	-1,960.91	9,359.75	15,695.84	15,428.10	267.74	58.623	
13,300.00	7,065.45	6,298.00	6,287.56	39.86	228.47	-22.74	-1,960.91	9,359.75	15,795.67	15,527.63	268.05	58.929	
13,400.00	7,065.12	6,298.00	6,287.56	40.16	228.47	-22.74	-1,960.91	9,359.75	15,895.51	15,627.16	268.35	59.234	
13,500.00	7,064.79	6,298.00	6,287.56	40.47	228.47	-22.74	-1,960.91	9,359.75	15,995.34	15,726.69	268.65	59.539	
13,600.00	7,064.46	6,298.00	6,287.56	40.77	228.47	-22.74	-1,960.91	9,359.75	16,095.18	15,826.22	268.96	59.843	
13,700.00	7,064.13	6,298.00	6,287.56	41.07	228.47	-22.74	-1,960.91	9,359.75	16,195.02	15,925.76	269.26	60.146	
13,800.00	7,063.80	6,298.00	6,287.56	41.37	228.47	-22.74	-1,960.91	9,359.75	16,294.86	16,025.30	269.56	60.449	
13,900.00	7,063.47	6,298.00	6,287.56	41.67	228.47	-22.74	-1,960.91	9,359.75	16,394.71	16,124.84	269.87	60.751	
14,000.00	7,063.14	6,298.00	6,287.56	41.97	228.47	-22.74	-1,960.91	9,359.75	16,494.56	16,224.38	270.17	61.052	
14,100.00	7,062.82	6,298.00	6,287.56	42.27	228.47	-22.74	-1,960.91	9,359.75	16,594.40	16,323.93	270.48	61.353	
14,200.00	7,062.49	6,298.00	6,287.56	42.57	228.47	-22.74	-1,960.91	9,359.75	16,694.25	16,423.47	270.78	61.653	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 350-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,300.00	7,062.16	6,298.00	6,287.56	42.87	228.47	-22.74	-1,960.91	9,359.75	16,794.11	16,523.02	271.08	61.952	
14,400.00	7,061.83	6,298.00	6,287.56	43.17	228.47	-22.74	-1,960.91	9,359.75	16,893.96	16,622.57	271.39	62.251	
14,500.00	7,061.50	6,298.00	6,287.56	43.47	228.47	-22.74	-1,960.91	9,359.75	16,993.81	16,722.13	271.69	62.549	
14,600.00	7,061.17	6,298.00	6,287.56	43.77	228.47	-22.74	-1,960.91	9,359.75	17,093.67	16,821.68	271.99	62.846	
14,700.00	7,060.84	6,298.00	6,287.56	44.07	228.47	-22.74	-1,960.91	9,359.75	17,193.53	16,921.23	272.30	63.143	
14,800.00	7,060.51	6,298.00	6,287.56	44.37	228.47	-22.74	-1,960.91	9,359.75	17,293.39	17,020.79	272.60	63.439	
14,900.00	7,060.18	6,298.00	6,287.56	44.67	228.47	-22.74	-1,960.91	9,359.75	17,393.25	17,120.35	272.90	63.734	
15,000.00	7,059.86	6,298.00	6,287.56	44.97	228.47	-22.74	-1,960.91	9,359.75	17,493.12	17,219.91	273.20	64.029	
15,100.00	7,059.53	6,298.00	6,287.56	45.27	228.47	-22.74	-1,960.91	9,359.75	17,592.98	17,319.47	273.51	64.324	
15,200.00	7,059.20	6,298.00	6,287.56	45.57	228.47	-22.74	-1,960.91	9,359.75	17,692.85	17,419.04	273.81	64.617	
15,300.00	7,058.87	6,298.00	6,287.56	45.87	228.47	-22.74	-1,960.91	9,359.75	17,792.72	17,518.60	274.11	64.910	
15,400.00	7,058.54	6,298.00	6,287.56	46.17	228.47	-22.74	-1,960.91	9,359.75	17,892.59	17,618.17	274.42	65.202	
15,500.00	7,058.21	6,298.00	6,287.56	46.47	228.47	-22.74	-1,960.91	9,359.75	17,992.46	17,717.74	274.72	65.494	
15,600.00	7,057.88	6,298.00	6,287.56	46.77	228.47	-22.74	-1,960.91	9,359.75	18,092.33	17,817.31	275.02	65.785	
15,700.00	7,057.55	6,298.00	6,287.56	47.07	228.47	-22.74	-1,960.91	9,359.75	18,192.20	17,916.88	275.32	66.075	
15,800.00	7,057.23	6,298.00	6,287.56	47.37	228.47	-22.74	-1,960.91	9,359.75	18,292.08	18,016.45	275.63	66.365	
15,900.00	7,056.90	6,298.00	6,287.56	47.67	228.47	-22.74	-1,960.91	9,359.75	18,391.95	18,116.02	275.93	66.654	
16,000.00	7,056.57	6,298.00	6,287.56	47.97	228.47	-22.74	-1,960.91	9,359.75	18,491.83	18,215.60	276.23	66.943	
16,100.00	7,056.24	6,298.00	6,287.56	48.27	228.47	-22.74	-1,960.91	9,359.75	18,591.71	18,315.18	276.53	67.231	
16,200.00	7,055.91	6,298.00	6,287.56	48.57	228.47	-22.74	-1,960.91	9,359.75	18,691.59	18,414.75	276.84	67.518	
16,300.00	7,055.58	6,298.00	6,287.56	48.87	228.47	-22.74	-1,960.91	9,359.75	18,791.47	18,514.33	277.14	67.805	
16,400.00	7,055.25	6,298.00	6,287.56	49.17	228.47	-22.74	-1,960.91	9,359.75	18,891.36	18,613.91	277.44	68.091	
16,500.00	7,054.92	6,298.00	6,287.56	49.47	228.47	-22.74	-1,960.91	9,359.75	18,991.24	18,713.50	277.74	68.377	
16,600.00	7,054.59	6,298.00	6,287.56	49.77	228.47	-22.74	-1,960.91	9,359.75	19,091.13	18,813.08	278.05	68.662	
16,619.57	7,054.53	6,298.00	6,287.56	49.83	228.47	-22.74	-1,960.91	9,359.75	19,110.68	18,832.57	278.11	68.717	
16,700.00	7,054.27	6,298.00	6,287.56	50.07	228.47	-22.74	-1,960.91	9,359.75	19,191.01	18,912.66	278.35	68.946	
16,782.16	7,054.00	6,298.00	6,287.56	50.32	228.47	-22.74	-1,960.91	9,359.75	19,273.08	18,994.48	278.60	69.179	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	95.53	-586.88	6,057.96	6,086.32				
100.00	100.00	284.48	275.51	0.23	2.68	95.53	-586.88	6,057.96	6,086.32	6,083.42	2.90	2,096.865	
200.00	200.00	375.52	375.51	0.53	4.47	95.53	-586.88	6,057.96	6,086.32	6,081.33	4.99	1,219.236	
300.00	300.00	475.52	475.51	0.83	6.43	95.53	-586.88	6,057.96	6,086.32	6,079.06	7.26	838.626	
357.29	357.29	532.81	532.80	1.00	7.56	95.53	-586.33	6,057.96	6,086.27	6,077.71	8.56	711.392	CC
400.00	400.00	575.09	575.08	1.13	8.39	95.53	-586.35	6,057.96	6,086.27	6,076.75	9.51	639.677	
500.00	500.00	674.08	674.08	1.43	10.33	95.53	-586.50	6,057.96	6,086.28	6,074.52	11.76	517.519	
600.00	599.98	773.07	773.06	1.73	12.28	-90.06	-586.83	6,057.96	6,086.32	6,072.31	14.01	434.545	
700.00	699.84	875.40	875.35	2.03	14.29	-90.11	-586.88	6,057.96	6,086.33	6,070.01	16.32	372.915	
800.00	799.45	975.01	974.97	2.33	16.26	-90.20	-586.88	6,057.96	6,086.35	6,067.77	18.58	327.526	
861.88	860.92	1,036.48	1,036.42	2.51	17.47	-90.27	-585.78	6,057.96	6,086.28	6,066.30	19.98	304.634	
900.00	898.70	1,073.55	1,073.49	2.63	18.20	-90.32	-585.81	6,057.96	6,086.31	6,065.48	20.82	292.282	
1,000.00	997.47	1,170.52	1,170.46	2.93	20.11	-90.45	-586.10	6,057.96	6,086.44	6,063.41	23.03	264.246	
1,100.00	1,095.62	1,267.04	1,266.96	3.23	22.01	-90.62	-586.71	6,057.96	6,086.68	6,061.45	25.23	241.210	
1,207.25	1,200.09	1,375.70	1,375.60	3.55	24.15	-90.84	-586.88	6,057.96	6,087.01	6,059.32	27.70	219.779	
1,300.00	1,290.03	1,465.63	1,465.54	3.83	25.92	-91.05	-586.88	6,057.96	6,087.40	6,057.65	29.75	204.647	
1,400.00	1,386.99	1,562.41	1,562.32	4.13	27.83	-91.27	-586.34	6,057.96	6,087.87	6,055.91	31.95	190.531	
1,500.00	1,483.96	1,658.67	1,658.58	4.43	29.72	-91.49	-586.46	6,057.96	6,088.48	6,054.34	34.15	178.296	
1,600.00	1,580.93	1,755.02	1,754.92	4.73	31.62	-91.71	-586.74	6,057.96	6,089.21	6,052.86	36.35	167.535	
1,700.00	1,677.90	1,853.55	1,853.41	5.03	33.61	-91.94	-586.88	6,057.96	6,090.02	6,051.39	38.63	157.641	
1,800.00	1,774.87	1,950.52	1,950.38	5.33	35.58	-92.16	-586.88	6,057.96	6,090.92	6,050.01	40.91	148.883	
1,900.00	1,871.83	2,047.40	2,047.25	5.63	37.56	-92.39	-585.79	6,057.96	6,091.86	6,048.68	43.19	141.056	
2,000.00	1,968.80	2,143.36	2,143.21	5.93	39.52	-92.61	-585.97	6,057.96	6,092.97	6,047.53	45.45	134.072	
2,100.00	2,065.77	2,239.49	2,239.34	6.23	41.48	-92.83	-586.48	6,057.96	6,094.20	6,046.49	47.71	127.743	
2,200.00	2,162.74	2,338.45	2,338.25	6.53	43.50	-93.05	-586.88	6,057.96	6,095.51	6,045.48	50.03	121.845	
2,300.00	2,259.71	2,435.42	2,435.22	6.83	45.48	-93.27	-586.88	6,057.96	6,096.90	6,044.59	52.31	116.560	
2,400.00	2,356.67	2,532.38	2,532.19	7.13	47.46	-93.50	-586.88	6,057.96	6,098.39	6,043.80	54.59	111.718	
2,500.00	2,453.64	2,628.89	2,628.68	7.43	49.43	-93.72	-586.21	6,057.96	6,099.95	6,043.09	56.86	107.284	
2,600.00	2,550.61	2,725.51	2,725.30	7.73	51.40	-93.94	-586.58	6,057.96	6,101.65	6,042.52	59.13	103.189	
2,700.00	2,647.58	2,823.34	2,823.09	8.03	53.44	-94.16	-586.88	6,057.96	6,103.44	6,041.97	61.46	99.302	
2,800.00	2,744.55	2,920.31	2,920.06	8.33	55.49	-94.38	-586.88	6,057.96	6,105.31	6,041.50	63.82	95.669	
2,900.00	2,841.51	3,017.28	3,017.01	8.63	57.54	-94.62	-585.84	6,057.96	6,107.27	6,041.10	66.17	92.296	
3,000.00	2,938.48	3,114.03	3,113.76	8.93	59.59	-94.84	-586.02	6,057.96	6,109.35	6,040.83	68.52	89.163	
3,100.00	3,035.45	3,210.97	3,210.69	9.23	61.65	-95.05	-586.54	6,057.96	6,111.53	6,040.65	70.87	86.233	ES
3,200.00	3,132.42	3,308.26	3,307.93	9.53	63.59	-95.27	-586.88	6,057.96	6,113.79	6,040.68	73.11	83.623	
3,300.00	3,229.39	3,405.23	3,404.90	9.83	65.42	-95.49	-586.88	6,057.96	6,116.16	6,040.91	75.25	81.279	
3,400.00	3,326.35	3,502.19	3,501.87	10.13	67.26	-95.71	-586.88	6,057.96	6,118.62	6,041.23	77.39	79.066	
3,500.00	3,423.32	3,599.37	3,599.03	10.43	69.10	-95.94	-585.96	6,057.96	6,121.18	6,041.65	79.53	76.970	
3,600.00	3,520.29	3,696.72	3,696.38	10.73	70.95	-96.16	-586.46	6,057.96	6,123.83	6,042.16	81.67	74.981	
3,700.00	3,617.26	3,794.25	3,793.89	11.03	72.79	-96.37	-587.29	6,057.96	6,126.57	6,042.75	83.82	73.093	
3,800.00	3,714.23	3,890.10	3,889.74	11.33	74.82	-96.59	-586.88	6,057.96	6,129.42	6,043.28	86.14	71.155	
3,900.00	3,811.19	3,987.17	3,986.81	11.63	76.80	-96.82	-586.70	6,057.96	6,132.36	6,043.94	88.43	69.351	
4,000.00	3,908.16	4,137.92	4,083.68	11.93	79.92	-97.03	-586.88	6,057.96	6,135.40	6,043.55	91.85	66.800	
4,100.00	4,005.13	4,181.05	4,180.64	12.23	80.87	-97.25	-586.88	6,057.96	6,138.53	6,045.43	93.09	65.938	
4,200.00	4,102.10	4,278.02	4,277.61	12.53	83.00	-97.47	-586.88	6,057.96	6,141.76	6,046.23	95.53	64.294	
4,300.00	4,199.07	4,374.99	4,374.58	12.83	85.13	-97.69	-586.88	6,057.96	6,145.08	6,047.12	97.96	62.732	
4,400.00	4,296.03	4,471.96	4,471.55	13.13	87.26	-97.91	-586.88	6,057.96	6,148.50	6,048.11	100.39	61.247	
4,500.00	4,393.00	4,568.92	4,568.52	13.43	89.39	-98.13	-586.88	6,057.96	6,152.02	6,049.20	102.82	59.833	
4,600.00	4,489.97	4,665.89	4,665.48	13.73	91.53	-98.35	-586.88	6,057.96	6,155.63	6,050.37	105.25	58.485	
4,700.00	4,586.94	4,763.63	4,763.17	14.03	93.67	-98.60	-583.30	6,057.96	6,159.53	6,051.83	107.70	57.192	
4,800.00	4,683.91	4,861.54	4,861.07	14.33	95.83	-98.82	-583.62	6,057.96	6,163.33	6,053.17	110.15	55.953	
4,900.00	4,780.87	4,959.58	4,959.09	14.63	97.98	-99.03	-584.16	6,057.96	6,167.20	6,054.59	112.61	54.768	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,877.84	5,057.73	5,057.23	14.93	100.14	-99.25	-584.93	6,057.96	6,171.14	6,056.08	115.06	53.632	
5,100.00	4,974.81	5,319.04	5,150.32	15.23	105.75	-99.44	-586.88	6,057.96	6,175.09	6,054.11	120.98	51.043	
5,200.00	5,071.78	5,254.39	5,253.85	15.53	104.46	-99.67	-587.14	6,057.96	6,179.25	6,059.26	119.99	51.499	
5,300.00	5,168.75	5,352.90	5,352.33	15.83	106.63	-99.87	-588.59	6,057.96	6,183.41	6,060.95	122.45	50.497	
5,400.00	5,265.71	5,441.86	5,441.23	16.13	108.26	-100.09	-586.88	6,057.96	6,187.90	6,063.51	124.39	49.746	
5,500.00	5,362.68	5,538.83	5,538.20	16.43	110.25	-100.30	-586.88	6,057.96	6,192.36	6,065.68	126.67	48.884	
5,600.00	5,459.65	5,635.80	5,635.16	16.73	112.23	-100.52	-586.88	6,057.96	6,196.91	6,067.95	128.96	48.054	
5,700.00	5,556.62	5,732.76	5,732.13	17.03	114.21	-100.73	-586.88	6,057.96	6,201.55	6,070.31	131.24	47.254	
5,800.00	5,653.59	5,829.73	5,829.10	17.33	116.20	-100.95	-586.88	6,057.96	6,206.28	6,072.76	133.52	46.481	
5,900.00	5,750.55	5,926.70	5,926.07	17.63	118.18	-101.16	-586.88	6,057.96	6,211.11	6,075.31	135.81	45.735	
6,000.00	5,847.52	6,023.67	6,023.04	17.93	120.16	-101.38	-586.88	6,057.96	6,216.03	6,077.94	138.09	45.015	
6,100.00	5,944.49	6,120.64	6,120.00	18.23	122.15	-101.59	-586.88	6,057.96	6,221.04	6,080.67	140.37	44.318	
6,200.00	6,041.46	6,217.61	6,216.97	18.53	124.13	-101.81	-586.88	6,057.96	6,226.15	6,083.49	142.65	43.645	
6,300.00	6,138.43	6,314.57	6,313.94	18.83	126.11	-102.02	-586.88	6,057.96	6,231.34	6,086.41	144.94	42.993	
6,400.00	6,235.39	6,411.54	6,410.91	19.13	128.09	-102.23	-586.88	6,057.96	6,236.63	6,089.41	147.22	42.362	
6,500.00	6,332.36	6,508.51	6,507.88	19.43	130.08	-102.45	-586.88	6,057.96	6,242.01	6,092.51	149.50	41.751 SF	
6,600.00	6,429.33	6,476.00	6,475.22	19.73	129.41	-102.38	-586.88	6,057.96	6,248.82	6,099.71	149.11	41.907	
6,700.00	6,526.30	6,476.00	6,475.22	20.03	129.41	-102.38	-586.88	6,057.96	6,257.14	6,107.79	149.36	41.894	
6,715.28	6,541.12	6,476.00	6,475.22	20.08	129.41	-102.38	-586.88	6,057.96	6,258.56	6,109.16	149.39	41.894	
6,750.00	6,574.74	6,476.00	6,475.22	20.18	129.41	-115.60	-586.88	6,057.96	6,262.94	6,113.47	149.47	41.902	
6,800.00	6,622.83	6,476.00	6,475.22	20.33	129.41	-131.47	-586.88	6,057.96	6,273.18	6,123.61	149.57	41.941	
6,850.00	6,670.20	6,476.00	6,475.22	20.49	129.41	-143.05	-586.88	6,057.96	6,287.99	6,138.32	149.67	42.012	
6,900.00	6,716.50	6,476.00	6,475.22	20.64	129.41	-151.30	-586.88	6,057.96	6,307.21	6,157.45	149.77	42.114	
6,950.00	6,761.36	6,476.00	6,475.22	20.79	129.41	-157.32	-586.88	6,057.96	6,330.66	6,180.80	149.86	42.245	
7,000.00	6,804.45	6,476.00	6,475.22	20.94	129.41	-161.91	-586.88	6,057.96	6,358.12	6,208.17	149.95	42.403	
7,050.00	6,845.44	6,476.00	6,475.22	21.09	129.41	-165.59	-586.88	6,057.96	6,389.31	6,239.28	150.03	42.586	
7,100.00	6,884.01	6,476.00	6,475.22	21.24	129.41	-168.74	-586.88	6,057.96	6,423.97	6,273.85	150.12	42.791	
7,150.00	6,919.88	6,476.00	6,475.22	21.39	129.41	-171.62	-586.88	6,057.96	6,461.76	6,311.55	150.21	43.017	
7,200.00	6,952.78	6,476.00	6,475.22	21.54	129.41	-174.48	-586.88	6,057.96	6,502.35	6,352.04	150.31	43.259	
7,250.00	6,982.44	6,476.00	6,475.22	21.69	129.41	-177.59	-586.88	6,057.96	6,545.38	6,394.97	150.41	43.517	
7,300.00	7,008.65	6,476.00	6,475.22	21.84	129.41	178.62	-586.88	6,057.96	6,590.48	6,439.96	150.52	43.785	
7,350.00	7,031.20	6,476.00	6,475.22	21.99	129.41	173.41	-586.88	6,057.96	6,637.27	6,486.63	150.63	44.063	
7,400.00	7,049.92	6,476.00	6,475.22	22.14	129.41	165.18	-586.88	6,057.96	6,685.35	6,534.60	150.76	44.346	
7,450.00	7,064.68	6,476.00	6,475.22	22.29	129.41	149.87	-586.88	6,057.96	6,734.35	6,583.46	150.89	44.632	
7,500.00	7,075.36	6,476.00	6,475.22	22.44	129.41	118.93	-586.88	6,057.96	6,783.86	6,632.84	151.03	44.919	
7,550.00	7,081.87	6,476.00	6,475.22	22.59	129.41	77.75	-586.88	6,057.96	6,833.51	6,682.34	151.17	45.203	
7,604.16	7,084.18	6,476.00	6,475.22	22.75	129.41	51.27	-586.88	6,057.96	6,887.01	6,735.67	151.34	45.505	
7,700.00	7,083.86	6,476.00	6,475.22	23.04	129.41	51.27	-586.88	6,057.96	6,981.18	6,829.52	151.66	46.033	
7,800.00	7,083.53	6,476.00	6,475.22	23.34	129.41	51.27	-586.88	6,057.96	7,079.48	6,927.50	151.98	46.582	
7,900.00	7,083.20	6,476.00	6,475.22	23.64	129.41	51.27	-586.88	6,057.96	7,177.83	7,025.53	152.30	47.129	
8,000.00	7,082.87	6,476.00	6,475.22	23.94	129.41	51.27	-586.88	6,057.96	7,276.23	7,123.61	152.62	47.675	
8,100.00	7,082.54	6,476.00	6,475.22	24.24	129.41	51.27	-586.88	6,057.96	7,374.67	7,221.72	152.94	48.218	
8,200.00	7,082.22	6,476.00	6,475.22	24.54	129.41	51.27	-586.88	6,057.96	7,473.15	7,319.88	153.26	48.760	
8,300.00	7,081.89	6,476.00	6,475.22	24.84	129.41	51.27	-586.88	6,057.96	7,571.67	7,418.09	153.58	49.300	
8,400.00	7,081.56	6,476.00	6,475.22	25.14	129.41	51.27	-586.88	6,057.96	7,670.23	7,516.33	153.90	49.839	
8,500.00	7,081.23	6,476.00	6,475.22	25.45	129.41	51.27	-586.88	6,057.96	7,768.82	7,614.60	154.22	50.375	
8,600.00	7,080.90	6,476.00	6,475.22	25.75	129.41	51.27	-586.88	6,057.96	7,867.45	7,712.92	154.54	50.910	
8,700.00	7,080.57	6,476.00	6,475.22	26.05	129.41	51.27	-586.88	6,057.96	7,966.12	7,811.26	154.85	51.444	
8,800.00	7,080.24	6,476.00	6,475.22	26.35	129.41	51.27	-586.88	6,057.96	8,064.81	7,909.65	155.17	51.975	
8,900.00	7,079.91	6,476.00	6,475.22	26.65	129.41	51.27	-586.88	6,057.96	8,163.54	8,008.06	155.48	52.504	
9,000.00	7,079.59	6,476.00	6,475.22	26.95	129.41	51.27	-586.88	6,057.96	8,262.30	8,106.51	155.80	53.032	
9,100.00	7,079.26	6,476.00	6,475.22	27.25	129.41	51.27	-586.88	6,057.96	8,361.09	8,204.98	156.11	53.558	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
9,200.00	7,078.93	6,476.00	6,475.22	27.55	129.41	51.27	-586.88	6,057.96	8,459.91	8,303.48	156.43	54.083	
9,300.00	7,078.60	6,476.00	6,475.22	27.85	129.41	51.27	-586.88	6,057.96	8,558.75	8,402.02	156.74	54.605	
9,400.00	7,078.27	6,476.00	6,475.22	28.15	129.41	51.27	-586.88	6,057.96	8,657.63	8,500.58	157.05	55.126	
9,500.00	7,077.94	6,476.00	6,475.22	28.45	129.41	51.27	-586.88	6,057.96	8,756.52	8,599.16	157.36	55.645	
9,600.00	7,077.61	6,476.00	6,475.22	28.75	129.41	51.27	-586.88	6,057.96	8,855.45	8,697.77	157.68	56.162	
9,700.00	7,077.28	6,476.00	6,475.22	29.05	129.41	51.27	-586.88	6,057.96	8,954.39	8,796.40	157.99	56.678	
9,800.00	7,076.95	6,476.00	6,475.22	29.35	129.41	51.27	-586.88	6,057.96	9,053.36	8,895.06	158.30	57.192	
9,900.00	7,076.63	6,476.00	6,475.22	29.65	129.41	51.27	-586.88	6,057.96	9,152.35	8,993.74	158.61	57.704	
10,000.00	7,076.30	6,476.00	6,475.22	29.95	129.41	51.27	-586.88	6,057.96	9,251.37	9,092.45	158.92	58.214	
10,100.00	7,075.97	6,476.00	6,475.22	30.25	129.41	51.27	-586.88	6,057.96	9,350.40	9,191.17	159.23	58.723	
10,200.00	7,075.64	6,476.00	6,475.22	30.55	129.41	51.27	-586.88	6,057.96	9,449.46	9,289.92	159.54	59.229	
10,300.00	7,075.31	6,476.00	6,475.22	30.85	129.41	51.27	-586.88	6,057.96	9,548.53	9,388.68	159.85	59.735	
10,400.00	7,074.98	6,476.00	6,475.22	31.15	129.41	51.27	-586.88	6,057.96	9,647.62	9,487.46	160.16	60.238	
10,500.00	7,074.65	6,476.00	6,475.22	31.46	129.41	51.27	-586.88	6,057.96	9,746.73	9,586.27	160.47	60.740	
10,600.00	7,074.32	6,476.00	6,475.22	31.76	129.41	51.27	-586.88	6,057.96	9,845.86	9,685.09	160.78	61.240	
10,700.00	7,074.00	6,476.00	6,475.22	32.06	129.41	51.27	-586.88	6,057.96	9,945.01	9,783.93	161.08	61.738	
10,800.00	7,073.67	6,476.00	6,475.22	32.36	129.41	51.27	-586.88	6,057.96	10,044.18	9,882.78	161.39	62.234	
10,900.00	7,073.34	6,476.00	6,475.22	32.66	129.41	51.27	-586.88	6,057.96	10,143.36	9,981.66	161.70	62.729	
11,000.00	7,073.01	6,476.00	6,475.22	32.96	129.41	51.27	-586.88	6,057.96	10,242.55	10,080.55	162.01	63.222	
11,100.00	7,072.68	6,476.00	6,475.22	33.26	129.41	51.27	-586.88	6,057.96	10,341.77	10,179.45	162.32	63.714	
11,200.00	7,072.35	6,476.00	6,475.22	33.56	129.41	51.27	-586.88	6,057.96	10,440.99	10,278.37	162.62	64.203	
11,300.00	7,072.02	6,476.00	6,475.22	33.86	129.41	51.27	-586.88	6,057.96	10,540.23	10,377.30	162.93	64.692	
11,400.00	7,071.69	6,476.00	6,475.22	34.16	129.41	51.27	-586.88	6,057.96	10,639.49	10,476.25	163.24	65.178	
11,500.00	7,071.36	6,476.00	6,475.22	34.46	129.41	51.27	-586.88	6,057.96	10,738.76	10,575.22	163.54	65.663	
11,600.00	7,071.04	6,476.00	6,475.22	34.76	129.41	51.27	-586.88	6,057.96	10,838.04	10,674.19	163.85	66.146	
11,700.00	7,070.71	6,476.00	6,475.22	35.06	129.41	51.27	-586.88	6,057.96	10,937.34	10,773.18	164.16	66.627	
11,800.00	7,070.38	6,476.00	6,475.22	35.36	129.41	51.27	-586.88	6,057.96	11,036.65	10,872.19	164.46	67.107	
11,900.00	7,070.05	6,476.00	6,475.22	35.66	129.41	51.27	-586.88	6,057.96	11,135.97	10,971.20	164.77	67.585	
12,000.00	7,069.72	6,476.00	6,475.22	35.96	129.41	51.27	-586.88	6,057.96	11,235.30	11,070.23	165.08	68.062	
12,100.00	7,069.39	6,476.00	6,475.22	36.26	129.41	51.27	-586.88	6,057.96	11,334.65	11,169.27	165.38	68.537	
12,200.00	7,069.06	6,476.00	6,475.22	36.56	129.41	51.27	-586.88	6,057.96	11,434.00	11,268.32	165.69	69.010	
12,300.00	7,068.73	6,476.00	6,475.22	36.86	129.41	51.27	-586.88	6,057.96	11,533.37	11,367.38	165.99	69.481	
12,400.00	7,068.41	6,476.00	6,475.22	37.16	129.41	51.27	-586.88	6,057.96	11,632.75	11,466.45	166.30	69.952	
12,500.00	7,068.08	6,476.00	6,475.22	37.46	129.41	51.27	-586.88	6,057.96	11,732.14	11,565.54	166.60	70.420	
12,600.00	7,067.75	6,476.00	6,475.22	37.76	129.41	51.27	-586.88	6,057.96	11,831.54	11,664.63	166.91	70.887	
12,700.00	7,067.42	6,476.00	6,475.22	38.06	129.41	51.27	-586.88	6,057.96	11,930.95	11,763.74	167.21	71.352	
12,800.00	7,067.09	6,476.00	6,475.22	38.36	129.41	51.27	-586.88	6,057.96	12,030.37	11,862.85	167.52	71.816	
12,900.00	7,066.76	6,476.00	6,475.22	38.66	129.41	51.27	-586.88	6,057.96	12,129.80	11,961.97	167.82	72.278	
13,000.00	7,066.43	6,476.00	6,475.22	38.96	129.41	51.27	-586.88	6,057.96	12,229.23	12,061.11	168.13	72.738	
13,100.00	7,066.10	6,476.00	6,475.22	39.26	129.41	51.27	-586.88	6,057.96	12,328.68	12,160.25	168.43	73.197	
13,200.00	7,065.77	6,476.00	6,475.22	39.56	129.41	51.27	-586.88	6,057.96	12,428.14	12,259.40	168.74	73.655	
13,300.00	7,065.45	6,476.00	6,475.22	39.86	129.41	51.27	-586.88	6,057.96	12,527.60	12,358.56	169.04	74.110	
13,400.00	7,065.12	6,476.00	6,475.22	40.16	129.41	51.27	-586.88	6,057.96	12,627.07	12,457.73	169.34	74.565	
13,500.00	7,064.79	6,476.00	6,475.22	40.47	129.41	51.27	-586.88	6,057.96	12,726.56	12,556.91	169.65	75.018	
13,600.00	7,064.46	6,476.00	6,475.22	40.77	129.41	51.27	-586.88	6,057.96	12,826.05	12,656.09	169.95	75.469	
13,700.00	7,064.13	6,476.00	6,475.22	41.07	129.41	51.27	-586.88	6,057.96	12,925.54	12,755.29	170.26	75.918	
13,800.00	7,063.80	6,476.00	6,475.22	41.37	129.41	51.27	-586.88	6,057.96	13,025.05	12,854.49	170.56	76.367	
13,900.00	7,063.47	6,476.00	6,475.22	41.67	129.41	51.27	-586.88	6,057.96	13,124.56	12,953.70	170.86	76.813	
14,000.00	7,063.14	6,476.00	6,475.22	41.97	129.41	51.27	-586.88	6,057.96	13,224.08	13,052.91	171.17	77.258	
14,100.00	7,062.82	6,476.00	6,475.22	42.27	129.41	51.27	-586.88	6,057.96	13,323.61	13,152.14	171.47	77.702	
14,200.00	7,062.49	6,476.00	6,475.22	42.57	129.41	51.27	-586.88	6,057.96	13,423.14	13,251.37	171.77	78.144	
14,300.00	7,062.16	6,476.00	6,475.22	42.87	129.41	51.27	-586.88	6,057.96	13,522.68	13,350.61	172.08	78.585	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 280-A027Ua_INC-ONLY

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,400.00	7,061.83	6,476.00	6,475.22	43.17	129.41	51.27	-586.88	6,057.96	13,622.23	13,449.85	172.38	79.024	
14,500.00	7,061.50	6,476.00	6,475.22	43.47	129.41	51.27	-586.88	6,057.96	13,721.78	13,549.10	172.68	79.462	
14,600.00	7,061.17	6,476.00	6,475.22	43.77	129.41	51.27	-586.88	6,057.96	13,821.34	13,648.36	172.99	79.898	
14,700.00	7,060.84	6,476.00	6,475.22	44.07	129.41	51.27	-586.88	6,057.96	13,920.91	13,747.62	173.29	80.333	
14,800.00	7,060.51	6,476.00	6,475.22	44.37	129.41	51.27	-586.88	6,057.96	14,020.49	13,846.89	173.59	80.766	
14,900.00	7,060.18	6,476.00	6,475.22	44.67	129.41	51.27	-586.88	6,057.96	14,120.06	13,946.17	173.90	81.198	
15,000.00	7,059.86	6,476.00	6,475.22	44.97	129.41	51.27	-586.88	6,057.96	14,219.65	14,045.45	174.20	81.629	
15,100.00	7,059.53	6,476.00	6,475.22	45.27	129.41	51.27	-586.88	6,057.96	14,319.24	14,144.74	174.50	82.058	
15,200.00	7,059.20	6,476.00	6,475.22	45.57	129.41	51.27	-586.88	6,057.96	14,418.84	14,244.03	174.80	82.485	
15,300.00	7,058.87	6,476.00	6,475.22	45.87	129.41	51.27	-586.88	6,057.96	14,518.44	14,343.33	175.11	82.912	
15,400.00	7,058.54	6,476.00	6,475.22	46.17	129.41	51.27	-586.88	6,057.96	14,618.05	14,442.64	175.41	83.336	
15,500.00	7,058.21	6,476.00	6,475.22	46.47	129.41	51.27	-586.88	6,057.96	14,717.66	14,541.95	175.71	83.760	
15,600.00	7,057.88	6,476.00	6,475.22	46.77	129.41	51.27	-586.88	6,057.96	14,817.28	14,641.26	176.02	84.182	
15,700.00	7,057.55	6,476.00	6,475.22	47.07	129.41	51.27	-586.88	6,057.96	14,916.90	14,740.58	176.32	84.602	
15,800.00	7,057.23	6,476.00	6,475.22	47.37	129.41	51.27	-586.88	6,057.96	15,016.53	14,839.91	176.62	85.022	
15,900.00	7,056.90	6,476.00	6,475.22	47.67	129.41	51.27	-586.88	6,057.96	15,116.16	14,939.24	176.92	85.439	
16,000.00	7,056.57	6,476.00	6,475.22	47.97	129.41	51.27	-586.88	6,057.96	15,215.80	15,038.57	177.23	85.856	
16,100.00	7,056.24	6,476.00	6,475.22	48.27	129.41	51.27	-586.88	6,057.96	15,315.44	15,137.91	177.53	86.271	
16,200.00	7,055.91	6,476.00	6,475.22	48.57	129.41	51.27	-586.88	6,057.96	15,415.09	15,237.26	177.83	86.685	
16,300.00	7,055.58	6,476.00	6,475.22	48.87	129.41	51.27	-586.88	6,057.96	15,514.74	15,336.61	178.13	87.097	
16,400.00	7,055.25	6,476.00	6,475.22	49.17	129.41	51.27	-586.88	6,057.96	15,614.40	15,435.96	178.43	87.508	
16,500.00	7,054.92	6,476.00	6,475.22	49.47	129.41	51.27	-586.88	6,057.96	15,714.06	15,535.32	178.74	87.918	
16,600.00	7,054.59	6,476.00	6,475.22	49.77	129.41	51.27	-586.88	6,057.96	15,813.72	15,634.68	179.04	88.326	
16,619.57	7,054.53	6,476.00	6,475.22	49.83	129.41	51.27	-586.88	6,057.96	15,833.23	15,654.13	179.10	88.406	
16,700.00	7,054.27	6,476.00	6,475.22	50.07	129.41	51.27	-586.88	6,057.96	15,913.39	15,734.05	179.34	88.733	
16,782.16	7,054.00	6,476.00	6,475.22	50.32	129.41	51.27	-586.88	6,057.96	15,995.28	15,815.70	179.59	89.066	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	167.21	167.21	0.00	0.14	104.28	-1,722.60	6,769.11	6,984.86				
100.00	100.00	246.28	246.28	0.23	0.25	104.27	-1,722.05	6,769.35	6,984.99	6,984.63	0.36	N/A	
200.00	200.00	349.71	349.70	0.53	0.38	104.27	-1,721.26	6,769.84	6,985.26	6,984.52	0.74	9,477.953	
300.00	300.00	446.13	446.12	0.83	0.51	104.26	-1,720.43	6,770.38	6,985.59	6,984.47	1.11	6,285.814	
400.00	400.00	545.23	545.21	1.13	0.64	104.25	-1,719.66	6,770.96	6,985.96	6,984.47	1.49	4,685.808	
500.00	500.00	640.11	640.09	1.43	0.76	104.24	-1,718.94	6,771.52	6,986.35	6,984.49	1.87	3,738.975	
600.00	599.98	737.49	737.46	1.73	0.89	-81.36	-1,718.16	6,772.18	6,986.55	6,984.30	2.25	3,105.336	
700.00	699.84	825.30	825.27	2.03	1.00	-81.41	-1,717.34	6,772.89	6,986.31	6,983.69	2.62	2,662.098	
800.00	799.45	910.34	910.30	2.33	1.11	-81.49	-1,716.49	6,773.73	6,985.74	6,982.74	3.00	2,328.850	
900.00	898.70	1,004.24	1,004.18	2.63	1.23	-81.61	-1,715.59	6,774.85	6,984.86	6,981.47	3.39	2,061.472	
1,000.00	997.47	1,105.08	1,105.02	2.93	1.36	-81.77	-1,714.72	6,775.99	6,983.47	6,979.69	3.79	1,844.637	
1,100.00	1,095.62	1,205.14	1,205.06	3.23	1.49	-81.97	-1,713.67	6,777.18	6,981.65	6,977.47	4.18	1,669.980	
1,207.25	1,200.09	1,330.06	1,329.96	3.55	1.65	-82.27	-1,711.96	6,778.37	6,978.88	6,974.28	4.61	1,515.452	
1,300.00	1,290.03	1,418.98	1,418.87	3.83	1.77	-82.46	-1,710.65	6,779.19	6,976.31	6,971.35	4.96	1,407.898	
1,400.00	1,386.99	1,493.46	1,493.34	4.13	1.86	-82.62	-1,709.52	6,780.00	6,973.78	6,968.46	5.32	1,311.175	
1,500.00	1,483.96	1,593.20	1,593.07	4.43	1.99	-82.83	-1,708.28	6,781.24	6,971.55	6,965.83	5.71	1,220.531	
1,600.00	1,580.93	1,655.00	1,654.85	4.73	2.07	-82.96	-1,707.40	6,782.13	6,969.57	6,963.50	6.07	1,147.900	
1,700.00	1,677.90	1,750.00	1,749.83	5.03	2.19	-83.16	-1,706.14	6,783.81	6,968.01	6,961.54	6.47	1,077.275	
1,800.00	1,774.87	1,816.71	1,816.52	5.33	2.28	-83.31	-1,705.12	6,785.16	6,966.73	6,959.89	6.84	1,018.892	
1,900.00	1,871.83	1,920.90	1,920.68	5.63	2.41	-83.53	-1,703.76	6,787.26	6,965.58	6,958.33	7.25	961.044	
2,000.00	1,968.80	2,000.00	1,999.75	5.93	2.51	-83.70	-1,702.52	6,789.01	6,964.69	6,957.06	7.63	912.581	
2,100.00	2,065.77	2,065.08	2,064.80	6.23	2.59	-83.84	-1,701.54	6,790.67	6,964.22	6,956.21	8.00	870.036	
2,200.00	2,162.74	2,176.91	2,176.58	6.53	2.73	-84.08	-1,700.30	6,793.62	6,964.01	6,955.58	8.43	825.762	
2,289.91	2,249.92	2,248.68	2,248.33	6.80	2.82	-84.23	-1,699.43	6,795.51	6,963.88	6,955.09	8.79	792.559	CC
2,300.00	2,259.71	2,256.06	2,255.70	6.83	2.83	-84.25	-1,699.33	6,795.71	6,963.88	6,955.05	8.83	789.058	
2,400.00	2,356.67	2,352.45	2,352.05	7.13	2.94	-84.45	-1,698.20	6,798.51	6,964.09	6,954.85	9.24	753.757	
2,500.00	2,453.64	2,425.00	2,424.56	7.43	3.03	-84.61	-1,697.36	6,800.55	6,964.35	6,954.73	9.63	723.474	ES
2,600.00	2,550.61	2,525.00	2,524.51	7.73	3.16	-84.82	-1,696.18	6,803.58	6,964.88	6,954.84	10.05	693.320	
2,700.00	2,647.58	2,604.17	2,603.63	8.03	3.25	-84.99	-1,695.22	6,806.22	6,965.77	6,955.33	10.44	667.063	
2,800.00	2,744.55	2,664.20	2,663.62	8.33	3.33	-85.12	-1,694.41	6,808.40	6,967.03	6,956.21	10.82	644.061	
2,900.00	2,841.51	2,746.36	2,745.70	8.63	3.43	-85.30	-1,693.39	6,811.63	6,968.71	6,957.49	11.22	621.124	
3,000.00	2,938.48	2,816.47	2,815.73	8.93	3.51	-85.45	-1,692.31	6,814.67	6,970.82	6,959.21	11.61	600.560	
3,100.00	3,035.45	2,937.78	2,936.91	9.23	3.66	-85.71	-1,690.59	6,820.03	6,973.14	6,961.08	12.06	578.402	
3,200.00	3,132.42	3,028.14	3,027.18	9.53	3.77	-85.91	-1,689.04	6,823.79	6,975.26	6,962.79	12.47	559.528	
3,300.00	3,229.39	3,104.29	3,103.25	9.83	3.87	-86.08	-1,687.76	6,827.17	6,977.74	6,964.88	12.86	542.529	
3,400.00	3,326.35	3,185.24	3,184.10	10.13	3.97	-86.26	-1,686.21	6,830.86	6,980.42	6,967.16	13.26	526.364	
3,500.00	3,423.32	3,252.77	3,251.53	10.43	4.06	-86.41	-1,684.97	6,834.25	6,983.65	6,970.00	13.65	511.713	
3,600.00	3,520.29	3,339.24	3,337.87	10.73	4.16	-86.60	-1,683.37	6,838.83	6,987.23	6,973.17	14.06	497.083	
3,700.00	3,617.26	3,422.70	3,421.18	11.03	4.27	-86.78	-1,681.75	6,843.39	6,991.07	6,976.61	14.46	483.409	
3,800.00	3,714.23	3,605.07	3,603.29	11.33	4.49	-87.18	-1,678.92	6,852.71	6,994.92	6,979.93	14.99	466.709	
3,900.00	3,811.19	3,700.00	3,698.14	11.63	4.61	-87.38	-1,678.12	6,856.62	6,997.82	6,982.41	15.41	454.054	
4,000.00	3,908.16	3,818.75	3,816.79	11.93	4.75	-87.63	-1,677.15	6,861.21	7,000.53	6,984.67	15.87	441.244	
4,100.00	4,005.13	3,925.28	3,923.25	12.23	4.88	-87.86	-1,676.31	6,865.21	7,003.28	6,986.98	16.30	429.530	
4,200.00	4,102.10	4,200.00	4,140.59	12.53	5.21	-88.30	-1,675.53	6,871.69	7,005.65	6,988.69	16.96	413.083	
4,300.00	4,199.07	4,285.61	4,283.46	12.83	5.28	-88.59	-1,676.13	6,873.71	7,006.43	6,989.05	17.37	403.284	
4,400.00	4,296.03	4,450.00	4,447.84	13.13	5.36	-88.90	-1,677.42	6,874.76	7,006.62	6,988.77	17.84	392.686	
4,500.00	4,393.00	4,581.38	4,579.22	13.43	5.34	-89.17	-1,677.53	6,874.54	7,005.98	6,987.84	18.14	386.136	
4,600.00	4,489.97	4,671.19	4,669.03	13.73	5.33	-89.34	-1,677.84	6,874.28	7,005.42	6,986.96	18.46	379.593	
4,700.00	4,586.94	4,770.44	4,768.27	14.03	5.32	-89.53	-1,678.72	6,874.10	7,005.07	6,986.27	18.80	372.620	
4,800.00	4,683.91	4,862.65	4,860.48	14.33	5.31	-89.71	-1,679.65	6,873.95	7,004.84	6,985.69	19.14	365.885	
4,900.00	4,780.87	4,951.24	4,949.06	14.63	5.31	-89.88	-1,680.58	6,873.85	7,004.74	6,985.25	19.49	359.343	
5,000.00	4,877.84	5,061.51	5,059.33	14.93	5.30	-90.09	-1,681.60	6,873.60	7,004.59	6,984.75	19.84	353.040	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
5,029.28	4,906.23	5,081.86	5,079.68	15.02	5.30	-90.13	-1,681.84	6,873.55	7,004.57	6,984.63	19.94	351.308	
5,100.00	4,974.81	5,147.00	5,144.81	15.23	5.30	-90.26	-1,682.46	6,873.52	7,004.66	6,984.47	20.19	346.964	
5,200.00	5,071.78	5,242.57	5,240.37	15.53	5.31	-90.44	-1,683.51	6,873.37	7,004.75	6,984.22	20.54	341.087	
5,300.00	5,168.75	5,345.75	5,343.55	15.83	5.32	-90.64	-1,684.67	6,873.23	7,004.95	6,984.06	20.89	335.323	
5,400.00	5,265.71	5,400.00	5,442.10	16.13	5.33	-90.82	-1,685.80	6,873.08	7,005.21	6,983.99	21.22	330.119	
5,500.00	5,362.68	5,540.29	5,538.08	16.43	5.35	-91.01	-1,686.97	6,872.91	7,005.54	6,983.95	21.59	324.495	
5,600.00	5,459.65	5,613.38	5,611.16	16.73	5.37	-91.15	-1,687.79	6,872.90	7,006.09	6,984.15	21.93	319.419	
5,700.00	5,556.62	5,714.90	5,712.67	17.03	5.40	-91.34	-1,688.75	6,872.91	7,006.72	6,984.43	22.30	314.257	
5,800.00	5,653.59	5,798.93	5,796.70	17.33	5.44	-91.50	-1,689.50	6,873.08	7,007.62	6,984.96	22.66	309.245	
5,900.00	5,750.55	5,897.73	5,895.49	17.63	5.49	-91.69	-1,691.01	6,873.38	7,008.75	6,985.71	23.04	304.251	
6,000.00	5,847.52	6,024.00	6,021.73	17.93	5.54	-91.92	-1,694.04	6,873.37	7,009.69	6,986.28	23.41	299.429	
6,100.00	5,944.49	6,118.12	6,115.82	18.23	5.58	-92.09	-1,696.11	6,873.22	7,010.54	6,986.78	23.76	295.043	
6,200.00	6,041.46	6,234.05	6,231.73	18.53	5.61	-92.30	-1,698.09	6,872.82	7,011.24	6,987.13	24.11	290.764	
6,300.00	6,138.43	6,328.09	6,325.76	18.83	5.64	-92.48	-1,699.58	6,872.47	7,012.00	6,987.55	24.45	286.750	
6,400.00	6,235.39	6,418.95	6,416.61	19.13	5.68	-92.65	-1,700.87	6,872.19	7,012.89	6,988.10	24.79	282.853	
6,500.00	6,332.36	6,525.00	6,522.65	19.43	5.72	-92.85	-1,702.57	6,871.78	7,013.78	6,988.64	25.14	279.003	
6,600.00	6,429.33	6,615.18	6,612.82	19.73	5.75	-93.02	-1,703.98	6,871.48	7,014.81	6,989.33	25.48	275.315	
6,700.00	6,526.30	6,702.78	6,700.40	20.03	5.79	-93.18	-1,705.27	6,871.24	7,015.96	6,990.14	25.82	271.731	
6,715.28	6,541.12	6,729.41	6,727.03	20.08	5.81	-93.23	-1,705.61	6,871.18	7,016.14	6,990.26	25.88	271.121	
6,750.00	6,574.74	6,750.25	6,747.87	20.18	5.82	-106.44	-1,705.85	6,871.14	7,017.64	6,991.65	25.99	269.991	
6,800.00	6,622.83	6,798.99	6,796.60	20.33	5.84	-122.24	-1,706.48	6,871.09	7,023.54	6,997.37	26.17	268.399	
6,850.00	6,670.20	6,843.32	6,840.93	20.49	5.87	-133.68	-1,706.94	6,871.03	7,033.73	7,007.39	26.34	267.031	
6,900.00	6,716.50	6,885.40	6,883.01	20.64	5.89	-141.69	-1,707.41	6,871.03	7,048.24	7,021.72	26.52	265.820	
6,950.00	6,761.36	6,943.94	6,941.55	20.79	5.93	-147.40	-1,708.13	6,870.98	7,066.83	7,040.14	26.70	264.710	
7,000.00	6,804.45	6,985.58	6,983.18	20.94	5.95	-151.52	-1,708.51	6,870.90	7,089.37	7,062.50	26.87	263.880	
7,050.00	6,845.44	7,028.70	7,026.30	21.09	5.97	-154.60	-1,708.88	6,870.84	7,115.73	7,088.70	27.04	263.194	
7,100.00	6,884.01	7,064.57	7,062.17	21.24	5.99	-156.91	-1,709.19	6,870.77	7,145.70	7,118.50	27.20	262.685	
7,150.00	6,919.88	7,102.69	7,100.29	21.39	6.01	-158.69	-1,709.49	6,870.72	7,179.07	7,151.70	27.37	262.290	
7,200.00	6,952.78	7,138.61	7,136.21	21.54	6.03	-160.05	-1,709.77	6,870.64	7,215.54	7,188.01	27.54	262.038	
7,250.00	6,982.44	7,166.03	7,163.63	21.69	6.05	-161.06	-1,710.00	6,870.59	7,254.87	7,227.17	27.70	261.921	
7,300.00	7,008.65	7,185.66	7,183.25	21.84	6.06	-161.75	-1,710.19	6,870.56	7,296.75	7,268.89	27.86	261.920 SF	
7,350.00	7,031.20	7,200.00	7,197.60	21.99	6.07	-162.14	-1,710.33	6,870.55	7,340.88	7,312.86	28.02	262.018	
7,400.00	7,049.92	7,215.08	7,212.68	22.14	6.08	-162.22	-1,710.47	6,870.56	7,386.91	7,358.73	28.18	262.164	
7,450.00	7,064.68	7,230.91	7,228.50	22.29	6.09	-161.87	-1,710.60	6,870.57	7,434.46	7,406.13	28.34	262.360	
7,500.00	7,075.36	7,255.13	7,252.73	22.44	6.11	-160.80	-1,710.75	6,870.57	7,483.17	7,454.67	28.50	262.552	
7,550.00	7,081.87	7,263.05	7,260.64	22.59	6.11	-156.83	-1,710.81	6,870.56	7,532.66	7,504.00	28.66	262.872	
7,604.16	7,084.18	7,266.58	7,264.17	22.75	6.11	-82.78	-1,710.83	6,870.55	7,586.73	7,557.91	28.82	263.246	
7,700.00	7,083.86	7,266.32	7,263.92	23.04	6.11	-82.65	-1,710.83	6,870.55	7,682.56	7,653.45	29.11	263.932	
7,800.00	7,083.53	7,266.05	7,263.65	23.34	6.11	-82.52	-1,710.83	6,870.55	7,782.55	7,753.14	29.41	264.634	
7,900.00	7,083.20	7,265.77	7,263.37	23.64	6.11	-82.38	-1,710.83	6,870.55	7,882.54	7,852.83	29.71	265.322	
8,000.00	7,082.87	7,265.50	7,263.09	23.94	6.11	-82.24	-1,710.83	6,870.55	7,982.52	7,952.51	30.01	265.996	
8,100.00	7,082.54	7,265.21	7,262.81	24.24	6.11	-82.10	-1,710.82	6,870.55	8,082.51	8,052.20	30.31	266.657	
8,200.00	7,082.22	7,264.93	7,262.52	24.54	6.11	-81.96	-1,710.82	6,870.56	8,182.50	8,151.89	30.61	267.305	
8,300.00	7,081.89	7,264.64	7,262.23	24.84	6.11	-81.82	-1,710.82	6,870.56	8,282.49	8,251.58	30.91	267.941	
8,400.00	7,081.56	7,264.34	7,261.94	25.14	6.11	-81.67	-1,710.82	6,870.56	8,382.48	8,351.27	31.21	268.564	
8,500.00	7,081.23	7,264.04	7,261.64	25.45	6.11	-81.53	-1,710.82	6,870.56	8,482.48	8,450.96	31.51	269.176	
8,600.00	7,080.90	7,263.74	7,261.33	25.75	6.11	-81.38	-1,710.81	6,870.56	8,582.47	8,550.65	31.81	269.777	
8,700.00	7,080.57	7,263.43	7,261.03	26.05	6.11	-81.23	-1,710.81	6,870.56	8,682.46	8,650.34	32.11	270.366	
8,800.00	7,080.24	7,263.12	7,260.72	26.35	6.11	-81.07	-1,710.81	6,870.56	8,782.45	8,750.03	32.41	270.945	
8,900.00	7,079.91	7,262.80	7,260.40	26.65	6.11	-80.92	-1,710.81	6,870.56	8,882.44	8,849.73	32.71	271.513	
9,000.00	7,079.59	7,262.48	7,260.08	26.95	6.11	-80.76	-1,710.81	6,870.56	8,982.43	8,949.42	33.02	272.071	
9,100.00	7,079.26	7,262.16	7,259.75	27.25	6.11	-80.60	-1,710.80	6,870.56	9,082.42	9,049.11	33.32	272.619	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,200.00	7,078.93	7,261.83	7,259.42	27.55	6.11	-80.44	-1,710.80	6,870.56	9,182.42	9,148.80	33.62	273.157	
9,300.00	7,078.60	7,261.49	7,259.09	27.85	6.11	-80.28	-1,710.80	6,870.56	9,282.41	9,248.49	33.92	273.686	
9,400.00	7,078.27	7,261.15	7,258.75	28.15	6.11	-80.11	-1,710.80	6,870.56	9,382.40	9,348.18	34.22	274.206	
9,500.00	7,077.94	7,260.81	7,258.40	28.45	6.11	-79.94	-1,710.79	6,870.56	9,482.39	9,447.88	34.52	274.717	
9,600.00	7,077.61	7,260.46	7,258.05	28.75	6.11	-79.77	-1,710.79	6,870.56	9,582.39	9,547.57	34.82	275.219	
9,700.00	7,077.28	7,260.10	7,257.70	29.05	6.11	-79.60	-1,710.79	6,870.56	9,682.38	9,647.26	35.12	275.712	
9,800.00	7,076.95	7,259.74	7,257.34	29.35	6.11	-79.42	-1,710.79	6,870.56	9,782.37	9,746.95	35.42	276.198	
9,900.00	7,076.63	7,259.38	7,256.97	29.65	6.11	-79.24	-1,710.78	6,870.56	9,882.36	9,846.65	35.72	276.675	
10,000.00	7,076.30	7,259.00	7,256.60	29.95	6.11	-79.06	-1,710.78	6,870.56	9,982.36	9,946.34	36.02	277.145	
10,100.00	7,075.97	7,258.62	7,256.22	30.25	6.11	-78.88	-1,710.78	6,870.56	10,082.35	10,046.03	36.32	277.606	
10,200.00	7,075.64	7,258.24	7,255.84	30.55	6.11	-78.69	-1,710.78	6,870.56	10,182.34	10,145.72	36.62	278.061	
10,300.00	7,075.31	7,257.85	7,255.45	30.85	6.11	-78.51	-1,710.77	6,870.56	10,282.34	10,245.42	36.92	278.508	
10,400.00	7,074.98	10,400.00	7,242.02	31.15	9.46	-72.19	-1,710.69	6,870.57	10,382.33	10,343.24	39.09	265.579	
10,500.00	7,074.65	10,500.00	7,241.68	31.46	9.59	-72.03	-1,710.68	6,870.57	10,482.32	10,442.87	39.45	265.689	
10,600.00	7,074.32	10,600.00	7,241.33	31.76	9.71	-71.87	-1,710.68	6,870.57	10,582.32	10,542.50	39.81	265.797	
10,700.00	7,074.00	10,700.00	7,240.99	32.06	9.84	-71.72	-1,710.68	6,870.57	10,682.31	10,642.14	40.17	265.903	
10,800.00	7,073.67	10,800.00	7,240.64	32.36	9.97	-71.56	-1,710.68	6,870.57	10,782.31	10,741.77	40.53	266.007	
10,900.00	7,073.34	10,900.00	7,240.30	32.66	10.09	-71.40	-1,710.67	6,870.57	10,882.30	10,841.41	40.89	266.109	
11,000.00	7,073.01	11,000.00	7,239.95	32.96	10.22	-71.25	-1,710.67	6,870.57	10,982.29	10,941.04	41.25	266.210	
11,100.00	7,072.68	11,100.00	7,239.61	33.26	10.35	-71.09	-1,710.67	6,870.57	11,082.29	11,040.67	41.61	266.308	
11,200.00	7,072.35	11,200.00	7,239.26	33.56	10.48	-70.94	-1,710.67	6,870.57	11,182.28	11,140.31	41.97	266.406	
11,300.00	7,072.02	11,300.00	7,238.92	33.86	10.60	-70.78	-1,710.66	6,870.57	11,282.28	11,239.94	42.33	266.501	
11,400.00	7,071.69	11,400.00	7,238.57	34.16	10.73	-70.63	-1,710.66	6,870.57	11,382.27	11,339.57	42.69	266.595	
11,500.00	7,071.36	11,500.00	7,238.23	34.46	10.86	-70.47	-1,710.66	6,870.57	11,482.26	11,439.21	43.06	266.688	
11,600.00	7,071.04	11,600.00	7,237.88	34.76	10.99	-70.32	-1,710.66	6,870.57	11,582.26	11,538.84	43.42	266.779	
11,700.00	7,070.71	11,700.00	7,237.54	35.06	11.12	-70.16	-1,710.65	6,870.57	11,682.25	11,638.48	43.78	266.868	
11,800.00	7,070.38	7,254.57	7,252.17	35.36	6.11	-76.93	-1,710.75	6,870.57	11,782.25	11,740.83	41.42	284.429	
11,900.00	7,070.05	7,252.67	7,250.27	35.66	6.11	-76.03	-1,710.74	6,870.57	11,882.25	11,840.52	41.72	284.786	
12,000.00	7,069.72	7,250.52	7,248.11	35.96	6.10	-75.01	-1,710.73	6,870.57	11,982.24	11,940.22	42.02	285.139	
12,100.00	7,069.39	7,248.05	7,245.64	36.26	6.10	-73.86	-1,710.71	6,870.57	12,082.24	12,039.92	42.32	285.489	
12,200.00	7,069.06	7,245.18	7,242.78	36.56	6.10	-72.53	-1,710.69	6,870.58	12,182.23	12,139.61	42.62	285.835	
12,300.00	7,068.73	7,241.82	7,239.42	36.86	6.10	-71.01	-1,710.67	6,870.58	12,282.23	12,239.31	42.92	286.178	
12,400.00	7,068.41	7,237.84	7,235.43	37.16	6.10	-69.23	-1,710.65	6,870.58	12,382.22	12,339.01	43.22	286.519	
12,500.00	7,068.08	7,233.02	7,230.62	37.46	6.09	-67.14	-1,710.61	6,870.57	12,482.22	12,438.71	43.51	286.858	
12,600.00	7,067.75	7,227.09	7,224.69	37.76	6.09	-64.64	-1,710.57	6,870.57	12,582.21	12,538.40	43.81	287.198	
12,700.00	7,067.42	7,225.00	7,222.60	38.06	6.09	-63.79	-1,710.55	6,870.57	12,682.21	12,638.10	44.11	287.517	
12,800.00	7,067.09	7,225.00	7,222.60	38.36	6.09	-63.79	-1,710.55	6,870.57	12,782.20	12,737.79	44.41	287.825	
12,900.00	7,066.76	7,225.00	7,222.60	38.66	6.09	-63.79	-1,710.55	6,870.57	12,882.20	12,837.49	44.71	288.128	
13,000.00	7,066.43	7,225.00	7,222.60	38.96	6.09	-63.79	-1,710.55	6,870.57	12,982.19	12,937.18	45.01	288.428	
13,100.00	7,066.10	7,225.00	7,222.60	39.26	6.09	-63.79	-1,710.55	6,870.57	13,082.19	13,036.88	45.31	288.723	
13,200.00	7,065.77	7,225.00	7,222.60	39.56	6.09	-63.79	-1,710.55	6,870.57	13,182.18	13,136.57	45.61	289.015	
13,300.00	7,065.45	7,222.92	7,220.52	39.86	6.09	-62.95	-1,710.54	6,870.57	13,282.18	13,236.27	45.91	289.311	
13,400.00	7,065.12	7,222.61	7,220.21	40.16	6.08	-62.82	-1,710.53	6,870.57	13,382.18	13,335.97	46.21	289.596	
13,500.00	7,064.79	7,222.31	7,219.91	40.47	6.08	-62.70	-1,710.53	6,870.57	13,482.17	13,435.66	46.51	289.878	
13,600.00	7,064.46	7,222.01	7,219.60	40.77	6.08	-62.58	-1,710.53	6,870.57	13,582.17	13,535.36	46.81	290.156	
13,700.00	7,064.13	7,221.71	7,219.30	41.07	6.08	-62.46	-1,710.53	6,870.57	13,682.16	13,635.05	47.11	290.430	
13,800.00	7,063.80	7,221.41	7,219.00	41.37	6.08	-62.34	-1,710.52	6,870.57	13,782.16	13,734.75	47.41	290.701	
13,900.00	7,063.47	7,221.11	7,218.70	41.67	6.08	-62.22	-1,710.52	6,870.56	13,882.15	13,834.44	47.71	290.969	
14,000.00	7,063.14	7,220.81	7,218.41	41.97	6.08	-62.11	-1,710.52	6,870.56	13,982.15	13,934.14	48.01	291.233	
14,100.00	7,062.82	7,220.51	7,218.11	42.27	6.08	-61.99	-1,710.52	6,870.56	14,082.14	14,033.83	48.31	291.494	
14,200.00	7,062.49	7,220.22	7,217.82	42.57	6.08	-61.87	-1,710.52	6,870.56	14,182.14	14,133.53	48.61	291.752	
14,300.00	7,062.16	7,219.93	7,217.52	42.87	6.08	-61.76	-1,710.51	6,870.56	14,282.14	14,233.23	48.91	292.007	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
14,400.00	7,061.83	7,219.63	7,217.23	43.17	6.08	-61.64	-1,710.51	6,870.56	14,382.13	14,332.92	49.21	292.258	
14,500.00	7,061.50	7,219.34	7,216.94	43.47	6.08	-61.53	-1,710.51	6,870.56	14,482.13	14,432.62	49.51	292.507	
14,600.00	7,061.17	7,219.05	7,216.65	43.77	6.08	-61.42	-1,710.51	6,870.56	14,582.12	14,532.31	49.81	292.753	
14,700.00	7,060.84	7,218.76	7,216.36	44.07	6.08	-61.30	-1,710.50	6,870.56	14,682.12	14,632.01	50.11	292.995	
14,800.00	7,060.51	7,218.48	7,216.07	44.37	6.08	-61.19	-1,710.50	6,870.56	14,782.12	14,731.71	50.41	293.235	
14,900.00	7,060.18	7,218.19	7,215.79	44.67	6.08	-61.08	-1,710.50	6,870.56	14,882.11	14,831.40	50.71	293.472	
15,000.00	7,059.86	7,217.91	7,215.50	44.97	6.08	-60.97	-1,710.50	6,870.56	14,982.11	14,931.10	51.01	293.706	
15,100.00	7,059.53	7,217.62	7,215.22	45.27	6.08	-60.86	-1,710.49	6,870.56	15,082.11	15,030.79	51.31	293.938	
15,200.00	7,059.20	7,217.34	7,214.94	45.57	6.08	-60.75	-1,710.49	6,870.56	15,182.10	15,130.49	51.61	294.166	
15,300.00	7,058.87	7,217.06	7,214.66	45.87	6.08	-60.64	-1,710.49	6,870.56	15,282.10	15,230.19	51.91	294.393	
15,400.00	7,058.54	7,216.78	7,214.38	46.17	6.08	-60.54	-1,710.49	6,870.56	15,382.09	15,329.88	52.21	294.616	
15,500.00	7,058.21	7,216.50	7,214.10	46.47	6.08	-60.43	-1,710.48	6,870.56	15,482.09	15,429.58	52.51	294.837	
15,600.00	7,057.88	7,216.22	7,213.82	46.77	6.08	-60.32	-1,710.48	6,870.56	15,582.09	15,529.28	52.81	295.056	
15,700.00	7,057.55	7,215.95	7,213.54	47.07	6.08	-60.22	-1,710.48	6,870.56	15,682.08	15,628.97	53.11	295.272	
15,800.00	7,057.23	7,215.67	7,213.27	47.37	6.08	-60.11	-1,710.48	6,870.56	15,782.08	15,728.67	53.41	295.485	
15,900.00	7,056.90	7,215.40	7,213.00	47.67	6.08	-60.01	-1,710.48	6,870.56	15,882.08	15,828.37	53.71	295.697	
16,000.00	7,056.57	7,215.13	7,212.72	47.97	6.08	-59.91	-1,710.47	6,870.56	15,982.07	15,928.06	54.01	295.906	
16,100.00	7,056.24	7,214.85	7,212.45	48.27	6.08	-59.80	-1,710.47	6,870.56	16,082.07	16,027.76	54.31	296.112	
16,200.00	7,055.91	7,214.58	7,212.18	48.57	6.08	-59.70	-1,710.47	6,870.56	16,182.07	16,127.46	54.61	296.317	
16,300.00	7,055.58	7,214.31	7,211.91	48.87	6.08	-59.60	-1,710.47	6,870.56	16,282.06	16,227.15	54.91	296.519	
16,400.00	7,055.25	7,214.05	7,211.64	49.17	6.08	-59.50	-1,710.46	6,870.56	16,382.06	16,326.85	55.21	296.719	
16,500.00	7,054.92	7,213.78	7,211.38	49.47	6.08	-59.40	-1,710.46	6,870.56	16,482.06	16,426.55	55.51	296.916	
16,600.00	7,054.59	7,213.51	7,211.11	49.77	6.08	-59.30	-1,710.46	6,870.56	16,582.05	16,526.24	55.81	297.112	
16,619.57	7,054.53	7,213.46	7,211.06	49.83	6.08	-59.28	-1,710.46	6,870.56	16,601.63	16,545.76	55.87	297.150	
16,700.00	7,054.27	7,213.25	7,210.84	50.07	6.08	-59.20	-1,710.46	6,870.56	16,682.05	16,625.94	56.11	297.306	
16,782.16	7,054.00	7,213.03	7,210.63	50.32	6.08	-59.12	-1,710.45	6,870.56	16,764.21	16,707.85	56.36	297.463	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-98.18	-1,341.48	-9,337.29	9,433.16				
100.00	100.00	84.51	84.51	0.23	0.75	-98.18	-1,341.48	-9,337.29	9,433.16	9,432.19	0.98	9,672.210	
200.00	200.00	275.49	184.51	0.53	2.86	-98.18	-1,341.48	-9,337.29	9,433.16	9,429.78	3.38	2,787.482	
300.00	300.00	284.51	284.51	0.83	3.02	-98.18	-1,341.48	-9,337.29	9,433.16	9,429.31	3.85	2,452.150	
400.00	400.00	384.51	384.51	1.13	4.82	-98.18	-1,341.48	-9,337.29	9,433.16	9,427.21	5.95	1,585.405	
500.00	500.00	484.51	484.51	1.43	6.63	-98.18	-1,341.48	-9,337.29	9,433.16	9,425.11	8.05	1,171.369	
600.00	599.98	583.91	583.91	1.73	8.42	76.26	-1,341.17	-9,337.29	9,432.70	9,422.56	10.15	929.750	
700.00	699.84	682.80	682.80	2.03	10.20	76.32	-1,341.25	-9,337.29	9,431.47	9,419.24	12.23	771.275	
800.00	799.45	781.46	781.46	2.33	11.98	76.41	-1,341.40	-9,337.29	9,429.43	9,415.12	14.31	659.062	
900.00	898.70	883.23	883.21	2.63	13.84	76.53	-1,341.48	-9,337.29	9,426.57	9,410.10	16.47	572.435	
1,000.00	997.47	981.99	981.98	2.93	15.66	76.70	-1,341.48	-9,337.29	9,422.90	9,404.32	18.59	506.930	
1,100.00	1,095.62	1,078.45	1,078.44	3.23	17.44	76.89	-1,341.09	-9,337.29	9,418.42	9,397.75	20.67	455.735	
1,207.25	1,200.09	1,180.13	1,180.11	3.55	19.31	77.14	-1,341.34	-9,337.29	9,412.86	9,390.00	22.86	411.714	
1,300.00	1,290.03	1,274.57	1,274.54	3.83	21.08	77.27	-1,341.48	-9,337.29	9,407.71	9,382.80	24.91	377.662	
1,400.00	1,386.99	1,371.54	1,371.51	4.13	22.92	77.42	-1,341.48	-9,337.29	9,402.20	9,375.16	27.05	347.644	
1,500.00	1,483.96	1,468.39	1,468.36	4.43	24.75	77.56	-1,340.94	-9,337.29	9,396.68	9,367.50	29.18	322.043	
1,600.00	1,580.93	1,563.41	1,563.38	4.73	26.55	77.70	-1,341.03	-9,337.29	9,391.30	9,360.03	31.28	300.266	
1,700.00	1,677.90	1,658.52	1,658.49	5.03	28.35	77.84	-1,341.28	-9,337.29	9,386.00	9,352.63	33.38	281.217	
1,800.00	1,774.87	1,759.44	1,759.38	5.33	30.32	77.98	-1,341.48	-9,337.29	9,380.76	9,345.11	35.64	263.194	
1,900.00	1,871.83	1,856.41	1,856.35	5.63	32.26	78.12	-1,341.48	-9,337.29	9,375.55	9,337.66	37.89	247.463	
2,000.00	1,968.80	1,953.37	1,953.31	5.93	34.20	78.27	-1,341.48	-9,337.29	9,370.40	9,330.26	40.13	233.493	
2,100.00	2,065.77	2,047.95	2,047.89	6.23	36.10	78.41	-1,340.76	-9,337.29	9,365.23	9,322.90	42.33	221.253	
2,200.00	2,162.74	2,142.48	2,142.41	6.53	38.00	78.54	-1,341.10	-9,337.29	9,360.24	9,315.72	44.52	210.230	
2,300.00	2,259.71	2,244.34	2,244.22	6.83	40.07	78.69	-1,341.48	-9,337.29	9,355.31	9,308.42	46.89	199.502	
2,400.00	2,356.67	2,341.30	2,341.19	7.13	42.09	78.83	-1,341.48	-9,337.29	9,350.41	9,301.20	49.21	189.995	
2,500.00	2,453.64	2,438.27	2,438.15	7.43	44.11	78.98	-1,341.48	-9,337.29	9,345.57	9,294.03	51.53	181.346	
2,600.00	2,550.61	2,532.79	2,532.66	7.73	46.08	79.12	-1,340.51	-9,337.29	9,340.69	9,286.88	53.80	173.606	
2,700.00	2,647.58	2,626.87	2,626.74	8.03	48.04	79.26	-1,340.91	-9,337.29	9,336.01	9,279.95	56.06	166.523	
2,800.00	2,744.55	2,729.25	2,729.06	8.33	50.18	79.41	-1,341.48	-9,337.29	9,331.40	9,272.90	58.50	159.507	
2,900.00	2,841.51	2,826.22	2,826.03	8.63	52.21	79.55	-1,341.48	-9,337.29	9,326.81	9,265.97	60.84	153.305	
3,000.00	2,938.48	2,923.19	2,923.00	8.93	54.25	79.69	-1,341.48	-9,337.29	9,322.27	9,259.10	63.18	147.563	
3,100.00	3,035.45	3,019.95	3,019.75	9.23	56.28	79.84	-1,340.14	-9,337.29	9,317.68	9,252.18	65.51	142.238	
3,200.00	3,132.42	3,114.86	3,114.65	9.53	58.27	79.98	-1,340.30	-9,337.29	9,313.29	9,245.49	67.80	137.362	
3,300.00	3,229.39	3,209.90	3,209.69	9.83	60.27	80.12	-1,340.70	-9,337.29	9,308.97	9,238.88	70.10	132.801	
3,400.00	3,326.35	3,305.07	3,304.85	10.13	62.27	80.26	-1,341.37	-9,337.29	9,304.74	9,232.35	72.40	128.526	
3,500.00	3,423.32	3,337.00	3,336.71	10.43	62.94	80.31	-1,341.48	-9,337.29	9,300.79	9,227.43	73.37	126.773	
3,600.00	3,520.29	3,337.00	3,336.71	10.73	62.94	80.31	-1,341.48	-9,337.29	9,297.88	9,224.22	73.66	126.231	
3,700.00	3,617.26	3,337.00	3,336.71	11.03	62.94	80.31	-1,341.48	-9,337.29	9,296.04	9,222.10	73.94	125.720	
3,800.00	3,714.23	3,337.00	3,336.71	11.33	62.94	80.31	-1,341.48	-9,337.29	9,295.27	9,221.05	74.22	125.238	
3,821.11	3,734.69	3,337.00	3,336.71	11.40	62.94	80.31	-1,341.48	-9,337.29	9,295.25	9,220.97	74.28	125.140	
3,900.00	3,811.19	3,337.00	3,336.71	11.63	62.94	80.31	-1,341.48	-9,337.29	9,295.58	9,221.09	74.49	124.785	
4,000.00	3,908.16	3,337.00	3,336.71	11.93	62.94	80.31	-1,341.48	-9,337.29	9,296.97	9,222.21	74.76	124.361	
4,100.00	4,005.13	3,337.00	3,336.71	12.23	62.94	80.31	-1,341.48	-9,337.29	9,299.43	9,224.42	75.02	123.966	
4,200.00	4,102.10	3,337.00	3,336.71	12.53	62.94	80.31	-1,341.48	-9,337.29	9,302.97	9,227.70	75.27	123.598	
4,300.00	4,199.07	3,337.00	3,336.71	12.83	62.94	80.31	-1,341.48	-9,337.29	9,307.58	9,232.06	75.51	123.257	
4,400.00	4,296.03	3,337.00	3,336.71	13.13	62.94	80.31	-1,341.48	-9,337.29	9,313.26	9,237.51	75.75	122.944	
4,500.00	4,393.00	3,337.00	3,336.71	13.43	62.94	80.31	-1,341.48	-9,337.29	9,320.01	9,244.02	75.98	122.657	
4,600.00	4,489.97	3,337.00	3,336.71	13.73	62.94	80.31	-1,341.48	-9,337.29	9,327.83	9,251.62	76.21	122.396	
4,700.00	4,586.94	3,337.00	3,336.71	14.03	62.94	80.31	-1,341.48	-9,337.29	9,336.71	9,260.28	76.43	122.161	
4,800.00	4,683.91	3,337.00	3,336.71	14.33	62.94	80.31	-1,341.48	-9,337.29	9,346.65	9,270.01	76.64	121.951	
4,900.00	4,780.87	3,337.00	3,336.71	14.63	62.94	80.31	-1,341.48	-9,337.29	9,357.65	9,280.80	76.85	121.766	
5,000.00	4,877.84	3,337.00	3,336.71	14.93	62.94	80.31	-1,341.48	-9,337.29	9,369.71	9,292.66	77.05	121.606	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,337.00	3,336.71	15.23	62.94	80.31	-1,341.48	-9,337.29	9,382.82	9,305.57	77.24	121.469	
5,200.00	5,071.78	3,337.00	3,336.71	15.53	62.94	80.31	-1,341.48	-9,337.29	9,396.97	9,319.54	77.43	121.356	
5,300.00	5,168.75	3,337.00	3,336.71	15.83	62.94	80.31	-1,341.48	-9,337.29	9,412.16	9,334.55	77.62	121.266	
5,400.00	5,265.71	3,337.00	3,336.71	16.13	62.94	80.31	-1,341.48	-9,337.29	9,428.39	9,350.60	77.79	121.198	
5,500.00	5,362.68	3,337.00	3,336.71	16.43	62.94	80.31	-1,341.48	-9,337.29	9,445.65	9,367.69	77.96	121.154	
5,600.00	5,459.65	3,337.00	3,336.71	16.73	62.94	80.31	-1,341.48	-9,337.29	9,463.94	9,385.81	78.13	121.131	
5,700.00	5,556.62	3,337.00	3,336.71	17.03	62.94	80.31	-1,341.48	-9,337.29	9,483.24	9,404.95	78.29	121.129	
5,800.00	5,653.59	3,337.00	3,336.71	17.33	62.94	80.31	-1,341.48	-9,337.29	9,503.56	9,425.12	78.45	121.149	
5,900.00	5,750.55	3,337.00	3,336.71	17.63	62.94	80.31	-1,341.48	-9,337.29	9,524.89	9,446.29	78.59	121.190	
6,000.00	5,847.52	3,337.00	3,336.71	17.93	62.94	80.31	-1,341.48	-9,337.29	9,547.21	9,468.47	78.74	121.251	
6,100.00	5,944.49	3,337.00	3,336.71	18.23	62.94	80.31	-1,341.48	-9,337.29	9,570.53	9,491.65	78.88	121.332	
6,200.00	6,041.46	3,337.00	3,336.71	18.53	62.94	80.31	-1,341.48	-9,337.29	9,594.83	9,515.82	79.01	121.432	
6,300.00	6,138.43	3,337.00	3,336.71	18.83	62.94	80.31	-1,341.48	-9,337.29	9,620.11	9,540.97	79.14	121.552	
6,400.00	6,235.39	3,337.00	3,336.71	19.13	62.94	80.31	-1,341.48	-9,337.29	9,646.37	9,567.10	79.27	121.691	
6,500.00	6,332.36	3,337.00	3,336.71	19.43	62.94	80.31	-1,341.48	-9,337.29	9,673.58	9,594.19	79.39	121.848	
6,600.00	6,429.33	3,337.00	3,336.71	19.73	62.94	80.31	-1,341.48	-9,337.29	9,701.75	9,622.24	79.51	122.023	
6,700.00	6,526.30	3,337.00	3,336.71	20.03	62.94	80.31	-1,341.48	-9,337.29	9,730.86	9,651.24	79.62	122.216	
6,715.28	6,541.12	3,337.00	3,336.71	20.08	62.94	80.31	-1,341.48	-9,337.29	9,735.39	9,655.76	79.64	122.247	
6,750.00	6,574.74	3,337.00	3,336.71	20.18	62.94	67.21	-1,341.48	-9,337.29	9,744.77	9,665.09	79.67	122.309	
6,800.00	6,622.83	3,337.00	3,336.71	20.33	62.94	51.56	-1,341.48	-9,337.29	9,754.89	9,675.16	79.72	122.360	
6,850.00	6,670.20	3,337.00	3,336.71	20.49	62.94	40.23	-1,341.48	-9,337.29	9,760.96	9,681.20	79.77	122.366	
6,900.00	6,716.50	3,337.00	3,336.71	20.64	62.94	32.27	-1,341.48	-9,337.29	9,762.96	9,683.15	79.81	122.324	
6,950.00	6,761.36	3,337.00	3,336.71	20.79	62.94	26.61	-1,341.48	-9,337.29	9,760.87	9,681.01	79.85	122.233	
7,000.00	6,804.45	3,337.00	3,336.71	20.94	62.94	22.45	-1,341.48	-9,337.29	9,754.69	9,674.80	79.90	122.092	
7,050.00	6,845.44	3,337.00	3,336.71	21.09	62.94	19.32	-1,341.48	-9,337.29	9,744.48	9,664.54	79.94	121.901	
7,100.00	6,884.01	3,337.00	3,336.71	21.24	62.94	16.87	-1,341.48	-9,337.29	9,730.29	9,650.31	79.98	121.660	
7,150.00	6,919.88	3,337.00	3,336.71	21.39	62.94	14.91	-1,341.48	-9,337.29	9,712.22	9,632.19	80.02	121.368	
7,200.00	6,952.78	3,337.00	3,336.71	21.54	62.94	13.29	-1,341.48	-9,337.29	9,690.37	9,610.31	80.07	121.026	
7,250.00	6,982.44	3,337.00	3,336.71	21.69	62.94	11.91	-1,341.48	-9,337.29	9,664.91	9,584.79	80.12	120.634	
7,300.00	7,008.65	3,337.00	3,336.71	21.84	62.94	10.70	-1,341.48	-9,337.29	9,635.98	9,555.81	80.17	120.194	
7,350.00	7,031.20	3,337.00	3,336.71	21.99	62.94	9.59	-1,341.48	-9,337.29	9,603.78	9,523.55	80.23	119.707	
7,400.00	7,049.92	3,337.00	3,336.71	22.14	62.94	8.52	-1,341.48	-9,337.29	9,568.52	9,488.23	80.29	119.173	
7,450.00	7,064.68	3,337.00	3,336.71	22.29	62.94	7.43	-1,341.48	-9,337.29	9,530.44	9,450.08	80.36	118.596	
7,500.00	7,075.36	3,337.00	3,336.71	22.44	62.94	6.23	-1,341.48	-9,337.29	9,489.80	9,409.36	80.44	117.978	
7,550.00	7,081.87	3,337.00	3,336.71	22.59	62.94	4.80	-1,341.48	-9,337.29	9,446.87	9,366.35	80.52	117.320	
7,604.16	7,084.18	3,337.00	3,336.71	22.75	62.94	2.73	-1,341.48	-9,337.29	9,398.14	9,317.51	80.62	116.568	
7,700.00	7,083.86	3,337.00	3,336.71	23.04	62.94	2.73	-1,341.48	-9,337.29	9,310.15	9,229.33	80.81	115.205	
7,800.00	7,083.53	3,337.00	3,336.71	23.34	62.94	2.73	-1,341.48	-9,337.29	9,218.51	9,137.50	81.01	113.797	
7,900.00	7,083.20	3,337.00	3,336.71	23.64	62.94	2.73	-1,341.48	-9,337.29	9,127.04	9,045.84	81.20	112.401	
8,000.00	7,082.87	3,337.00	3,336.71	23.94	62.94	2.73	-1,341.48	-9,337.29	9,035.76	8,954.37	81.39	111.020	
8,100.00	7,082.54	3,337.00	3,336.71	24.24	62.94	2.73	-1,341.48	-9,337.29	8,944.66	8,863.08	81.57	109.651	
8,200.00	7,082.22	3,337.00	3,336.71	24.54	62.94	2.73	-1,341.48	-9,337.29	8,853.75	8,772.00	81.76	108.296	
8,300.00	7,081.89	3,337.00	3,336.71	24.84	62.94	2.73	-1,341.48	-9,337.29	8,763.04	8,681.11	81.93	106.954	
8,400.00	7,081.56	3,337.00	3,336.71	25.14	62.94	2.73	-1,341.48	-9,337.29	8,672.54	8,590.43	82.11	105.626	
8,500.00	7,081.23	3,337.00	3,336.71	25.45	62.94	2.73	-1,341.48	-9,337.29	8,582.24	8,499.97	82.28	104.311	
8,600.00	7,080.90	3,337.00	3,336.71	25.75	62.94	2.73	-1,341.48	-9,337.29	8,492.17	8,409.73	82.44	103.009	
8,700.00	7,080.57	3,337.00	3,336.71	26.05	62.94	2.73	-1,341.48	-9,337.29	8,402.32	8,319.71	82.60	101.720	
8,800.00	7,080.24	3,337.00	3,336.71	26.35	62.94	2.73	-1,341.48	-9,337.29	8,312.70	8,229.94	82.76	100.445	
8,900.00	7,079.91	3,337.00	3,336.71	26.65	62.94	2.73	-1,341.48	-9,337.29	8,223.32	8,140.41	82.91	99.183	
9,000.00	7,079.59	3,337.00	3,336.71	26.95	62.94	2.73	-1,341.48	-9,337.29	8,134.18	8,051.13	83.06	97.935	
9,100.00	7,079.26	3,337.00	3,336.71	27.25	62.94	2.73	-1,341.48	-9,337.29	8,045.31	7,962.11	83.20	96.700	
9,200.00	7,078.93	3,337.00	3,336.71	27.55	62.94	2.73	-1,341.48	-9,337.29	7,956.69	7,873.36	83.34	95.478	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,337.00	3,336.71	27.85	62.94	2.73	-1,341.48	-9,337.29	7,868.35	7,784.89	83.47	94.270	
9,400.00	7,078.27	3,337.00	3,336.71	28.15	62.94	2.73	-1,341.48	-9,337.29	7,780.29	7,696.70	83.59	93.076	
9,500.00	7,077.94	3,337.00	3,336.71	28.45	62.94	2.73	-1,341.48	-9,337.29	7,692.53	7,608.82	83.71	91.895	
9,600.00	7,077.61	3,337.00	3,336.71	28.75	62.94	2.73	-1,341.48	-9,337.29	7,605.06	7,521.24	83.82	90.728	
9,700.00	7,077.28	3,337.00	3,336.71	29.05	62.94	2.73	-1,341.48	-9,337.29	7,517.91	7,433.98	83.93	89.575	
9,800.00	7,076.95	3,337.00	3,336.71	29.35	62.94	2.73	-1,341.48	-9,337.29	7,431.08	7,347.06	84.03	88.436	
9,900.00	7,076.63	3,337.00	3,336.71	29.65	62.94	2.73	-1,341.48	-9,337.29	7,344.59	7,260.47	84.12	87.311	
10,000.00	7,076.30	3,337.00	3,336.71	29.95	62.94	2.73	-1,341.48	-9,337.29	7,258.45	7,174.24	84.20	86.200	
10,100.00	7,075.97	3,337.00	3,336.71	30.25	62.94	2.73	-1,341.48	-9,337.29	7,172.66	7,088.38	84.28	85.104	
10,200.00	7,075.64	3,337.00	3,336.71	30.55	62.94	2.73	-1,341.48	-9,337.29	7,087.25	7,002.90	84.35	84.022	
10,300.00	7,075.31	3,337.00	3,336.71	30.85	62.94	2.73	-1,341.48	-9,337.29	7,002.22	6,917.81	84.41	82.955	
10,400.00	7,074.98	3,337.00	3,336.71	31.15	62.94	2.73	-1,341.48	-9,337.29	6,917.59	6,833.13	84.46	81.902	
10,500.00	7,074.65	3,337.00	3,336.71	31.46	62.94	2.73	-1,341.48	-9,337.29	6,833.38	6,748.88	84.50	80.865	
10,600.00	7,074.32	3,337.00	3,336.71	31.76	62.94	2.73	-1,341.48	-9,337.29	6,749.60	6,665.06	84.54	79.843	
10,700.00	7,074.00	3,337.00	3,336.71	32.06	62.94	2.73	-1,341.48	-9,337.29	6,666.27	6,581.71	84.56	78.836	
10,800.00	7,073.67	3,337.00	3,336.71	32.36	62.94	2.73	-1,341.48	-9,337.29	6,583.40	6,498.83	84.57	77.845	
10,900.00	7,073.34	3,337.00	3,336.71	32.66	62.94	2.73	-1,341.48	-9,337.29	6,501.01	6,416.44	84.57	76.870	
11,000.00	7,073.01	3,337.00	3,336.71	32.96	62.94	2.73	-1,341.48	-9,337.29	6,419.12	6,334.56	84.56	75.911	
11,100.00	7,072.68	3,337.00	3,336.71	33.26	62.94	2.73	-1,341.48	-9,337.29	6,337.75	6,253.22	84.54	74.969	
11,200.00	7,072.35	3,337.00	3,336.71	33.56	62.94	2.73	-1,341.48	-9,337.29	6,256.93	6,172.42	84.50	74.044	
11,300.00	7,072.02	3,337.00	3,336.71	33.86	62.94	2.73	-1,341.48	-9,337.29	6,176.66	6,092.21	84.46	73.135	
11,400.00	7,071.69	3,337.00	3,336.71	34.16	62.94	2.73	-1,341.48	-9,337.29	6,096.98	6,012.59	84.39	72.245	
11,500.00	7,071.36	3,337.00	3,336.71	34.46	62.94	2.73	-1,341.48	-9,337.29	6,017.90	5,933.59	84.32	71.372	
11,600.00	7,071.04	3,337.00	3,336.71	34.76	62.94	2.73	-1,341.48	-9,337.29	5,939.46	5,855.23	84.23	70.518	
11,700.00	7,070.71	3,337.00	3,336.71	35.06	62.94	2.73	-1,341.48	-9,337.29	5,861.67	5,777.55	84.12	69.683	
11,800.00	7,070.38	3,337.00	3,336.71	35.36	62.94	2.73	-1,341.48	-9,337.29	5,784.56	5,700.57	84.00	68.866	
11,900.00	7,070.05	3,337.00	3,336.71	35.66	62.94	2.73	-1,341.48	-9,337.29	5,708.17	5,624.31	83.86	68.070	
12,000.00	7,069.72	3,337.00	3,336.71	35.96	62.94	2.73	-1,341.48	-9,337.29	5,632.51	5,548.81	83.70	67.294	
12,100.00	7,069.39	3,337.00	3,336.71	36.26	62.94	2.73	-1,341.48	-9,337.29	5,557.63	5,474.10	83.52	66.540	
12,200.00	7,069.06	3,337.00	3,336.71	36.56	62.94	2.73	-1,341.48	-9,337.29	5,483.54	5,400.21	83.33	65.806	
12,300.00	7,068.73	3,337.00	3,336.71	36.86	62.94	2.73	-1,341.48	-9,337.29	5,410.29	5,327.18	83.11	65.095	
12,400.00	7,068.41	3,337.00	3,336.71	37.16	62.94	2.73	-1,341.48	-9,337.29	5,337.91	5,255.03	82.88	64.407	
12,500.00	7,068.08	3,337.00	3,336.71	37.46	62.94	2.73	-1,341.48	-9,337.29	5,266.43	5,183.81	82.62	63.743	
12,600.00	7,067.75	3,337.00	3,336.71	37.76	62.94	2.73	-1,341.48	-9,337.29	5,195.89	5,113.55	82.34	63.104	
12,700.00	7,067.42	3,337.00	3,336.71	38.06	62.94	2.73	-1,341.48	-9,337.29	5,126.33	5,044.29	82.04	62.489	
12,800.00	7,067.09	3,337.00	3,336.71	38.36	62.94	2.73	-1,341.48	-9,337.29	5,057.79	4,976.09	81.71	61.901	
12,900.00	7,066.76	3,337.00	3,336.71	38.66	62.94	2.73	-1,341.48	-9,337.29	4,990.32	4,908.96	81.35	61.341	
13,000.00	7,066.43	3,337.00	3,336.71	38.96	62.94	2.73	-1,341.48	-9,337.29	4,923.95	4,842.97	80.97	60.808	
13,100.00	7,066.10	3,337.00	3,336.71	39.26	62.94	2.73	-1,341.48	-9,337.29	4,858.73	4,778.16	80.57	60.305	
13,200.00	7,065.77	3,337.00	3,336.71	39.56	62.94	2.73	-1,341.48	-9,337.29	4,794.72	4,714.58	80.13	59.833	
13,300.00	7,065.45	3,337.00	3,336.71	39.86	62.94	2.73	-1,341.48	-9,337.29	4,731.95	4,652.27	79.67	59.392	
13,400.00	7,065.12	3,337.00	3,336.71	40.16	62.94	2.73	-1,341.48	-9,337.29	4,670.47	4,591.29	79.18	58.985	
13,500.00	7,064.79	3,337.00	3,336.71	40.47	62.94	2.73	-1,341.48	-9,337.29	4,610.35	4,531.69	78.66	58.612	
13,600.00	7,064.46	3,337.00	3,336.71	40.77	62.94	2.73	-1,341.48	-9,337.29	4,551.63	4,473.52	78.11	58.275	
13,700.00	7,064.13	3,337.00	3,336.71	41.07	62.94	2.73	-1,341.48	-9,337.29	4,494.37	4,416.84	77.52	57.975	
13,800.00	7,063.80	3,337.00	3,336.71	41.37	62.94	2.73	-1,341.48	-9,337.29	4,438.62	4,361.71	76.91	57.714	
13,900.00	7,063.47	3,337.00	3,336.71	41.67	62.94	2.73	-1,341.48	-9,337.29	4,384.44	4,308.19	76.26	57.494	
14,000.00	7,063.14	3,337.00	3,336.71	41.97	62.94	2.73	-1,341.48	-9,337.29	4,331.90	4,256.32	75.58	57.316	
14,100.00	7,062.82	3,337.00	3,336.71	42.27	62.94	2.73	-1,341.48	-9,337.29	4,281.05	4,206.18	74.87	57.182	
14,200.00	7,062.49	3,337.00	3,336.71	42.57	62.94	2.73	-1,341.48	-9,337.29	4,231.95	4,157.82	74.12	57.093	
14,300.00	7,062.16	3,337.00	3,336.71	42.87	62.94	2.73	-1,341.48	-9,337.29	4,184.66	4,111.31	73.35	57.052	SF
14,400.00	7,061.83	3,337.00	3,336.71	43.17	62.94	2.73	-1,341.48	-9,337.29	4,139.25	4,066.71	72.54	57.059	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.50	3,337.00	3,336.71	43.47	62.94	2.73	-1,341.48	-9,337.29	4,095.78	4,024.07	71.71	57.118	
14,600.00	7,061.17	3,337.00	3,336.71	43.77	62.94	2.73	-1,341.48	-9,337.29	4,054.31	3,983.46	70.85	57.228	
14,700.00	7,060.84	3,337.00	3,336.71	44.07	62.94	2.73	-1,341.48	-9,337.29	4,014.90	3,944.94	69.96	57.391	
14,800.00	7,060.51	3,337.00	3,336.71	44.37	62.94	2.73	-1,341.48	-9,337.29	3,977.62	3,908.57	69.05	57.608	
14,900.00	7,060.18	3,337.00	3,336.71	44.67	62.94	2.73	-1,341.48	-9,337.29	3,942.52	3,874.40	68.12	57.879	
15,000.00	7,059.86	3,337.00	3,336.71	44.97	62.94	2.73	-1,341.48	-9,337.29	3,909.66	3,842.49	67.17	58.203	
15,100.00	7,059.53	3,337.00	3,336.71	45.27	62.94	2.73	-1,341.48	-9,337.29	3,879.10	3,812.88	66.22	58.579	
15,200.00	7,059.20	3,337.00	3,336.71	45.57	62.94	2.73	-1,341.48	-9,337.29	3,850.90	3,785.64	65.27	59.002	
15,300.00	7,058.87	3,337.00	3,336.71	45.87	62.94	2.73	-1,341.48	-9,337.29	3,825.11	3,760.79	64.32	59.469	
15,400.00	7,058.54	3,337.00	3,336.71	46.17	62.94	2.73	-1,341.48	-9,337.29	3,801.77	3,738.38	63.39	59.970	
15,500.00	7,058.21	3,337.00	3,336.71	46.47	62.94	2.73	-1,341.48	-9,337.29	3,780.94	3,718.43	62.50	60.493	
15,600.00	7,057.88	3,337.00	3,336.71	46.77	62.94	2.73	-1,341.48	-9,337.29	3,762.64	3,700.98	61.66	61.021	
15,700.00	7,057.55	3,337.00	3,336.71	47.07	62.94	2.73	-1,341.48	-9,337.29	3,746.93	3,686.04	60.90	61.530	
15,800.00	7,057.23	3,337.00	3,336.71	47.37	62.94	2.73	-1,341.48	-9,337.29	3,733.83	3,673.60	60.23	61.989	
15,900.00	7,056.90	3,337.00	3,336.71	47.67	62.94	2.73	-1,341.48	-9,337.29	3,723.37	3,663.67	59.71	62.359	
16,000.00	7,056.57	3,337.00	3,336.71	47.97	62.94	2.73	-1,341.48	-9,337.29	3,715.58	3,656.22	59.36	62.597	
16,100.00	7,056.24	3,337.00	3,336.71	48.27	62.94	2.73	-1,341.48	-9,337.29	3,710.46	3,651.24	59.22	62.658	
16,200.00	7,055.91	3,337.00	3,336.71	48.57	62.94	2.73	-1,341.48	-9,337.29	3,708.04	3,648.72	59.32	62.511	
16,239.96	7,055.78	3,337.00	3,336.71	48.69	62.94	2.73	-1,341.48	-9,337.29	3,707.82	3,648.39	59.43	62.389	CC, ES
16,300.00	7,055.58	3,337.00	3,336.71	48.87	62.94	2.73	-1,341.48	-9,337.29	3,708.31	3,648.63	59.68	62.141	
16,400.00	7,055.25	3,337.00	3,336.71	49.17	62.94	2.73	-1,341.48	-9,337.29	3,711.27	3,650.99	60.28	61.562	
16,500.00	7,054.92	3,337.00	3,336.71	49.47	62.94	2.73	-1,341.48	-9,337.29	3,716.93	3,655.81	61.12	60.810	
16,600.00	7,054.59	3,337.00	3,336.71	49.77	62.94	2.73	-1,341.48	-9,337.29	3,725.26	3,663.10	62.16	59.932	
16,619.57	7,054.53	3,337.00	3,336.71	49.83	62.94	2.73	-1,341.48	-9,337.29	3,727.20	3,664.82	62.38	59.750	
16,700.00	7,054.27	3,337.00	3,336.71	50.07	62.94	2.73	-1,341.48	-9,337.29	3,736.25	3,672.90	63.35	58.978	
16,782.16	7,054.00	3,337.00	3,336.71	50.32	62.94	2.73	-1,341.48	-9,337.29	3,747.26	3,682.83	64.42	58.167	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-105.08	-1,722.87	-6,393.11	6,621.89				
100.00	100.00	3.51	3.51	0.23	0.04	-105.08	-1,722.87	-6,393.11	6,621.19	6,620.93	0.26	N/A	
200.00	200.00	103.51	103.51	0.53	1.10	-105.08	-1,722.87	-6,393.11	6,621.19	6,619.56	1.63	4,066.608	
300.00	300.00	203.51	203.51	0.83	2.17	-105.08	-1,722.87	-6,393.11	6,621.19	6,618.20	2.99	2,212.753	
400.00	400.00	340.47	303.51	1.13	3.80	-105.08	-1,722.87	-6,393.11	6,621.19	6,616.26	4.93	1,342.866	
500.00	500.00	403.53	403.51	1.43	5.09	-105.08	-1,722.87	-6,393.11	6,621.19	6,614.67	6.52	1,015.590	
600.00	599.98	503.51	503.49	1.73	7.14	69.36	-1,722.87	-6,393.11	6,620.58	6,611.71	8.86	746.981	
700.00	699.84	599.97	599.94	2.03	9.11	69.44	-1,721.93	-6,393.11	6,618.49	6,607.36	11.13	594.400	
800.00	799.45	693.47	693.44	2.33	11.02	69.56	-1,722.29	-6,393.11	6,615.53	6,602.18	13.35	495.698	
900.00	898.70	802.28	802.21	2.63	13.24	69.74	-1,722.87	-6,393.11	6,611.40	6,595.53	15.87	416.589	
1,000.00	997.47	901.05	900.98	2.93	15.26	69.97	-1,722.87	-6,393.11	6,605.96	6,587.77	18.19	363.165	
1,100.00	1,095.62	999.21	999.14	3.23	17.27	70.25	-1,722.87	-6,393.11	6,599.36	6,578.86	20.50	321.963	
1,207.25	1,200.09	1,101.92	1,101.85	3.55	19.37	70.61	-1,721.98	-6,393.11	6,590.82	6,567.90	22.92	287.563	
1,300.00	1,290.03	1,188.63	1,188.55	3.83	21.14	70.78	-1,722.16	-6,393.11	6,583.17	6,558.19	24.97	263.634	
1,400.00	1,386.99	1,282.22	1,282.14	4.13	23.06	70.96	-1,722.55	-6,393.11	6,575.04	6,547.85	27.18	241.865	
1,500.00	1,483.96	1,387.61	1,387.47	4.43	25.25	71.17	-1,722.87	-6,393.11	6,566.97	6,537.29	29.68	221.252	
1,600.00	1,580.93	1,484.58	1,484.44	4.73	27.32	71.37	-1,722.87	-6,393.11	6,558.90	6,526.86	32.04	204.692	
1,700.00	1,677.90	1,580.06	1,579.91	5.03	29.35	71.57	-1,721.93	-6,393.11	6,550.70	6,516.33	34.37	190.578	
1,800.00	1,774.87	1,671.61	1,671.46	5.33	31.29	71.76	-1,722.19	-6,393.11	6,542.86	6,506.24	36.62	178.672	
1,900.00	1,871.83	1,763.34	1,763.18	5.63	33.24	71.94	-1,722.78	-6,393.11	6,535.19	6,496.32	38.87	168.131	
2,000.00	1,968.80	1,872.52	1,872.31	5.93	35.57	72.16	-1,722.87	-6,393.11	6,527.46	6,485.96	41.49	157.318	
2,100.00	2,065.77	1,969.48	1,969.28	6.23	37.63	72.36	-1,722.87	-6,393.11	6,519.80	6,475.95	43.85	148.668	
2,200.00	2,162.74	2,064.46	2,064.24	6.53	39.65	72.56	-1,721.81	-6,393.11	6,512.00	6,465.83	46.18	141.029	
2,300.00	2,259.71	2,157.04	2,156.82	6.83	41.62	72.75	-1,722.09	-6,393.11	6,504.58	6,456.13	48.44	134.269	
2,400.00	2,356.67	2,249.78	2,249.55	7.13	43.59	72.94	-1,722.68	-6,393.11	6,497.30	6,446.58	50.72	128.109	
2,500.00	2,453.64	2,357.43	2,357.15	7.43	45.88	73.16	-1,722.87	-6,393.11	6,490.01	6,436.70	53.31	121.747	
2,600.00	2,550.61	2,454.40	2,454.12	7.73	47.94	73.36	-1,722.87	-6,393.11	6,482.77	6,427.10	55.67	116.449	
2,700.00	2,647.58	2,550.09	2,549.80	8.03	49.98	73.57	-1,721.80	-6,393.11	6,475.40	6,417.39	58.01	111.632	
2,800.00	2,744.55	2,643.02	2,642.73	8.33	51.96	73.76	-1,722.05	-6,393.11	6,468.38	6,408.10	60.28	107.299	
2,900.00	2,841.51	2,736.11	2,735.81	8.63	53.94	73.95	-1,722.60	-6,393.11	6,461.51	6,398.94	62.56	103.278	
3,000.00	2,938.48	2,842.35	2,842.00	8.93	56.14	74.17	-1,722.87	-6,393.11	6,454.65	6,389.59	65.06	99.205	
3,100.00	3,035.45	2,939.32	2,938.96	9.23	58.12	74.37	-1,722.87	-6,393.11	6,447.84	6,380.49	67.35	95.742	
3,200.00	3,132.42	3,030.92	3,030.56	9.53	59.99	74.57	-1,722.34	-6,393.11	6,441.01	6,371.50	69.52	92.653	
3,300.00	3,229.39	3,133.29	3,132.90	9.83	62.06	74.78	-1,722.87	-6,393.11	6,434.46	6,362.57	71.89	89.503	
3,400.00	3,326.35	3,230.26	3,229.87	10.13	63.97	74.98	-1,722.87	-6,393.11	6,427.90	6,353.81	74.09	86.756	
3,500.00	3,423.32	3,327.23	3,326.84	10.43	65.87	75.19	-1,722.87	-6,393.11	6,421.43	6,345.14	76.29	84.167	
3,600.00	3,520.29	3,384.00	3,383.58	10.73	66.98	75.31	-1,722.87	-6,393.11	6,415.17	6,337.46	77.71	82.557	
3,700.00	3,617.26	3,384.00	3,383.58	11.03	66.98	75.31	-1,722.87	-6,393.11	6,410.21	6,332.22	77.99	82.191	
3,800.00	3,714.23	3,384.00	3,383.58	11.33	66.98	75.31	-1,722.87	-6,393.11	6,406.81	6,328.55	78.26	81.863	
3,900.00	3,811.19	3,384.00	3,383.58	11.63	66.98	75.31	-1,722.87	-6,393.11	6,404.97	6,326.45	78.52	81.572	
3,967.88	3,877.01	3,384.00	3,383.58	11.84	66.98	75.31	-1,722.87	-6,393.11	6,404.61	6,325.93	78.68	81.396	
4,000.00	3,908.16	3,384.00	3,383.58	11.93	66.98	75.31	-1,722.87	-6,393.11	6,404.69	6,325.93	78.76	81.319	
4,100.00	4,005.13	3,384.00	3,383.58	12.23	66.98	75.31	-1,722.87	-6,393.11	6,405.98	6,326.99	78.99	81.102	
4,200.00	4,102.10	3,384.00	3,383.58	12.53	66.98	75.31	-1,722.87	-6,393.11	6,408.82	6,329.62	79.20	80.922	
4,300.00	4,199.07	3,384.00	3,383.58	12.83	66.98	75.31	-1,722.87	-6,393.11	6,413.22	6,333.82	79.39	80.777	
4,400.00	4,296.03	3,384.00	3,383.58	13.13	66.98	75.31	-1,722.87	-6,393.11	6,419.17	6,339.60	79.58	80.667	
4,500.00	4,393.00	3,384.00	3,383.58	13.43	66.98	75.31	-1,722.87	-6,393.11	6,426.68	6,346.94	79.74	80.592	
4,600.00	4,489.97	3,384.00	3,383.58	13.73	66.98	75.31	-1,722.87	-6,393.11	6,435.73	6,355.83	79.90	80.550	
4,700.00	4,586.94	3,384.00	3,383.58	14.03	66.98	75.31	-1,722.87	-6,393.11	6,446.32	6,366.29	80.04	80.543	
4,800.00	4,683.91	3,384.00	3,383.58	14.33	66.98	75.31	-1,722.87	-6,393.11	6,458.44	6,378.28	80.16	80.568	
4,900.00	4,780.87	3,384.00	3,383.58	14.63	66.98	75.31	-1,722.87	-6,393.11	6,472.09	6,391.81	80.27	80.626	
5,000.00	4,877.84	3,384.00	3,383.58	14.93	66.98	75.31	-1,722.87	-6,393.11	6,487.24	6,406.87	80.37	80.715	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,384.00	3,383.58	15.23	66.98	75.31	-1,722.87	-6,393.11	6,503.90	6,423.45	80.46	80.836	
5,200.00	5,071.78	3,384.00	3,383.58	15.53	66.98	75.31	-1,722.87	-6,393.11	6,522.05	6,441.52	80.53	80.988	
5,300.00	5,168.75	3,384.00	3,383.58	15.83	66.98	75.31	-1,722.87	-6,393.11	6,541.68	6,461.09	80.59	81.170	
5,400.00	5,265.71	3,384.00	3,383.58	16.13	66.98	75.31	-1,722.87	-6,393.11	6,562.78	6,482.13	80.64	81.381	
5,500.00	5,362.68	3,384.00	3,383.58	16.43	66.98	75.31	-1,722.87	-6,393.11	6,585.32	6,504.64	80.68	81.622	
5,600.00	5,459.65	3,384.00	3,383.58	16.73	66.98	75.31	-1,722.87	-6,393.11	6,609.30	6,528.59	80.71	81.891	
5,700.00	5,556.62	3,384.00	3,383.58	17.03	66.98	75.31	-1,722.87	-6,393.11	6,634.71	6,553.98	80.73	82.188	
5,800.00	5,653.59	3,384.00	3,383.58	17.33	66.98	75.31	-1,722.87	-6,393.11	6,661.51	6,580.78	80.73	82.513	
5,900.00	5,750.55	3,384.00	3,383.58	17.63	66.98	75.31	-1,722.87	-6,393.11	6,689.71	6,608.97	80.73	82.864	
6,000.00	5,847.52	3,384.00	3,383.58	17.93	66.98	75.31	-1,722.87	-6,393.11	6,719.27	6,638.55	80.72	83.242	
6,100.00	5,944.49	3,384.00	3,383.58	18.23	66.98	75.31	-1,722.87	-6,393.11	6,750.19	6,669.49	80.70	83.645	
6,200.00	6,041.46	3,384.00	3,383.58	18.53	66.98	75.31	-1,722.87	-6,393.11	6,782.44	6,701.76	80.67	84.074	
6,300.00	6,138.43	3,384.00	3,383.58	18.83	66.98	75.31	-1,722.87	-6,393.11	6,816.00	6,735.36	80.64	84.527	
6,400.00	6,235.39	3,384.00	3,383.58	19.13	66.98	75.31	-1,722.87	-6,393.11	6,850.86	6,770.26	80.60	85.003	
6,500.00	6,332.36	3,384.00	3,383.58	19.43	66.98	75.31	-1,722.87	-6,393.11	6,887.00	6,806.45	80.55	85.503	
6,600.00	6,429.33	3,384.00	3,383.58	19.73	66.98	75.31	-1,722.87	-6,393.11	6,924.39	6,843.90	80.49	86.026	
6,700.00	6,526.30	3,384.00	3,383.58	20.03	66.98	75.31	-1,722.87	-6,393.11	6,963.01	6,882.58	80.43	86.571	
6,715.28	6,541.12	3,384.00	3,383.58	20.08	66.98	75.31	-1,722.87	-6,393.11	6,969.02	6,888.60	80.42	86.657	
6,750.00	6,574.74	3,384.00	3,383.58	20.18	66.98	62.36	-1,722.87	-6,393.11	6,981.82	6,901.43	80.40	86.843	
6,800.00	6,622.83	3,384.00	3,383.58	20.33	66.98	46.89	-1,722.87	-6,393.11	6,997.09	6,916.74	80.35	87.081	
6,850.00	6,670.20	3,384.00	3,383.58	20.49	66.98	35.69	-1,722.87	-6,393.11	7,008.54	6,928.24	80.30	87.280	
6,900.00	6,716.50	3,384.00	3,383.58	20.64	66.98	27.84	-1,722.87	-6,393.11	7,016.10	6,935.86	80.24	87.437	
6,950.00	6,761.36	3,384.00	3,383.58	20.79	66.98	22.24	-1,722.87	-6,393.11	7,019.73	6,939.55	80.18	87.550	
7,000.00	6,804.45	3,384.00	3,383.58	20.94	66.98	18.13	-1,722.87	-6,393.11	7,019.41	6,939.30	80.11	87.619	
7,050.00	6,845.44	3,384.00	3,383.58	21.09	66.98	15.01	-1,722.87	-6,393.11	7,015.13	6,935.09	80.04	87.642	
7,100.00	6,884.01	3,384.00	3,383.58	21.24	66.98	12.55	-1,722.87	-6,393.11	7,006.93	6,926.96	79.97	87.616	
7,150.00	6,919.88	3,384.00	3,383.58	21.39	66.98	10.55	-1,722.87	-6,393.11	6,994.85	6,914.95	79.90	87.542	
7,200.00	6,952.78	3,384.00	3,383.58	21.54	66.98	8.87	-1,722.87	-6,393.11	6,978.97	6,899.13	79.83	87.418	
7,250.00	6,982.44	3,384.00	3,383.58	21.69	66.98	7.40	-1,722.87	-6,393.11	6,959.37	6,879.61	79.77	87.244	
7,300.00	7,008.65	3,384.00	3,383.58	21.84	66.98	6.07	-1,722.87	-6,393.11	6,936.19	6,856.48	79.71	87.020	
7,350.00	7,031.20	3,384.00	3,383.58	21.99	66.98	4.81	-1,722.87	-6,393.11	6,909.55	6,829.90	79.65	86.745	
7,400.00	7,049.92	3,384.00	3,383.58	22.14	66.98	3.56	-1,722.87	-6,393.11	6,879.63	6,800.02	79.61	86.420	
7,450.00	7,064.68	3,384.00	3,383.58	22.29	66.98	2.26	-1,722.87	-6,393.11	6,846.61	6,767.04	79.57	86.045	
7,500.00	7,075.36	3,384.00	3,383.58	22.44	66.98	0.83	-1,722.87	-6,393.11	6,810.69	6,731.15	79.54	85.621	
7,550.00	7,081.87	3,384.00	3,383.58	22.59	66.98	-0.82	-1,722.87	-6,393.11	6,772.11	6,692.58	79.53	85.149	
7,604.16	7,084.18	3,384.00	3,383.58	22.75	66.98	-3.04	-1,722.87	-6,393.11	6,727.61	6,648.08	79.54	84.587	
7,700.00	7,083.86	3,384.00	3,383.58	23.04	66.98	-3.04	-1,722.87	-6,393.11	6,646.76	6,567.21	79.55	83.550	
7,800.00	7,083.53	3,384.00	3,383.58	23.34	66.98	-3.04	-1,722.87	-6,393.11	6,562.83	6,483.27	79.56	82.485	
7,900.00	7,083.20	3,384.00	3,383.58	23.64	66.98	-3.04	-1,722.87	-6,393.11	6,479.35	6,399.79	79.56	81.437	
8,000.00	7,082.87	3,384.00	3,383.58	23.94	66.98	-3.04	-1,722.87	-6,393.11	6,396.35	6,316.80	79.55	80.407	
8,100.00	7,082.54	3,384.00	3,383.58	24.24	66.98	-3.04	-1,722.87	-6,393.11	6,313.84	6,234.32	79.52	79.396	
8,200.00	7,082.22	3,384.00	3,383.58	24.54	66.98	-3.04	-1,722.87	-6,393.11	6,231.84	6,152.36	79.48	78.403	
8,300.00	7,081.89	3,384.00	3,383.58	24.84	66.98	-3.04	-1,722.87	-6,393.11	6,150.38	6,070.95	79.43	77.429	
8,400.00	7,081.56	3,384.00	3,383.58	25.14	66.98	-3.04	-1,722.87	-6,393.11	6,069.47	5,990.10	79.37	76.475	
8,500.00	7,081.23	3,384.00	3,383.58	25.45	66.98	-3.04	-1,722.87	-6,393.11	5,989.13	5,909.85	79.28	75.540	
8,600.00	7,080.90	3,384.00	3,383.58	25.75	66.98	-3.04	-1,722.87	-6,393.11	5,909.40	5,830.21	79.19	74.625	
8,700.00	7,080.57	3,384.00	3,383.58	26.05	66.98	-3.04	-1,722.87	-6,393.11	5,830.29	5,751.22	79.07	73.732	
8,800.00	7,080.24	3,384.00	3,383.58	26.35	66.98	-3.04	-1,722.87	-6,393.11	5,751.83	5,672.89	78.94	72.859	
8,900.00	7,079.91	3,384.00	3,383.58	26.65	66.98	-3.04	-1,722.87	-6,393.11	5,674.05	5,595.26	78.80	72.009	
9,000.00	7,079.59	3,384.00	3,383.58	26.95	66.98	-3.04	-1,722.87	-6,393.11	5,596.98	5,518.35	78.63	71.181	
9,100.00	7,079.26	3,384.00	3,383.58	27.25	66.98	-3.04	-1,722.87	-6,393.11	5,520.64	5,442.19	78.45	70.376	
9,200.00	7,078.93	3,384.00	3,383.58	27.55	66.98	-3.04	-1,722.87	-6,393.11	5,445.06	5,366.83	78.24	69.595	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,384.00	3,383.58	27.85	66.98	-3.04	-1,722.87	-6,393.11	5,370.29	5,292.28	78.01	68.839	
9,400.00	7,078.27	3,384.00	3,383.58	28.15	66.98	-3.04	-1,722.87	-6,393.11	5,296.35	5,218.59	77.76	68.109	
9,500.00	7,077.94	3,384.00	3,383.58	28.45	66.98	-3.04	-1,722.87	-6,393.11	5,223.27	5,145.78	77.49	67.405	
9,600.00	7,077.61	3,384.00	3,383.58	28.75	66.98	-3.04	-1,722.87	-6,393.11	5,151.10	5,073.91	77.20	66.728	
9,700.00	7,077.28	3,384.00	3,383.58	29.05	66.98	-3.04	-1,722.87	-6,393.11	5,079.88	5,003.00	76.87	66.080	
9,800.00	7,076.95	3,384.00	3,383.58	29.35	66.98	-3.04	-1,722.87	-6,393.11	5,009.64	4,933.11	76.53	65.462	
9,900.00	7,076.63	3,384.00	3,383.58	29.65	66.98	-3.04	-1,722.87	-6,393.11	4,940.42	4,864.27	76.15	64.875	
10,000.00	7,076.30	3,384.00	3,383.58	29.95	66.98	-3.04	-1,722.87	-6,393.11	4,872.27	4,796.52	75.75	64.319	
10,100.00	7,075.97	3,384.00	3,383.58	30.25	66.98	-3.04	-1,722.87	-6,393.11	4,805.24	4,729.92	75.32	63.798	
10,200.00	7,075.64	3,384.00	3,383.58	30.55	66.98	-3.04	-1,722.87	-6,393.11	4,739.37	4,664.51	74.86	63.311	
10,300.00	7,075.31	3,384.00	3,383.58	30.85	66.98	-3.04	-1,722.87	-6,393.11	4,674.71	4,600.34	74.37	62.860	
10,400.00	7,074.98	3,384.00	3,383.58	31.15	66.98	-3.04	-1,722.87	-6,393.11	4,611.31	4,537.47	73.84	62.448	
10,500.00	7,074.65	3,384.00	3,383.58	31.46	66.98	-3.04	-1,722.87	-6,393.11	4,549.23	4,475.94	73.28	62.076	
10,600.00	7,074.32	3,384.00	3,383.58	31.76	66.98	-3.04	-1,722.87	-6,393.11	4,488.51	4,415.82	72.69	61.746	
10,700.00	7,074.00	3,384.00	3,383.58	32.06	66.98	-3.04	-1,722.87	-6,393.11	4,429.22	4,357.16	72.07	61.460	
10,800.00	7,073.67	3,384.00	3,383.58	32.36	66.98	-3.04	-1,722.87	-6,393.11	4,371.42	4,300.01	71.40	61.220	
10,900.00	7,073.34	3,384.00	3,383.58	32.66	66.98	-3.04	-1,722.87	-6,393.11	4,315.16	4,244.45	70.71	61.029	
11,000.00	7,073.01	3,384.00	3,383.58	32.96	66.98	-3.04	-1,722.87	-6,393.11	4,260.50	4,190.53	69.97	60.888	
11,100.00	7,072.68	3,384.00	3,383.58	33.26	66.98	-3.04	-1,722.87	-6,393.11	4,207.51	4,138.31	69.20	60.801	
11,200.00	7,072.35	3,384.00	3,383.58	33.56	66.98	-3.04	-1,722.87	-6,393.11	4,156.25	4,087.86	68.39	60.770	
11,300.00	7,072.02	3,384.00	3,383.58	33.86	66.98	-3.04	-1,722.87	-6,393.11	4,106.79	4,039.24	67.55	60.798	
11,400.00	7,071.69	3,384.00	3,383.58	34.16	66.98	-3.04	-1,722.87	-6,393.11	4,059.19	3,992.52	66.67	60.888	
11,500.00	7,071.36	3,384.00	3,383.58	34.46	66.98	-3.04	-1,722.87	-6,393.11	4,013.52	3,947.77	65.75	61.042	
11,600.00	7,071.04	3,384.00	3,383.58	34.76	66.98	-3.04	-1,722.87	-6,393.11	3,969.84	3,905.04	64.80	61.263	
11,700.00	7,070.71	3,384.00	3,383.58	35.06	66.98	-3.04	-1,722.87	-6,393.11	3,928.22	3,864.40	63.82	61.555	
11,800.00	7,070.38	3,384.00	3,383.58	35.36	66.98	-3.04	-1,722.87	-6,393.11	3,888.72	3,825.92	62.80	61.918	
11,900.00	7,070.05	3,384.00	3,383.58	35.66	66.98	-3.04	-1,722.87	-6,393.11	3,851.42	3,789.66	61.76	62.356	
12,000.00	7,069.72	3,384.00	3,383.58	35.96	66.98	-3.04	-1,722.87	-6,393.11	3,816.38	3,755.67	60.70	62.869	
12,100.00	7,069.39	3,384.00	3,383.58	36.26	66.98	-3.04	-1,722.87	-6,393.11	3,783.65	3,724.03	59.62	63.458	
12,200.00	7,069.06	3,384.00	3,383.58	36.56	66.98	-3.04	-1,722.87	-6,393.11	3,753.31	3,694.77	58.53	64.121	
12,300.00	7,068.73	3,384.00	3,383.58	36.86	66.98	-3.04	-1,722.87	-6,393.11	3,725.40	3,667.96	57.44	64.853	
12,400.00	7,068.41	3,384.00	3,383.58	37.16	66.98	-3.04	-1,722.87	-6,393.11	3,699.98	3,643.62	56.36	65.648	
12,500.00	7,068.08	3,384.00	3,383.58	37.46	66.98	-3.04	-1,722.87	-6,393.11	3,677.11	3,621.81	55.30	66.493	
12,600.00	7,067.75	3,384.00	3,383.58	37.76	66.98	-3.04	-1,722.87	-6,393.11	3,656.84	3,602.56	54.28	67.369	
12,700.00	7,067.42	3,384.00	3,383.58	38.06	66.98	-3.04	-1,722.87	-6,393.11	3,639.19	3,585.87	53.32	68.248	
12,800.00	7,067.09	3,384.00	3,383.58	38.36	66.98	-3.04	-1,722.87	-6,393.11	3,624.23	3,571.77	52.46	69.089	
12,900.00	7,066.76	3,384.00	3,383.58	38.66	66.98	-3.04	-1,722.87	-6,393.11	3,611.97	3,560.25	51.72	69.837	
13,000.00	7,066.43	3,384.00	3,383.58	38.96	66.98	-3.04	-1,722.87	-6,393.11	3,602.44	3,551.29	51.15	70.426	
13,100.00	7,066.10	3,384.00	3,383.58	39.26	66.98	-3.04	-1,722.87	-6,393.11	3,595.68	3,544.87	50.80	70.779	
13,200.00	7,065.77	3,384.00	3,383.58	39.56	66.98	-3.04	-1,722.87	-6,393.11	3,591.68	3,540.97	50.71	70.824	
13,293.57	7,065.47	3,384.00	3,383.58	39.85	66.98	-3.04	-1,722.87	-6,393.11	3,590.46	3,539.57	50.89	70.547	CC
13,300.00	7,065.45	3,384.00	3,383.58	39.86	66.98	-3.04	-1,722.87	-6,393.11	3,590.47	3,539.55	50.92	70.516	ES
13,400.00	7,065.12	3,384.00	3,383.58	40.16	66.98	-3.04	-1,722.87	-6,393.11	3,592.04	3,540.62	51.42	69.853	
13,500.00	7,064.79	3,384.00	3,383.58	40.47	66.98	-3.04	-1,722.87	-6,393.11	3,596.39	3,544.18	52.21	68.879	
13,600.00	7,064.46	3,384.00	3,383.58	40.77	66.98	-3.04	-1,722.87	-6,393.11	3,603.51	3,550.26	53.25	67.672	
13,700.00	7,064.13	3,384.00	3,383.58	41.07	66.98	-3.04	-1,722.87	-6,393.11	3,613.39	3,558.90	54.49	66.316	
13,800.00	7,063.80	3,384.00	3,383.58	41.37	66.98	-3.04	-1,722.87	-6,393.11	3,626.00	3,570.12	55.88	64.889	
13,900.00	7,063.47	3,384.00	3,383.58	41.67	66.98	-3.04	-1,722.87	-6,393.11	3,641.31	3,583.93	57.39	63.453	
14,000.00	7,063.14	3,384.00	3,383.58	41.97	66.98	-3.04	-1,722.87	-6,393.11	3,659.30	3,600.32	58.97	62.050	
14,100.00	7,062.82	3,384.00	3,383.58	42.27	66.98	-3.04	-1,722.87	-6,393.11	3,679.91	3,619.29	60.62	60.709	
14,200.00	7,062.49	3,384.00	3,383.58	42.57	66.98	-3.04	-1,722.87	-6,393.11	3,703.11	3,640.82	62.29	59.448	
14,300.00	7,062.16	3,384.00	3,383.58	42.87	66.98	-3.04	-1,722.87	-6,393.11	3,728.85	3,664.86	63.98	58.277	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.83	3,384.00	3,383.58	43.17	66.98	-3.04	-1,722.87	-6,393.11	3,757.07	3,691.39	65.68	57.200	
14,500.00	7,061.50	3,384.00	3,383.58	43.47	66.98	-3.04	-1,722.87	-6,393.11	3,787.73	3,720.35	67.38	56.218	
14,600.00	7,061.17	3,384.00	3,383.58	43.77	66.98	-3.04	-1,722.87	-6,393.11	3,820.76	3,751.70	69.06	55.329	
14,700.00	7,060.84	3,384.00	3,383.58	44.07	66.98	-3.04	-1,722.87	-6,393.11	3,856.09	3,785.38	70.72	54.529	
14,800.00	7,060.51	3,384.00	3,383.58	44.37	66.98	-3.04	-1,722.87	-6,393.11	3,893.68	3,821.33	72.35	53.815	
14,900.00	7,060.18	3,384.00	3,383.58	44.67	66.98	-3.04	-1,722.87	-6,393.11	3,933.45	3,859.49	73.96	53.182	
15,000.00	7,059.86	3,384.00	3,383.58	44.97	66.98	-3.04	-1,722.87	-6,393.11	3,975.34	3,899.80	75.54	52.625	
15,100.00	7,059.53	3,384.00	3,383.58	45.27	66.98	-3.04	-1,722.87	-6,393.11	4,019.28	3,942.19	77.09	52.140	
15,200.00	7,059.20	3,384.00	3,383.58	45.57	66.98	-3.04	-1,722.87	-6,393.11	4,065.20	3,986.61	78.60	51.723	
15,300.00	7,058.87	3,384.00	3,383.58	45.87	66.98	-3.04	-1,722.87	-6,393.11	4,113.05	4,032.98	80.07	51.367	
15,400.00	7,058.54	3,384.00	3,383.58	46.17	66.98	-3.04	-1,722.87	-6,393.11	4,162.75	4,081.24	81.51	51.071	
15,500.00	7,058.21	3,384.00	3,383.58	46.47	66.98	-3.04	-1,722.87	-6,393.11	4,214.23	4,131.32	82.91	50.829	
15,600.00	7,057.88	3,384.00	3,383.58	46.77	66.98	-3.04	-1,722.87	-6,393.11	4,267.44	4,183.16	84.27	50.637	
15,700.00	7,057.55	3,384.00	3,383.58	47.07	66.98	-3.04	-1,722.87	-6,393.11	4,322.30	4,236.70	85.60	50.493	
15,800.00	7,057.23	3,384.00	3,383.58	47.37	66.98	-3.04	-1,722.87	-6,393.11	4,378.77	4,291.88	86.89	50.393	
15,900.00	7,056.90	3,384.00	3,383.58	47.67	66.98	-3.04	-1,722.87	-6,393.11	4,436.77	4,348.62	88.15	50.334	
16,000.00	7,056.57	3,384.00	3,383.58	47.97	66.98	-3.04	-1,722.87	-6,393.11	4,496.24	4,406.87	89.37	50.313	SF
16,100.00	7,056.24	3,384.00	3,383.58	48.27	66.98	-3.04	-1,722.87	-6,393.11	4,557.13	4,466.58	90.55	50.327	
16,200.00	7,055.91	3,384.00	3,383.58	48.57	66.98	-3.04	-1,722.87	-6,393.11	4,619.39	4,527.69	91.70	50.375	
16,300.00	7,055.58	3,384.00	3,383.58	48.87	66.98	-3.04	-1,722.87	-6,393.11	4,682.95	4,590.13	92.82	50.453	
16,400.00	7,055.25	3,384.00	3,383.58	49.17	66.98	-3.04	-1,722.87	-6,393.11	4,747.77	4,653.87	93.90	50.561	
16,500.00	7,054.92	3,384.00	3,383.58	49.47	66.98	-3.04	-1,722.87	-6,393.11	4,813.79	4,718.84	94.96	50.695	
16,600.00	7,054.59	3,384.00	3,383.58	49.77	66.98	-3.04	-1,722.87	-6,393.11	4,880.97	4,784.99	95.98	50.853	
16,619.57	7,054.53	3,384.00	3,383.58	49.83	66.98	-3.04	-1,722.87	-6,393.11	4,894.25	4,798.07	96.18	50.887	
16,700.00	7,054.27	3,384.00	3,383.58	50.07	66.98	-3.04	-1,722.87	-6,393.11	4,949.26	4,852.28	96.98	51.036	
16,782.16	7,054.00	3,384.00	3,383.58	50.32	66.98	-3.04	-1,722.87	-6,393.11	5,006.16	4,908.39	97.77	51.202	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-178.26	-1,320.84	-40.23	1,322.01				
100.00	100.00	61.51	61.51	0.23	0.57	-178.26	-1,320.84	-40.23	1,321.45	1,320.66	0.80	1,661.782	
200.00	200.00	161.51	161.51	0.53	1.49	-178.26	-1,320.84	-40.23	1,321.45	1,319.43	2.02	654.380	
300.00	300.00	261.52	261.51	0.83	2.66	-178.26	-1,320.84	-40.23	1,321.45	1,317.96	3.49	378.778	
400.00	400.00	361.52	361.51	1.13	4.51	-178.26	-1,320.84	-40.23	1,321.45	1,315.82	5.64	234.414	
500.00	500.00	461.52	461.51	1.43	6.36	-178.26	-1,320.84	-40.23	1,321.45	1,313.67	7.79	169.726	
600.00	599.98	560.27	560.26	1.73	8.18	-3.84	-1,320.28	-40.23	1,319.15	1,309.24	9.91	133.096	
700.00	699.84	658.05	658.04	2.03	9.99	-3.87	-1,320.45	-40.23	1,314.11	1,302.09	12.02	109.337	
800.00	799.45	755.62	755.61	2.33	11.80	-3.90	-1,320.77	-40.23	1,305.74	1,291.62	14.12	92.458	
900.00	898.70	860.24	860.21	2.63	13.78	-3.96	-1,320.84	-40.23	1,293.64	1,277.23	16.40	78.860	
1,000.00	997.47	959.00	958.98	2.93	15.65	-4.03	-1,320.84	-40.23	1,278.03	1,259.45	18.58	68.777	
1,100.00	1,095.62	1,057.00	1,056.98	3.23	17.52	-4.12	-1,320.23	-40.23	1,258.39	1,237.65	20.75	60.656	
1,207.25	1,200.09	1,159.49	1,159.46	3.55	19.47	-4.23	-1,320.33	-40.23	1,234.29	1,211.28	23.02	53.624	
1,300.00	1,290.03	1,247.79	1,247.76	3.83	21.15	-4.31	-1,320.54	-40.23	1,211.90	1,186.93	24.97	48.525	
1,400.00	1,386.99	1,348.56	1,348.51	4.13	23.09	-4.40	-1,320.84	-40.23	1,187.82	1,160.61	27.22	43.642	
1,500.00	1,483.96	1,445.53	1,445.47	4.43	25.05	-4.50	-1,320.84	-40.23	1,163.46	1,133.98	29.48	39.467	
1,600.00	1,580.93	1,542.50	1,542.44	4.73	27.01	-4.59	-1,320.84	-40.23	1,139.09	1,107.35	31.74	35.887	
1,700.00	1,677.90	1,637.54	1,637.48	5.03	28.93	-4.69	-1,320.09	-40.23	1,113.98	1,080.02	33.96	32.799	
1,800.00	1,774.87	1,731.82	1,731.76	5.33	30.84	-4.79	-1,320.38	-40.23	1,089.91	1,053.74	36.17	30.132	
1,900.00	1,871.83	1,833.46	1,833.35	5.63	32.91	-4.91	-1,320.84	-40.23	1,066.01	1,027.47	38.54	27.660	
2,000.00	1,968.80	1,930.43	1,930.31	5.93	34.95	-5.02	-1,320.84	-40.23	1,041.66	1,000.78	40.88	25.483	
2,100.00	2,065.77	2,027.40	2,027.28	6.23	36.98	-5.14	-1,320.84	-40.23	1,017.31	974.10	43.21	23.541	
2,200.00	2,162.74	2,122.36	2,122.24	6.53	38.98	-5.27	-1,319.82	-40.23	991.95	946.44	45.51	21.796	
2,300.00	2,259.71	2,216.19	2,216.06	6.83	40.95	-5.39	-1,320.17	-40.23	967.97	920.19	47.78	20.259	
2,400.00	2,356.67	2,318.38	2,318.19	7.13	43.10	-5.54	-1,320.84	-40.23	944.30	894.07	50.23	18.800	
2,500.00	2,453.64	2,415.34	2,415.15	7.43	45.15	-5.69	-1,320.84	-40.23	919.97	867.39	52.58	17.497	
2,600.00	2,550.61	2,512.31	2,512.12	7.73	47.19	-5.84	-1,320.84	-40.23	895.65	840.73	54.93	16.307	
2,700.00	2,647.58	2,608.13	2,607.93	8.03	49.22	-6.00	-1,319.74	-40.23	870.24	812.99	57.25	15.201	
2,800.00	2,744.55	2,702.44	2,702.23	8.33	51.21	-6.17	-1,320.02	-40.23	846.22	786.68	59.54	14.212	
2,900.00	2,841.51	2,796.91	2,796.69	8.63	53.20	-6.35	-1,320.60	-40.23	822.51	760.68	61.83	13.302	
3,000.00	2,938.48	2,900.26	2,900.00	8.93	55.39	-6.56	-1,320.84	-40.23	798.44	734.11	64.32	12.413	
3,100.00	3,035.45	2,997.23	2,996.96	9.23	57.44	-6.76	-1,320.84	-40.23	774.15	707.48	66.68	11.611	
3,200.00	3,132.42	3,091.88	3,091.60	9.53	59.45	-6.98	-1,320.09	-40.23	749.14	680.16	68.98	10.860	
3,300.00	3,229.39	3,185.91	3,185.63	9.83	61.44	-7.20	-1,320.58	-40.23	725.38	654.11	71.27	10.178	
3,400.00	3,326.35	3,288.19	3,287.87	10.13	63.60	-7.47	-1,320.84	-40.23	701.37	627.63	73.74	9.512	
3,500.00	3,423.32	3,385.16	3,384.84	10.43	65.66	-7.74	-1,320.84	-40.23	677.13	601.04	76.09	8.899	
3,600.00	3,520.29	3,402.00	3,401.64	10.73	66.02	-7.78	-1,320.84	-40.23	657.82	581.55	76.27	8.625	SF
3,680.36	3,598.21	3,402.00	3,401.64	10.97	66.02	-7.78	-1,320.84	-40.23	652.89	577.82	75.07	8.697	CC, ES
3,700.00	3,617.26	3,402.00	3,401.64	11.03	66.02	-7.78	-1,320.84	-40.23	653.19	578.55	74.64	8.752	
3,800.00	3,714.23	3,402.00	3,401.64	11.33	66.02	-7.78	-1,320.84	-40.23	663.76	592.15	71.61	9.269	
3,900.00	3,811.19	3,402.00	3,401.64	11.63	66.02	-7.78	-1,320.84	-40.23	688.84	621.31	67.54	10.199	
4,000.00	3,908.16	3,402.00	3,401.64	11.93	66.02	-7.78	-1,320.84	-40.23	726.94	664.04	62.90	11.557	
4,100.00	4,005.13	3,402.00	3,401.64	12.23	66.02	-7.78	-1,320.84	-40.23	776.12	717.98	58.14	13.349	
4,200.00	4,102.10	3,402.00	3,401.64	12.53	66.02	-7.78	-1,320.84	-40.23	834.44	780.85	53.59	15.571	
4,300.00	4,199.07	3,402.00	3,401.64	12.83	66.02	-7.78	-1,320.84	-40.23	900.12	850.69	49.43	18.209	
4,400.00	4,296.03	3,402.00	3,401.64	13.13	66.02	-7.78	-1,320.84	-40.23	971.67	925.93	45.75	21.240	
4,500.00	4,393.00	3,402.00	3,401.64	13.43	66.02	-7.78	-1,320.84	-40.23	1,047.89	1,005.35	42.54	24.631	
4,600.00	4,489.97	3,402.00	3,401.64	13.73	66.02	-7.78	-1,320.84	-40.23	1,127.83	1,088.03	39.80	28.339	
4,700.00	4,586.94	3,402.00	3,401.64	14.03	66.02	-7.78	-1,320.84	-40.23	1,210.76	1,173.29	37.47	32.315	
4,800.00	4,683.91	3,402.00	3,401.64	14.33	66.02	-7.78	-1,320.84	-40.23	1,296.10	1,260.59	35.51	36.502	
4,900.00	4,780.87	3,402.00	3,401.64	14.63	66.02	-7.78	-1,320.84	-40.23	1,383.40	1,349.52	33.88	40.836	
5,000.00	4,877.84	3,402.00	3,401.64	14.93	66.02	-7.78	-1,320.84	-40.23	1,472.32	1,439.78	32.53	45.255	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,402.00	3,401.64	15.23	66.02	-7.78	-1,320.84	-40.23	1,562.58	1,531.13	31.44	49.695	
5,200.00	5,071.78	3,402.00	3,401.64	15.53	66.02	-7.78	-1,320.84	-40.23	1,653.96	1,623.38	30.58	54.093	
5,300.00	5,168.75	3,402.00	3,401.64	15.83	66.02	-7.78	-1,320.84	-40.23	1,746.28	1,716.38	29.90	58.397	
5,400.00	5,265.71	3,402.00	3,401.64	16.13	66.02	-7.78	-1,320.84	-40.23	1,839.41	1,810.01	29.40	62.560	
5,500.00	5,362.68	3,402.00	3,401.64	16.43	66.02	-7.78	-1,320.84	-40.23	1,933.23	1,904.17	29.05	66.545	
5,600.00	5,459.65	3,402.00	3,401.64	16.73	66.02	-7.78	-1,320.84	-40.23	2,027.63	1,998.80	28.83	70.330	
5,700.00	5,556.62	3,402.00	3,401.64	17.03	66.02	-7.78	-1,320.84	-40.23	2,122.55	2,093.83	28.72	73.899	
5,800.00	5,653.59	3,402.00	3,401.64	17.33	66.02	-7.78	-1,320.84	-40.23	2,217.91	2,189.20	28.71	77.251	
5,900.00	5,750.55	3,402.00	3,401.64	17.63	66.02	-7.78	-1,320.84	-40.23	2,313.67	2,284.89	28.78	80.388	
6,000.00	5,847.52	3,402.00	3,401.64	17.93	66.02	-7.78	-1,320.84	-40.23	2,409.77	2,380.85	28.92	83.323	
6,100.00	5,944.49	3,402.00	3,401.64	18.23	66.02	-7.78	-1,320.84	-40.23	2,506.18	2,477.06	29.12	86.070	
6,200.00	6,041.46	3,402.00	3,401.64	18.53	66.02	-7.78	-1,320.84	-40.23	2,602.86	2,573.49	29.36	88.645	
6,300.00	6,138.43	3,402.00	3,401.64	18.83	66.02	-7.78	-1,320.84	-40.23	2,699.78	2,670.13	29.65	91.066	
6,400.00	6,235.39	3,402.00	3,401.64	19.13	66.02	-7.78	-1,320.84	-40.23	2,796.91	2,766.95	29.96	93.350	
6,500.00	6,332.36	3,402.00	3,401.64	19.43	66.02	-7.78	-1,320.84	-40.23	2,894.24	2,863.94	30.30	95.513	
6,600.00	6,429.33	3,402.00	3,401.64	19.73	66.02	-7.78	-1,320.84	-40.23	2,991.75	2,961.09	30.66	97.570	
6,700.00	6,526.30	3,402.00	3,401.64	20.03	66.02	-7.78	-1,320.84	-40.23	3,089.42	3,058.38	31.04	99.534	
6,715.28	6,541.12	3,402.00	3,401.64	20.08	66.02	-7.78	-1,320.84	-40.23	3,104.35	3,073.26	31.10	99.827	
6,750.00	6,574.74	3,402.00	3,401.64	20.18	66.02	-4.97	-1,320.84	-40.23	3,138.30	3,107.06	31.24	100.472	
6,800.00	6,622.83	3,402.00	3,401.64	20.33	66.02	-1.06	-1,320.84	-40.23	3,186.99	3,155.54	31.45	101.334	
6,850.00	6,670.20	3,402.00	3,401.64	20.49	66.02	1.31	-1,320.84	-40.23	3,235.15	3,203.47	31.68	102.107	
6,900.00	6,716.50	3,402.00	3,401.64	20.64	66.02	2.45	-1,320.84	-40.23	3,282.45	3,250.51	31.94	102.774	
6,950.00	6,761.36	3,402.00	3,401.64	20.79	66.02	2.96	-1,320.84	-40.23	3,328.56	3,296.35	32.22	103.319	
7,000.00	6,804.45	3,402.00	3,401.64	20.94	66.02	3.17	-1,320.84	-40.23	3,373.20	3,340.68	32.52	103.723	
7,050.00	6,845.44	3,402.00	3,401.64	21.09	66.02	3.24	-1,320.84	-40.23	3,416.08	3,383.22	32.86	103.969	
7,100.00	6,884.01	3,402.00	3,401.64	21.24	66.02	3.26	-1,320.84	-40.23	3,456.95	3,423.73	33.23	104.043	
7,150.00	6,919.88	3,402.00	3,401.64	21.39	66.02	3.26	-1,320.84	-40.23	3,495.58	3,461.95	33.63	103.935	
7,200.00	6,952.78	3,402.00	3,401.64	21.54	66.02	3.26	-1,320.84	-40.23	3,531.75	3,497.67	34.08	103.636	
7,250.00	6,982.44	3,402.00	3,401.64	21.69	66.02	3.26	-1,320.84	-40.23	3,565.26	3,530.70	34.56	103.147	
7,300.00	7,008.65	3,402.00	3,401.64	21.84	66.02	3.28	-1,320.84	-40.23	3,595.94	3,560.85	35.09	102.469	
7,350.00	7,031.20	3,402.00	3,401.64	21.99	66.02	3.31	-1,320.84	-40.23	3,623.63	3,587.97	35.66	101.610	
7,400.00	7,049.92	3,402.00	3,401.64	22.14	66.02	3.36	-1,320.84	-40.23	3,648.18	3,611.91	36.27	100.582	
7,450.00	7,064.68	3,402.00	3,401.64	22.29	66.02	3.43	-1,320.84	-40.23	3,669.48	3,632.56	36.92	99.399	
7,500.00	7,075.36	3,402.00	3,401.64	22.44	66.02	3.53	-1,320.84	-40.23	3,687.42	3,649.82	37.60	98.077	
7,550.00	7,081.87	3,402.00	3,401.64	22.59	66.02	3.64	-1,320.84	-40.23	3,701.91	3,663.60	38.31	96.633	
7,604.16	7,084.18	3,402.00	3,401.64	22.75	66.02	3.80	-1,320.84	-40.23	3,713.64	3,674.53	39.11	94.954	
7,700.00	7,083.86	3,402.00	3,401.64	23.04	66.02	3.80	-1,320.84	-40.23	3,731.90	3,691.31	40.59	91.935	
7,800.00	7,083.53	3,402.00	3,401.64	23.34	66.02	3.80	-1,320.84	-40.23	3,753.47	3,711.28	42.18	88.977	
7,900.00	7,083.20	3,402.00	3,401.64	23.64	66.02	3.80	-1,320.84	-40.23	3,777.56	3,733.75	43.81	86.236	
8,000.00	7,082.87	3,402.00	3,401.64	23.94	66.02	3.80	-1,320.84	-40.23	3,804.13	3,758.69	45.44	83.718	
8,100.00	7,082.54	3,402.00	3,401.64	24.24	66.02	3.80	-1,320.84	-40.23	3,833.12	3,786.04	47.08	81.421	
8,200.00	7,082.22	3,402.00	3,401.64	24.54	66.02	3.80	-1,320.84	-40.23	3,864.48	3,815.77	48.71	79.337	
8,300.00	7,081.89	3,402.00	3,401.64	24.84	66.02	3.80	-1,320.84	-40.23	3,898.16	3,847.83	50.33	77.453	
8,400.00	7,081.56	3,402.00	3,401.64	25.14	66.02	3.80	-1,320.84	-40.23	3,934.09	3,882.16	51.93	75.757	
8,500.00	7,081.23	3,402.00	3,401.64	25.45	66.02	3.80	-1,320.84	-40.23	3,972.22	3,918.71	53.51	74.234	
8,600.00	7,080.90	3,402.00	3,401.64	25.75	66.02	3.80	-1,320.84	-40.23	4,012.47	3,957.41	55.06	72.873	
8,700.00	7,080.57	3,402.00	3,401.64	26.05	66.02	3.80	-1,320.84	-40.23	4,054.79	3,998.21	56.58	71.659	
8,800.00	7,080.24	3,402.00	3,401.64	26.35	66.02	3.80	-1,320.84	-40.23	4,099.12	4,041.04	58.08	70.581	
8,900.00	7,079.91	3,402.00	3,401.64	26.65	66.02	3.80	-1,320.84	-40.23	4,145.38	4,085.85	59.54	69.628	
9,000.00	7,079.59	3,402.00	3,401.64	26.95	66.02	3.80	-1,320.84	-40.23	4,193.52	4,132.56	60.96	68.789	
9,100.00	7,079.26	3,402.00	3,401.64	27.25	66.02	3.80	-1,320.84	-40.23	4,243.47	4,181.12	62.35	68.055	
9,200.00	7,078.93	3,402.00	3,401.64	27.55	66.02	3.80	-1,320.84	-40.23	4,295.17	4,231.46	63.71	67.417	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,402.00	3,401.64	27.85	66.02	3.80	-1,320.84	-40.23	4,348.55	4,283.52	65.03	66.868	
9,400.00	7,078.27	3,402.00	3,401.64	28.15	66.02	3.80	-1,320.84	-40.23	4,403.56	4,337.24	66.32	66.400	
9,500.00	7,077.94	3,402.00	3,401.64	28.45	66.02	3.80	-1,320.84	-40.23	4,460.13	4,392.56	67.57	66.006	
9,600.00	7,077.61	3,402.00	3,401.64	28.75	66.02	3.80	-1,320.84	-40.23	4,518.20	4,449.42	68.79	65.682	
9,700.00	7,077.28	3,402.00	3,401.64	29.05	66.02	3.80	-1,320.84	-40.23	4,577.73	4,507.75	69.97	65.420	
9,800.00	7,076.95	3,402.00	3,401.64	29.35	66.02	3.80	-1,320.84	-40.23	4,638.64	4,567.52	71.13	65.217	
9,900.00	7,076.63	3,402.00	3,401.64	29.65	66.02	3.80	-1,320.84	-40.23	4,700.90	4,628.65	72.25	65.068	
10,000.00	7,076.30	3,402.00	3,401.64	29.95	66.02	3.80	-1,320.84	-40.23	4,764.44	4,691.10	73.34	64.968	
10,100.00	7,075.97	3,402.00	3,401.64	30.25	66.02	3.80	-1,320.84	-40.23	4,829.21	4,754.82	74.39	64.914	
10,200.00	7,075.64	3,402.00	3,401.64	30.55	66.02	3.80	-1,320.84	-40.23	4,895.17	4,819.75	75.42	64.903	
10,300.00	7,075.31	3,402.00	3,401.64	30.85	66.02	3.80	-1,320.84	-40.23	4,962.27	4,885.85	76.42	64.931	
10,400.00	7,074.98	3,402.00	3,401.64	31.15	66.02	3.80	-1,320.84	-40.23	5,030.47	4,953.07	77.40	64.996	
10,500.00	7,074.65	3,402.00	3,401.64	31.46	66.02	3.80	-1,320.84	-40.23	5,099.71	5,021.36	78.34	65.094	
10,600.00	7,074.32	3,402.00	3,401.64	31.76	66.02	3.80	-1,320.84	-40.23	5,169.95	5,090.69	79.27	65.223	
10,700.00	7,074.00	3,402.00	3,401.64	32.06	66.02	3.80	-1,320.84	-40.23	5,241.17	5,161.01	80.16	65.382	
10,800.00	7,073.67	3,402.00	3,401.64	32.36	66.02	3.80	-1,320.84	-40.23	5,313.31	5,232.28	81.04	65.568	
10,900.00	7,073.34	3,402.00	3,401.64	32.66	66.02	3.80	-1,320.84	-40.23	5,386.34	5,304.46	81.89	65.779	
11,000.00	7,073.01	3,402.00	3,401.64	32.96	66.02	3.80	-1,320.84	-40.23	5,460.23	5,377.52	82.71	66.013	
11,100.00	7,072.68	3,402.00	3,401.64	33.26	66.02	3.80	-1,320.84	-40.23	5,534.94	5,451.42	83.52	66.269	
11,200.00	7,072.35	3,402.00	3,401.64	33.56	66.02	3.80	-1,320.84	-40.23	5,610.44	5,526.13	84.31	66.546	
11,300.00	7,072.02	3,402.00	3,401.64	33.86	66.02	3.80	-1,320.84	-40.23	5,686.69	5,601.61	85.08	66.841	
11,400.00	7,071.69	3,402.00	3,401.64	34.16	66.02	3.80	-1,320.84	-40.23	5,763.67	5,677.84	85.83	67.153	
11,500.00	7,071.36	3,402.00	3,401.64	34.46	66.02	3.80	-1,320.84	-40.23	5,841.34	5,754.78	86.56	67.482	
11,600.00	7,071.04	3,402.00	3,401.64	34.76	66.02	3.80	-1,320.84	-40.23	5,919.69	5,832.41	87.28	67.827	
11,700.00	7,070.71	3,402.00	3,401.64	35.06	66.02	3.80	-1,320.84	-40.23	5,998.68	5,910.70	87.98	68.185	
11,800.00	7,070.38	3,402.00	3,401.64	35.36	66.02	3.80	-1,320.84	-40.23	6,078.28	5,989.62	88.66	68.557	
11,900.00	7,070.05	3,402.00	3,401.64	35.66	66.02	3.80	-1,320.84	-40.23	6,158.49	6,069.16	89.33	68.941	
12,000.00	7,069.72	3,402.00	3,401.64	35.96	66.02	3.80	-1,320.84	-40.23	6,239.26	6,149.28	89.99	69.337	
12,100.00	7,069.39	3,402.00	3,401.64	36.26	66.02	3.80	-1,320.84	-40.23	6,320.59	6,229.96	90.63	69.743	
12,200.00	7,069.06	3,402.00	3,401.64	36.56	66.02	3.80	-1,320.84	-40.23	6,402.44	6,311.18	91.26	70.159	
12,300.00	7,068.73	3,402.00	3,401.64	36.86	66.02	3.80	-1,320.84	-40.23	6,484.80	6,392.93	91.87	70.585	
12,400.00	7,068.41	3,402.00	3,401.64	37.16	66.02	3.80	-1,320.84	-40.23	6,567.65	6,475.18	92.48	71.019	
12,500.00	7,068.08	3,402.00	3,401.64	37.46	66.02	3.80	-1,320.84	-40.23	6,650.98	6,557.91	93.07	71.462	
12,600.00	7,067.75	3,402.00	3,401.64	37.76	66.02	3.80	-1,320.84	-40.23	6,734.76	6,641.10	93.65	71.912	
12,700.00	7,067.42	3,402.00	3,401.64	38.06	66.02	3.80	-1,320.84	-40.23	6,818.97	6,724.75	94.23	72.369	
12,800.00	7,067.09	3,402.00	3,401.64	38.36	66.02	3.80	-1,320.84	-40.23	6,903.61	6,808.82	94.79	72.832	
12,900.00	7,066.76	3,402.00	3,401.64	38.66	66.02	3.80	-1,320.84	-40.23	6,988.65	6,893.31	95.34	73.302	
13,000.00	7,066.43	3,402.00	3,401.64	38.96	66.02	3.80	-1,320.84	-40.23	7,074.08	6,978.20	95.88	73.777	
13,100.00	7,066.10	3,402.00	3,401.64	39.26	66.02	3.80	-1,320.84	-40.23	7,159.89	7,063.47	96.42	74.258	
13,200.00	7,065.77	3,402.00	3,401.64	39.56	66.02	3.80	-1,320.84	-40.23	7,246.07	7,149.12	96.95	74.743	
13,300.00	7,065.45	3,402.00	3,401.64	39.86	66.02	3.80	-1,320.84	-40.23	7,332.59	7,235.13	97.47	75.233	
13,400.00	7,065.12	3,402.00	3,401.64	40.16	66.02	3.80	-1,320.84	-40.23	7,419.46	7,321.48	97.98	75.727	
13,500.00	7,064.79	3,402.00	3,401.64	40.47	66.02	3.80	-1,320.84	-40.23	7,506.65	7,408.17	98.48	76.225	
13,600.00	7,064.46	3,402.00	3,401.64	40.77	66.02	3.80	-1,320.84	-40.23	7,594.16	7,495.18	98.98	76.726	
13,700.00	7,064.13	3,402.00	3,401.64	41.07	66.02	3.80	-1,320.84	-40.23	7,681.97	7,582.50	99.47	77.230	
13,800.00	7,063.80	3,402.00	3,401.64	41.37	66.02	3.80	-1,320.84	-40.23	7,770.07	7,670.12	99.95	77.738	
13,900.00	7,063.47	3,402.00	3,401.64	41.67	66.02	3.80	-1,320.84	-40.23	7,858.47	7,758.04	100.43	78.248	
14,000.00	7,063.14	3,402.00	3,401.64	41.97	66.02	3.80	-1,320.84	-40.23	7,947.13	7,846.23	100.90	78.761	
14,100.00	7,062.82	3,402.00	3,401.64	42.27	66.02	3.80	-1,320.84	-40.23	8,036.06	7,934.70	101.37	79.276	
14,200.00	7,062.49	3,402.00	3,401.64	42.57	66.02	3.80	-1,320.84	-40.23	8,125.25	8,023.43	101.83	79.793	
14,300.00	7,062.16	3,402.00	3,401.64	42.87	66.02	3.80	-1,320.84	-40.23	8,214.69	8,112.41	102.28	80.312	
14,400.00	7,061.83	3,402.00	3,401.64	43.17	66.02	3.80	-1,320.84	-40.23	8,304.37	8,201.64	102.73	80.833	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.50	3,402.00	3,401.64	43.47	66.02	3.80	-1,320.84	-40.23	8,394.29	8,291.10	103.18	81.355	
14,600.00	7,061.17	3,402.00	3,401.64	43.77	66.02	3.80	-1,320.84	-40.23	8,484.42	8,380.80	103.62	81.879	
14,700.00	7,060.84	3,402.00	3,401.64	44.07	66.02	3.80	-1,320.84	-40.23	8,574.78	8,470.72	104.06	82.403	
14,800.00	7,060.51	3,402.00	3,401.64	44.37	66.02	3.80	-1,320.84	-40.23	8,665.35	8,560.86	104.49	82.929	
14,900.00	7,060.18	3,402.00	3,401.64	44.67	66.02	3.80	-1,320.84	-40.23	8,756.13	8,651.21	104.92	83.456	
15,000.00	7,059.86	3,402.00	3,401.64	44.97	66.02	3.80	-1,320.84	-40.23	8,847.10	8,741.75	105.34	83.983	
15,100.00	7,059.53	3,402.00	3,401.64	45.27	66.02	3.80	-1,320.84	-40.23	8,938.26	8,832.50	105.76	84.511	
15,200.00	7,059.20	3,402.00	3,401.64	45.57	66.02	3.80	-1,320.84	-40.23	9,029.62	8,923.44	106.18	85.039	
15,300.00	7,058.87	3,402.00	3,401.64	45.87	66.02	3.80	-1,320.84	-40.23	9,121.15	9,014.56	106.60	85.568	
15,400.00	7,058.54	3,402.00	3,401.64	46.17	66.02	3.80	-1,320.84	-40.23	9,212.86	9,105.86	107.01	86.097	
15,500.00	7,058.21	3,402.00	3,401.64	46.47	66.02	3.80	-1,320.84	-40.23	9,304.75	9,197.33	107.41	86.626	
15,600.00	7,057.88	3,402.00	3,401.64	46.77	66.02	3.80	-1,320.84	-40.23	9,396.79	9,288.98	107.82	87.156	
15,700.00	7,057.55	3,402.00	3,401.64	47.07	66.02	3.80	-1,320.84	-40.23	9,489.00	9,380.78	108.22	87.685	
15,800.00	7,057.23	3,402.00	3,401.64	47.37	66.02	3.80	-1,320.84	-40.23	9,581.37	9,472.75	108.61	88.214	
15,900.00	7,056.90	3,402.00	3,401.64	47.67	66.02	3.80	-1,320.84	-40.23	9,673.88	9,564.87	109.01	88.743	
16,000.00	7,056.57	3,402.00	3,401.64	47.97	66.02	3.80	-1,320.84	-40.23	9,766.55	9,657.14	109.40	89.272	
16,100.00	7,056.24	3,402.00	3,401.64	48.27	66.02	3.80	-1,320.84	-40.23	9,859.35	9,749.56	109.79	89.800	
16,200.00	7,055.91	3,402.00	3,401.64	48.57	66.02	3.80	-1,320.84	-40.23	9,952.30	9,842.12	110.18	90.328	
16,300.00	7,055.58	3,402.00	3,401.64	48.87	66.02	3.80	-1,320.84	-40.23	10,045.38	9,934.82	110.56	90.855	
16,400.00	7,055.25	3,402.00	3,401.64	49.17	66.02	3.80	-1,320.84	-40.23	10,138.60	10,027.65	110.95	91.382	
16,500.00	7,054.92	3,402.00	3,401.64	49.47	66.02	3.80	-1,320.84	-40.23	10,231.94	10,120.61	111.33	91.908	
16,600.00	7,054.59	3,402.00	3,401.64	49.77	66.02	3.80	-1,320.84	-40.23	10,325.40	10,213.70	111.71	92.434	
16,619.57	7,054.53	3,402.00	3,401.64	49.83	66.02	3.80	-1,320.84	-40.23	10,343.71	10,231.93	111.78	92.537	
16,700.00	7,054.27	3,402.00	3,401.64	50.07	66.02	3.80	-1,320.84	-40.23	10,418.99	10,306.91	112.08	92.959	
16,782.16	7,054.00	3,402.00	3,401.64	50.32	66.02	3.80	-1,320.84	-40.23	10,495.97	10,383.58	112.39	93.390	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	107.40	-1,006.80	3,212.03	3,366.45				
100.00	100.00	52.51	52.51	0.23	0.49	107.40	-1,006.80	3,212.03	3,366.12	3,365.41	0.71	4,727.947	
200.00	200.00	152.51	152.51	0.53	1.91	107.40	-1,006.80	3,212.03	3,366.12	3,363.68	2.44	1,379.420	
224.98	224.98	177.50	177.49	0.60	2.39	107.40	-1,006.63	3,212.03	3,366.07	3,363.08	2.99	1,125.574	
300.00	300.00	248.44	248.44	0.83	3.74	107.40	-1,006.77	3,212.03	3,366.11	3,361.55	4.57	737.278	
400.00	400.00	352.52	352.51	1.13	5.66	107.40	-1,006.80	3,212.03	3,366.12	3,359.33	6.79	495.667	
420.85	420.85	372.66	372.65	1.19	6.04	107.40	-1,006.45	3,212.03	3,366.02	3,358.79	7.23	465.848	
500.00	500.00	447.22	447.21	1.43	7.41	107.40	-1,006.67	3,212.03	3,366.09	3,357.25	8.84	380.770	
600.00	599.98	552.51	552.49	1.73	9.36	-78.21	-1,006.80	3,212.03	3,365.76	3,354.68	11.09	303.607	
700.00	699.84	652.37	652.35	2.03	11.21	-78.32	-1,006.80	3,212.03	3,364.70	3,351.46	13.23	254.295	
800.00	799.45	751.80	751.78	2.33	13.04	-78.51	-1,006.51	3,212.03	3,362.85	3,347.49	15.37	218.804	
900.00	898.70	850.25	850.23	2.63	14.86	-78.75	-1,006.57	3,212.03	3,360.45	3,342.96	17.49	192.149	
1,000.00	997.47	948.25	948.23	2.93	16.67	-79.07	-1,006.71	3,212.03	3,357.45	3,337.85	19.60	171.299	
1,100.00	1,095.62	1,048.18	1,048.14	3.23	18.62	-79.46	-1,006.80	3,212.03	3,353.85	3,332.01	21.84	153.544	
1,207.25	1,200.09	1,152.64	1,152.60	3.55	20.73	-79.94	-1,006.80	3,212.03	3,349.40	3,325.13	24.27	137.983	
1,300.00	1,290.03	1,242.53	1,242.48	3.83	22.54	-80.32	-1,005.98	3,212.03	3,345.18	3,318.81	26.37	126.869	
1,400.00	1,386.99	1,337.33	1,337.28	4.13	24.45	-80.71	-1,006.11	3,212.03	3,341.07	3,312.49	28.58	116.897	
1,500.00	1,483.96	1,432.25	1,432.20	4.43	26.37	-81.10	-1,006.47	3,212.03	3,337.19	3,306.39	30.80	108.357	
1,600.00	1,580.93	1,533.54	1,533.44	4.73	28.42	-81.52	-1,006.80	3,212.03	3,333.47	3,300.32	33.15	100.559	
1,700.00	1,677.90	1,630.51	1,630.41	5.03	30.39	-81.92	-1,006.80	3,212.03	3,329.84	3,294.42	35.42	94.008	
1,800.00	1,774.87	1,727.48	1,727.38	5.33	32.37	-82.33	-1,006.80	3,212.03	3,326.39	3,288.70	37.69	88.251	
1,900.00	1,871.83	1,822.26	1,822.15	5.63	34.29	-82.74	-1,005.83	3,212.03	3,322.90	3,282.98	39.92	83.240	
2,000.00	1,968.80	1,916.91	1,916.79	5.93	36.22	-83.13	-1,006.26	3,212.03	3,319.90	3,277.76	42.14	78.776	
2,100.00	2,065.77	2,018.44	2,018.28	6.23	38.30	-83.54	-1,006.80	3,212.03	3,317.09	3,272.56	44.53	74.490	
2,200.00	2,162.74	2,115.41	2,115.25	6.53	40.35	-83.95	-1,006.80	3,212.03	3,314.35	3,267.47	46.88	70.705	
2,300.00	2,259.71	2,212.38	2,212.22	6.83	42.39	-84.36	-1,006.80	3,212.03	3,311.78	3,262.56	49.22	67.285	
2,400.00	2,356.67	2,308.17	2,308.01	7.13	44.41	-84.77	-1,006.05	3,212.03	3,309.25	3,257.71	51.54	64.207	
2,500.00	2,453.64	2,403.68	2,403.51	7.43	46.43	-85.17	-1,006.35	3,212.03	3,307.11	3,253.25	53.85	61.408	
2,600.00	2,550.61	2,503.36	2,503.12	7.73	48.52	-85.58	-1,006.80	3,212.03	3,305.16	3,248.91	56.25	58.764	
2,700.00	2,647.58	2,600.33	2,600.09	8.03	50.50	-85.99	-1,006.80	3,212.03	3,303.31	3,244.78	58.53	56.442	
2,800.00	2,744.55	2,697.29	2,697.06	8.33	52.48	-86.40	-1,006.80	3,212.03	3,301.64	3,240.83	60.81	54.298	
2,900.00	2,841.51	2,794.26	2,794.03	8.63	54.46	-86.82	-1,006.80	3,212.03	3,300.15	3,237.06	63.09	52.312	
3,000.00	2,938.48	2,890.32	2,890.06	8.93	56.42	-87.25	-1,004.98	3,212.03	3,298.57	3,233.22	65.35	50.477	
3,100.00	3,035.45	2,985.97	2,985.70	9.23	58.37	-87.65	-1,005.31	3,212.03	3,297.50	3,229.90	67.60	48.779	
3,200.00	3,132.42	3,081.78	3,081.50	9.53	60.33	-88.05	-1,005.92	3,212.03	3,296.65	3,226.79	69.86	47.191	
3,300.00	3,229.39	3,182.22	3,181.90	9.83	62.36	-88.46	-1,006.80	3,212.03	3,295.99	3,223.80	72.19	45.656	
3,400.00	3,326.35	3,279.19	3,278.87	10.13	64.13	-88.87	-1,006.80	3,212.03	3,295.40	3,221.14	74.26	44.376	
3,500.00	3,423.32	3,376.16	3,375.84	10.43	65.90	-89.28	-1,006.80	3,212.03	3,295.00	3,218.67	76.33	43.168	
3,563.65	3,485.04	3,437.87	3,437.55	10.62	67.03	-89.55	-1,006.80	3,212.03	3,294.84	3,217.19	77.65	42.434	CC, ES, SF
3,600.00	3,520.29	3,414.00	3,413.67	10.73	66.59	-89.45	-1,006.80	3,212.03	3,295.31	3,218.00	77.31	42.625	
3,700.00	3,617.26	3,414.00	3,413.67	11.03	66.59	-89.45	-1,006.80	3,212.03	3,298.43	3,220.88	77.55	42.534	
3,800.00	3,714.23	3,414.00	3,413.67	11.33	66.59	-89.45	-1,006.80	3,212.03	3,304.58	3,226.85	77.73	42.514	
3,900.00	3,811.19	3,414.00	3,413.67	11.63	66.59	-89.45	-1,006.80	3,212.03	3,313.73	3,235.87	77.86	42.562	
4,000.00	3,908.16	3,414.00	3,413.67	11.93	66.59	-89.45	-1,006.80	3,212.03	3,325.87	3,247.94	77.93	42.677	
4,100.00	4,005.13	3,414.00	3,413.67	12.23	66.59	-89.45	-1,006.80	3,212.03	3,340.96	3,263.00	77.95	42.858	
4,200.00	4,102.10	3,414.00	3,413.67	12.53	66.59	-89.45	-1,006.80	3,212.03	3,358.95	3,281.03	77.93	43.103	
4,300.00	4,199.07	3,414.00	3,413.67	12.83	66.59	-89.45	-1,006.80	3,212.03	3,379.82	3,301.96	77.86	43.412	
4,400.00	4,296.03	3,414.00	3,413.67	13.13	66.59	-89.45	-1,006.80	3,212.03	3,403.49	3,325.75	77.74	43.781	
4,500.00	4,393.00	3,414.00	3,413.67	13.43	66.59	-89.45	-1,006.80	3,212.03	3,429.92	3,352.34	77.58	44.211	
4,600.00	4,489.97	3,414.00	3,413.67	13.73	66.59	-89.45	-1,006.80	3,212.03	3,459.04	3,381.65	77.39	44.699	
4,700.00	4,586.94	3,414.00	3,413.67	14.03	66.59	-89.45	-1,006.80	3,212.03	3,490.78	3,413.62	77.16	45.243	
4,800.00	4,683.91	3,414.00	3,413.67	14.33	66.59	-89.45	-1,006.80	3,212.03	3,525.07	3,448.17	76.89	45.843	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,780.87	3,414.00	3,413.67	14.63	66.59	-89.45	-1,006.80	3,212.03	3,561.84	3,485.23	76.61	46.495	
5,000.00	4,877.84	3,414.00	3,413.67	14.93	66.59	-89.45	-1,006.80	3,212.03	3,601.01	3,524.72	76.29	47.199	
5,100.00	4,974.81	3,414.00	3,413.67	15.23	66.59	-89.45	-1,006.80	3,212.03	3,642.51	3,566.55	75.96	47.953	
5,200.00	5,071.78	3,414.00	3,413.67	15.53	66.59	-89.45	-1,006.80	3,212.03	3,686.25	3,610.64	75.61	48.755	
5,300.00	5,168.75	3,414.00	3,413.67	15.83	66.59	-89.45	-1,006.80	3,212.03	3,732.16	3,656.92	75.24	49.603	
5,400.00	5,265.71	3,414.00	3,413.67	16.13	66.59	-89.45	-1,006.80	3,212.03	3,780.16	3,705.30	74.86	50.494	
5,500.00	5,362.68	3,414.00	3,413.67	16.43	66.59	-89.45	-1,006.80	3,212.03	3,830.17	3,755.70	74.48	51.429	
5,600.00	5,459.65	3,414.00	3,413.67	16.73	66.59	-89.45	-1,006.80	3,212.03	3,882.11	3,808.03	74.08	52.404	
5,700.00	5,556.62	3,414.00	3,413.67	17.03	66.59	-89.45	-1,006.80	3,212.03	3,935.91	3,862.23	73.68	53.417	
5,800.00	5,653.59	3,414.00	3,413.67	17.33	66.59	-89.45	-1,006.80	3,212.03	3,991.49	3,918.21	73.28	54.468	
5,900.00	5,750.55	3,414.00	3,413.67	17.63	66.59	-89.45	-1,006.80	3,212.03	4,048.77	3,975.89	72.88	55.553	
6,000.00	5,847.52	3,414.00	3,413.67	17.93	66.59	-89.45	-1,006.80	3,212.03	4,107.70	4,035.21	72.48	56.672	
6,100.00	5,944.49	3,414.00	3,413.67	18.23	66.59	-89.45	-1,006.80	3,212.03	4,168.18	4,096.10	72.09	57.823	
6,200.00	6,041.46	3,414.00	3,413.67	18.53	66.59	-89.45	-1,006.80	3,212.03	4,230.17	4,158.48	71.69	59.003	
6,300.00	6,138.43	3,414.00	3,413.67	18.83	66.59	-89.45	-1,006.80	3,212.03	4,293.59	4,222.28	71.31	60.210	
6,400.00	6,235.39	3,414.00	3,413.67	19.13	66.59	-89.45	-1,006.80	3,212.03	4,358.38	4,287.45	70.93	61.444	
6,500.00	6,332.36	3,414.00	3,413.67	19.43	66.59	-89.45	-1,006.80	3,212.03	4,424.49	4,353.93	70.56	62.703	
6,600.00	6,429.33	3,414.00	3,413.67	19.73	66.59	-89.45	-1,006.80	3,212.03	4,491.85	4,421.65	70.20	63.985	
6,700.00	6,526.30	3,414.00	3,413.67	20.03	66.59	-89.45	-1,006.80	3,212.03	4,560.40	4,490.55	69.85	65.287	
6,715.28	6,541.12	3,414.00	3,413.67	20.08	66.59	-89.45	-1,006.80	3,212.03	4,570.98	4,501.18	69.80	65.488	
6,750.00	6,574.74	3,414.00	3,413.67	20.18	66.59	-102.25	-1,006.80	3,212.03	4,595.85	4,526.16	69.69	65.949	
6,800.00	6,622.83	3,414.00	3,413.67	20.33	66.59	-117.30	-1,006.80	3,212.03	4,634.32	4,564.76	69.56	66.625	
6,850.00	6,670.20	3,414.00	3,413.67	20.49	66.59	-127.75	-1,006.80	3,212.03	4,675.59	4,606.12	69.46	67.310	
6,900.00	6,716.50	3,414.00	3,413.67	20.64	66.59	-134.41	-1,006.80	3,212.03	4,719.27	4,649.87	69.41	67.996	
6,950.00	6,761.36	3,414.00	3,413.67	20.79	66.59	-138.10	-1,006.80	3,212.03	4,764.99	4,695.60	69.39	68.674	
7,000.00	6,804.45	3,414.00	3,413.67	20.94	66.59	-138.98	-1,006.80	3,212.03	4,812.32	4,742.92	69.40	69.337	
7,050.00	6,845.44	3,414.00	3,413.67	21.09	66.59	-135.97	-1,006.80	3,212.03	4,860.88	4,791.41	69.46	69.978	
7,100.00	6,884.01	3,414.00	3,413.67	21.24	66.59	-123.59	-1,006.80	3,212.03	4,910.25	4,840.69	69.56	70.590	
7,150.00	6,919.88	3,414.00	3,413.67	21.39	66.59	-77.69	-1,006.80	3,212.03	4,960.06	4,890.36	69.70	71.167	
7,200.00	6,952.78	3,414.00	3,413.67	21.54	66.59	-21.93	-1,006.80	3,212.03	5,009.90	4,940.03	69.87	71.704	
7,250.00	6,982.44	3,414.00	3,413.67	21.69	66.59	-4.68	-1,006.80	3,212.03	5,059.41	4,989.33	70.08	72.197	
7,300.00	7,008.65	3,414.00	3,413.67	21.84	66.59	1.52	-1,006.80	3,212.03	5,108.22	5,037.90	70.32	72.641	
7,350.00	7,031.20	3,414.00	3,413.67	21.99	66.59	4.44	-1,006.80	3,212.03	5,156.00	5,085.40	70.60	73.034	
7,400.00	7,049.92	3,414.00	3,413.67	22.14	66.59	6.07	-1,006.80	3,212.03	5,202.39	5,131.49	70.90	73.373	
7,450.00	7,064.68	3,414.00	3,413.67	22.29	66.59	7.10	-1,006.80	3,212.03	5,247.11	5,175.87	71.24	73.656	
7,500.00	7,075.36	3,414.00	3,413.67	22.44	66.59	7.83	-1,006.80	3,212.03	5,289.84	5,218.24	71.60	73.881	
7,550.00	7,081.87	3,414.00	3,413.67	22.59	66.59	8.40	-1,006.80	3,212.03	5,330.32	5,258.34	71.98	74.049	
7,604.16	7,084.18	3,414.00	3,413.67	22.75	66.59	8.94	-1,006.80	3,212.03	5,371.34	5,298.92	72.42	74.165	
7,700.00	7,083.86	3,414.00	3,413.67	23.04	66.59	8.94	-1,006.80	3,212.03	5,441.54	5,368.32	73.22	74.317	
7,800.00	7,083.53	3,414.00	3,413.67	23.34	66.59	8.94	-1,006.80	3,212.03	5,515.61	5,441.58	74.03	74.504	
7,900.00	7,083.20	3,414.00	3,413.67	23.64	66.59	8.94	-1,006.80	3,212.03	5,590.48	5,515.66	74.82	74.717	
8,000.00	7,082.87	3,414.00	3,413.67	23.94	66.59	8.94	-1,006.80	3,212.03	5,666.13	5,590.54	75.59	74.955	
8,100.00	7,082.54	3,414.00	3,413.67	24.24	66.59	8.94	-1,006.80	3,212.03	5,742.53	5,666.18	76.35	75.216	
8,200.00	7,082.22	3,414.00	3,413.67	24.54	66.59	8.94	-1,006.80	3,212.03	5,819.64	5,742.56	77.08	75.498	
8,300.00	7,081.89	3,414.00	3,413.67	24.84	66.59	8.94	-1,006.80	3,212.03	5,897.44	5,819.64	77.80	75.800	
8,400.00	7,081.56	3,414.00	3,413.67	25.14	66.59	8.94	-1,006.80	3,212.03	5,975.90	5,897.39	78.51	76.121	
8,500.00	7,081.23	3,414.00	3,413.67	25.45	66.59	8.94	-1,006.80	3,212.03	6,054.99	5,975.80	79.19	76.459	
8,600.00	7,080.90	3,414.00	3,413.67	25.75	66.59	8.94	-1,006.80	3,212.03	6,134.70	6,054.83	79.87	76.813	
8,700.00	7,080.57	3,414.00	3,413.67	26.05	66.59	8.94	-1,006.80	3,212.03	6,214.99	6,134.47	80.52	77.181	
8,800.00	7,080.24	3,414.00	3,413.67	26.35	66.59	8.94	-1,006.80	3,212.03	6,295.85	6,214.68	81.17	77.564	
8,900.00	7,079.91	3,414.00	3,413.67	26.65	66.59	8.94	-1,006.80	3,212.03	6,377.25	6,295.44	81.80	77.960	
9,000.00	7,079.59	3,414.00	3,413.67	26.95	66.59	8.94	-1,006.80	3,212.03	6,459.17	6,376.75	82.42	78.367	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
9,100.00	7,079.26	3,414.00	3,413.67	27.25	66.59	8.94	-1,006.80	3,212.03	6,541.59	6,458.56	83.03	78.786	
9,200.00	7,078.93	3,414.00	3,413.67	27.55	66.59	8.94	-1,006.80	3,212.03	6,624.50	6,540.87	83.63	79.216	
9,300.00	7,078.60	3,414.00	3,413.67	27.85	66.59	8.94	-1,006.80	3,212.03	6,707.87	6,623.66	84.21	79.655	
9,400.00	7,078.27	3,414.00	3,413.67	28.15	66.59	8.94	-1,006.80	3,212.03	6,791.70	6,706.91	84.79	80.103	
9,500.00	7,077.94	3,414.00	3,413.67	28.45	66.59	8.94	-1,006.80	3,212.03	6,875.95	6,790.60	85.35	80.560	
9,600.00	7,077.61	3,414.00	3,413.67	28.75	66.59	8.94	-1,006.80	3,212.03	6,960.62	6,874.72	85.91	81.024	
9,700.00	7,077.28	3,414.00	3,413.67	29.05	66.59	8.94	-1,006.80	3,212.03	7,045.70	6,959.24	86.45	81.496	
9,800.00	7,076.95	3,414.00	3,413.67	29.35	66.59	8.94	-1,006.80	3,212.03	7,131.16	7,044.17	86.99	81.974	
9,900.00	7,076.63	3,414.00	3,413.67	29.65	66.59	8.94	-1,006.80	3,212.03	7,217.00	7,129.47	87.52	82.459	
10,000.00	7,076.30	3,414.00	3,413.67	29.95	66.59	8.94	-1,006.80	3,212.03	7,303.19	7,215.15	88.04	82.949	
10,100.00	7,075.97	3,414.00	3,413.67	30.25	66.59	8.94	-1,006.80	3,212.03	7,389.73	7,301.18	88.56	83.445	
10,200.00	7,075.64	3,414.00	3,413.67	30.55	66.59	8.94	-1,006.80	3,212.03	7,476.61	7,387.55	89.06	83.946	
10,300.00	7,075.31	3,414.00	3,413.67	30.85	66.59	8.94	-1,006.80	3,212.03	7,563.82	7,474.25	89.56	84.452	
10,400.00	7,074.98	3,414.00	3,413.67	31.15	66.59	8.94	-1,006.80	3,212.03	7,651.33	7,561.28	90.06	84.962	
10,500.00	7,074.65	3,414.00	3,413.67	31.46	66.59	8.94	-1,006.80	3,212.03	7,739.15	7,648.61	90.54	85.475	
10,600.00	7,074.32	3,414.00	3,413.67	31.76	66.59	8.94	-1,006.80	3,212.03	7,827.26	7,736.24	91.02	85.993	
10,700.00	7,074.00	3,414.00	3,413.67	32.06	66.59	8.94	-1,006.80	3,212.03	7,915.66	7,824.16	91.50	86.513	
10,800.00	7,073.67	3,414.00	3,413.67	32.36	66.59	8.94	-1,006.80	3,212.03	8,004.32	7,912.36	91.96	87.037	
10,900.00	7,073.34	3,414.00	3,413.67	32.66	66.59	8.94	-1,006.80	3,212.03	8,093.26	8,000.83	92.43	87.563	
11,000.00	7,073.01	3,414.00	3,413.67	32.96	66.59	8.94	-1,006.80	3,212.03	8,182.44	8,089.56	92.89	88.092	
11,100.00	7,072.68	3,414.00	3,413.67	33.26	66.59	8.94	-1,006.80	3,212.03	8,271.88	8,178.54	93.34	88.623	
11,200.00	7,072.35	3,414.00	3,413.67	33.56	66.59	8.94	-1,006.80	3,212.03	8,361.55	8,267.76	93.79	89.156	
11,300.00	7,072.02	3,414.00	3,413.67	33.86	66.59	8.94	-1,006.80	3,212.03	8,451.45	8,357.23	94.23	89.691	
11,400.00	7,071.69	3,414.00	3,413.67	34.16	66.59	8.94	-1,006.80	3,212.03	8,541.58	8,446.92	94.67	90.228	
11,500.00	7,071.36	3,414.00	3,413.67	34.46	66.59	8.94	-1,006.80	3,212.03	8,631.93	8,536.83	95.10	90.766	
11,600.00	7,071.04	3,414.00	3,413.67	34.76	66.59	8.94	-1,006.80	3,212.03	8,722.49	8,626.96	95.53	91.305	
11,700.00	7,070.71	3,414.00	3,413.67	35.06	66.59	8.94	-1,006.80	3,212.03	8,813.25	8,717.29	95.96	91.846	
11,800.00	7,070.38	3,414.00	3,413.67	35.36	66.59	8.94	-1,006.80	3,212.03	8,904.21	8,807.83	96.38	92.387	
11,900.00	7,070.05	3,414.00	3,413.67	35.66	66.59	8.94	-1,006.80	3,212.03	8,995.36	8,898.56	96.80	92.929	
12,000.00	7,069.72	3,414.00	3,413.67	35.96	66.59	8.94	-1,006.80	3,212.03	9,086.70	8,989.49	97.21	93.472	
12,100.00	7,069.39	3,414.00	3,413.67	36.26	66.59	8.94	-1,006.80	3,212.03	9,178.22	9,080.59	97.62	94.016	
12,200.00	7,069.06	3,414.00	3,413.67	36.56	66.59	8.94	-1,006.80	3,212.03	9,269.91	9,171.88	98.03	94.559	
12,300.00	7,068.73	3,414.00	3,413.67	36.86	66.59	8.94	-1,006.80	3,212.03	9,361.78	9,263.34	98.44	95.103	
12,400.00	7,068.41	3,414.00	3,413.67	37.16	66.59	8.94	-1,006.80	3,212.03	9,453.80	9,354.97	98.84	95.648	
12,500.00	7,068.08	3,414.00	3,413.67	37.46	66.59	8.94	-1,006.80	3,212.03	9,545.99	9,446.76	99.24	96.192	
12,600.00	7,067.75	3,414.00	3,413.67	37.76	66.59	8.94	-1,006.80	3,212.03	9,638.34	9,538.70	99.64	96.736	
12,700.00	7,067.42	3,414.00	3,413.67	38.06	66.59	8.94	-1,006.80	3,212.03	9,730.84	9,630.81	100.03	97.280	
12,800.00	7,067.09	3,414.00	3,413.67	38.36	66.59	8.94	-1,006.80	3,212.03	9,823.48	9,723.06	100.42	97.824	
12,900.00	7,066.76	3,414.00	3,413.67	38.66	66.59	8.94	-1,006.80	3,212.03	9,916.26	9,815.46	100.81	98.367	
13,000.00	7,066.43	3,414.00	3,413.67	38.96	66.59	8.94	-1,006.80	3,212.03	10,009.19	9,908.00	101.19	98.911	
13,100.00	7,066.10	3,414.00	3,413.67	39.26	66.59	8.94	-1,006.80	3,212.03	10,102.25	10,000.67	101.58	99.453	
13,200.00	7,065.77	3,414.00	3,413.67	39.56	66.59	8.94	-1,006.80	3,212.03	10,195.44	10,093.48	101.96	99.995	
13,300.00	7,065.45	3,414.00	3,413.67	39.86	66.59	8.94	-1,006.80	3,212.03	10,288.76	10,186.42	102.34	100.537	
13,400.00	7,065.12	3,414.00	3,413.67	40.16	66.59	8.94	-1,006.80	3,212.03	10,382.21	10,279.49	102.72	101.077	
13,500.00	7,064.79	3,414.00	3,413.67	40.47	66.59	8.94	-1,006.80	3,212.03	10,475.77	10,372.68	103.09	101.617	
13,600.00	7,064.46	3,414.00	3,413.67	40.77	66.59	8.94	-1,006.80	3,212.03	10,569.45	10,465.99	103.46	102.156	
13,700.00	7,064.13	3,414.00	3,413.67	41.07	66.59	8.94	-1,006.80	3,212.03	10,663.25	10,559.42	103.83	102.695	
13,800.00	7,063.80	3,414.00	3,413.67	41.37	66.59	8.94	-1,006.80	3,212.03	10,757.16	10,652.96	104.20	103.232	
13,900.00	7,063.47	3,414.00	3,413.67	41.67	66.59	8.94	-1,006.80	3,212.03	10,851.18	10,746.61	104.57	103.768	
14,000.00	7,063.14	3,414.00	3,413.67	41.97	66.59	8.94	-1,006.80	3,212.03	10,945.30	10,840.37	104.94	104.304	
14,100.00	7,062.82	3,414.00	3,413.67	42.27	66.59	8.94	-1,006.80	3,212.03	11,039.53	10,934.23	105.30	104.838	
14,200.00	7,062.49	3,414.00	3,413.67	42.57	66.59	8.94	-1,006.80	3,212.03	11,133.86	11,028.19	105.66	105.371	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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
14,300.00	7,062.16	3,414.00	3,413.67	42.87	66.59	8.94	-1,006.80	3,212.03	11,228.28	11,122.26	106.02	105.903	
14,400.00	7,061.83	3,414.00	3,413.67	43.17	66.59	8.94	-1,006.80	3,212.03	11,322.81	11,216.42	106.38	106.434	
14,500.00	7,061.50	3,414.00	3,413.67	43.47	66.59	8.94	-1,006.80	3,212.03	11,417.42	11,310.68	106.74	106.963	
14,600.00	7,061.17	3,414.00	3,413.67	43.77	66.59	8.94	-1,006.80	3,212.03	11,512.13	11,405.03	107.10	107.492	
14,700.00	7,060.84	3,414.00	3,413.67	44.07	66.59	8.94	-1,006.80	3,212.03	11,606.92	11,499.47	107.45	108.019	
14,800.00	7,060.51	3,414.00	3,413.67	44.37	66.59	8.94	-1,006.80	3,212.03	11,701.81	11,594.00	107.81	108.544	
14,900.00	7,060.18	3,414.00	3,413.67	44.67	66.59	8.94	-1,006.80	3,212.03	11,796.77	11,688.61	108.16	109.069	
15,000.00	7,059.86	3,414.00	3,413.67	44.97	66.59	8.94	-1,006.80	3,212.03	11,891.82	11,783.31	108.51	109.592	
15,100.00	7,059.53	3,414.00	3,413.67	45.27	66.59	8.94	-1,006.80	3,212.03	11,986.95	11,878.09	108.86	110.113	
15,200.00	7,059.20	3,414.00	3,413.67	45.57	66.59	8.94	-1,006.80	3,212.03	12,082.16	11,972.95	109.21	110.633	
15,300.00	7,058.87	3,414.00	3,413.67	45.87	66.59	8.94	-1,006.80	3,212.03	12,177.44	12,067.89	109.56	111.152	
15,400.00	7,058.54	3,414.00	3,413.67	46.17	66.59	8.94	-1,006.80	3,212.03	12,272.80	12,162.90	109.90	111.669	
15,500.00	7,058.21	3,414.00	3,413.67	46.47	66.59	8.94	-1,006.80	3,212.03	12,368.24	12,257.99	110.25	112.185	
15,600.00	7,057.88	3,414.00	3,413.67	46.77	66.59	8.94	-1,006.80	3,212.03	12,463.74	12,353.15	110.59	112.699	
15,700.00	7,057.55	3,414.00	3,413.67	47.07	66.59	8.94	-1,006.80	3,212.03	12,559.32	12,448.38	110.94	113.212	
15,800.00	7,057.23	3,414.00	3,413.67	47.37	66.59	8.94	-1,006.80	3,212.03	12,654.96	12,543.68	111.28	113.723	
15,900.00	7,056.90	3,414.00	3,413.67	47.67	66.59	8.94	-1,006.80	3,212.03	12,750.67	12,639.05	111.62	114.232	
16,000.00	7,056.57	3,414.00	3,413.67	47.97	66.59	8.94	-1,006.80	3,212.03	12,846.45	12,734.48	111.96	114.740	
16,100.00	7,056.24	3,414.00	3,413.67	48.27	66.59	8.94	-1,006.80	3,212.03	12,942.29	12,829.98	112.30	115.246	
16,200.00	7,055.91	3,414.00	3,413.67	48.57	66.59	8.94	-1,006.80	3,212.03	13,038.19	12,925.55	112.64	115.751	
16,300.00	7,055.58	3,414.00	3,413.67	48.87	66.59	8.94	-1,006.80	3,212.03	13,134.15	13,021.17	112.98	116.254	
16,400.00	7,055.25	3,414.00	3,413.67	49.17	66.59	8.94	-1,006.80	3,212.03	13,230.17	13,116.86	113.31	116.756	
16,500.00	7,054.92	3,414.00	3,413.67	49.47	66.59	8.94	-1,006.80	3,212.03	13,326.25	13,212.60	113.65	117.256	
16,600.00	7,054.59	3,414.00	3,413.67	49.77	66.59	8.94	-1,006.80	3,212.03	13,422.39	13,308.41	113.99	117.754	
16,619.57	7,054.53	3,414.00	3,413.67	49.83	66.59	8.94	-1,006.80	3,212.03	13,441.22	13,327.16	114.05	117.851	
16,700.00	7,054.27	3,414.00	3,413.67	50.07	66.59	8.94	-1,006.80	3,212.03	13,518.59	13,404.27	114.32	118.250	
16,782.16	7,054.00	3,414.00	3,413.67	50.32	66.59	8.94	-1,006.80	3,212.03	13,597.66	13,483.07	114.60	118.657	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	52.42	0.00	0.00	97.83	-1,145.71	8,334.76	8,413.19				
100.00	100.00	217.53	217.52	0.23	0.65	97.82	-1,144.25	8,333.50	8,412.24	8,411.36	0.88	9,569.255	
200.00	200.00	303.63	303.61	0.53	0.91	97.82	-1,143.85	8,332.55	8,411.09	8,409.66	1.44	5,851.661	
300.00	300.00	377.47	377.44	0.83	1.13	97.82	-1,143.91	8,331.93	8,410.28	8,408.32	1.96	4,293.357	
400.00	400.00	431.31	431.28	1.13	1.29	97.82	-1,144.54	8,331.60	8,409.85	8,407.43	2.42	3,474.524	
419.65	419.65	441.00	440.97	1.19	1.32	97.82	-1,144.74	8,331.57	8,409.84	8,407.33	2.51	3,352.591	CC
500.00	500.00	472.00	471.96	1.43	1.42	97.83	-1,145.57	8,331.50	8,410.03	8,407.19	2.84	2,958.654	ES
600.00	599.98	513.56	513.49	1.73	1.54	-87.73	-1,147.04	8,331.63	8,410.84	8,407.57	3.27	2,574.330	
700.00	699.84	549.39	549.28	2.03	1.65	-87.70	-1,148.70	8,332.00	8,412.30	8,408.62	3.67	2,289.269	
800.00	799.45	592.00	591.81	2.33	1.78	-87.67	-1,151.17	8,332.74	8,414.39	8,410.29	4.10	2,051.045	
900.00	898.70	620.00	619.74	2.63	1.86	-87.63	-1,153.04	8,333.39	8,417.07	8,412.58	4.49	1,876.100	
1,000.00	997.47	651.00	650.65	2.93	1.95	-87.58	-1,155.28	8,334.28	8,420.39	8,415.51	4.88	1,725.686	
1,100.00	1,095.62	681.00	680.53	3.23	2.04	-87.52	-1,157.71	8,335.31	8,424.34	8,419.07	5.27	1,598.725	
1,207.25	1,200.09	713.00	712.38	3.55	2.14	-87.45	-1,160.58	8,336.63	8,429.32	8,423.63	5.69	1,482.178	
1,300.00	1,290.03	744.00	743.18	3.83	2.23	-87.49	-1,163.63	8,338.21	8,434.38	8,428.32	6.06	1,392.198	
1,400.00	1,386.99	775.00	773.96	4.13	2.33	-87.52	-1,166.94	8,339.99	8,440.61	8,434.16	6.45	1,308.360	
1,500.00	1,483.96	806.00	804.70	4.43	2.42	-87.55	-1,170.44	8,341.93	8,447.60	8,440.75	6.84	1,234.262	
1,600.00	1,580.93	836.00	834.39	4.73	2.51	-87.58	-1,174.12	8,344.09	8,455.48	8,448.25	7.23	1,168.822	
1,700.00	1,677.90	867.00	865.01	5.03	2.60	-87.60	-1,178.23	8,346.62	8,464.28	8,456.65	7.63	1,109.757	
1,800.00	1,774.87	898.00	895.60	5.33	2.69	-87.63	-1,182.51	8,349.33	8,473.82	8,465.80	8.02	1,056.572	
1,900.00	1,871.83	930.00	927.12	5.63	2.79	-87.65	-1,187.17	8,352.28	8,484.10	8,475.69	8.42	1,008.085	
2,000.00	1,968.80	974.36	970.71	5.93	2.92	-87.68	-1,194.16	8,356.61	8,495.08	8,486.23	8.85	959.995	
2,100.00	2,065.77	1,024.00	1,019.32	6.23	3.07	-87.71	-1,202.76	8,361.79	8,506.81	8,497.51	9.30	914.907	
2,200.00	2,162.74	1,056.00	1,050.57	6.53	3.17	-87.73	-1,208.71	8,365.22	8,519.11	8,509.41	9.69	878.807	
2,300.00	2,259.71	1,098.39	1,091.86	6.83	3.30	-87.75	-1,217.01	8,370.04	8,532.14	8,522.02	10.12	843.011	
2,400.00	2,356.67	1,118.00	1,110.92	7.13	3.35	-87.75	-1,221.03	8,372.36	8,545.94	8,535.46	10.48	815.469	
2,500.00	2,453.64	1,178.00	1,169.11	7.43	3.54	-87.78	-1,233.52	8,379.96	8,560.43	8,549.47	10.96	781.086	
2,600.00	2,550.61	1,233.88	1,223.22	7.73	3.70	-87.80	-1,245.28	8,387.45	8,575.56	8,564.13	11.43	750.445	
2,700.00	2,647.58	1,280.95	1,268.74	8.03	3.84	-87.81	-1,255.40	8,393.88	8,591.10	8,579.24	11.87	723.862	
2,800.00	2,744.55	1,351.62	1,336.94	8.33	4.06	-87.83	-1,270.93	8,403.91	8,607.20	8,594.82	12.38	695.227	
2,900.00	2,841.51	1,409.25	1,392.51	8.63	4.23	-87.85	-1,283.80	8,412.20	8,623.58	8,610.73	12.85	670.924	
3,000.00	2,938.48	1,483.43	1,463.80	8.93	4.45	-87.86	-1,301.15	8,423.13	8,640.43	8,627.05	13.38	645.973	
3,100.00	3,035.45	1,643.09	1,617.02	9.23	4.93	-87.88	-1,339.74	8,445.99	8,656.93	8,642.78	14.15	611.582	
3,200.00	3,132.42	2,020.00	1,980.86	9.53	6.06	-87.97	-1,425.37	8,494.15	8,672.24	8,656.66	15.59	556.404	
3,300.00	3,229.39	2,068.08	2,027.39	9.83	6.21	-87.98	-1,436.16	8,499.56	8,685.56	8,669.53	16.03	541.818	
3,400.00	3,326.35	2,124.55	2,082.19	10.13	6.38	-88.00	-1,447.99	8,506.39	8,699.47	8,682.97	16.50	527.247	
3,500.00	3,423.32	2,215.60	2,170.56	10.43	6.65	-88.03	-1,466.74	8,517.73	8,713.71	8,696.63	17.07	510.380	
3,600.00	3,520.29	2,426.13	2,374.61	10.73	7.28	-88.09	-1,512.48	8,542.05	8,727.07	8,709.06	18.00	484.712	
3,700.00	3,617.26	3,512.00	3,448.77	11.03	10.54	-89.18	-1,623.17	8,612.81	8,732.31	8,710.74	21.56	404.979	
3,800.00	3,714.23	3,512.00	3,448.77	11.33	10.54	-89.18	-1,623.17	8,612.81	8,734.76	8,712.90	21.86	399.534	
3,900.00	3,811.19	3,512.00	3,448.77	11.63	10.54	-89.18	-1,623.17	8,612.81	8,738.36	8,716.19	22.16	394.288	
4,000.00	3,908.16	3,512.00	3,448.77	11.93	10.54	-89.18	-1,623.17	8,612.81	8,743.10	8,720.63	22.46	389.232	
4,100.00	4,005.13	3,512.00	3,448.77	12.23	10.54	-89.18	-1,623.17	8,612.81	8,748.98	8,726.21	22.76	384.360	
4,200.00	4,102.10	3,512.00	3,448.77	12.53	10.54	-89.18	-1,623.17	8,612.81	8,756.00	8,732.93	23.06	379.664	
4,300.00	4,199.07	3,512.00	3,448.77	12.83	10.54	-89.18	-1,623.17	8,612.81	8,764.15	8,740.79	23.36	375.138	
4,400.00	4,296.03	3,512.00	3,448.77	13.13	10.54	-89.18	-1,623.17	8,612.81	8,773.44	8,749.77	23.66	370.774	
4,500.00	4,393.00	3,512.00	3,448.77	13.43	10.54	-89.18	-1,623.17	8,612.81	8,783.85	8,759.89	23.96	366.566	
4,600.00	4,489.97	3,512.00	3,448.77	13.73	10.54	-89.18	-1,623.17	8,612.81	8,795.39	8,771.13	24.26	362.509	
4,700.00	4,586.94	3,512.00	3,448.77	14.03	10.54	-89.18	-1,623.17	8,612.81	8,808.05	8,783.49	24.56	358.596	
4,800.00	4,683.91	3,512.00	3,448.77	14.33	10.54	-89.18	-1,623.17	8,612.81	8,821.82	8,796.96	24.86	354.823	
4,900.00	4,780.87	3,512.00	3,448.77	14.63	10.54	-89.18	-1,623.17	8,612.81	8,836.71	8,811.55	25.16	351.184	
5,000.00	4,877.84	3,512.00	3,448.77	14.93	10.54	-89.18	-1,623.17	8,612.81	8,852.70	8,827.24	25.46	347.673	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,512.00	3,448.77	15.23	10.54	-89.18	-1,623.17	8,612.81	8,869.79	8,844.03	25.76	344.288	
5,200.00	5,071.78	3,512.00	3,448.77	15.53	10.54	-89.18	-1,623.17	8,612.81	8,887.97	8,861.91	26.06	341.022	
5,300.00	5,168.75	3,512.00	3,448.77	15.83	10.54	-89.18	-1,623.17	8,612.81	8,907.24	8,880.87	26.36	337.872	
5,400.00	5,265.71	3,512.00	3,448.77	16.13	10.54	-89.18	-1,623.17	8,612.81	8,927.58	8,900.92	26.66	334.833	
5,500.00	5,362.68	3,512.00	3,448.77	16.43	10.54	-89.18	-1,623.17	8,612.81	8,949.00	8,922.04	26.96	331.901	
5,600.00	5,459.65	3,512.00	3,448.77	16.73	10.54	-89.18	-1,623.17	8,612.81	8,971.48	8,944.22	27.26	329.073	
5,700.00	5,556.62	3,512.00	3,448.77	17.03	10.54	-89.18	-1,623.17	8,612.81	8,995.02	8,967.45	27.56	326.345	
5,800.00	5,653.59	3,512.00	3,448.77	17.33	10.54	-89.18	-1,623.17	8,612.81	9,019.60	8,991.74	27.86	323.713	
5,900.00	5,750.55	3,512.00	3,448.77	17.63	10.54	-89.18	-1,623.17	8,612.81	9,045.22	9,017.06	28.16	321.174	
6,000.00	5,847.52	3,512.00	3,448.77	17.93	10.54	-89.18	-1,623.17	8,612.81	9,071.87	9,043.41	28.46	318.724	
6,100.00	5,944.49	3,512.00	3,448.77	18.23	10.54	-89.18	-1,623.17	8,612.81	9,099.55	9,070.78	28.76	316.362	
6,200.00	6,041.46	3,512.00	3,448.77	18.53	10.54	-89.18	-1,623.17	8,612.81	9,128.23	9,099.17	29.06	314.083	
6,300.00	6,138.43	3,512.00	3,448.77	18.83	10.54	-89.18	-1,623.17	8,612.81	9,157.92	9,128.55	29.36	311.884	
6,400.00	6,235.39	3,512.00	3,448.77	19.13	10.54	-89.18	-1,623.17	8,612.81	9,188.60	9,158.93	29.66	309.764	
6,500.00	6,332.36	3,512.00	3,448.77	19.43	10.54	-89.18	-1,623.17	8,612.81	9,220.26	9,190.29	29.96	307.719	
6,600.00	6,429.33	3,512.00	3,448.77	19.73	10.54	-89.18	-1,623.17	8,612.81	9,252.89	9,222.63	30.26	305.746	
6,700.00	6,526.30	3,512.00	3,448.77	20.03	10.54	-89.18	-1,623.17	8,612.81	9,286.49	9,255.92	30.56	303.844	
6,715.28	6,541.12	3,512.00	3,448.77	20.08	10.54	-89.18	-1,623.17	8,612.81	9,291.71	9,261.10	30.61	303.559	
6,750.00	6,574.74	3,512.00	3,448.77	20.18	10.54	-102.20	-1,623.17	8,612.81	9,304.62	9,273.90	30.71	302.940	
6,800.00	6,622.83	3,512.00	3,448.77	20.33	10.54	-117.66	-1,623.17	8,612.81	9,326.75	9,295.89	30.87	302.165	
6,850.00	6,670.20	3,512.00	3,448.77	20.49	10.54	-128.68	-1,623.17	8,612.81	9,352.89	9,321.87	31.02	301.526	
6,900.00	6,716.50	3,512.00	3,448.77	20.64	10.54	-136.20	-1,623.17	8,612.81	9,382.78	9,351.61	31.17	301.016	
6,950.00	6,761.36	3,512.00	3,448.77	20.79	10.54	-141.26	-1,623.17	8,612.81	9,416.19	9,384.87	31.32	300.623	
7,000.00	6,804.45	3,512.00	3,448.77	20.94	10.54	-144.59	-1,623.17	8,612.81	9,452.81	9,421.33	31.47	300.337	
7,050.00	6,845.44	3,512.00	3,448.77	21.09	10.54	-146.63	-1,623.17	8,612.81	9,492.33	9,460.70	31.63	300.146	
7,100.00	6,884.01	3,512.00	3,448.77	21.24	10.54	-147.56	-1,623.17	8,612.81	9,534.41	9,502.63	31.78	300.040	
7,150.00	6,919.88	3,512.00	3,448.77	21.39	10.54	-147.37	-1,623.17	8,612.81	9,578.71	9,546.78	31.93	300.005 SF	
7,200.00	6,952.78	3,512.00	3,448.77	21.54	10.54	-145.77	-1,623.17	8,612.81	9,624.86	9,592.78	32.08	300.030	
7,250.00	6,982.44	3,512.00	3,448.77	21.69	10.54	-141.91	-1,623.17	8,612.81	9,672.48	9,640.25	32.23	300.103	
7,300.00	7,008.65	3,512.00	3,448.77	21.84	10.54	-133.36	-1,623.17	8,612.81	9,721.19	9,688.81	32.38	300.211	
7,350.00	7,031.20	3,512.00	3,448.77	21.99	10.54	-112.55	-1,623.17	8,612.81	9,770.61	9,738.08	32.53	300.341	
7,400.00	7,049.92	3,512.00	3,448.77	22.14	10.54	-66.68	-1,623.17	8,612.81	9,820.35	9,787.67	32.68	300.482	
7,450.00	7,064.68	3,512.00	3,448.77	22.29	10.54	-28.22	-1,623.17	8,612.81	9,870.04	9,837.21	32.83	300.623	
7,500.00	7,075.36	3,512.00	3,448.77	22.44	10.54	-12.15	-1,623.17	8,612.81	9,919.29	9,886.31	32.98	300.752	
7,550.00	7,081.87	3,512.00	3,448.77	22.59	10.54	-4.71	-1,623.17	8,612.81	9,967.75	9,934.62	33.13	300.857	
7,604.16	7,084.18	3,512.00	3,448.77	22.75	10.54	-0.28	-1,623.17	8,612.81	10,018.93	9,985.64	33.29	300.934	
7,700.00	7,083.86	3,512.00	3,448.77	23.04	10.54	-0.28	-1,623.17	8,612.81	10,108.10	10,074.52	33.58	301.011	
7,800.00	7,083.53	3,512.00	3,448.77	23.34	10.54	-0.28	-1,623.17	8,612.81	10,201.28	10,167.40	33.88	301.093	
7,900.00	7,083.20	3,512.00	3,448.77	23.64	10.54	-0.28	-1,623.17	8,612.81	10,294.58	10,260.40	34.18	301.177	
8,000.00	7,082.87	3,512.00	3,448.77	23.94	10.54	-0.28	-1,623.17	8,612.81	10,388.00	10,353.52	34.48	301.264	
8,100.00	7,082.54	3,512.00	3,448.77	24.24	10.54	-0.28	-1,623.17	8,612.81	10,481.55	10,446.77	34.78	301.352	
8,200.00	7,082.22	3,512.00	3,448.77	24.54	10.54	-0.28	-1,623.17	8,612.81	10,575.22	10,540.13	35.08	301.443	
8,300.00	7,081.89	3,512.00	3,448.77	24.84	10.54	-0.28	-1,623.17	8,612.81	10,669.00	10,633.61	35.38	301.535	
8,400.00	7,081.56	3,512.00	3,448.77	25.14	10.54	-0.28	-1,623.17	8,612.81	10,762.89	10,727.21	35.68	301.629	
8,500.00	7,081.23	3,512.00	3,448.77	25.45	10.54	-0.28	-1,623.17	8,612.81	10,856.89	10,820.91	35.98	301.724	
8,600.00	7,080.90	3,512.00	3,448.77	25.75	10.54	-0.28	-1,623.17	8,612.81	10,951.00	10,914.72	36.28	301.821	
8,700.00	7,080.57	3,512.00	3,448.77	26.05	10.54	-0.28	-1,623.17	8,612.81	11,045.21	11,008.63	36.58	301.918	
8,800.00	7,080.24	3,512.00	3,448.77	26.35	10.54	-0.28	-1,623.17	8,612.81	11,139.52	11,102.64	36.88	302.017	
8,900.00	7,079.91	3,512.00	3,448.77	26.65	10.54	-0.28	-1,623.17	8,612.81	11,233.93	11,196.75	37.18	302.117	
9,000.00	7,079.59	3,512.00	3,448.77	26.95	10.54	-0.28	-1,623.17	8,612.81	11,328.44	11,290.95	37.48	302.218	
9,100.00	7,079.26	3,512.00	3,448.77	27.25	10.54	-0.28	-1,623.17	8,612.81	11,423.04	11,385.25	37.78	302.320	
9,200.00	7,078.93	3,512.00	3,448.77	27.55	10.54	-0.28	-1,623.17	8,612.81	11,517.73	11,479.64	38.08	302.423	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,512.00	3,448.77	27.85	10.54	-0.28	-1,623.17	8,612.81	11,612.51	11,574.12	38.39	302.526	
9,400.00	7,078.27	3,512.00	3,448.77	28.15	10.54	-0.28	-1,623.17	8,612.81	11,707.38	11,668.69	38.69	302.631	
9,500.00	7,077.94	3,512.00	3,448.77	28.45	10.54	-0.28	-1,623.17	8,612.81	11,802.33	11,763.34	38.99	302.735	
9,600.00	7,077.61	3,512.00	3,448.77	28.75	10.54	-0.28	-1,623.17	8,612.81	11,897.36	11,858.08	39.29	302.840	
9,700.00	7,077.28	3,512.00	3,448.77	29.05	10.54	-0.28	-1,623.17	8,612.81	11,992.48	11,952.89	39.59	302.946	
9,800.00	7,076.95	3,512.00	3,448.77	29.35	10.54	-0.28	-1,623.17	8,612.81	12,087.67	12,047.79	39.89	303.052	
9,900.00	7,076.63	3,512.00	3,448.77	29.65	10.54	-0.28	-1,623.17	8,612.81	12,182.94	12,142.76	40.19	303.158	
10,000.00	7,076.30	3,512.00	3,448.77	29.95	10.54	-0.28	-1,623.17	8,612.81	12,278.29	12,237.80	40.49	303.265	
10,100.00	7,075.97	3,512.00	3,448.77	30.25	10.54	-0.28	-1,623.17	8,612.81	12,373.71	12,332.92	40.79	303.372	
10,200.00	7,075.64	3,512.00	3,448.77	30.55	10.54	-0.28	-1,623.17	8,612.81	12,469.20	12,428.11	41.09	303.479	
10,300.00	7,075.31	3,512.00	3,448.77	30.85	10.54	-0.28	-1,623.17	8,612.81	12,564.76	12,523.38	41.39	303.586	
10,400.00	7,074.98	3,512.00	3,448.77	31.15	10.54	-0.28	-1,623.17	8,612.81	12,660.39	12,618.71	41.69	303.694	
10,500.00	7,074.65	3,512.00	3,448.77	31.46	10.54	-0.28	-1,623.17	8,612.81	12,756.09	12,714.10	41.99	303.801	
10,600.00	7,074.32	3,512.00	3,448.77	31.76	10.54	-0.28	-1,623.17	8,612.81	12,851.85	12,809.57	42.29	303.909	
10,700.00	7,074.00	3,512.00	3,448.77	32.06	10.54	-0.28	-1,623.17	8,612.81	12,947.68	12,905.09	42.59	304.016	
10,800.00	7,073.67	3,512.00	3,448.77	32.36	10.54	-0.28	-1,623.17	8,612.81	13,043.57	13,000.68	42.89	304.124	
10,900.00	7,073.34	3,512.00	3,448.77	32.66	10.54	-0.28	-1,623.17	8,612.81	13,139.52	13,096.33	43.19	304.231	
11,000.00	7,073.01	3,512.00	3,448.77	32.96	10.54	-0.28	-1,623.17	8,612.81	13,235.53	13,192.04	43.49	304.339	
11,100.00	7,072.68	3,512.00	3,448.77	33.26	10.54	-0.28	-1,623.17	8,612.81	13,331.60	13,287.81	43.79	304.446	
11,200.00	7,072.35	3,512.00	3,448.77	33.56	10.54	-0.28	-1,623.17	8,612.81	13,427.73	13,383.64	44.09	304.553	
11,300.00	7,072.02	3,512.00	3,448.77	33.86	10.54	-0.28	-1,623.17	8,612.81	13,523.91	13,479.52	44.39	304.660	
11,400.00	7,071.69	3,512.00	3,448.77	34.16	10.54	-0.28	-1,623.17	8,612.81	13,620.15	13,575.46	44.69	304.766	
11,500.00	7,071.36	3,512.00	3,448.77	34.46	10.54	-0.28	-1,623.17	8,612.81	13,716.44	13,671.45	44.99	304.873	
11,600.00	7,071.04	3,512.00	3,448.77	34.76	10.54	-0.28	-1,623.17	8,612.81	13,812.78	13,767.49	45.29	304.979	
11,700.00	7,070.71	3,512.00	3,448.77	35.06	10.54	-0.28	-1,623.17	8,612.81	13,909.18	13,863.59	45.59	305.085	
11,800.00	7,070.38	3,512.00	3,448.77	35.36	10.54	-0.28	-1,623.17	8,612.81	14,005.63	13,959.74	45.89	305.191	
11,900.00	7,070.05	3,512.00	3,448.77	35.66	10.54	-0.28	-1,623.17	8,612.81	14,102.12	14,055.93	46.19	305.296	
12,000.00	7,069.72	3,512.00	3,448.77	35.96	10.54	-0.28	-1,623.17	8,612.81	14,198.67	14,152.18	46.49	305.401	
12,100.00	7,069.39	3,512.00	3,448.77	36.26	10.54	-0.28	-1,623.17	8,612.81	14,295.26	14,248.47	46.79	305.506	
12,200.00	7,069.06	3,512.00	3,448.77	36.56	10.54	-0.28	-1,623.17	8,612.81	14,391.90	14,344.81	47.09	305.611	
12,300.00	7,068.73	3,512.00	3,448.77	36.86	10.54	-0.28	-1,623.17	8,612.81	14,488.58	14,441.19	47.39	305.715	
12,400.00	7,068.41	3,512.00	3,448.77	37.16	10.54	-0.28	-1,623.17	8,612.81	14,585.31	14,537.62	47.69	305.818	
12,500.00	7,068.08	3,512.00	3,448.77	37.46	10.54	-0.28	-1,623.17	8,612.81	14,682.09	14,634.09	47.99	305.922	
12,600.00	7,067.75	3,512.00	3,448.77	37.76	10.54	-0.28	-1,623.17	8,612.81	14,778.90	14,730.61	48.29	306.025	
12,700.00	7,067.42	3,512.00	3,448.77	38.06	10.54	-0.28	-1,623.17	8,612.81	14,875.76	14,827.17	48.59	306.127	
12,800.00	7,067.09	3,512.00	3,448.77	38.36	10.54	-0.28	-1,623.17	8,612.81	14,972.66	14,923.76	48.89	306.230	
12,900.00	7,066.76	3,512.00	3,448.77	38.66	10.54	-0.28	-1,623.17	8,612.81	15,069.60	15,020.40	49.19	306.331	
13,000.00	7,066.43	3,512.00	3,448.77	38.96	10.54	-0.28	-1,623.17	8,612.81	15,166.58	15,117.08	49.49	306.433	
13,100.00	7,066.10	3,512.00	3,448.77	39.26	10.54	-0.28	-1,623.17	8,612.81	15,263.60	15,213.80	49.79	306.534	
13,200.00	7,065.77	3,512.00	3,448.77	39.56	10.54	-0.28	-1,623.17	8,612.81	15,360.65	15,310.56	50.09	306.634	
13,300.00	7,065.45	3,512.00	3,448.77	39.86	10.54	-0.28	-1,623.17	8,612.81	15,457.75	15,407.35	50.39	306.734	
13,400.00	7,065.12	3,512.00	3,448.77	40.16	10.54	-0.28	-1,623.17	8,612.81	15,554.88	15,504.18	50.69	306.834	
13,500.00	7,064.79	3,512.00	3,448.77	40.47	10.54	-0.28	-1,623.17	8,612.81	15,652.05	15,601.05	51.00	306.933	
13,600.00	7,064.46	3,512.00	3,448.77	40.77	10.54	-0.28	-1,623.17	8,612.81	15,749.25	15,697.95	51.30	307.032	
13,700.00	7,064.13	3,512.00	3,448.77	41.07	10.54	-0.28	-1,623.17	8,612.81	15,846.49	15,794.89	51.60	307.130	
13,800.00	7,063.80	3,512.00	3,448.77	41.37	10.54	-0.28	-1,623.17	8,612.81	15,943.76	15,891.86	51.90	307.227	
13,900.00	7,063.47	3,512.00	3,448.77	41.67	10.54	-0.28	-1,623.17	8,612.81	16,041.06	15,988.87	52.20	307.325	
14,000.00	7,063.14	3,512.00	3,448.77	41.97	10.54	-0.28	-1,623.17	8,612.81	16,138.40	16,085.90	52.50	307.422	
14,100.00	7,062.82	3,512.00	3,448.77	42.27	10.54	-0.28	-1,623.17	8,612.81	16,235.77	16,182.97	52.80	307.518	
14,200.00	7,062.49	3,512.00	3,448.77	42.57	10.54	-0.28	-1,623.17	8,612.81	16,333.17	16,280.08	53.10	307.614	
14,300.00	7,062.16	3,512.00	3,448.77	42.87	10.54	-0.28	-1,623.17	8,612.81	16,430.61	16,377.21	53.40	307.709	
14,400.00	7,061.83	3,512.00	3,448.77	43.17	10.54	-0.28	-1,623.17	8,612.81	16,528.07	16,474.37	53.70	307.804	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.50	3,512.00	3,448.77	43.47	10.54	-0.28	-1,623.17	8,612.81	16,625.56	16,571.57	54.00	307.898	
14,600.00	7,061.17	3,512.00	3,448.77	43.77	10.54	-0.28	-1,623.17	8,612.81	16,723.09	16,668.79	54.30	307.992	
14,700.00	7,060.84	3,512.00	3,448.77	44.07	10.54	-0.28	-1,623.17	8,612.81	16,820.64	16,766.04	54.60	308.086	
14,800.00	7,060.51	3,512.00	3,448.77	44.37	10.54	-0.28	-1,623.17	8,612.81	16,918.22	16,863.33	54.90	308.179	
14,900.00	7,060.18	3,512.00	3,448.77	44.67	10.54	-0.28	-1,623.17	8,612.81	17,015.83	16,960.63	55.20	308.271	
15,000.00	7,059.86	3,512.00	3,448.77	44.97	10.54	-0.28	-1,623.17	8,612.81	17,113.47	17,057.97	55.50	308.363	
15,100.00	7,059.53	3,512.00	3,448.77	45.27	10.54	-0.28	-1,623.17	8,612.81	17,211.13	17,155.34	55.80	308.454	
15,200.00	7,059.20	3,512.00	3,448.77	45.57	10.54	-0.28	-1,623.17	8,612.81	17,308.82	17,252.73	56.10	308.545	
15,300.00	7,058.87	3,512.00	3,448.77	45.87	10.54	-0.28	-1,623.17	8,612.81	17,406.54	17,350.14	56.40	308.636	
15,400.00	7,058.54	3,512.00	3,448.77	46.17	10.54	-0.28	-1,623.17	8,612.81	17,504.29	17,447.59	56.70	308.726	
15,500.00	7,058.21	3,512.00	3,448.77	46.47	10.54	-0.28	-1,623.17	8,612.81	17,602.05	17,545.05	57.00	308.815	
15,600.00	7,057.88	3,512.00	3,448.77	46.77	10.54	-0.28	-1,623.17	8,612.81	17,699.85	17,642.55	57.30	308.904	
15,700.00	7,057.55	3,512.00	3,448.77	47.07	10.54	-0.28	-1,623.17	8,612.81	17,797.66	17,740.07	57.60	308.992	
15,800.00	7,057.23	3,512.00	3,448.77	47.37	10.54	-0.28	-1,623.17	8,612.81	17,895.51	17,837.61	57.90	309.080	
15,900.00	7,056.90	3,512.00	3,448.77	47.67	10.54	-0.28	-1,623.17	8,612.81	17,993.37	17,935.17	58.20	309.168	
16,000.00	7,056.57	3,512.00	3,448.77	47.97	10.54	-0.28	-1,623.17	8,612.81	18,091.26	18,032.76	58.50	309.255	
16,100.00	7,056.24	3,512.00	3,448.77	48.27	10.54	-0.28	-1,623.17	8,612.81	18,189.17	18,130.37	58.80	309.341	
16,200.00	7,055.91	3,512.00	3,448.77	48.57	10.54	-0.28	-1,623.17	8,612.81	18,287.11	18,228.01	59.10	309.427	
16,300.00	7,055.58	3,512.00	3,448.77	48.87	10.54	-0.28	-1,623.17	8,612.81	18,385.06	18,325.66	59.40	309.513	
16,400.00	7,055.25	3,512.00	3,448.77	49.17	10.54	-0.28	-1,623.17	8,612.81	18,483.04	18,423.34	59.70	309.598	
16,500.00	7,054.92	3,512.00	3,448.77	49.47	10.54	-0.28	-1,623.17	8,612.81	18,581.04	18,521.04	60.00	309.682	
16,600.00	7,054.59	3,512.00	3,448.77	49.77	10.54	-0.28	-1,623.17	8,612.81	18,679.06	18,618.76	60.30	309.766	
16,619.57	7,054.53	3,512.00	3,448.77	49.83	10.54	-0.28	-1,623.17	8,612.81	18,698.25	18,637.89	60.36	309.783	
16,700.00	7,054.27	3,512.00	3,448.77	50.07	10.54	-0.28	-1,623.17	8,612.81	18,777.11	18,716.51	60.60	309.850	
16,782.16	7,054.00	3,512.00	3,448.77	50.32	10.54	-0.28	-1,623.17	8,612.81	18,857.68	18,796.83	60.85	309.918	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	95.35	-556.36	5,941.89	5,967.88				
100.00	100.00	268.53	268.51	0.23	3.16	95.35	-556.36	5,941.89	5,967.88	5,964.49	3.39	1,762.194	
200.00	200.00	368.53	368.51	0.53	5.13	95.35	-556.36	5,941.89	5,967.88	5,962.22	5.65	1,055.642	
300.00	300.00	468.53	468.51	0.83	7.09	95.35	-556.36	5,941.89	5,967.88	5,959.96	7.92	753.519	
339.99	339.99	508.03	508.00	0.95	7.87	95.34	-555.29	5,941.89	5,967.78	5,958.96	8.82	676.862	CC
400.00	400.00	566.89	566.87	1.13	9.03	95.34	-555.40	5,941.89	5,967.79	5,957.63	10.15	587.691	
500.00	500.00	665.00	664.96	1.43	10.96	95.34	-555.86	5,941.89	5,967.83	5,955.45	12.38	481.899	
600.00	599.98	768.55	768.49	1.73	12.97	-90.25	-556.36	5,941.89	5,967.89	5,953.19	14.70	406.112	
700.00	699.84	868.41	868.35	2.03	14.87	-90.30	-556.36	5,941.89	5,967.91	5,951.02	16.89	353.307	
800.00	799.45	968.02	967.97	2.33	16.76	-90.38	-556.36	5,941.89	5,967.96	5,948.88	19.08	312.731	
900.00	898.70	1,066.47	1,066.41	2.63	18.63	-90.50	-555.89	5,941.89	5,968.01	5,946.76	21.25	280.809	
1,000.00	997.47	1,164.38	1,164.31	2.93	20.49	-90.64	-556.12	5,941.89	5,968.19	5,944.78	23.41	254.917	
1,100.00	1,095.62	1,264.22	1,264.14	3.23	22.41	-90.82	-556.36	5,941.89	5,968.46	5,942.83	25.63	232.833	
1,207.25	1,200.09	1,368.69	1,368.60	3.55	24.47	-91.03	-556.36	5,941.89	5,968.86	5,940.85	28.01	213.070	
1,300.00	1,290.03	1,458.62	1,458.54	3.83	26.24	-91.25	-556.36	5,941.89	5,969.33	5,939.26	30.06	198.558	
1,400.00	1,386.99	1,554.94	1,554.84	4.13	28.13	-91.48	-555.55	5,941.89	5,969.87	5,937.61	32.26	185.052	
1,500.00	1,483.96	1,651.00	1,650.91	4.43	30.03	-91.70	-555.81	5,941.89	5,970.59	5,936.13	34.45	173.297	
1,600.00	1,580.93	1,747.19	1,747.09	4.73	31.92	-91.92	-556.31	5,941.89	5,971.42	5,934.77	36.65	162.942	
1,700.00	1,677.90	1,846.54	1,846.41	5.03	33.88	-92.15	-556.36	5,941.89	5,972.32	5,933.41	38.90	153.512	
1,800.00	1,774.87	1,943.51	1,943.38	5.33	35.79	-92.38	-556.36	5,941.89	5,973.32	5,932.20	41.11	145.284	
1,900.00	1,871.83	2,040.20	2,040.06	5.63	37.69	-92.62	-555.57	5,941.89	5,974.37	5,931.05	43.32	137.915	
2,000.00	1,968.80	2,136.49	2,136.35	5.93	39.59	-92.84	-555.78	5,941.89	5,975.58	5,930.07	45.52	131.284	
2,100.00	2,065.77	2,232.92	2,232.77	6.23	41.49	-93.06	-556.24	5,941.89	5,976.90	5,929.18	47.72	125.261	
2,200.00	2,162.74	2,331.42	2,331.25	6.53	43.43	-93.29	-556.36	5,941.89	5,978.30	5,928.35	49.96	119.671	
2,300.00	2,259.71	2,428.39	2,428.22	6.83	45.34	-93.52	-556.36	5,941.89	5,979.80	5,927.63	52.17	114.629	
2,400.00	2,356.67	2,524.96	2,524.78	7.13	47.24	-93.75	-555.78	5,941.89	5,981.37	5,927.01	54.37	110.015	
2,500.00	2,453.64	2,621.51	2,621.32	7.43	49.14	-93.97	-556.15	5,941.89	5,983.08	5,926.51	56.57	105.763	
2,600.00	2,550.61	2,719.33	2,719.12	7.73	51.12	-94.20	-556.36	5,941.89	5,984.88	5,926.04	58.84	101.712	
2,700.00	2,647.58	2,816.30	2,816.09	8.03	53.09	-94.42	-556.36	5,941.89	5,986.77	5,925.65	61.12	97.951	
2,800.00	2,744.55	2,913.13	2,912.91	8.33	55.07	-94.65	-555.75	5,941.89	5,988.76	5,925.36	63.40	94.467	
2,900.00	2,841.51	3,009.96	3,009.75	8.63	57.04	-94.88	-556.07	5,941.89	5,990.85	5,925.18	65.67	91.225	
3,000.00	2,938.48	3,107.25	3,107.00	8.93	59.06	-95.10	-556.36	5,941.89	5,993.05	5,925.06	67.99	88.146	
3,100.00	3,035.45	3,204.22	3,203.96	9.23	61.11	-95.33	-556.36	5,941.89	5,995.34	5,925.00	70.34	85.234	
3,200.00	3,132.42	3,301.24	3,300.98	9.53	63.16	-95.56	-555.69	5,941.89	5,997.72	5,925.03	72.69	82.510	
3,300.00	3,229.39	3,429.79	3,397.90	9.83	65.88	-95.78	-556.36	5,941.89	6,000.21	5,924.50	75.71	79.254	ES
3,400.00	3,326.35	3,495.18	3,494.87	10.13	67.27	-96.00	-556.36	5,941.89	6,002.79	5,925.40	77.39	77.563	
3,500.00	3,423.32	3,592.14	3,591.84	10.43	69.32	-96.23	-556.36	5,941.89	6,005.48	5,925.73	79.74	75.309	
3,600.00	3,520.29	3,597.00	3,596.66	10.73	69.42	-96.24	-556.36	5,941.89	6,008.96	5,928.83	80.14	74.981	
3,700.00	3,617.26	3,597.00	3,596.66	11.03	69.42	-96.24	-556.36	5,941.89	6,014.11	5,933.70	80.41	74.789	
3,800.00	3,714.23	3,597.00	3,596.66	11.33	69.42	-96.24	-556.36	5,941.89	6,020.91	5,940.24	80.67	74.635	
3,900.00	3,811.19	3,597.00	3,596.66	11.63	69.42	-96.24	-556.36	5,941.89	6,029.37	5,948.46	80.91	74.518	
4,000.00	3,908.16	3,597.00	3,596.66	11.93	69.42	-96.24	-556.36	5,941.89	6,039.47	5,958.33	81.13	74.438	
4,100.00	4,005.13	3,597.00	3,596.66	12.23	69.42	-96.24	-556.36	5,941.89	6,051.20	5,969.86	81.34	74.394	
4,200.00	4,102.10	3,597.00	3,596.66	12.53	69.42	-96.24	-556.36	5,941.89	6,064.56	5,983.03	81.53	74.385	SF
4,300.00	4,199.07	3,597.00	3,596.66	12.83	69.42	-96.24	-556.36	5,941.89	6,079.54	5,997.84	81.70	74.411	
4,400.00	4,296.03	3,597.00	3,596.66	13.13	69.42	-96.24	-556.36	5,941.89	6,096.12	6,014.26	81.86	74.471	
4,500.00	4,393.00	3,597.00	3,596.66	13.43	69.42	-96.24	-556.36	5,941.89	6,114.29	6,032.29	82.00	74.564	
4,600.00	4,489.97	3,597.00	3,596.66	13.73	69.42	-96.24	-556.36	5,941.89	6,134.04	6,051.91	82.13	74.689	
4,700.00	4,586.94	3,597.00	3,596.66	14.03	69.42	-96.24	-556.36	5,941.89	6,155.35	6,073.11	82.24	74.847	
4,800.00	4,683.91	3,597.00	3,596.66	14.33	69.42	-96.24	-556.36	5,941.89	6,178.20	6,095.87	82.34	75.035	
4,900.00	4,780.87	3,597.00	3,596.66	14.63	69.42	-96.24	-556.36	5,941.89	6,202.59	6,120.17	82.42	75.255	
5,000.00	4,877.84	3,597.00	3,596.66	14.93	69.42	-96.24	-556.36	5,941.89	6,228.48	6,145.99	82.49	75.504	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,597.00	3,596.66	15.23	69.42	-96.24	-556.36	5,941.89	6,255.86	6,173.31	82.55	75.783	
5,200.00	5,071.78	3,597.00	3,596.66	15.53	69.42	-96.24	-556.36	5,941.89	6,284.72	6,202.12	82.60	76.090	
5,300.00	5,168.75	3,597.00	3,596.66	15.83	69.42	-96.24	-556.36	5,941.89	6,315.03	6,232.40	82.63	76.425	
5,400.00	5,265.71	3,597.00	3,596.66	16.13	69.42	-96.24	-556.36	5,941.89	6,346.77	6,264.11	82.65	76.787	
5,500.00	5,362.68	3,597.00	3,596.66	16.43	69.42	-96.24	-556.36	5,941.89	6,379.92	6,297.25	82.67	77.176	
5,600.00	5,459.65	3,597.00	3,596.66	16.73	69.42	-96.24	-556.36	5,941.89	6,414.45	6,331.78	82.67	77.591	
5,700.00	5,556.62	3,597.00	3,596.66	17.03	69.42	-96.24	-556.36	5,941.89	6,450.36	6,367.69	82.66	78.031	
5,800.00	5,653.59	3,597.00	3,596.66	17.33	69.42	-96.24	-556.36	5,941.89	6,487.60	6,404.95	82.65	78.495	
5,900.00	5,750.55	3,597.00	3,596.66	17.63	69.42	-96.24	-556.36	5,941.89	6,526.17	6,443.54	82.63	78.984	
6,000.00	5,847.52	3,597.00	3,596.66	17.93	69.42	-96.24	-556.36	5,941.89	6,566.03	6,483.43	82.60	79.496	
6,100.00	5,944.49	3,597.00	3,596.66	18.23	69.42	-96.24	-556.36	5,941.89	6,607.16	6,524.61	82.56	80.030	
6,200.00	6,041.46	3,597.00	3,596.66	18.53	69.42	-96.24	-556.36	5,941.89	6,649.55	6,567.03	82.51	80.587	
6,300.00	6,138.43	3,597.00	3,596.66	18.83	69.42	-96.24	-556.36	5,941.89	6,693.16	6,610.69	82.46	81.164	
6,400.00	6,235.39	3,597.00	3,596.66	19.13	69.42	-96.24	-556.36	5,941.89	6,737.97	6,655.56	82.41	81.763	
6,500.00	6,332.36	3,597.00	3,596.66	19.43	69.42	-96.24	-556.36	5,941.89	6,783.96	6,701.61	82.35	82.381	
6,600.00	6,429.33	3,597.00	3,596.66	19.73	69.42	-96.24	-556.36	5,941.89	6,831.11	6,748.82	82.28	83.019	
6,700.00	6,526.30	3,597.00	3,596.66	20.03	69.42	-96.24	-556.36	5,941.89	6,879.38	6,797.17	82.22	83.675	
6,715.28	6,541.12	3,597.00	3,596.66	20.08	69.42	-96.24	-556.36	5,941.89	6,886.86	6,804.65	82.20	83.777	
6,750.00	6,574.74	3,597.00	3,596.66	20.18	69.42	-109.45	-556.36	5,941.89	6,904.84	6,822.66	82.18	84.018	
6,800.00	6,622.83	3,597.00	3,596.66	20.33	69.42	-125.25	-556.36	5,941.89	6,934.03	6,851.87	82.16	84.395	
6,850.00	6,670.20	3,597.00	3,596.66	20.49	69.42	-136.72	-556.36	5,941.89	6,966.85	6,884.70	82.15	84.805	
6,900.00	6,716.50	3,597.00	3,596.66	20.64	69.42	-144.81	-556.36	5,941.89	7,003.02	6,920.86	82.15	85.243	
6,950.00	6,761.36	3,597.00	3,596.66	20.79	69.42	-150.62	-556.36	5,941.89	7,042.20	6,960.03	82.17	85.703	
7,000.00	6,804.45	3,597.00	3,596.66	20.94	69.42	-154.94	-556.36	5,941.89	7,084.04	7,001.84	82.20	86.178	
7,050.00	6,845.44	3,597.00	3,596.66	21.09	69.42	-158.31	-556.36	5,941.89	7,128.20	7,045.95	82.25	86.663	
7,100.00	6,884.01	3,597.00	3,596.66	21.24	69.42	-161.12	-556.36	5,941.89	7,174.28	7,091.96	82.32	87.153	
7,150.00	6,919.88	3,597.00	3,596.66	21.39	69.42	-163.73	-556.36	5,941.89	7,221.91	7,139.51	82.40	87.641	
7,200.00	6,952.78	3,597.00	3,596.66	21.54	69.42	-166.78	-556.36	5,941.89	7,270.70	7,188.20	82.51	88.123	
7,250.00	6,982.44	3,597.00	3,596.66	21.69	69.42	-172.81	-556.36	5,941.89	7,320.26	7,237.63	82.63	88.593	
7,300.00	7,008.65	3,597.00	3,596.66	21.84	69.42	100.39	-556.36	5,941.89	7,370.19	7,287.43	82.77	89.046	
7,350.00	7,031.20	3,597.00	3,596.66	21.99	69.42	25.00	-556.36	5,941.89	7,420.12	7,337.20	82.93	89.478	
7,400.00	7,049.92	3,597.00	3,596.66	22.14	69.42	19.79	-556.36	5,941.89	7,469.67	7,386.57	83.10	89.884	
7,450.00	7,064.68	3,597.00	3,596.66	22.29	69.42	17.81	-556.36	5,941.89	7,518.47	7,435.17	83.30	90.262	
7,500.00	7,075.36	3,597.00	3,596.66	22.44	69.42	16.75	-556.36	5,941.89	7,566.16	7,482.66	83.51	90.606	
7,550.00	7,081.87	3,597.00	3,596.66	22.59	69.42	16.12	-556.36	5,941.89	7,612.42	7,528.69	83.73	90.915	
7,604.16	7,084.18	3,597.00	3,596.66	22.75	69.42	15.73	-556.36	5,941.89	7,660.53	7,576.54	83.99	91.206	
7,700.00	7,083.86	3,597.00	3,596.66	23.04	69.42	15.73	-556.36	5,941.89	7,743.74	7,659.27	84.47	91.677	
7,800.00	7,083.53	3,597.00	3,596.66	23.34	69.42	15.73	-556.36	5,941.89	7,830.88	7,745.92	84.96	92.174	
7,900.00	7,083.20	3,597.00	3,596.66	23.64	69.42	15.73	-556.36	5,941.89	7,918.31	7,832.87	85.44	92.675	
8,000.00	7,082.87	3,597.00	3,596.66	23.94	69.42	15.73	-556.36	5,941.89	8,006.05	7,920.13	85.92	93.181	
8,100.00	7,082.54	3,597.00	3,596.66	24.24	69.42	15.73	-556.36	5,941.89	8,094.06	8,007.67	86.39	93.691	
8,200.00	7,082.22	3,597.00	3,596.66	24.54	69.42	15.73	-556.36	5,941.89	8,182.36	8,095.50	86.86	94.204	
8,300.00	7,081.89	3,597.00	3,596.66	24.84	69.42	15.73	-556.36	5,941.89	8,270.92	8,183.60	87.32	94.720	
8,400.00	7,081.56	3,597.00	3,596.66	25.14	69.42	15.73	-556.36	5,941.89	8,359.73	8,271.96	87.78	95.239	
8,500.00	7,081.23	3,597.00	3,596.66	25.45	69.42	15.73	-556.36	5,941.89	8,448.80	8,360.57	88.23	95.762	
8,600.00	7,080.90	3,597.00	3,596.66	25.75	69.42	15.73	-556.36	5,941.89	8,538.11	8,449.43	88.67	96.286	
8,700.00	7,080.57	3,597.00	3,596.66	26.05	69.42	15.73	-556.36	5,941.89	8,627.65	8,538.53	89.12	96.813	
8,800.00	7,080.24	3,597.00	3,596.66	26.35	69.42	15.73	-556.36	5,941.89	8,717.42	8,627.87	89.55	97.342	
8,900.00	7,079.91	3,597.00	3,596.66	26.65	69.42	15.73	-556.36	5,941.89	8,807.41	8,717.42	89.99	97.873	
9,000.00	7,079.59	3,597.00	3,596.66	26.95	69.42	15.73	-556.36	5,941.89	8,897.62	8,807.20	90.42	98.405	
9,100.00	7,079.26	3,597.00	3,596.66	27.25	69.42	15.73	-556.36	5,941.89	8,988.03	8,897.19	90.84	98.939	
9,200.00	7,078.93	3,597.00	3,596.66	27.55	69.42	15.73	-556.36	5,941.89	9,078.64	8,987.38	91.27	99.474	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,597.00	3,596.66	27.85	69.42	15.73	-556.36	5,941.89	9,169.45	9,077.77	91.69	100.010	
9,400.00	7,078.27	3,597.00	3,596.66	28.15	69.42	15.73	-556.36	5,941.89	9,260.45	9,168.35	92.10	100.548	
9,500.00	7,077.94	3,597.00	3,596.66	28.45	69.42	15.73	-556.36	5,941.89	9,351.63	9,259.12	92.51	101.086	
9,600.00	7,077.61	3,597.00	3,596.66	28.75	69.42	15.73	-556.36	5,941.89	9,442.99	9,350.07	92.92	101.624	
9,700.00	7,077.28	3,597.00	3,596.66	29.05	69.42	15.73	-556.36	5,941.89	9,534.53	9,441.20	93.33	102.163	
9,800.00	7,076.95	3,597.00	3,596.66	29.35	69.42	15.73	-556.36	5,941.89	9,626.23	9,532.50	93.73	102.703	
9,900.00	7,076.63	3,597.00	3,596.66	29.65	69.42	15.73	-556.36	5,941.89	9,718.09	9,623.96	94.13	103.243	
10,000.00	7,076.30	3,597.00	3,596.66	29.95	69.42	15.73	-556.36	5,941.89	9,810.12	9,715.59	94.53	103.783	
10,100.00	7,075.97	3,597.00	3,596.66	30.25	69.42	15.73	-556.36	5,941.89	9,902.30	9,807.38	94.92	104.323	
10,200.00	7,075.64	3,597.00	3,596.66	30.55	69.42	15.73	-556.36	5,941.89	9,994.63	9,899.32	95.31	104.863	
10,300.00	7,075.31	3,597.00	3,596.66	30.85	69.42	15.73	-556.36	5,941.89	10,087.10	9,991.40	95.70	105.403	
10,400.00	7,074.98	3,597.00	3,596.66	31.15	69.42	15.73	-556.36	5,941.89	10,179.72	10,083.64	96.09	105.942	
10,500.00	7,074.65	3,597.00	3,596.66	31.46	69.42	15.73	-556.36	5,941.89	10,272.48	10,176.01	96.47	106.482	
10,600.00	7,074.32	3,597.00	3,596.66	31.76	69.42	15.73	-556.36	5,941.89	10,365.37	10,268.52	96.85	107.021	
10,700.00	7,074.00	3,597.00	3,596.66	32.06	69.42	15.73	-556.36	5,941.89	10,458.39	10,361.16	97.23	107.559	
10,800.00	7,073.67	3,597.00	3,596.66	32.36	69.42	15.73	-556.36	5,941.89	10,551.54	10,453.93	97.61	108.097	
10,900.00	7,073.34	3,597.00	3,596.66	32.66	69.42	15.73	-556.36	5,941.89	10,644.82	10,546.83	97.99	108.634	
11,000.00	7,073.01	3,597.00	3,596.66	32.96	69.42	15.73	-556.36	5,941.89	10,738.21	10,639.85	98.36	109.171	
11,100.00	7,072.68	3,597.00	3,596.66	33.26	69.42	15.73	-556.36	5,941.89	10,831.73	10,732.99	98.73	109.707	
11,200.00	7,072.35	3,597.00	3,596.66	33.56	69.42	15.73	-556.36	5,941.89	10,925.36	10,826.25	99.10	110.242	
11,300.00	7,072.02	3,597.00	3,596.66	33.86	69.42	15.73	-556.36	5,941.89	11,019.10	10,919.62	99.47	110.776	
11,400.00	7,071.69	3,597.00	3,596.66	34.16	69.42	15.73	-556.36	5,941.89	11,112.95	11,013.11	99.84	111.309	
11,500.00	7,071.36	3,597.00	3,596.66	34.46	69.42	15.73	-556.36	5,941.89	11,206.90	11,106.70	100.20	111.841	
11,600.00	7,071.04	3,597.00	3,596.66	34.76	69.42	15.73	-556.36	5,941.89	11,300.96	11,200.39	100.57	112.372	
11,700.00	7,070.71	3,597.00	3,596.66	35.06	69.42	15.73	-556.36	5,941.89	11,395.12	11,294.19	100.93	112.902	
11,800.00	7,070.38	3,597.00	3,596.66	35.36	69.42	15.73	-556.36	5,941.89	11,489.38	11,388.09	101.29	113.431	
11,900.00	7,070.05	3,597.00	3,596.66	35.66	69.42	15.73	-556.36	5,941.89	11,583.74	11,482.09	101.65	113.959	
12,000.00	7,069.72	3,597.00	3,596.66	35.96	69.42	15.73	-556.36	5,941.89	11,678.19	11,576.18	102.01	114.485	
12,100.00	7,069.39	3,597.00	3,596.66	36.26	69.42	15.73	-556.36	5,941.89	11,772.73	11,670.37	102.36	115.011	
12,200.00	7,069.06	3,597.00	3,596.66	36.56	69.42	15.73	-556.36	5,941.89	11,867.36	11,764.64	102.72	115.535	
12,300.00	7,068.73	3,597.00	3,596.66	36.86	69.42	15.73	-556.36	5,941.89	11,962.08	11,859.01	103.07	116.057	
12,400.00	7,068.41	3,597.00	3,596.66	37.16	69.42	15.73	-556.36	5,941.89	12,056.88	11,953.46	103.42	116.579	
12,500.00	7,068.08	3,597.00	3,596.66	37.46	69.42	15.73	-556.36	5,941.89	12,151.77	12,047.99	103.77	117.099	
12,600.00	7,067.75	3,597.00	3,596.66	37.76	69.42	15.73	-556.36	5,941.89	12,246.74	12,142.61	104.12	117.618	
12,700.00	7,067.42	3,597.00	3,596.66	38.06	69.42	15.73	-556.36	5,941.89	12,341.78	12,237.31	104.47	118.135	
12,800.00	7,067.09	3,597.00	3,596.66	38.36	69.42	15.73	-556.36	5,941.89	12,436.91	12,332.09	104.82	118.651	
12,900.00	7,066.76	3,597.00	3,596.66	38.66	69.42	15.73	-556.36	5,941.89	12,532.11	12,426.94	105.17	119.165	
13,000.00	7,066.43	3,597.00	3,596.66	38.96	69.42	15.73	-556.36	5,941.89	12,627.39	12,521.87	105.51	119.678	
13,100.00	7,066.10	3,597.00	3,596.66	39.26	69.42	15.73	-556.36	5,941.89	12,722.73	12,616.88	105.86	120.189	
13,200.00	7,065.77	3,597.00	3,596.66	39.56	69.42	15.73	-556.36	5,941.89	12,818.15	12,711.95	106.20	120.699	
13,300.00	7,065.45	3,597.00	3,596.66	39.86	69.42	15.73	-556.36	5,941.89	12,913.64	12,807.10	106.54	121.207	
13,400.00	7,065.12	3,597.00	3,596.66	40.16	69.42	15.73	-556.36	5,941.89	13,009.20	12,902.31	106.88	121.714	
13,500.00	7,064.79	3,597.00	3,596.66	40.47	69.42	15.73	-556.36	5,941.89	13,104.82	12,997.59	107.22	122.219	
13,600.00	7,064.46	3,597.00	3,596.66	40.77	69.42	15.73	-556.36	5,941.89	13,200.51	13,092.94	107.56	122.722	
13,700.00	7,064.13	3,597.00	3,596.66	41.07	69.42	15.73	-556.36	5,941.89	13,296.26	13,188.35	107.90	123.224	
13,800.00	7,063.80	3,597.00	3,596.66	41.37	69.42	15.73	-556.36	5,941.89	13,392.07	13,283.83	108.24	123.725	
13,900.00	7,063.47	3,597.00	3,596.66	41.67	69.42	15.73	-556.36	5,941.89	13,487.94	13,379.36	108.58	124.223	
14,000.00	7,063.14	3,597.00	3,596.66	41.97	69.42	15.73	-556.36	5,941.89	13,583.88	13,474.96	108.91	124.720	
14,100.00	7,062.82	3,597.00	3,596.66	42.27	69.42	15.73	-556.36	5,941.89	13,679.87	13,570.62	109.25	125.216	
14,200.00	7,062.49	3,597.00	3,596.66	42.57	69.42	15.73	-556.36	5,941.89	13,775.92	13,666.33	109.59	125.709	
14,300.00	7,062.16	3,597.00	3,596.66	42.87	69.42	15.73	-556.36	5,941.89	13,872.02	13,762.10	109.92	126.201	
14,400.00	7,061.83	3,597.00	3,596.66	43.17	69.42	15.73	-556.36	5,941.89	13,968.18	13,857.93	110.25	126.692	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Well Planning
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,500.00	7,061.50	3,597.00	3,596.66	43.47	69.42	15.73	-556.36	5,941.89	14,064.39	13,953.80	110.59	127.180	
14,600.00	7,061.17	3,597.00	3,596.66	43.77	69.42	15.73	-556.36	5,941.89	14,160.66	14,049.74	110.92	127.667	
14,700.00	7,060.84	3,597.00	3,596.66	44.07	69.42	15.73	-556.36	5,941.89	14,256.97	14,145.72	111.25	128.152	
14,800.00	7,060.51	3,597.00	3,596.66	44.37	69.42	15.73	-556.36	5,941.89	14,353.34	14,241.76	111.58	128.636	
14,900.00	7,060.18	3,597.00	3,596.66	44.67	69.42	15.73	-556.36	5,941.89	14,449.76	14,337.84	111.91	129.118	
15,000.00	7,059.86	3,597.00	3,596.66	44.97	69.42	15.73	-556.36	5,941.89	14,546.22	14,433.98	112.24	129.598	
15,100.00	7,059.53	3,597.00	3,596.66	45.27	69.42	15.73	-556.36	5,941.89	14,642.73	14,530.16	112.57	130.076	
15,200.00	7,059.20	3,597.00	3,596.66	45.57	69.42	15.73	-556.36	5,941.89	14,739.29	14,626.39	112.90	130.553	
15,300.00	7,058.87	3,597.00	3,596.66	45.87	69.42	15.73	-556.36	5,941.89	14,835.89	14,722.67	113.23	131.028	
15,400.00	7,058.54	3,597.00	3,596.66	46.17	69.42	15.73	-556.36	5,941.89	14,932.54	14,818.99	113.55	131.501	
15,500.00	7,058.21	3,597.00	3,596.66	46.47	69.42	15.73	-556.36	5,941.89	15,029.24	14,915.35	113.88	131.973	
15,600.00	7,057.88	3,597.00	3,596.66	46.77	69.42	15.73	-556.36	5,941.89	15,125.97	15,011.76	114.21	132.443	
15,700.00	7,057.55	3,597.00	3,596.66	47.07	69.42	15.73	-556.36	5,941.89	15,222.75	15,108.21	114.53	132.911	
15,800.00	7,057.23	3,597.00	3,596.66	47.37	69.42	15.73	-556.36	5,941.89	15,319.57	15,204.71	114.86	133.377	
15,900.00	7,056.90	3,597.00	3,596.66	47.67	69.42	15.73	-556.36	5,941.89	15,416.43	15,301.24	115.18	133.842	
16,000.00	7,056.57	3,597.00	3,596.66	47.97	69.42	15.73	-556.36	5,941.89	15,513.33	15,397.82	115.51	134.305	
16,100.00	7,056.24	3,597.00	3,596.66	48.27	69.42	15.73	-556.36	5,941.89	15,610.27	15,494.43	115.83	134.766	
16,200.00	7,055.91	3,597.00	3,596.66	48.57	69.42	15.73	-556.36	5,941.89	15,707.24	15,591.09	116.16	135.225	
16,300.00	7,055.58	3,597.00	3,596.66	48.87	69.42	15.73	-556.36	5,941.89	15,804.26	15,687.78	116.48	135.683	
16,400.00	7,055.25	3,597.00	3,596.66	49.17	69.42	15.73	-556.36	5,941.89	15,901.31	15,784.51	116.80	136.139	
16,500.00	7,054.92	3,597.00	3,596.66	49.47	69.42	15.73	-556.36	5,941.89	15,998.40	15,881.27	117.12	136.593	
16,600.00	7,054.59	3,597.00	3,596.66	49.77	69.42	15.73	-556.36	5,941.89	16,095.52	15,978.08	117.45	137.046	
16,619.57	7,054.53	3,597.00	3,596.66	49.83	69.42	15.73	-556.36	5,941.89	16,114.54	15,997.03	117.51	137.134	
16,700.00	7,054.27	3,597.00	3,596.66	50.07	69.42	15.73	-556.36	5,941.89	16,192.68	16,074.91	117.77	137.497	
16,782.16	7,054.00	3,597.00	3,596.66	50.32	69.42	15.73	-556.36	5,941.89	16,272.53	16,154.50	118.03	137.866	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	619.86	619.16	0.00	1.82	90.77	-186.93	13,895.32	13,904.75				
100.00	100.00	670.57	669.50	0.23	1.97	90.80	-192.86	13,893.57	13,901.46	13,899.27	2.20	6,329.790	
200.00	200.00	706.00	704.59	0.53	2.08	90.81	-197.60	13,892.50	13,898.62	13,896.02	2.60	5,340.517	
300.00	300.00	735.63	733.88	0.83	2.17	90.83	-201.94	13,891.74	13,896.27	13,893.27	2.99	4,645.429	
400.00	400.00	767.00	764.85	1.13	2.26	90.85	-206.93	13,891.11	13,894.43	13,891.04	3.39	4,104.097	
500.00	500.00	796.83	794.24	1.43	2.35	90.87	-212.03	13,890.65	13,893.09	13,889.32	3.77	3,680.290	
600.00	599.98	835.08	831.82	1.73	2.46	-94.70	-219.10	13,890.23	13,892.39	13,888.20	4.19	3,315.810	
689.03	688.90	910.69	905.61	1.99	2.69	-94.65	-235.57	13,889.49	13,892.19	13,887.51	4.68	2,966.097	CC
700.00	699.84	916.89	911.63	2.03	2.71	-94.64	-237.07	13,889.44	13,892.20	13,887.46	4.74	2,933.828	
800.00	799.45	973.29	966.05	2.33	2.88	-94.59	-251.83	13,889.01	13,892.56	13,887.36	5.20	2,669.413	ES
900.00	898.70	1,024.46	1,014.98	2.63	3.03	-94.54	-266.83	13,888.74	13,893.54	13,887.88	5.66	2,455.611	
1,000.00	997.47	1,068.00	1,056.35	2.93	3.17	-94.48	-280.38	13,888.68	13,895.18	13,889.10	6.09	2,282.206	
1,100.00	1,095.62	1,109.42	1,095.58	3.23	3.29	-94.41	-293.68	13,888.78	13,897.52	13,891.01	6.51	2,133.894	
1,207.25	1,200.09	1,172.63	1,155.29	3.55	3.48	-94.31	-314.39	13,889.17	13,900.75	13,893.73	7.02	1,978.997	
1,300.00	1,290.03	1,350.21	1,322.84	3.83	4.01	-94.25	-373.23	13,889.71	13,903.31	13,895.48	7.84	1,774.484	
1,400.00	1,386.99	1,383.85	1,354.56	4.13	4.12	-94.23	-384.45	13,889.84	13,906.24	13,898.01	8.24	1,688.455	
1,500.00	1,483.96	1,438.00	1,405.64	4.43	4.28	-94.21	-402.39	13,890.21	13,909.52	13,900.83	8.70	1,599.069	
1,600.00	1,580.93	1,502.00	1,465.95	4.73	4.47	-94.19	-423.81	13,890.87	13,913.14	13,903.95	9.19	1,513.861	
1,700.00	1,677.90	1,554.66	1,515.40	5.03	4.63	-94.17	-441.91	13,891.61	13,917.10	13,907.46	9.65	1,442.412	
1,800.00	1,774.87	1,656.80	1,611.27	5.33	4.94	-94.12	-477.10	13,893.01	13,921.10	13,910.84	10.25	1,357.505	
1,900.00	1,871.83	1,789.70	1,736.02	5.63	5.34	-94.06	-522.89	13,894.93	13,925.20	13,914.25	10.95	1,271.289	
2,000.00	1,968.80	1,896.88	1,836.59	5.93	5.66	-94.02	-559.92	13,896.22	13,929.05	13,917.48	11.58	1,203.356	
2,100.00	2,065.77	2,009.00	1,942.24	6.23	5.99	-93.97	-597.44	13,897.41	13,932.72	13,920.50	12.21	1,140.947	
2,200.00	2,162.74	2,086.62	2,015.49	6.53	6.23	-93.95	-623.08	13,898.32	13,936.51	13,923.77	12.74	1,093.541	
2,300.00	2,259.71	2,524.33	2,428.77	6.83	7.54	-93.79	-767.25	13,898.30	13,938.92	13,924.57	14.36	970.845	
2,400.00	2,356.67	2,400.00	2,537.24	7.13	7.17	-93.75	-802.99	13,896.98	13,940.36	13,926.07	14.28	975.906	
2,500.00	2,453.64	2,672.58	2,569.57	7.43	7.98	-93.74	-813.58	13,896.61	13,941.93	13,926.52	15.40	905.186	
2,600.00	2,550.61	2,873.10	2,760.87	7.73	8.59	-93.69	-873.62	13,894.87	13,943.81	13,927.50	16.30	855.248	
2,700.00	2,647.58	2,895.00	2,781.99	8.03	8.65	-93.69	-879.42	13,894.60	13,945.16	13,928.49	16.67	836.566	
2,800.00	2,744.55	2,921.27	2,807.42	8.33	8.73	-93.69	-886.02	13,894.43	13,947.06	13,930.01	17.05	818.088	
2,900.00	2,841.51	2,958.00	2,843.12	8.63	8.84	-93.69	-894.61	13,894.62	13,949.65	13,932.19	17.46	799.016	
3,000.00	2,938.48	2,958.00	2,843.12	8.93	8.84	-93.69	-894.61	13,894.62	13,952.67	13,934.91	17.76	785.688	
3,100.00	3,035.45	3,260.00	3,140.97	9.23	9.74	-93.80	-942.79	13,896.73	13,955.84	13,936.88	18.96	735.891	
3,200.00	3,132.42	3,504.68	3,385.46	9.53	10.47	-94.01	-950.99	13,896.28	13,957.71	13,937.71	20.00	697.936	
3,300.00	3,229.39	3,527.00	3,407.78	9.83	10.54	-94.03	-951.19	13,896.10	13,958.87	13,938.51	20.37	685.417	
3,400.00	3,326.35	3,527.00	3,407.78	10.13	10.54	-94.03	-951.19	13,896.10	13,960.74	13,940.07	20.67	675.556	
3,500.00	3,423.32	3,527.00	3,407.78	10.43	10.54	-94.03	-951.19	13,896.10	13,963.32	13,942.35	20.97	666.012	
3,600.00	3,520.29	3,527.00	3,407.78	10.73	10.54	-94.03	-951.19	13,896.10	13,966.62	13,945.35	21.27	656.771	
3,700.00	3,617.26	3,527.00	3,407.78	11.03	10.54	-94.03	-951.19	13,896.10	13,970.63	13,949.06	21.57	647.820	
3,800.00	3,714.23	3,527.00	3,407.78	11.33	10.54	-94.03	-951.19	13,896.10	13,975.35	13,953.49	21.87	639.147	
3,900.00	3,811.19	3,527.00	3,407.78	11.63	10.54	-94.03	-951.19	13,896.10	13,980.79	13,958.63	22.17	630.741	
4,000.00	3,908.16	3,527.00	3,407.78	11.93	10.54	-94.03	-951.19	13,896.10	13,986.95	13,964.48	22.47	622.592	
4,100.00	4,005.13	3,527.00	3,407.78	12.23	10.54	-94.03	-951.19	13,896.10	13,993.81	13,971.05	22.77	614.688	
4,200.00	4,102.10	3,527.00	3,407.78	12.53	10.54	-94.03	-951.19	13,896.10	14,001.39	13,978.32	23.07	607.021	
4,300.00	4,199.07	3,527.00	3,407.78	12.83	10.54	-94.03	-951.19	13,896.10	14,009.67	13,986.31	23.37	599.581	
4,400.00	4,296.03	3,527.00	3,407.78	13.13	10.54	-94.03	-951.19	13,896.10	14,018.67	13,995.00	23.67	592.360	
4,500.00	4,393.00	3,527.00	3,407.78	13.43	10.54	-94.03	-951.19	13,896.10	14,028.37	14,004.40	23.97	585.349	
4,600.00	4,489.97	3,527.00	3,407.78	13.73	10.54	-94.03	-951.19	13,896.10	14,038.77	14,014.51	24.27	578.541	
4,700.00	4,586.94	3,527.00	3,407.78	14.03	10.54	-94.03	-951.19	13,896.10	14,049.88	14,025.32	24.57	571.927	
4,800.00	4,683.91	3,527.00	3,407.78	14.33	10.54	-94.03	-951.19	13,896.10	14,061.70	14,036.83	24.87	565.502	
4,900.00	4,780.87	3,527.00	3,407.78	14.63	10.54	-94.03	-951.19	13,896.10	14,074.21	14,049.04	25.17	559.257	
5,000.00	4,877.84	3,527.00	3,407.78	14.93	10.54	-94.03	-951.19	13,896.10	14,087.42	14,061.96	25.47	553.187	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,527.00	3,407.78	15.23	10.54	-94.03	-951.19	13,896.10	14,101.33	14,075.56	25.77	547.285	
5,200.00	5,071.78	3,527.00	3,407.78	15.53	10.54	-94.03	-951.19	13,896.10	14,115.93	14,089.87	26.07	541.546	
5,300.00	5,168.75	3,527.00	3,407.78	15.83	10.54	-94.03	-951.19	13,896.10	14,131.23	14,104.87	26.37	535.964	
5,400.00	5,265.71	3,527.00	3,407.78	16.13	10.54	-94.03	-951.19	13,896.10	14,147.22	14,120.55	26.67	530.533	
5,500.00	5,362.68	3,527.00	3,407.78	16.43	10.54	-94.03	-951.19	13,896.10	14,163.89	14,136.93	26.97	525.249	
5,600.00	5,459.65	3,527.00	3,407.78	16.73	10.54	-94.03	-951.19	13,896.10	14,181.25	14,153.99	27.27	520.106	
5,700.00	5,556.62	3,527.00	3,407.78	17.03	10.54	-94.03	-951.19	13,896.10	14,199.30	14,171.73	27.57	515.099	
5,800.00	5,653.59	3,527.00	3,407.78	17.33	10.54	-94.03	-951.19	13,896.10	14,218.02	14,190.15	27.87	510.225	
5,900.00	5,750.55	3,527.00	3,407.78	17.63	10.54	-94.03	-951.19	13,896.10	14,237.42	14,209.25	28.17	505.479	
6,000.00	5,847.52	3,527.00	3,407.78	17.93	10.54	-94.03	-951.19	13,896.10	14,257.50	14,229.03	28.47	500.857	
6,100.00	5,944.49	3,527.00	3,407.78	18.23	10.54	-94.03	-951.19	13,896.10	14,278.25	14,249.48	28.77	496.354	
6,200.00	6,041.46	3,527.00	3,407.78	18.53	10.54	-94.03	-951.19	13,896.10	14,299.66	14,270.60	29.07	491.968	
6,300.00	6,138.43	3,527.00	3,407.78	18.83	10.54	-94.03	-951.19	13,896.10	14,321.75	14,292.38	29.37	487.693	
6,400.00	6,235.39	3,527.00	3,407.78	19.13	10.54	-94.03	-951.19	13,896.10	14,344.50	14,314.83	29.67	483.528	
6,500.00	6,332.36	3,527.00	3,407.78	19.43	10.54	-94.03	-951.19	13,896.10	14,367.90	14,337.94	29.97	479.468	
6,600.00	6,429.33	3,527.00	3,407.78	19.73	10.54	-94.03	-951.19	13,896.10	14,391.97	14,361.70	30.27	475.510	
6,700.00	6,526.30	3,527.00	3,407.78	20.03	10.54	-94.03	-951.19	13,896.10	14,416.68	14,386.12	30.57	471.651	
6,715.28	6,541.12	3,527.00	3,407.78	20.08	10.54	-94.03	-951.19	13,896.10	14,420.52	14,389.91	30.61	471.070	
6,750.00	6,574.74	3,527.00	3,407.78	20.18	10.54	-107.19	-951.19	13,896.10	14,430.30	14,399.58	30.72	469.779	
6,800.00	6,622.83	3,527.00	3,407.78	20.33	10.54	-122.87	-951.19	13,896.10	14,448.01	14,417.14	30.87	468.046	
6,850.00	6,670.20	3,527.00	3,407.78	20.49	10.54	-134.20	-951.19	13,896.10	14,469.88	14,438.86	31.02	466.464	
6,900.00	6,716.50	3,527.00	3,407.78	20.64	10.54	-142.10	-951.19	13,896.10	14,495.70	14,464.53	31.17	465.025	
6,950.00	6,761.36	3,527.00	3,407.78	20.79	10.54	-147.66	-951.19	13,896.10	14,525.28	14,493.95	31.32	463.719	
7,000.00	6,804.45	3,527.00	3,407.78	20.94	10.54	-151.65	-951.19	13,896.10	14,558.35	14,526.87	31.47	462.538	
7,050.00	6,845.44	3,527.00	3,407.78	21.09	10.54	-154.56	-951.19	13,896.10	14,594.64	14,563.02	31.63	461.471	
7,100.00	6,884.01	3,527.00	3,407.78	21.24	10.54	-156.70	-951.19	13,896.10	14,633.87	14,602.09	31.78	460.508	
7,150.00	6,919.88	3,527.00	3,407.78	21.39	10.54	-158.23	-951.19	13,896.10	14,675.69	14,643.76	31.93	459.636	
7,200.00	6,952.78	3,527.00	3,407.78	21.54	10.54	-159.26	-951.19	13,896.10	14,719.78	14,687.70	32.08	458.845	
7,250.00	6,982.44	3,527.00	3,407.78	21.69	10.54	-159.80	-951.19	13,896.10	14,765.79	14,733.55	32.23	458.123	
7,300.00	7,008.65	3,527.00	3,407.78	21.84	10.54	-159.71	-951.19	13,896.10	14,813.33	14,780.95	32.38	457.457	
7,350.00	7,031.20	3,527.00	3,407.78	21.99	10.54	-158.47	-951.19	13,896.10	14,862.05	14,829.52	32.53	456.836	
7,400.00	7,049.92	3,527.00	3,407.78	22.14	10.54	-153.52	-951.19	13,896.10	14,911.56	14,878.88	32.68	456.246	
7,450.00	7,064.68	3,527.00	3,407.78	22.29	10.54	-92.01	-951.19	13,896.10	14,961.47	14,928.64	32.83	455.678	
7,500.00	7,075.36	3,527.00	3,407.78	22.44	10.54	1.31	-951.19	13,896.10	15,011.41	14,978.43	32.98	455.118	
7,550.00	7,081.87	3,527.00	3,407.78	22.59	10.54	7.77	-951.19	13,896.10	15,061.00	15,027.87	33.13	454.555	
7,604.16	7,084.18	3,527.00	3,407.78	22.75	10.54	9.97	-951.19	13,896.10	15,113.88	15,080.59	33.30	453.930	
7,700.00	7,083.86	3,527.00	3,407.78	23.04	10.54	9.97	-951.19	13,896.10	15,206.45	15,172.87	33.58	452.794	
7,800.00	7,083.53	3,527.00	3,407.78	23.34	10.54	9.97	-951.19	13,896.10	15,303.08	15,269.20	33.88	451.632	
7,900.00	7,083.20	3,527.00	3,407.78	23.64	10.54	9.97	-951.19	13,896.10	15,399.76	15,365.57	34.18	450.491	
8,000.00	7,082.87	3,527.00	3,407.78	23.94	10.54	9.97	-951.19	13,896.10	15,496.47	15,461.99	34.48	449.372	
8,100.00	7,082.54	3,527.00	3,407.78	24.24	10.54	9.97	-951.19	13,896.10	15,593.23	15,558.44	34.79	448.273	
8,200.00	7,082.22	3,527.00	3,407.78	24.54	10.54	9.97	-951.19	13,896.10	15,690.03	15,654.94	35.09	447.194	
8,300.00	7,081.89	3,527.00	3,407.78	24.84	10.54	9.97	-951.19	13,896.10	15,786.87	15,751.48	35.39	446.135	
8,400.00	7,081.56	3,527.00	3,407.78	25.14	10.54	9.97	-951.19	13,896.10	15,883.74	15,848.06	35.69	445.094	
8,500.00	7,081.23	3,527.00	3,407.78	25.45	10.54	9.97	-951.19	13,896.10	15,980.66	15,944.67	35.99	444.073	
8,600.00	7,080.90	3,527.00	3,407.78	25.75	10.54	9.97	-951.19	13,896.10	16,077.61	16,041.33	36.29	443.069	
8,700.00	7,080.57	3,527.00	3,407.78	26.05	10.54	9.97	-951.19	13,896.10	16,174.60	16,138.02	36.59	442.083	
8,800.00	7,080.24	3,527.00	3,407.78	26.35	10.54	9.97	-951.19	13,896.10	16,271.63	16,234.74	36.89	441.113	
8,900.00	7,079.91	3,527.00	3,407.78	26.65	10.54	9.97	-951.19	13,896.10	16,368.70	16,331.51	37.19	440.161	
9,000.00	7,079.59	3,527.00	3,407.78	26.95	10.54	9.97	-951.19	13,896.10	16,465.79	16,428.31	37.49	439.225	
9,100.00	7,079.26	3,527.00	3,407.78	27.25	10.54	9.97	-951.19	13,896.10	16,562.93	16,525.14	37.79	438.304	
9,200.00	7,078.93	3,527.00	3,407.78	27.55	10.54	9.97	-951.19	13,896.10	16,660.09	16,622.00	38.09	437.399	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,527.00	3,407.78	27.85	10.54	9.97	-951.19	13,896.10	16,757.29	16,718.90	38.39	436.509	
9,400.00	7,078.27	3,527.00	3,407.78	28.15	10.54	9.97	-951.19	13,896.10	16,854.53	16,815.84	38.69	435.634	
9,500.00	7,077.94	3,527.00	3,407.78	28.45	10.54	9.97	-951.19	13,896.10	16,951.79	16,912.80	38.99	434.774	
9,600.00	7,077.61	3,527.00	3,407.78	28.75	10.54	9.97	-951.19	13,896.10	17,049.09	17,009.80	39.29	433.927	
9,700.00	7,077.28	3,527.00	3,407.78	29.05	10.54	9.97	-951.19	13,896.10	17,146.42	17,106.82	39.59	433.094	
9,800.00	7,076.95	3,527.00	3,407.78	29.35	10.54	9.97	-951.19	13,896.10	17,243.77	17,203.88	39.89	432.274	
9,900.00	7,076.63	3,527.00	3,407.78	29.65	10.54	9.97	-951.19	13,896.10	17,341.16	17,300.97	40.19	431.467	
10,000.00	7,076.30	3,527.00	3,407.78	29.95	10.54	9.97	-951.19	13,896.10	17,438.58	17,398.09	40.49	430.673	
10,100.00	7,075.97	3,527.00	3,407.78	30.25	10.54	9.97	-951.19	13,896.10	17,536.03	17,495.24	40.79	429.892	
10,200.00	7,075.64	3,527.00	3,407.78	30.55	10.54	9.97	-951.19	13,896.10	17,633.50	17,592.41	41.09	429.122	
10,300.00	7,075.31	3,527.00	3,407.78	30.85	10.54	9.97	-951.19	13,896.10	17,731.01	17,689.61	41.39	428.365	
10,400.00	7,074.98	3,527.00	3,407.78	31.15	10.54	9.97	-951.19	13,896.10	17,828.54	17,786.84	41.69	427.619	
10,500.00	7,074.65	3,527.00	3,407.78	31.46	10.54	9.97	-951.19	13,896.10	17,926.10	17,884.10	41.99	426.884	
10,600.00	7,074.32	3,527.00	3,407.78	31.76	10.54	9.97	-951.19	13,896.10	18,023.68	17,981.39	42.29	426.161	
10,700.00	7,074.00	3,527.00	3,407.78	32.06	10.54	9.97	-951.19	13,896.10	18,121.29	18,078.70	42.59	425.448	
10,800.00	7,073.67	3,527.00	3,407.78	32.36	10.54	9.97	-951.19	13,896.10	18,218.93	18,176.04	42.89	424.746	
10,900.00	7,073.34	3,527.00	3,407.78	32.66	10.54	9.97	-951.19	13,896.10	18,316.59	18,273.40	43.19	424.055	
11,000.00	7,073.01	3,527.00	3,407.78	32.96	10.54	9.97	-951.19	13,896.10	18,414.28	18,370.79	43.49	423.373	
11,100.00	7,072.68	3,527.00	3,407.78	33.26	10.54	9.97	-951.19	13,896.10	18,511.99	18,468.20	43.79	422.702	
11,200.00	7,072.35	3,527.00	3,407.78	33.56	10.54	9.97	-951.19	13,896.10	18,609.73	18,565.64	44.09	422.040	
11,300.00	7,072.02	3,527.00	3,407.78	33.86	10.54	9.97	-951.19	13,896.10	18,707.49	18,663.10	44.39	421.388	
11,400.00	7,071.69	3,527.00	3,407.78	34.16	10.54	9.97	-951.19	13,896.10	18,805.28	18,760.58	44.70	420.745	
11,500.00	7,071.36	3,527.00	3,407.78	34.46	10.54	9.97	-951.19	13,896.10	18,903.09	18,858.09	45.00	420.111	
11,600.00	7,071.04	3,527.00	3,407.78	34.76	10.54	9.97	-951.19	13,896.10	19,000.92	18,955.62	45.30	419.486	
11,700.00	7,070.71	3,527.00	3,407.78	35.06	10.54	9.97	-951.19	13,896.10	19,098.77	19,053.17	45.60	418.870	
11,800.00	7,070.38	3,527.00	3,407.78	35.36	10.54	9.97	-951.19	13,896.10	19,196.64	19,150.75	45.90	418.262	
11,900.00	7,070.05	3,527.00	3,407.78	35.66	10.54	9.97	-951.19	13,896.10	19,294.54	19,248.34	46.20	417.663	
12,000.00	7,069.72	3,527.00	3,407.78	35.96	10.54	9.97	-951.19	13,896.10	19,392.46	19,345.96	46.50	417.072	
12,100.00	7,069.39	3,527.00	3,407.78	36.26	10.54	9.97	-951.19	13,896.10	19,490.40	19,443.60	46.80	416.489	
12,200.00	7,069.06	3,527.00	3,407.78	36.56	10.54	9.97	-951.19	13,896.10	19,588.36	19,541.26	47.10	415.914	
12,300.00	7,068.73	3,527.00	3,407.78	36.86	10.54	9.97	-951.19	13,896.10	19,686.34	19,638.94	47.40	415.347	
12,400.00	7,068.41	3,527.00	3,407.78	37.16	10.54	9.97	-951.19	13,896.10	19,784.34	19,736.64	47.70	414.787	
12,500.00	7,068.08	3,527.00	3,407.78	37.46	10.54	9.97	-951.19	13,896.10	19,882.36	19,834.36	48.00	414.235	
12,600.00	7,067.75	3,527.00	3,407.78	37.76	10.54	9.97	-951.19	13,896.10	19,980.40	19,932.11	48.30	413.690 SF	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	90.61	-110.64	10,399.29	10,399.88				
100.00	100.00	259.52	259.51	0.23	2.63	90.61	-110.64	10,399.29	10,399.88	10,397.03	2.85	3,646.875	
200.00	200.00	359.52	359.51	0.53	4.47	90.61	-110.64	10,399.29	10,399.88	10,394.88	5.00	2,079.866	
300.00	300.00	459.52	459.51	0.83	6.32	90.61	-110.64	10,399.29	10,399.88	10,392.73	7.15	1,454.772	
340.68	340.68	500.16	500.16	0.95	7.07	90.61	-110.10	10,399.29	10,399.88	10,391.86	8.02	1,296.380	CC
400.00	400.00	559.37	559.37	1.13	8.17	90.61	-110.14	10,399.29	10,399.88	10,390.58	9.29	1,118.903	
500.00	500.00	659.18	659.17	1.43	10.01	90.61	-110.36	10,399.29	10,399.88	10,388.44	11.44	909.105	
600.00	599.98	759.51	759.49	1.73	11.88	-94.98	-110.64	10,399.29	10,400.03	10,386.43	13.61	764.362	
700.00	699.84	859.37	859.35	2.03	13.78	-95.00	-110.64	10,399.29	10,400.49	10,384.69	15.80	658.083	
800.00	799.45	958.90	958.88	2.33	15.67	-95.03	-110.25	10,399.29	10,401.25	10,383.26	18.00	577.973	
900.00	898.70	1,057.97	1,057.94	2.63	17.55	-95.08	-110.45	10,399.29	10,402.34	10,382.16	20.18	515.501	
1,000.00	997.47	1,157.02	1,156.98	2.93	19.44	-95.13	-110.64	10,399.29	10,403.75	10,381.38	22.36	465.225	
1,100.00	1,095.62	1,255.18	1,255.14	3.23	21.30	-95.20	-110.64	10,399.29	10,405.50	10,380.97	24.53	424.185	
1,207.25	1,200.09	1,359.64	1,359.59	3.55	23.29	-95.29	-109.84	10,399.29	10,407.77	10,380.93	26.84	387.771	ES
1,300.00	1,290.03	1,449.58	1,449.53	3.83	25.00	-95.41	-109.96	10,399.29	10,409.95	10,381.12	28.83	361.087	
1,400.00	1,386.99	1,546.67	1,546.62	4.13	26.85	-95.54	-110.34	10,399.29	10,412.35	10,381.37	30.98	336.132	
1,500.00	1,483.96	1,643.90	1,643.84	4.43	28.70	-95.66	-110.97	10,399.30	10,414.81	10,381.68	33.13	314.391	
1,600.00	1,580.93	1,740.52	1,740.44	4.73	30.54	-95.79	-110.64	10,399.29	10,417.32	10,382.06	35.27	295.390	
1,700.00	1,677.90	1,837.50	1,837.42	5.03	32.39	-95.93	-110.14	10,399.29	10,419.90	10,382.49	37.41	278.515	
1,800.00	1,774.87	1,934.69	1,934.61	5.33	34.24	-96.06	-110.24	10,399.29	10,422.53	10,382.97	39.56	263.446	
1,900.00	1,871.83	2,090.55	2,031.35	5.63	37.22	-96.18	-110.64	10,399.29	10,425.21	10,382.36	42.85	243.315	
2,000.00	1,968.80	2,128.42	2,128.31	5.93	37.96	-96.31	-110.64	10,399.29	10,427.95	10,384.06	43.89	237.594	
2,100.00	2,065.77	2,225.38	2,225.28	6.23	39.87	-96.44	-110.64	10,399.29	10,430.75	10,384.66	46.09	226.297	
2,200.00	2,162.74	2,322.53	2,322.43	6.53	41.77	-96.58	-109.90	10,399.29	10,433.62	10,385.32	48.30	216.016	
2,300.00	2,259.71	2,420.19	2,420.08	6.83	43.69	-96.70	-110.11	10,399.29	10,436.53	10,386.01	50.52	206.594	
2,400.00	2,356.67	2,533.67	2,516.19	7.13	45.92	-96.83	-110.64	10,399.29	10,439.48	10,386.43	53.05	196.785	
2,500.00	2,453.64	2,613.30	2,613.15	7.43	47.54	-96.96	-110.64	10,399.29	10,442.51	10,387.54	54.96	189.985	
2,600.00	2,550.61	2,710.26	2,710.12	7.73	49.50	-97.09	-110.64	10,399.29	10,445.59	10,388.36	57.23	182.517	
2,700.00	2,647.58	2,808.15	2,808.00	8.03	51.49	-97.22	-110.10	10,399.29	10,448.74	10,389.23	59.52	175.563	
2,800.00	2,744.55	2,947.75	2,904.06	8.33	54.32	-97.35	-110.64	10,399.29	10,451.92	10,389.27	62.65	166.837	
2,900.00	2,841.51	3,001.22	3,001.03	8.63	55.41	-97.48	-110.64	10,399.29	10,455.17	10,391.13	64.03	163.275	
3,000.00	2,938.48	3,098.18	3,098.00	8.93	57.38	-97.60	-110.64	10,399.29	10,458.47	10,392.16	66.31	157.732	
3,100.00	3,035.45	3,195.30	3,195.10	9.23	59.35	-97.74	-109.51	10,399.29	10,461.88	10,393.30	68.58	152.552	
3,200.00	3,132.42	3,293.80	3,293.60	9.53	61.35	-97.87	-109.71	10,399.29	10,465.29	10,394.41	70.88	147.645	
3,300.00	3,229.39	3,392.48	3,392.27	9.83	63.36	-98.00	-110.23	10,399.29	10,468.74	10,395.55	73.19	143.040	
3,400.00	3,326.35	3,491.33	3,491.11	10.13	65.37	-98.12	-111.08	10,399.30	10,472.23	10,396.73	75.50	138.711	
3,500.00	3,423.32	3,569.00	3,568.74	10.43	66.87	-98.23	-110.64	10,399.29	10,475.84	10,398.55	77.30	135.529	
3,600.00	3,520.29	3,569.00	3,568.74	10.73	66.87	-98.23	-110.64	10,399.29	10,480.06	10,402.47	77.59	135.065	
3,700.00	3,617.26	3,569.00	3,568.74	11.03	66.87	-98.23	-110.64	10,399.29	10,485.23	10,407.35	77.88	134.627	
3,800.00	3,714.23	3,569.00	3,568.74	11.33	66.87	-98.23	-110.64	10,399.29	10,491.36	10,413.19	78.17	134.214	
3,900.00	3,811.19	3,569.00	3,568.74	11.63	66.87	-98.23	-110.64	10,399.29	10,498.43	10,419.98	78.45	133.825	
4,000.00	3,908.16	3,569.00	3,568.74	11.93	66.87	-98.23	-110.64	10,399.29	10,506.45	10,427.72	78.72	133.461	
4,100.00	4,005.13	3,569.00	3,568.74	12.23	66.87	-98.23	-110.64	10,399.29	10,515.41	10,436.42	78.99	133.120	
4,200.00	4,102.10	3,569.00	3,568.74	12.53	66.87	-98.23	-110.64	10,399.29	10,525.31	10,446.06	79.26	132.802	
4,300.00	4,199.07	3,569.00	3,568.74	12.83	66.87	-98.23	-110.64	10,399.29	10,536.16	10,456.65	79.51	132.508	
4,400.00	4,296.03	3,569.00	3,568.74	13.13	66.87	-98.23	-110.64	10,399.29	10,547.94	10,468.18	79.77	132.235	
4,500.00	4,393.00	3,569.00	3,568.74	13.43	66.87	-98.23	-110.64	10,399.29	10,560.66	10,480.64	80.01	131.985	
4,600.00	4,489.97	3,569.00	3,568.74	13.73	66.87	-98.23	-110.64	10,399.29	10,574.31	10,494.05	80.26	131.757	
4,700.00	4,586.94	3,569.00	3,568.74	14.03	66.87	-98.23	-110.64	10,399.29	10,588.88	10,508.39	80.49	131.550	
4,800.00	4,683.91	3,569.00	3,568.74	14.33	66.87	-98.23	-110.64	10,399.29	10,604.38	10,523.65	80.73	131.364	
4,900.00	4,780.87	3,569.00	3,568.74	14.63	66.87	-98.23	-110.64	10,399.29	10,620.79	10,539.84	80.95	131.198	
5,000.00	4,877.84	3,569.00	3,568.74	14.93	66.87	-98.23	-110.64	10,399.29	10,638.12	10,556.95	81.17	131.053	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,569.00	3,568.74	15.23	66.87	-98.23	-110.64	10,399.29	10,656.36	10,574.97	81.39	130.927	
5,200.00	5,071.78	3,569.00	3,568.74	15.53	66.87	-98.23	-110.64	10,399.29	10,675.51	10,593.90	81.60	130.821	
5,300.00	5,168.75	3,569.00	3,568.74	15.83	66.87	-98.23	-110.64	10,399.29	10,695.55	10,613.74	81.81	130.735	
5,400.00	5,265.71	3,569.00	3,568.74	16.13	66.87	-98.23	-110.64	10,399.29	10,716.50	10,634.48	82.01	130.667	
5,500.00	5,362.68	3,569.00	3,568.74	16.43	66.87	-98.23	-110.64	10,399.29	10,738.33	10,656.12	82.21	130.617	
5,600.00	5,459.65	3,569.00	3,568.74	16.73	66.87	-98.23	-110.64	10,399.29	10,761.05	10,678.64	82.41	130.586	
5,700.00	5,556.62	3,569.00	3,568.74	17.03	66.87	-98.23	-110.64	10,399.29	10,784.64	10,702.05	82.60	130.572	SF
5,800.00	5,653.59	3,569.00	3,568.74	17.33	66.87	-98.23	-110.64	10,399.29	10,809.12	10,726.34	82.78	130.576	
5,900.00	5,750.55	3,569.00	3,568.74	17.63	66.87	-98.23	-110.64	10,399.29	10,834.45	10,751.49	82.96	130.597	
6,000.00	5,847.52	3,569.00	3,568.74	17.93	66.87	-98.23	-110.64	10,399.29	10,860.65	10,777.52	83.14	130.634	
6,100.00	5,944.49	3,569.00	3,568.74	18.23	66.87	-98.23	-110.64	10,399.29	10,887.71	10,804.40	83.31	130.688	
6,200.00	6,041.46	3,569.00	3,568.74	18.53	66.87	-98.23	-110.64	10,399.29	10,915.62	10,832.14	83.48	130.759	
6,300.00	6,138.43	3,569.00	3,568.74	18.83	66.87	-98.23	-110.64	10,399.29	10,944.36	10,860.72	83.64	130.845	
6,400.00	6,235.39	3,569.00	3,568.74	19.13	66.87	-98.23	-110.64	10,399.29	10,973.95	10,890.14	83.81	130.946	
6,500.00	6,332.36	3,569.00	3,568.74	19.43	66.87	-98.23	-110.64	10,399.29	11,004.36	10,920.40	83.96	131.063	
6,600.00	6,429.33	3,569.00	3,568.74	19.73	66.87	-98.23	-110.64	10,399.29	11,035.59	10,951.48	84.12	131.194	
6,700.00	6,526.30	3,569.00	3,568.74	20.03	66.87	-98.23	-110.64	10,399.29	11,067.65	10,983.38	84.27	131.340	
6,715.28	6,541.12	3,569.00	3,568.74	20.08	66.87	-98.23	-110.64	10,399.29	11,072.61	10,988.32	84.29	131.364	
6,750.00	6,574.74	3,569.00	3,568.74	20.18	66.87	-111.47	-110.64	10,399.29	11,084.96	11,000.62	84.34	131.428	
6,800.00	6,622.83	3,569.00	3,568.74	20.33	66.87	-127.33	-110.64	10,399.29	11,106.29	11,021.87	84.42	131.559	
6,850.00	6,670.20	3,569.00	3,568.74	20.49	66.87	-138.88	-110.64	10,399.29	11,131.64	11,047.14	84.50	131.733	
6,900.00	6,716.50	3,569.00	3,568.74	20.64	66.87	-147.07	-110.64	10,399.29	11,160.80	11,076.22	84.59	131.947	
6,950.00	6,761.36	3,569.00	3,568.74	20.79	66.87	-153.01	-110.64	10,399.29	11,193.52	11,108.84	84.67	132.196	
7,000.00	6,804.45	3,569.00	3,568.74	20.94	66.87	-157.48	-110.64	10,399.29	11,229.50	11,144.74	84.77	132.476	
7,050.00	6,845.44	3,569.00	3,568.74	21.09	66.87	-161.03	-110.64	10,399.29	11,268.46	11,183.60	84.86	132.782	
7,100.00	6,884.01	3,569.00	3,568.74	21.24	66.87	-164.03	-110.64	10,399.29	11,310.07	11,225.10	84.97	133.110	
7,150.00	6,919.88	3,569.00	3,568.74	21.39	66.87	-166.79	-110.64	10,399.29	11,353.97	11,268.89	85.08	133.454	
7,200.00	6,952.78	3,569.00	3,568.74	21.54	66.87	-169.63	-110.64	10,399.29	11,399.82	11,314.62	85.19	133.810	
7,250.00	6,982.44	3,569.00	3,568.74	21.69	66.87	-173.10	-110.64	10,399.29	11,447.24	11,361.92	85.32	134.172	
7,300.00	7,008.65	3,569.00	3,568.74	21.84	66.87	-178.48	-110.64	10,399.29	11,495.85	11,410.41	85.45	134.537	
7,350.00	7,031.20	3,569.00	3,568.74	21.99	66.87	169.24	-110.64	10,399.29	11,545.28	11,459.69	85.59	134.898	
7,400.00	7,049.92	3,569.00	3,568.74	22.14	66.87	116.95	-110.64	10,399.29	11,595.13	11,509.40	85.73	135.252	
7,450.00	7,064.68	3,569.00	3,568.74	22.29	66.87	46.38	-110.64	10,399.29	11,645.03	11,559.15	85.88	135.594	
7,500.00	7,075.36	3,569.00	3,568.74	22.44	66.87	30.55	-110.64	10,399.29	11,694.60	11,608.56	86.04	135.920	
7,550.00	7,081.87	3,569.00	3,568.74	22.59	66.87	24.96	-110.64	10,399.29	11,743.46	11,657.26	86.21	136.226	
7,604.16	7,084.18	3,569.00	3,568.74	22.75	66.87	22.05	-110.64	10,399.29	11,795.18	11,708.79	86.39	136.530	
7,700.00	7,083.86	3,569.00	3,568.74	23.04	66.87	22.05	-110.64	10,399.29	11,885.37	11,798.64	86.73	137.037	
7,800.00	7,083.53	3,569.00	3,568.74	23.34	66.87	22.05	-110.64	10,399.29	11,979.57	11,892.49	87.08	137.564	
7,900.00	7,083.20	3,569.00	3,568.74	23.64	66.87	22.05	-110.64	10,399.29	12,073.87	11,986.43	87.43	138.091	
8,000.00	7,082.87	3,569.00	3,568.74	23.94	66.87	22.05	-110.64	10,399.29	12,168.25	12,080.47	87.78	138.616	
8,100.00	7,082.54	3,569.00	3,568.74	24.24	66.87	22.05	-110.64	10,399.29	12,262.73	12,174.60	88.13	139.140	
8,200.00	7,082.22	3,569.00	3,568.74	24.54	66.87	22.05	-110.64	10,399.29	12,357.29	12,268.81	88.48	139.662	
8,300.00	7,081.89	3,569.00	3,568.74	24.84	66.87	22.05	-110.64	10,399.29	12,451.94	12,363.11	88.83	140.183	
8,400.00	7,081.56	3,569.00	3,568.74	25.14	66.87	22.05	-110.64	10,399.29	12,546.67	12,457.49	89.17	140.703	
8,500.00	7,081.23	3,569.00	3,568.74	25.45	66.87	22.05	-110.64	10,399.29	12,641.48	12,551.96	89.52	141.221	
8,600.00	7,080.90	3,569.00	3,568.74	25.75	66.87	22.05	-110.64	10,399.29	12,736.37	12,646.51	89.86	141.737	
8,700.00	7,080.57	3,569.00	3,568.74	26.05	66.87	22.05	-110.64	10,399.29	12,831.33	12,741.13	90.20	142.252	
8,800.00	7,080.24	3,569.00	3,568.74	26.35	66.87	22.05	-110.64	10,399.29	12,926.38	12,835.83	90.54	142.766	
8,900.00	7,079.91	3,569.00	3,568.74	26.65	66.87	22.05	-110.64	10,399.29	13,021.49	12,930.61	90.88	143.277	
9,000.00	7,079.59	3,569.00	3,568.74	26.95	66.87	22.05	-110.64	10,399.29	13,116.69	13,025.46	91.22	143.787	
9,100.00	7,079.26	3,569.00	3,568.74	27.25	66.87	22.05	-110.64	10,399.29	13,211.95	13,120.39	91.56	144.296	
9,200.00	7,078.93	3,569.00	3,568.74	27.55	66.87	22.05	-110.64	10,399.29	13,307.28	13,215.38	91.90	144.802	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,569.00	3,568.74	27.85	66.87	22.05	-110.64	10,399.29	13,402.68	13,310.44	92.24	145.307	
9,400.00	7,078.27	3,569.00	3,568.74	28.15	66.87	22.05	-110.64	10,399.29	13,498.14	13,405.57	92.57	145.810	
9,500.00	7,077.94	3,569.00	3,568.74	28.45	66.87	22.05	-110.64	10,399.29	13,593.67	13,500.76	92.91	146.312	
9,600.00	7,077.61	3,569.00	3,568.74	28.75	66.87	22.05	-110.64	10,399.29	13,689.27	13,596.02	93.24	146.812	
9,700.00	7,077.28	3,569.00	3,568.74	29.05	66.87	22.05	-110.64	10,399.29	13,784.93	13,691.35	93.58	147.310	
9,800.00	7,076.95	3,569.00	3,568.74	29.35	66.87	22.05	-110.64	10,399.29	13,880.64	13,786.73	93.91	147.806	
9,900.00	7,076.63	3,569.00	3,568.74	29.65	66.87	22.05	-110.64	10,399.29	13,976.42	13,882.18	94.24	148.300	
10,000.00	7,076.30	3,569.00	3,568.74	29.95	66.87	22.05	-110.64	10,399.29	14,072.26	13,977.68	94.58	148.793	
10,100.00	7,075.97	3,569.00	3,568.74	30.25	66.87	22.05	-110.64	10,399.29	14,168.15	14,073.25	94.91	149.283	
10,200.00	7,075.64	3,569.00	3,568.74	30.55	66.87	22.05	-110.64	10,399.29	14,264.10	14,168.87	95.24	149.772	
10,300.00	7,075.31	3,569.00	3,568.74	30.85	66.87	22.05	-110.64	10,399.29	14,360.11	14,264.54	95.57	150.259	
10,400.00	7,074.98	3,569.00	3,568.74	31.15	66.87	22.05	-110.64	10,399.29	14,456.17	14,360.27	95.90	150.744	
10,500.00	7,074.65	3,569.00	3,568.74	31.46	66.87	22.05	-110.64	10,399.29	14,552.28	14,456.06	96.23	151.228	
10,600.00	7,074.32	3,569.00	3,568.74	31.76	66.87	22.05	-110.64	10,399.29	14,648.45	14,551.89	96.56	151.709	
10,700.00	7,074.00	3,569.00	3,568.74	32.06	66.87	22.05	-110.64	10,399.29	14,744.67	14,647.78	96.88	152.189	
10,800.00	7,073.67	3,569.00	3,568.74	32.36	66.87	22.05	-110.64	10,399.29	14,840.93	14,743.72	97.21	152.666	
10,900.00	7,073.34	3,569.00	3,568.74	32.66	66.87	22.05	-110.64	10,399.29	14,937.25	14,839.71	97.54	153.142	
11,000.00	7,073.01	3,569.00	3,568.74	32.96	66.87	22.05	-110.64	10,399.29	15,033.61	14,935.75	97.86	153.616	
11,100.00	7,072.68	3,569.00	3,568.74	33.26	66.87	22.05	-110.64	10,399.29	15,130.02	15,031.83	98.19	154.088	
11,200.00	7,072.35	3,569.00	3,568.74	33.56	66.87	22.05	-110.64	10,399.29	15,226.48	15,127.97	98.52	154.559	
11,300.00	7,072.02	3,569.00	3,568.74	33.86	66.87	22.05	-110.64	10,399.29	15,322.98	15,224.14	98.84	155.027	
11,400.00	7,071.69	3,569.00	3,568.74	34.16	66.87	22.05	-110.64	10,399.29	15,419.53	15,320.37	99.17	155.493	
11,500.00	7,071.36	3,569.00	3,568.74	34.46	66.87	22.05	-110.64	10,399.29	15,516.12	15,416.63	99.49	155.958	
11,600.00	7,071.04	3,569.00	3,568.74	34.76	66.87	22.05	-110.64	10,399.29	15,612.76	15,512.94	99.81	156.420	
11,700.00	7,070.71	3,569.00	3,568.74	35.06	66.87	22.05	-110.64	10,399.29	15,709.43	15,609.30	100.14	156.881	
11,800.00	7,070.38	3,569.00	3,568.74	35.36	66.87	22.05	-110.64	10,399.29	15,806.15	15,705.69	100.46	157.340	
11,900.00	7,070.05	3,569.00	3,568.74	35.66	66.87	22.05	-110.64	10,399.29	15,902.91	15,802.13	100.78	157.797	
12,000.00	7,069.72	3,569.00	3,568.74	35.96	66.87	22.05	-110.64	10,399.29	15,999.71	15,898.60	101.10	158.252	
12,100.00	7,069.39	3,569.00	3,568.74	36.26	66.87	22.05	-110.64	10,399.29	16,096.54	15,995.12	101.42	158.705	
12,200.00	7,069.06	3,569.00	3,568.74	36.56	66.87	22.05	-110.64	10,399.29	16,193.42	16,091.67	101.75	159.156	
12,300.00	7,068.73	3,569.00	3,568.74	36.86	66.87	22.05	-110.64	10,399.29	16,290.33	16,188.26	102.07	159.606	
12,400.00	7,068.41	3,569.00	3,568.74	37.16	66.87	22.05	-110.64	10,399.29	16,387.28	16,284.89	102.39	160.053	
12,500.00	7,068.08	3,569.00	3,568.74	37.46	66.87	22.05	-110.64	10,399.29	16,484.27	16,381.56	102.71	160.499	
12,600.00	7,067.75	3,569.00	3,568.74	37.76	66.87	22.05	-110.64	10,399.29	16,581.29	16,478.26	103.03	160.943	
12,700.00	7,067.42	3,569.00	3,568.74	38.06	66.87	22.05	-110.64	10,399.29	16,678.35	16,575.00	103.35	161.384	
12,800.00	7,067.09	3,569.00	3,568.74	38.36	66.87	22.05	-110.64	10,399.29	16,775.44	16,671.78	103.66	161.824	
12,900.00	7,066.76	3,569.00	3,568.74	38.66	66.87	22.05	-110.64	10,399.29	16,872.57	16,768.58	103.98	162.263	
13,000.00	7,066.43	3,569.00	3,568.74	38.96	66.87	22.05	-110.64	10,399.29	16,969.73	16,865.42	104.30	162.699	
13,100.00	7,066.10	3,569.00	3,568.74	39.26	66.87	22.05	-110.64	10,399.29	17,066.92	16,962.30	104.62	163.133	
13,200.00	7,065.77	3,569.00	3,568.74	39.56	66.87	22.05	-110.64	10,399.29	17,164.14	17,059.21	104.94	163.566	
13,300.00	7,065.45	3,569.00	3,568.74	39.86	66.87	22.05	-110.64	10,399.29	17,261.40	17,156.15	105.25	163.997	
13,400.00	7,065.12	3,569.00	3,568.74	40.16	66.87	22.05	-110.64	10,399.29	17,358.69	17,253.12	105.57	164.426	
13,500.00	7,064.79	3,569.00	3,568.74	40.47	66.87	22.05	-110.64	10,399.29	17,456.01	17,350.12	105.89	164.853	
13,600.00	7,064.46	3,569.00	3,568.74	40.77	66.87	22.05	-110.64	10,399.29	17,553.35	17,447.15	106.21	165.278	
13,700.00	7,064.13	3,569.00	3,568.74	41.07	66.87	22.05	-110.64	10,399.29	17,650.73	17,544.21	106.52	165.701	
13,800.00	7,063.80	3,569.00	3,568.74	41.37	66.87	22.05	-110.64	10,399.29	17,748.14	17,641.30	106.84	166.123	
13,900.00	7,063.47	3,569.00	3,568.74	41.67	66.87	22.05	-110.64	10,399.29	17,845.57	17,738.42	107.15	166.543	
14,000.00	7,063.14	3,569.00	3,568.74	41.97	66.87	22.05	-110.64	10,399.29	17,943.04	17,835.57	107.47	166.960	
14,100.00	7,062.82	3,569.00	3,568.74	42.27	66.87	22.05	-110.64	10,399.29	18,040.53	17,932.75	107.78	167.377	
14,200.00	7,062.49	3,569.00	3,568.74	42.57	66.87	22.05	-110.64	10,399.29	18,138.05	18,029.95	108.10	167.791	
14,300.00	7,062.16	3,569.00	3,568.74	42.87	66.87	22.05	-110.64	10,399.29	18,235.60	18,127.18	108.41	168.204	
14,400.00	7,061.83	3,569.00	3,568.74	43.17	66.87	22.05	-110.64	10,399.29	18,333.17	18,224.44	108.73	168.614	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.50	3,569.00	3,568.74	43.47	66.87	22.05	-110.64	10,399.29	18,430.77	18,321.72	109.04	169.023	
14,600.00	7,061.17	3,569.00	3,568.74	43.77	66.87	22.05	-110.64	10,399.29	18,528.39	18,419.03	109.36	169.431	
14,700.00	7,060.84	3,569.00	3,568.74	44.07	66.87	22.05	-110.64	10,399.29	18,626.04	18,516.37	109.67	169.836	
14,800.00	7,060.51	3,569.00	3,568.74	44.37	66.87	22.05	-110.64	10,399.29	18,723.71	18,613.73	109.98	170.240	
14,900.00	7,060.18	3,569.00	3,568.74	44.67	66.87	22.05	-110.64	10,399.29	18,821.41	18,711.12	110.30	170.642	
15,000.00	7,059.86	3,569.00	3,568.74	44.97	66.87	22.05	-110.64	10,399.29	18,919.14	18,808.52	110.61	171.042	
15,100.00	7,059.53	3,569.00	3,568.74	45.27	66.87	22.05	-110.64	10,399.29	19,016.88	18,905.96	110.92	171.441	
15,200.00	7,059.20	3,569.00	3,568.74	45.57	66.87	22.05	-110.64	10,399.29	19,114.65	19,003.41	111.24	171.837	
15,300.00	7,058.87	3,569.00	3,568.74	45.87	66.87	22.05	-110.64	10,399.29	19,212.44	19,100.89	111.55	172.232	
15,400.00	7,058.54	3,569.00	3,568.74	46.17	66.87	22.05	-110.64	10,399.29	19,310.26	19,198.40	111.86	172.626	
15,500.00	7,058.21	3,569.00	3,568.74	46.47	66.87	22.05	-110.64	10,399.29	19,408.10	19,295.92	112.17	173.017	
15,600.00	7,057.88	3,569.00	3,568.74	46.77	66.87	22.05	-110.64	10,399.29	19,505.96	19,393.47	112.49	173.407	
15,700.00	7,057.55	3,569.00	3,568.74	47.07	66.87	22.05	-110.64	10,399.29	19,603.84	19,491.04	112.80	173.796	
15,800.00	7,057.23	3,569.00	3,568.74	47.37	66.87	22.05	-110.64	10,399.29	19,701.74	19,588.63	113.11	174.182	
15,900.00	7,056.90	3,569.00	3,568.74	47.67	66.87	22.05	-110.64	10,399.29	19,799.66	19,686.24	113.42	174.567	
16,000.00	7,056.57	3,569.00	3,568.74	47.97	66.87	22.05	-110.64	10,399.29	19,897.61	19,783.87	113.73	174.950	
16,100.00	7,056.24	3,569.00	3,568.74	48.27	66.87	22.05	-110.64	10,399.29	19,995.57	19,881.53	114.04	175.332	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-92.19	-109.66	-2,870.53	2,872.62				
100.00	100.00	77.51	77.51	0.23	0.76	-92.19	-109.66	-2,870.53	2,872.62	2,871.63	0.99	2,901.225	
200.00	200.00	177.51	177.51	0.53	1.75	-92.19	-109.66	-2,870.53	2,872.62	2,870.35	2.28	1,262.658	
300.00	300.00	277.51	277.51	0.83	2.73	-92.19	-109.66	-2,870.53	2,872.62	2,869.06	3.56	806.921	
400.00	400.00	377.52	377.51	1.13	4.18	-92.19	-109.66	-2,870.53	2,872.62	2,867.32	5.31	541.405	
500.00	500.00	477.52	477.51	1.43	6.22	-92.19	-109.66	-2,870.53	2,872.62	2,864.97	7.65	375.520	
600.00	599.98	577.47	577.45	1.73	8.27	82.28	-108.90	-2,870.53	2,872.36	2,862.37	9.99	287.454	
700.00	699.84	677.05	677.03	2.03	10.30	82.40	-109.08	-2,870.53	2,871.67	2,859.34	12.33	232.944	
800.00	799.45	776.44	776.42	2.33	12.33	82.58	-109.54	-2,870.53	2,870.54	2,855.88	14.66	195.819	
900.00	898.70	876.28	876.21	2.63	14.44	82.85	-109.66	-2,870.53	2,868.99	2,851.92	17.06	168.124	
1,000.00	997.47	975.04	974.98	2.93	16.54	83.20	-109.66	-2,870.53	2,867.06	2,847.60	19.46	147.307	
1,100.00	1,095.62	1,073.16	1,073.08	3.23	18.62	83.63	-108.58	-2,870.53	2,864.81	2,842.97	21.85	131.125	
1,207.25	1,200.09	1,177.59	1,177.51	3.55	20.84	84.15	-108.87	-2,870.53	2,862.17	2,837.78	24.39	117.357	
1,300.00	1,290.03	1,267.65	1,267.56	3.83	22.75	84.58	-109.43	-2,870.53	2,859.88	2,833.30	26.58	107.593	
1,400.00	1,386.99	1,364.65	1,364.51	4.13	24.88	85.05	-109.66	-2,870.53	2,857.60	2,828.60	29.00	98.531	
1,500.00	1,483.96	1,461.61	1,461.47	4.43	27.02	85.52	-109.66	-2,870.53	2,855.53	2,824.08	31.45	90.806	
1,600.00	1,580.93	1,558.62	1,558.47	4.73	29.17	86.02	-108.58	-2,870.53	2,853.69	2,819.80	33.89	84.200	
1,700.00	1,677.90	1,655.95	1,655.80	5.03	31.32	86.49	-108.80	-2,870.53	2,852.03	2,815.69	36.34	78.472	
1,800.00	1,774.87	1,831.39	1,752.38	5.33	35.23	86.95	-109.66	-2,870.53	2,850.56	2,810.00	40.56	70.279	
1,900.00	1,871.83	1,849.58	1,849.35	5.63	35.65	87.42	-109.66	-2,870.53	2,849.32	2,808.04	41.28	69.025	
2,000.00	1,968.80	1,946.55	1,946.31	5.93	37.89	87.90	-109.66	-2,870.53	2,848.29	2,804.48	43.81	65.009	
2,100.00	2,065.77	2,043.52	2,043.28	6.23	40.12	88.37	-109.66	-2,870.53	2,847.47	2,801.12	46.35	61.437	
2,200.00	2,162.74	2,141.41	2,141.15	6.53	42.38	88.88	-108.47	-2,870.53	2,846.95	2,798.05	48.90	58.216	
2,300.00	2,259.71	2,239.54	2,239.27	6.83	44.64	89.35	-109.08	-2,870.53	2,846.51	2,795.05	51.46	55.311	
2,400.00	2,356.67	2,337.89	2,337.60	7.13	46.90	89.81	-110.10	-2,870.53	2,846.23	2,792.20	54.03	52.679	
2,410.91	2,367.26	2,348.63	2,348.35	7.17	47.15	89.86	-110.24	-2,870.53	2,846.21	2,791.90	54.31	52.407	CC
2,500.00	2,453.64	2,431.51	2,431.15	7.43	48.83	90.28	-109.66	-2,870.53	2,846.29	2,790.03	56.26	50.596	
2,600.00	2,550.61	2,528.48	2,528.12	7.73	50.89	90.76	-109.66	-2,870.53	2,846.52	2,787.90	58.62	48.560	
2,700.00	2,647.58	2,626.74	2,626.36	8.03	52.98	91.26	-108.49	-2,870.53	2,847.10	2,786.09	61.01	46.666	
2,800.00	2,744.55	2,725.45	2,725.06	8.33	55.08	91.74	-109.07	-2,870.53	2,847.68	2,784.27	63.41	44.909	
2,900.00	2,841.51	2,824.38	2,823.98	8.63	57.19	92.20	-110.10	-2,870.53	2,848.41	2,782.59	65.82	43.279	
3,000.00	2,938.48	2,916.43	2,916.00	8.93	59.26	92.66	-109.66	-2,870.53	2,849.53	2,781.34	68.19	41.788	
3,100.00	3,035.45	3,013.42	3,012.98	9.23	61.41	93.15	-108.92	-2,870.53	2,850.92	2,780.28	70.64	40.358	
3,200.00	3,132.42	3,111.72	3,111.28	9.53	63.59	93.63	-109.07	-2,870.53	2,852.38	2,779.26	73.12	39.009	
3,300.00	3,229.39	3,210.17	3,209.73	9.83	65.78	94.11	-109.50	-2,870.53	2,854.01	2,778.41	75.60	37.750	
3,400.00	3,326.35	3,304.39	3,303.87	10.13	68.05	94.57	-109.66	-2,870.53	2,855.88	2,777.70	78.18	36.530	
3,500.00	3,423.32	3,401.36	3,400.84	10.43	70.47	95.04	-109.66	-2,870.53	2,857.99	2,777.10	80.89	35.330	ES
3,600.00	3,520.29	3,468.00	3,467.40	10.73	72.13	95.36	-109.66	-2,870.53	2,860.47	2,777.62	82.85	34.526	
3,700.00	3,617.26	3,468.00	3,467.40	11.03	72.13	95.36	-109.66	-2,870.53	2,865.67	2,782.58	83.08	34.491	SF
3,800.00	3,714.23	3,468.00	3,467.40	11.33	72.13	95.36	-109.66	-2,870.53	2,874.33	2,791.09	83.24	34.531	
3,900.00	3,811.19	3,468.00	3,467.40	11.63	72.13	95.36	-109.66	-2,870.53	2,886.44	2,803.12	83.32	34.645	
4,000.00	3,908.16	3,468.00	3,467.40	11.93	72.13	95.36	-109.66	-2,870.53	2,901.94	2,818.62	83.32	34.830	
4,100.00	4,005.13	3,468.00	3,467.40	12.23	72.13	95.36	-109.66	-2,870.53	2,920.79	2,837.54	83.25	35.086	
4,200.00	4,102.10	3,468.00	3,467.40	12.53	72.13	95.36	-109.66	-2,870.53	2,942.91	2,859.80	83.11	35.409	
4,300.00	4,199.07	3,468.00	3,467.40	12.83	72.13	95.36	-109.66	-2,870.53	2,968.24	2,885.33	82.91	35.800	
4,400.00	4,296.03	3,468.00	3,467.40	13.13	72.13	95.36	-109.66	-2,870.53	2,996.70	2,914.05	82.65	36.256	
4,500.00	4,393.00	3,468.00	3,467.40	13.43	72.13	95.36	-109.66	-2,870.53	3,028.19	2,945.85	82.35	36.774	
4,600.00	4,489.97	3,468.00	3,467.40	13.73	72.13	95.36	-109.66	-2,870.53	3,062.63	2,980.64	81.99	37.354	
4,700.00	4,586.94	3,468.00	3,467.40	14.03	72.13	95.36	-109.66	-2,870.53	3,099.91	3,018.32	81.59	37.992	
4,800.00	4,683.91	3,468.00	3,467.40	14.33	72.13	95.36	-109.66	-2,870.53	3,139.93	3,058.77	81.16	38.688	
4,900.00	4,780.87	3,468.00	3,467.40	14.63	72.13	95.36	-109.66	-2,870.53	3,182.60	3,101.90	80.70	39.439	
5,000.00	4,877.84	3,468.00	3,467.40	14.93	72.13	95.36	-109.66	-2,870.53	3,227.79	3,147.59	80.21	40.242	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,974.81	3,468.00	3,467.40	15.23	72.13	95.36	-109.66	-2,870.53	3,275.42	3,195.72	79.70	41.097	
5,200.00	5,071.78	3,468.00	3,467.40	15.53	72.13	95.36	-109.66	-2,870.53	3,325.38	3,246.20	79.18	42.000	
5,300.00	5,168.75	3,468.00	3,467.40	15.83	72.13	95.36	-109.66	-2,870.53	3,377.55	3,298.91	78.64	42.949	
5,400.00	5,265.71	3,468.00	3,467.40	16.13	72.13	95.36	-109.66	-2,870.53	3,431.85	3,353.76	78.10	43.943	
5,500.00	5,362.68	3,468.00	3,467.40	16.43	72.13	95.36	-109.66	-2,870.53	3,488.17	3,410.62	77.55	44.980	
5,600.00	5,459.65	3,468.00	3,467.40	16.73	72.13	95.36	-109.66	-2,870.53	3,546.42	3,469.42	77.00	46.056	
5,700.00	5,556.62	3,468.00	3,467.40	17.03	72.13	95.36	-109.66	-2,870.53	3,606.50	3,530.04	76.46	47.171	
5,800.00	5,653.59	3,468.00	3,467.40	17.33	72.13	95.36	-109.66	-2,870.53	3,668.32	3,592.41	75.92	48.321	
5,900.00	5,750.55	3,468.00	3,467.40	17.63	72.13	95.36	-109.66	-2,870.53	3,731.80	3,656.42	75.38	49.505	
6,000.00	5,847.52	3,468.00	3,467.40	17.93	72.13	95.36	-109.66	-2,870.53	3,796.85	3,721.99	74.86	50.721	
6,100.00	5,944.49	3,468.00	3,467.40	18.23	72.13	95.36	-109.66	-2,870.53	3,863.39	3,789.05	74.34	51.967	
6,200.00	6,041.46	3,468.00	3,467.40	18.53	72.13	95.36	-109.66	-2,870.53	3,931.35	3,857.51	73.84	53.241	
6,300.00	6,138.43	3,468.00	3,467.40	18.83	72.13	95.36	-109.66	-2,870.53	4,000.66	3,927.31	73.35	54.541	
6,400.00	6,235.39	3,468.00	3,467.40	19.13	72.13	95.36	-109.66	-2,870.53	4,071.24	3,998.37	72.88	55.864	
6,500.00	6,332.36	3,468.00	3,467.40	19.43	72.13	95.36	-109.66	-2,870.53	4,143.04	4,070.62	72.42	57.211	
6,600.00	6,429.33	3,468.00	3,467.40	19.73	72.13	95.36	-109.66	-2,870.53	4,215.98	4,144.01	71.97	58.577	
6,700.00	6,526.30	3,468.00	3,467.40	20.03	72.13	95.36	-109.66	-2,870.53	4,290.02	4,218.47	71.55	59.962	
6,715.28	6,541.12	3,468.00	3,467.40	20.08	72.13	95.36	-109.66	-2,870.53	4,301.42	4,229.94	71.48	60.175	
6,750.00	6,574.74	3,468.00	3,467.40	20.18	72.13	81.53	-109.66	-2,870.53	4,326.73	4,255.40	71.33	60.659	
6,800.00	6,622.83	3,468.00	3,467.40	20.33	72.13	65.03	-109.66	-2,870.53	4,360.83	4,289.75	71.09	61.346	
6,850.00	6,670.20	3,468.00	3,467.40	20.49	72.13	53.04	-109.66	-2,870.53	4,392.00	4,321.18	70.82	62.018	
6,900.00	6,716.50	3,468.00	3,467.40	20.64	72.13	44.58	-109.66	-2,870.53	4,420.07	4,349.54	70.53	62.668	
6,950.00	6,761.36	3,468.00	3,467.40	20.79	72.13	38.55	-109.66	-2,870.53	4,444.88	4,374.66	70.23	63.294	
7,000.00	6,804.45	3,468.00	3,467.40	20.94	72.13	34.13	-109.66	-2,870.53	4,466.31	4,396.40	69.90	63.892	
7,050.00	6,845.44	3,468.00	3,467.40	21.09	72.13	30.83	-109.66	-2,870.53	4,484.22	4,414.66	69.57	64.457	
7,100.00	6,884.01	3,468.00	3,467.40	21.24	72.13	28.32	-109.66	-2,870.53	4,498.55	4,429.32	69.22	64.985	
7,150.00	6,919.88	3,468.00	3,467.40	21.39	72.13	26.38	-109.66	-2,870.53	4,509.20	4,440.32	68.87	65.473	
7,200.00	6,952.78	3,468.00	3,467.40	21.54	72.13	24.88	-109.66	-2,870.53	4,516.12	4,447.60	68.51	65.915	
7,250.00	6,982.44	3,468.00	3,467.40	21.69	72.13	23.73	-109.66	-2,870.53	4,519.28	4,451.12	68.15	66.309	
7,300.00	7,008.65	3,468.00	3,467.40	21.84	72.13	22.86	-109.66	-2,870.53	4,518.66	4,450.87	67.80	66.651	
7,350.00	7,031.20	3,468.00	3,467.40	21.99	72.13	22.22	-109.66	-2,870.53	4,514.27	4,446.83	67.44	66.936	
7,400.00	7,049.92	3,468.00	3,467.40	22.14	72.13	21.78	-109.66	-2,870.53	4,506.13	4,439.03	67.09	67.162	
7,450.00	7,064.68	3,468.00	3,467.40	22.29	72.13	21.53	-109.66	-2,870.53	4,494.27	4,427.52	66.76	67.324	
7,500.00	7,075.36	3,468.00	3,467.40	22.44	72.13	21.46	-109.66	-2,870.53	4,478.77	4,412.34	66.43	67.420	
7,550.00	7,081.87	3,468.00	3,467.40	22.59	72.13	21.56	-109.66	-2,870.53	4,459.69	4,393.57	66.12	67.447	
7,604.16	7,084.18	3,468.00	3,467.40	22.75	72.13	21.87	-109.66	-2,870.53	4,435.12	4,369.32	65.81	67.396	
7,700.00	7,083.86	3,468.00	3,467.40	23.04	72.13	21.87	-109.66	-2,870.53	4,388.93	4,323.65	65.28	67.237	
7,800.00	7,083.53	3,468.00	3,467.40	23.34	72.13	21.87	-109.66	-2,870.53	4,342.45	4,277.75	64.71	67.109	
7,900.00	7,083.20	3,468.00	3,467.40	23.64	72.13	21.87	-109.66	-2,870.53	4,297.81	4,233.68	64.13	67.018	
8,000.00	7,082.87	3,468.00	3,467.40	23.94	72.13	21.87	-109.66	-2,870.53	4,255.04	4,191.50	63.54	66.962	
8,100.00	7,082.54	3,468.00	3,467.40	24.24	72.13	21.87	-109.66	-2,870.53	4,214.22	4,151.26	62.95	66.942	
8,200.00	7,082.22	3,468.00	3,467.40	24.54	72.13	21.87	-109.66	-2,870.53	4,175.39	4,113.02	62.36	66.953	
8,300.00	7,081.89	3,468.00	3,467.40	24.84	72.13	21.87	-109.66	-2,870.53	4,138.61	4,076.83	61.78	66.994	
8,400.00	7,081.56	3,468.00	3,467.40	25.14	72.13	21.87	-109.66	-2,870.53	4,103.94	4,042.74	61.20	67.060	
8,500.00	7,081.23	3,468.00	3,467.40	25.45	72.13	21.87	-109.66	-2,870.53	4,071.43	4,010.80	60.63	67.147	
8,600.00	7,080.90	3,468.00	3,467.40	25.75	72.13	21.87	-109.66	-2,870.53	4,041.14	3,981.05	60.09	67.250	
8,700.00	7,080.57	3,468.00	3,467.40	26.05	72.13	21.87	-109.66	-2,870.53	4,013.11	3,953.53	59.58	67.362	
8,800.00	7,080.24	3,468.00	3,467.40	26.35	72.13	21.87	-109.66	-2,870.53	3,987.39	3,928.29	59.09	67.474	
8,900.00	7,079.91	3,468.00	3,467.40	26.65	72.13	21.87	-109.66	-2,870.53	3,964.03	3,905.37	58.66	67.580	
9,000.00	7,079.59	3,468.00	3,467.40	26.95	72.13	21.87	-109.66	-2,870.53	3,943.06	3,884.79	58.27	67.670	
9,100.00	7,079.26	3,468.00	3,467.40	27.25	72.13	21.87	-109.66	-2,870.53	3,924.54	3,866.59	57.94	67.733	
9,200.00	7,078.93	3,468.00	3,467.40	27.55	72.13	21.87	-109.66	-2,870.53	3,908.48	3,850.80	57.68	67.760	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.60	3,468.00	3,467.40	27.85	72.13	21.87	-109.66	-2,870.53	3,894.93	3,837.43	57.50	67.742	
9,400.00	7,078.27	3,468.00	3,467.40	28.15	72.13	21.87	-109.66	-2,870.53	3,883.90	3,826.51	57.40	67.669	
9,500.00	7,077.94	3,468.00	3,467.40	28.45	72.13	21.87	-109.66	-2,870.53	3,875.43	3,818.04	57.38	67.535	
9,600.00	7,077.61	3,468.00	3,467.40	28.75	72.13	21.87	-109.66	-2,870.53	3,869.52	3,812.05	57.47	67.332	
9,700.00	7,077.28	3,468.00	3,467.40	29.05	72.13	21.87	-109.66	-2,870.53	3,866.19	3,808.53	57.65	67.060	
9,778.82	7,077.02	3,468.00	3,467.40	29.29	72.13	21.87	-109.66	-2,870.53	3,865.38	3,807.51	57.87	66.794	
9,800.00	7,076.95	3,468.00	3,467.40	29.35	72.13	21.87	-109.66	-2,870.53	3,865.44	3,807.50	57.94	66.716	
9,900.00	7,076.63	3,468.00	3,467.40	29.65	72.13	21.87	-109.66	-2,870.53	3,867.28	3,808.96	58.33	66.303	
10,000.00	7,076.30	3,468.00	3,467.40	29.95	72.13	21.87	-109.66	-2,870.53	3,871.71	3,812.89	58.82	65.828	
10,100.00	7,075.97	3,468.00	3,467.40	30.25	72.13	21.87	-109.66	-2,870.53	3,878.70	3,819.30	59.40	65.296	
10,200.00	7,075.64	3,468.00	3,467.40	30.55	72.13	21.87	-109.66	-2,870.53	3,888.26	3,828.18	60.08	64.719	
10,300.00	7,075.31	3,468.00	3,467.40	30.85	72.13	21.87	-109.66	-2,870.53	3,900.36	3,839.52	60.84	64.105	
10,400.00	7,074.98	3,468.00	3,467.40	31.15	72.13	21.87	-109.66	-2,870.53	3,914.98	3,853.29	61.69	63.466	
10,500.00	7,074.65	3,468.00	3,467.40	31.46	72.13	21.87	-109.66	-2,870.53	3,932.09	3,869.49	62.60	62.813	
10,600.00	7,074.32	3,468.00	3,467.40	31.76	72.13	21.87	-109.66	-2,870.53	3,951.65	3,888.07	63.58	62.157	
10,700.00	7,074.00	3,468.00	3,467.40	32.06	72.13	21.87	-109.66	-2,870.53	3,973.63	3,909.03	64.60	61.507	
10,800.00	7,073.67	3,468.00	3,467.40	32.36	72.13	21.87	-109.66	-2,870.53	3,998.00	3,932.32	65.68	60.871	
10,900.00	7,073.34	3,468.00	3,467.40	32.66	72.13	21.87	-109.66	-2,870.53	4,024.70	3,957.91	66.79	60.257	
11,000.00	7,073.01	3,468.00	3,467.40	32.96	72.13	21.87	-109.66	-2,870.53	4,053.70	3,985.77	67.93	59.671	
11,100.00	7,072.68	3,468.00	3,467.40	33.26	72.13	21.87	-109.66	-2,870.53	4,084.94	4,015.84	69.10	59.116	
11,200.00	7,072.35	3,468.00	3,467.40	33.56	72.13	21.87	-109.66	-2,870.53	4,118.37	4,048.09	70.28	58.598	
11,300.00	7,072.02	3,468.00	3,467.40	33.86	72.13	21.87	-109.66	-2,870.53	4,153.94	4,082.46	71.47	58.118	
11,400.00	7,071.69	3,468.00	3,467.40	34.16	72.13	21.87	-109.66	-2,870.53	4,191.59	4,118.92	72.67	57.678	
11,500.00	7,071.36	3,468.00	3,467.40	34.46	72.13	21.87	-109.66	-2,870.53	4,231.27	4,157.40	73.87	57.279	
11,600.00	7,071.04	3,468.00	3,467.40	34.76	72.13	21.87	-109.66	-2,870.53	4,272.93	4,197.86	75.07	56.922	
11,700.00	7,070.71	3,468.00	3,467.40	35.06	72.13	21.87	-109.66	-2,870.53	4,316.50	4,240.24	76.26	56.606	
11,800.00	7,070.38	3,468.00	3,467.40	35.36	72.13	21.87	-109.66	-2,870.53	4,361.92	4,284.49	77.43	56.331	
11,900.00	7,070.05	3,468.00	3,467.40	35.66	72.13	21.87	-109.66	-2,870.53	4,409.15	4,330.55	78.60	56.095	
12,000.00	7,069.72	3,468.00	3,467.40	35.96	72.13	21.87	-109.66	-2,870.53	4,458.12	4,378.37	79.75	55.899	
12,100.00	7,069.39	3,468.00	3,467.40	36.26	72.13	21.87	-109.66	-2,870.53	4,508.78	4,427.89	80.89	55.740	
12,200.00	7,069.06	3,468.00	3,467.40	36.56	72.13	21.87	-109.66	-2,870.53	4,561.07	4,479.06	82.01	55.617	
12,300.00	7,068.73	3,468.00	3,467.40	36.86	72.13	21.87	-109.66	-2,870.53	4,614.93	4,531.82	83.11	55.530	
12,400.00	7,068.41	3,468.00	3,467.40	37.16	72.13	21.87	-109.66	-2,870.53	4,670.31	4,586.12	84.19	55.475	
12,500.00	7,068.08	3,468.00	3,467.40	37.46	72.13	21.87	-109.66	-2,870.53	4,727.16	4,641.91	85.25	55.453	
12,600.00	7,067.75	3,468.00	3,467.40	37.76	72.13	21.87	-109.66	-2,870.53	4,785.42	4,699.14	86.28	55.461	
12,700.00	7,067.42	3,468.00	3,467.40	38.06	72.13	21.87	-109.66	-2,870.53	4,845.05	4,757.75	87.30	55.497	
12,800.00	7,067.09	3,468.00	3,467.40	38.36	72.13	21.87	-109.66	-2,870.53	4,905.99	4,817.69	88.30	55.562	
12,900.00	7,066.76	3,468.00	3,467.40	38.66	72.13	21.87	-109.66	-2,870.53	4,968.20	4,878.92	89.27	55.652	
13,000.00	7,066.43	3,468.00	3,467.40	38.96	72.13	21.87	-109.66	-2,870.53	5,031.62	4,941.39	90.23	55.766	
13,100.00	7,066.10	3,468.00	3,467.40	39.26	72.13	21.87	-109.66	-2,870.53	5,096.22	5,005.06	91.16	55.904	
13,200.00	7,065.77	3,468.00	3,467.40	39.56	72.13	21.87	-109.66	-2,870.53	5,161.95	5,069.87	92.07	56.064	
13,300.00	7,065.45	3,468.00	3,467.40	39.86	72.13	21.87	-109.66	-2,870.53	5,228.76	5,135.80	92.96	56.245	
13,400.00	7,065.12	3,468.00	3,467.40	40.16	72.13	21.87	-109.66	-2,870.53	5,296.62	5,202.78	93.84	56.446	
13,500.00	7,064.79	3,468.00	3,467.40	40.47	72.13	21.87	-109.66	-2,870.53	5,365.48	5,270.79	94.69	56.665	
13,600.00	7,064.46	3,468.00	3,467.40	40.77	72.13	21.87	-109.66	-2,870.53	5,435.31	5,339.79	95.52	56.902	
13,700.00	7,064.13	3,468.00	3,467.40	41.07	72.13	21.87	-109.66	-2,870.53	5,506.08	5,409.74	96.34	57.155	
13,800.00	7,063.80	3,468.00	3,467.40	41.37	72.13	21.87	-109.66	-2,870.53	5,577.73	5,480.60	97.13	57.424	
13,900.00	7,063.47	3,468.00	3,467.40	41.67	72.13	21.87	-109.66	-2,870.53	5,650.25	5,552.34	97.91	57.707	
14,000.00	7,063.14	3,468.00	3,467.40	41.97	72.13	21.87	-109.66	-2,870.53	5,723.60	5,624.92	98.67	58.005	
14,100.00	7,062.82	3,468.00	3,467.40	42.27	72.13	21.87	-109.66	-2,870.53	5,797.74	5,698.32	99.42	58.315	
14,200.00	7,062.49	3,468.00	3,467.40	42.57	72.13	21.87	-109.66	-2,870.53	5,872.65	5,772.50	100.15	58.638	
14,300.00	7,062.16	3,468.00	3,467.40	42.87	72.13	21.87	-109.66	-2,870.53	5,948.30	5,847.44	100.87	58.972	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,061.83	3,468.00	3,467.40	43.17	72.13	21.87	-109.66	-2,870.53	6,024.66	5,923.09	101.57	59.317	
14,500.00	7,061.50	3,468.00	3,467.40	43.47	72.13	21.87	-109.66	-2,870.53	6,101.70	5,999.45	102.25	59.672	
14,600.00	7,061.17	3,468.00	3,467.40	43.77	72.13	21.87	-109.66	-2,870.53	6,179.40	6,076.48	102.93	60.037	
14,700.00	7,060.84	3,468.00	3,467.40	44.07	72.13	21.87	-109.66	-2,870.53	6,257.73	6,154.15	103.59	60.412	
14,800.00	7,060.51	3,468.00	3,467.40	44.37	72.13	21.87	-109.66	-2,870.53	6,336.68	6,232.45	104.23	60.794	
14,900.00	7,060.18	3,468.00	3,467.40	44.67	72.13	21.87	-109.66	-2,870.53	6,416.21	6,311.34	104.87	61.185	
15,000.00	7,059.86	3,468.00	3,467.40	44.97	72.13	21.87	-109.66	-2,870.53	6,496.30	6,390.81	105.49	61.583	
15,100.00	7,059.53	3,468.00	3,467.40	45.27	72.13	21.87	-109.66	-2,870.53	6,576.94	6,470.84	106.10	61.988	
15,200.00	7,059.20	3,468.00	3,467.40	45.57	72.13	21.87	-109.66	-2,870.53	6,658.11	6,551.41	106.70	62.400	
15,300.00	7,058.87	3,468.00	3,467.40	45.87	72.13	21.87	-109.66	-2,870.53	6,739.78	6,632.49	107.29	62.818	
15,400.00	7,058.54	3,468.00	3,467.40	46.17	72.13	21.87	-109.66	-2,870.53	6,821.94	6,714.07	107.87	63.242	
15,500.00	7,058.21	3,468.00	3,467.40	46.47	72.13	21.87	-109.66	-2,870.53	6,904.57	6,796.13	108.44	63.671	
15,600.00	7,057.88	3,468.00	3,467.40	46.77	72.13	21.87	-109.66	-2,870.53	6,987.66	6,878.66	109.00	64.106	
15,700.00	7,057.55	3,468.00	3,467.40	47.07	72.13	21.87	-109.66	-2,870.53	7,071.18	6,961.63	109.55	64.545	
15,800.00	7,057.23	3,468.00	3,467.40	47.37	72.13	21.87	-109.66	-2,870.53	7,155.13	7,045.03	110.10	64.989	
15,900.00	7,056.90	3,468.00	3,467.40	47.67	72.13	21.87	-109.66	-2,870.53	7,239.48	7,128.85	110.63	65.437	
16,000.00	7,056.57	3,468.00	3,467.40	47.97	72.13	21.87	-109.66	-2,870.53	7,324.23	7,213.07	111.16	65.889	
16,100.00	7,056.24	3,468.00	3,467.40	48.27	72.13	21.87	-109.66	-2,870.53	7,409.36	7,297.68	111.68	66.345	
16,200.00	7,055.91	3,468.00	3,467.40	48.57	72.13	21.87	-109.66	-2,870.53	7,494.85	7,382.66	112.19	66.803	
16,300.00	7,055.58	3,468.00	3,467.40	48.87	72.13	21.87	-109.66	-2,870.53	7,580.70	7,468.00	112.70	67.266	
16,400.00	7,055.25	3,468.00	3,467.40	49.17	72.13	21.87	-109.66	-2,870.53	7,666.89	7,553.70	113.20	67.731	
16,500.00	7,054.92	3,468.00	3,467.40	49.47	72.13	21.87	-109.66	-2,870.53	7,753.42	7,639.73	113.69	68.198	
16,600.00	7,054.59	3,468.00	3,467.40	49.77	72.13	21.87	-109.66	-2,870.53	7,840.26	7,726.09	114.18	68.669	
16,619.57	7,054.53	3,468.00	3,467.40	49.83	72.13	21.87	-109.66	-2,870.53	7,857.30	7,743.03	114.27	68.761	
16,700.00	7,054.27	3,468.00	3,467.40	50.07	72.13	21.87	-109.66	-2,870.53	7,927.42	7,812.76	114.66	69.141	
16,782.16	7,054.00	3,468.00	3,467.40	50.32	72.13	21.87	-109.66	-2,870.53	7,999.25	7,884.21	115.05	69.531	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	-96.86	-574.64	-4,774.56	4,809.13				
100.00	100.00	66.51	66.51	0.23	0.66	-96.86	-574.64	-4,774.56	4,809.02	4,808.13	0.88	5,453.904	
200.00	200.00	166.52	166.51	0.53	1.73	-96.86	-574.64	-4,774.56	4,809.02	4,806.76	2.26	2,130.830	
300.00	300.00	266.52	266.51	0.83	3.77	-96.86	-574.64	-4,774.56	4,809.02	4,804.42	4.60	1,045.222	
335.47	335.47	301.98	301.98	0.93	4.50	-96.86	-574.17	-4,774.56	4,808.96	4,803.53	5.43	885.255	
400.00	400.00	364.88	364.87	1.13	5.79	-96.86	-574.26	-4,774.56	4,808.97	4,802.06	6.91	695.788	
500.00	500.00	466.55	466.51	1.43	7.86	-96.86	-574.64	-4,774.56	4,809.02	4,799.73	9.29	517.657	
600.00	599.98	566.53	566.49	1.73	9.91	77.58	-574.64	-4,774.56	4,808.64	4,797.01	11.63	413.308	
700.00	699.84	666.39	666.35	2.03	11.95	77.67	-574.64	-4,774.56	4,807.52	4,793.54	13.98	343.970	
800.00	799.45	766.00	765.97	2.33	13.99	77.80	-574.64	-4,774.56	4,805.66	4,789.35	16.31	294.579	
900.00	898.70	865.25	865.21	2.63	16.02	77.99	-574.64	-4,774.56	4,803.09	4,784.44	18.64	257.631	
1,000.00	997.47	963.54	963.48	2.93	18.03	78.26	-572.62	-4,774.56	4,799.60	4,778.65	20.95	229.063	
1,100.00	1,095.62	1,060.80	1,060.74	3.23	20.02	78.55	-572.79	-4,774.56	4,795.72	4,772.48	23.24	206.336	
1,207.25	1,200.09	1,164.42	1,164.35	3.55	22.13	78.92	-573.18	-4,774.56	4,790.90	4,765.22	25.68	186.541	
1,300.00	1,290.03	1,253.71	1,253.63	3.83	23.96	79.17	-573.67	-4,774.56	4,786.52	4,758.73	27.79	172.257	
1,400.00	1,386.99	1,350.07	1,349.98	4.13	25.93	79.44	-574.36	-4,774.56	4,781.91	4,751.86	30.06	159.092	
1,500.00	1,483.96	1,450.62	1,450.47	4.43	27.99	79.72	-574.64	-4,774.56	4,777.39	4,744.97	32.41	147.387	
1,600.00	1,580.93	1,547.59	1,547.44	4.73	29.97	80.00	-574.64	-4,774.56	4,772.96	4,738.26	34.70	137.561	
1,700.00	1,677.90	1,644.25	1,644.09	5.03	31.95	80.29	-573.89	-4,774.56	4,768.59	4,731.62	36.97	128.973	
1,800.00	1,774.87	1,740.31	1,740.15	5.33	33.91	80.57	-574.11	-4,774.56	4,764.42	4,725.18	39.24	121.424	
1,900.00	1,871.83	1,836.51	1,836.34	5.63	35.88	80.84	-574.58	-4,774.56	4,760.39	4,718.88	41.51	114.694	
2,000.00	1,968.80	1,935.52	1,935.31	5.93	37.90	81.13	-574.64	-4,774.56	4,756.45	4,712.62	43.83	108.520	
2,100.00	2,065.77	2,032.49	2,032.28	6.23	39.89	81.41	-574.64	-4,774.56	4,752.63	4,706.51	46.11	103.065	
2,200.00	2,162.74	2,129.15	2,128.94	6.53	41.86	81.71	-573.57	-4,774.56	4,748.87	4,700.48	48.39	98.138	
2,300.00	2,259.71	2,225.42	2,225.20	6.83	43.83	81.99	-573.85	-4,774.56	4,745.32	4,694.66	50.66	93.673	
2,400.00	2,356.67	2,321.86	2,321.63	7.13	45.80	82.26	-574.46	-4,774.56	4,741.89	4,688.96	52.93	89.587	
2,500.00	2,453.64	2,420.42	2,420.15	7.43	47.82	82.55	-574.64	-4,774.56	4,738.57	4,683.32	55.25	85.772	
2,600.00	2,550.61	2,517.38	2,517.12	7.73	49.80	82.83	-574.64	-4,774.56	4,735.36	4,677.84	57.53	82.312	
2,700.00	2,647.58	2,614.34	2,614.07	8.03	51.79	83.13	-573.77	-4,774.56	4,732.26	4,672.45	59.81	79.119	
2,800.00	2,744.55	2,711.08	2,710.81	8.33	53.76	83.41	-573.90	-4,774.56	4,729.31	4,667.22	62.09	76.168	
2,900.00	2,841.51	2,807.94	2,807.66	8.63	55.74	83.69	-574.25	-4,774.56	4,726.49	4,662.12	64.37	73.426	
3,000.00	2,938.48	2,905.32	2,905.00	8.93	57.76	83.97	-574.64	-4,774.56	4,723.79	4,657.10	66.69	70.836	
3,100.00	3,035.45	3,002.29	3,001.96	9.23	59.82	84.26	-574.64	-4,774.56	4,721.20	4,652.16	69.05	68.377	
3,200.00	3,132.42	3,099.25	3,098.92	9.53	61.88	84.55	-573.96	-4,774.56	4,718.74	4,647.34	71.41	66.083	
3,300.00	3,229.39	3,196.41	3,196.07	9.83	63.94	84.83	-574.45	-4,774.56	4,716.41	4,642.64	73.77	63.933	
3,400.00	3,326.35	3,293.24	3,292.87	10.13	66.00	85.12	-574.64	-4,774.56	4,714.21	4,638.08	76.13	61.924	
3,500.00	3,423.32	3,351.00	3,350.60	10.43	67.23	85.29	-574.64	-4,774.56	4,712.29	4,634.63	77.65	60.683	
3,557.06	3,478.66	3,351.00	3,350.60	10.60	67.23	85.29	-574.64	-4,774.56	4,711.94	4,634.13	77.81	60.554	
3,600.00	3,520.29	3,351.00	3,350.60	10.73	67.23	85.29	-574.64	-4,774.56	4,712.14	4,634.21	77.93	60.467	
3,700.00	3,617.26	3,351.00	3,350.60	11.03	67.23	85.29	-574.64	-4,774.56	4,714.11	4,635.93	78.18	60.301	
3,800.00	3,714.23	3,351.00	3,350.60	11.33	67.23	85.29	-574.64	-4,774.56	4,718.20	4,639.81	78.40	60.185	
3,900.00	3,811.19	3,351.00	3,350.60	11.63	67.23	85.29	-574.64	-4,774.56	4,724.40	4,645.82	78.59	60.117	
4,000.00	3,908.16	3,351.00	3,350.60	11.93	67.23	85.29	-574.64	-4,774.56	4,732.71	4,653.96	78.75	60.096	
4,100.00	4,005.13	3,351.00	3,350.60	12.23	67.23	85.29	-574.64	-4,774.56	4,743.12	4,664.23	78.89	60.122	
4,200.00	4,102.10	3,351.00	3,350.60	12.53	67.23	85.29	-574.64	-4,774.56	4,755.60	4,676.60	79.00	60.195	
4,300.00	4,199.07	3,351.00	3,350.60	12.83	67.23	85.29	-574.64	-4,774.56	4,770.15	4,691.06	79.09	60.312	
4,400.00	4,296.03	3,351.00	3,350.60	13.13	67.23	85.29	-574.64	-4,774.56	4,786.75	4,707.59	79.15	60.474	
4,500.00	4,393.00	3,351.00	3,350.60	13.43	67.23	85.29	-574.64	-4,774.56	4,805.36	4,726.17	79.19	60.679	
4,600.00	4,489.97	3,351.00	3,350.60	13.73	67.23	85.29	-574.64	-4,774.56	4,825.98	4,746.77	79.21	60.926	
4,700.00	4,586.94	3,351.00	3,350.60	14.03	67.23	85.29	-574.64	-4,774.56	4,848.58	4,769.37	79.21	61.215	
4,800.00	4,683.91	3,351.00	3,350.60	14.33	67.23	85.29	-574.64	-4,774.56	4,873.12	4,793.94	79.18	61.545	
4,900.00	4,780.87	3,351.00	3,350.60	14.63	67.23	85.29	-574.64	-4,774.56	4,899.58	4,820.44	79.13	61.915	

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

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	4,877.84	3,351.00	3,350.60	14.93	67.23	85.29	-574.64	-4,774.56	4,927.93	4,848.86	79.07	62.323	
5,100.00	4,974.81	3,351.00	3,350.60	15.23	67.23	85.29	-574.64	-4,774.56	4,958.13	4,879.14	78.99	62.770	
5,200.00	5,071.78	3,351.00	3,350.60	15.53	67.23	85.29	-574.64	-4,774.56	4,990.15	4,911.26	78.89	63.253	
5,300.00	5,168.75	3,351.00	3,350.60	15.83	67.23	85.29	-574.64	-4,774.56	5,023.96	4,945.19	78.78	63.772	
5,400.00	5,265.71	3,351.00	3,350.60	16.13	67.23	85.29	-574.64	-4,774.56	5,059.53	4,980.87	78.65	64.327	
5,500.00	5,362.68	3,351.00	3,350.60	16.43	67.23	85.29	-574.64	-4,774.56	5,096.80	5,018.29	78.51	64.915	
5,600.00	5,459.65	3,351.00	3,350.60	16.73	67.23	85.29	-574.64	-4,774.56	5,135.76	5,057.39	78.36	65.537	
5,700.00	5,556.62	3,351.00	3,350.60	17.03	67.23	85.29	-574.64	-4,774.56	5,176.35	5,098.14	78.20	66.190	
5,800.00	5,653.59	3,351.00	3,350.60	17.33	67.23	85.29	-574.64	-4,774.56	5,218.54	5,140.51	78.03	66.875	
5,900.00	5,750.55	3,351.00	3,350.60	17.63	67.23	85.29	-574.64	-4,774.56	5,262.29	5,184.44	77.86	67.590	
6,000.00	5,847.52	3,351.00	3,350.60	17.93	67.23	85.29	-574.64	-4,774.56	5,307.57	5,229.90	77.67	68.334	
6,100.00	5,944.49	3,351.00	3,350.60	18.23	67.23	85.29	-574.64	-4,774.56	5,354.34	5,276.86	77.48	69.106	
6,200.00	6,041.46	3,351.00	3,350.60	18.53	67.23	85.29	-574.64	-4,774.56	5,402.55	5,325.26	77.28	69.905	
6,300.00	6,138.43	3,351.00	3,350.60	18.83	67.23	85.29	-574.64	-4,774.56	5,452.16	5,375.08	77.08	70.730	
6,400.00	6,235.39	3,351.00	3,350.60	19.13	67.23	85.29	-574.64	-4,774.56	5,503.15	5,426.27	76.88	71.581	
6,500.00	6,332.36	3,351.00	3,350.60	19.43	67.23	85.29	-574.64	-4,774.56	5,555.47	5,478.80	76.67	72.455	
6,600.00	6,429.33	3,351.00	3,350.60	19.73	67.23	85.29	-574.64	-4,774.56	5,609.09	5,532.62	76.47	73.353	
6,700.00	6,526.30	3,351.00	3,350.60	20.03	67.23	85.29	-574.64	-4,774.56	5,663.96	5,587.70	76.26	74.273	
6,715.28	6,541.12	3,351.00	3,350.60	20.08	67.23	85.29	-574.64	-4,774.56	5,672.45	5,596.23	76.23	74.415	
6,750.00	6,574.74	3,351.00	3,350.60	20.18	67.23	72.10	-574.64	-4,774.56	5,690.97	5,614.82	76.15	74.734	
6,800.00	6,622.83	3,351.00	3,350.60	20.33	67.23	56.35	-574.64	-4,774.56	5,714.73	5,638.71	76.03	75.169	
6,850.00	6,670.20	3,351.00	3,350.60	20.49	67.23	44.95	-574.64	-4,774.56	5,734.92	5,659.04	75.89	75.570	
6,900.00	6,716.50	3,351.00	3,350.60	20.64	67.23	36.97	-574.64	-4,774.56	5,751.44	5,675.70	75.74	75.936	
6,950.00	6,761.36	3,351.00	3,350.60	20.79	67.23	31.31	-574.64	-4,774.56	5,764.18	5,688.60	75.58	76.263	
7,000.00	6,804.45	3,351.00	3,350.60	20.94	67.23	27.20	-574.64	-4,774.56	5,773.08	5,697.66	75.42	76.549	
7,050.00	6,845.44	3,351.00	3,350.60	21.09	67.23	24.14	-574.64	-4,774.56	5,778.08	5,702.83	75.24	76.790	
7,100.00	6,884.01	3,351.00	3,350.60	21.24	67.23	21.81	-574.64	-4,774.56	5,779.16	5,704.09	75.07	76.985	
7,150.00	6,919.88	3,351.00	3,350.60	21.39	67.23	20.00	-574.64	-4,774.56	5,776.31	5,701.42	74.89	77.132	
7,200.00	6,952.78	3,351.00	3,350.60	21.54	67.23	18.59	-574.64	-4,774.56	5,769.55	5,694.84	74.71	77.227	
7,250.00	6,982.44	3,351.00	3,350.60	21.69	67.23	17.48	-574.64	-4,774.56	5,758.91	5,684.38	74.53	77.270	
7,300.00	7,008.65	3,351.00	3,350.60	21.84	67.23	16.61	-574.64	-4,774.56	5,744.46	5,670.11	74.35	77.259	
7,350.00	7,031.20	3,351.00	3,350.60	21.99	67.23	15.93	-574.64	-4,774.56	5,726.28	5,652.10	74.18	77.191	
7,400.00	7,049.92	3,351.00	3,350.60	22.14	67.23	15.42	-574.64	-4,774.56	5,704.47	5,630.45	74.02	77.067	
7,450.00	7,064.68	3,351.00	3,350.60	22.29	67.23	15.05	-574.64	-4,774.56	5,679.15	5,605.28	73.87	76.884	
7,500.00	7,075.36	3,351.00	3,350.60	22.44	67.23	14.81	-574.64	-4,774.56	5,650.47	5,576.75	73.73	76.643	
7,550.00	7,081.87	3,351.00	3,350.60	22.59	67.23	14.68	-574.64	-4,774.56	5,618.61	5,545.01	73.60	76.342	
7,604.16	7,084.18	3,351.00	3,350.60	22.75	67.23	14.68	-574.64	-4,774.56	5,580.72	5,507.24	73.48	75.951	
7,700.00	7,083.86	3,351.00	3,350.60	23.04	67.23	14.68	-574.64	-4,774.56	5,511.09	5,437.81	73.28	75.204	
7,800.00	7,083.53	3,351.00	3,350.60	23.34	67.23	14.68	-574.64	-4,774.56	5,439.30	5,366.24	73.06	74.451	
7,900.00	7,083.20	3,351.00	3,350.60	23.64	67.23	14.68	-574.64	-4,774.56	5,368.41	5,295.59	72.82	73.726	
8,000.00	7,082.87	3,351.00	3,350.60	23.94	67.23	14.68	-574.64	-4,774.56	5,298.45	5,225.90	72.55	73.030	
8,100.00	7,082.54	3,351.00	3,350.60	24.24	67.23	14.68	-574.64	-4,774.56	5,229.48	5,157.21	72.27	72.364	
8,200.00	7,082.22	3,351.00	3,350.60	24.54	67.23	14.68	-574.64	-4,774.56	5,161.52	5,089.56	71.96	71.728	
8,300.00	7,081.89	3,351.00	3,350.60	24.84	67.23	14.68	-574.64	-4,774.56	5,094.61	5,022.98	71.63	71.124	
8,400.00	7,081.56	3,351.00	3,350.60	25.14	67.23	14.68	-574.64	-4,774.56	5,028.80	4,957.53	71.28	70.553	
8,500.00	7,081.23	3,351.00	3,350.60	25.45	67.23	14.68	-574.64	-4,774.56	4,964.14	4,893.24	70.90	70.016	
8,600.00	7,080.90	3,351.00	3,350.60	25.75	67.23	14.68	-574.64	-4,774.56	4,900.66	4,830.16	70.50	69.513	
8,700.00	7,080.57	3,351.00	3,350.60	26.05	67.23	14.68	-574.64	-4,774.56	4,838.42	4,768.35	70.07	69.047	
8,800.00	7,080.24	3,351.00	3,350.60	26.35	67.23	14.68	-574.64	-4,774.56	4,777.46	4,707.84	69.62	68.618	
8,900.00	7,079.91	3,351.00	3,350.60	26.65	67.23	14.68	-574.64	-4,774.56	4,717.83	4,648.69	69.15	68.228	
9,000.00	7,079.59	3,351.00	3,350.60	26.95	67.23	14.68	-574.64	-4,774.56	4,659.59	4,590.94	68.65	67.878	
9,100.00	7,079.26	3,351.00	3,350.60	27.25	67.23	14.68	-574.64	-4,774.56	4,602.78	4,534.66	68.12	67.569	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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	7,078.93	3,351.00	3,350.60	27.55	67.23	14.68	-574.64	-4,774.56	4,547.46	4,479.89	67.57	67.302	
9,300.00	7,078.60	3,351.00	3,350.60	27.85	67.23	14.68	-574.64	-4,774.56	4,493.69	4,426.70	66.99	67.079	
9,400.00	7,078.27	3,351.00	3,350.60	28.15	67.23	14.68	-574.64	-4,774.56	4,441.51	4,375.12	66.39	66.902	
9,500.00	7,077.94	3,351.00	3,350.60	28.45	67.23	14.68	-574.64	-4,774.56	4,391.00	4,325.23	65.76	66.770	
9,600.00	7,077.61	3,351.00	3,350.60	28.75	67.23	14.68	-574.64	-4,774.56	4,342.20	4,277.08	65.12	66.685	
9,700.00	7,077.28	3,351.00	3,350.60	29.05	67.23	14.68	-574.64	-4,774.56	4,295.17	4,230.72	64.45	66.647	
9,800.00	7,076.95	3,351.00	3,350.60	29.35	67.23	14.68	-574.64	-4,774.56	4,249.98	4,186.22	63.76	66.658	
9,900.00	7,076.63	3,351.00	3,350.60	29.65	67.23	14.68	-574.64	-4,774.56	4,206.68	4,143.62	63.05	66.716	
10,000.00	7,076.30	3,351.00	3,350.60	29.95	67.23	14.68	-574.64	-4,774.56	4,165.33	4,102.99	62.33	66.822	
10,100.00	7,075.97	3,351.00	3,350.60	30.25	67.23	14.68	-574.64	-4,774.56	4,125.99	4,064.38	61.60	66.975	
10,200.00	7,075.64	3,351.00	3,350.60	30.55	67.23	14.68	-574.64	-4,774.56	4,088.71	4,027.85	60.87	67.172	
10,300.00	7,075.31	3,351.00	3,350.60	30.85	67.23	14.68	-574.64	-4,774.56	4,053.57	3,993.43	60.13	67.411	
10,400.00	7,074.98	3,351.00	3,350.60	31.15	67.23	14.68	-574.64	-4,774.56	4,020.60	3,961.20	59.40	67.688	
10,500.00	7,074.65	3,351.00	3,350.60	31.46	67.23	14.68	-574.64	-4,774.56	3,989.87	3,931.19	58.68	67.996	
10,600.00	7,074.32	3,351.00	3,350.60	31.76	67.23	14.68	-574.64	-4,774.56	3,961.42	3,903.44	57.98	68.329	
10,700.00	7,074.00	3,351.00	3,350.60	32.06	67.23	14.68	-574.64	-4,774.56	3,935.31	3,878.01	57.30	68.676	
10,800.00	7,073.67	3,351.00	3,350.60	32.36	67.23	14.68	-574.64	-4,774.56	3,911.58	3,854.92	56.67	69.027	
10,900.00	7,073.34	3,351.00	3,350.60	32.66	67.23	14.68	-574.64	-4,774.56	3,890.28	3,834.20	56.08	69.367	
11,000.00	7,073.01	3,351.00	3,350.60	32.96	67.23	14.68	-574.64	-4,774.56	3,871.45	3,815.89	55.56	69.679	
11,100.00	7,072.68	3,351.00	3,350.60	33.26	67.23	14.68	-574.64	-4,774.56	3,855.12	3,800.00	55.12	69.946	
11,200.00	7,072.35	3,351.00	3,350.60	33.56	67.23	14.68	-574.64	-4,774.56	3,841.32	3,786.56	54.76	70.148	
11,300.00	7,072.02	3,351.00	3,350.60	33.86	67.23	14.68	-574.64	-4,774.56	3,830.09	3,775.58	54.51	70.264	
11,400.00	7,071.69	3,351.00	3,350.60	34.16	67.23	14.68	-574.64	-4,774.56	3,821.44	3,767.06	54.38	70.277	
11,500.00	7,071.36	3,351.00	3,350.60	34.46	67.23	14.68	-574.64	-4,774.56	3,815.39	3,761.02	54.37	70.172	
11,600.00	7,071.04	3,351.00	3,350.60	34.76	67.23	14.68	-574.64	-4,774.56	3,811.96	3,757.45	54.50	69.938	
11,680.91	7,070.77	3,351.00	3,350.60	35.00	67.23	14.68	-574.64	-4,774.56	3,811.10	3,756.38	54.72	69.652 CC	
11,700.00	7,070.71	3,351.00	3,350.60	35.06	67.23	14.68	-574.64	-4,774.56	3,811.15	3,756.37	54.78	69.572 ES	
11,800.00	7,070.38	3,351.00	3,350.60	35.36	67.23	14.68	-574.64	-4,774.56	3,812.96	3,757.76	55.20	69.078	
11,900.00	7,070.05	3,351.00	3,350.60	35.66	67.23	14.68	-574.64	-4,774.56	3,817.39	3,761.63	55.76	68.466	
12,000.00	7,069.72	3,351.00	3,350.60	35.96	67.23	14.68	-574.64	-4,774.56	3,824.43	3,767.99	56.45	67.753	
12,100.00	7,069.39	3,351.00	3,350.60	36.26	67.23	14.68	-574.64	-4,774.56	3,834.07	3,776.81	57.26	66.960	
12,200.00	7,069.06	3,351.00	3,350.60	36.56	67.23	14.68	-574.64	-4,774.56	3,846.29	3,788.11	58.18	66.109	
12,300.00	7,068.73	3,351.00	3,350.60	36.86	67.23	14.68	-574.64	-4,774.56	3,861.05	3,801.85	59.20	65.221	
12,400.00	7,068.41	3,351.00	3,350.60	37.16	67.23	14.68	-574.64	-4,774.56	3,878.34	3,818.05	60.30	64.318	
12,500.00	7,068.08	3,351.00	3,350.60	37.46	67.23	14.68	-574.64	-4,774.56	3,898.12	3,836.66	61.47	63.417	
12,600.00	7,067.75	3,351.00	3,350.60	37.76	67.23	14.68	-574.64	-4,774.56	3,920.36	3,857.66	62.69	62.534	
12,700.00	7,067.42	3,351.00	3,350.60	38.06	67.23	14.68	-574.64	-4,774.56	3,945.00	3,881.04	63.96	61.681	
12,800.00	7,067.09	3,351.00	3,350.60	38.36	67.23	14.68	-574.64	-4,774.56	3,972.01	3,906.75	65.26	60.867	
12,900.00	7,066.76	3,351.00	3,350.60	38.66	67.23	14.68	-574.64	-4,774.56	4,001.33	3,934.75	66.58	60.100	
13,000.00	7,066.43	3,351.00	3,350.60	38.96	67.23	14.68	-574.64	-4,774.56	4,032.92	3,965.01	67.91	59.383	
13,100.00	7,066.10	3,351.00	3,350.60	39.26	67.23	14.68	-574.64	-4,774.56	4,066.73	3,997.47	69.26	58.719	
13,200.00	7,065.77	3,351.00	3,350.60	39.56	67.23	14.68	-574.64	-4,774.56	4,102.69	4,032.09	70.60	58.111	
13,300.00	7,065.45	3,351.00	3,350.60	39.86	67.23	14.68	-574.64	-4,774.56	4,140.76	4,068.82	71.94	57.558	
13,400.00	7,065.12	3,351.00	3,350.60	40.16	67.23	14.68	-574.64	-4,774.56	4,180.88	4,107.61	73.27	57.061	
13,500.00	7,064.79	3,351.00	3,350.60	40.47	67.23	14.68	-574.64	-4,774.56	4,222.98	4,148.39	74.59	56.617	
13,600.00	7,064.46	3,351.00	3,350.60	40.77	67.23	14.68	-574.64	-4,774.56	4,267.01	4,191.12	75.89	56.226	
13,700.00	7,064.13	3,351.00	3,350.60	41.07	67.23	14.68	-574.64	-4,774.56	4,312.91	4,235.74	77.17	55.886	
13,800.00	7,063.80	3,351.00	3,350.60	41.37	67.23	14.68	-574.64	-4,774.56	4,360.62	4,282.18	78.44	55.595	
13,900.00	7,063.47	3,351.00	3,350.60	41.67	67.23	14.68	-574.64	-4,774.56	4,410.08	4,330.40	79.68	55.350	
14,000.00	7,063.14	3,351.00	3,350.60	41.97	67.23	14.68	-574.64	-4,774.56	4,461.24	4,380.34	80.89	55.150	
14,100.00	7,062.82	3,351.00	3,350.60	42.27	67.23	14.68	-574.64	-4,774.56	4,514.03	4,431.94	82.09	54.991	
14,200.00	7,062.49	3,351.00	3,350.60	42.57	67.23	14.68	-574.64	-4,774.56	4,568.40	4,485.15	83.25	54.873	

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 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are 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

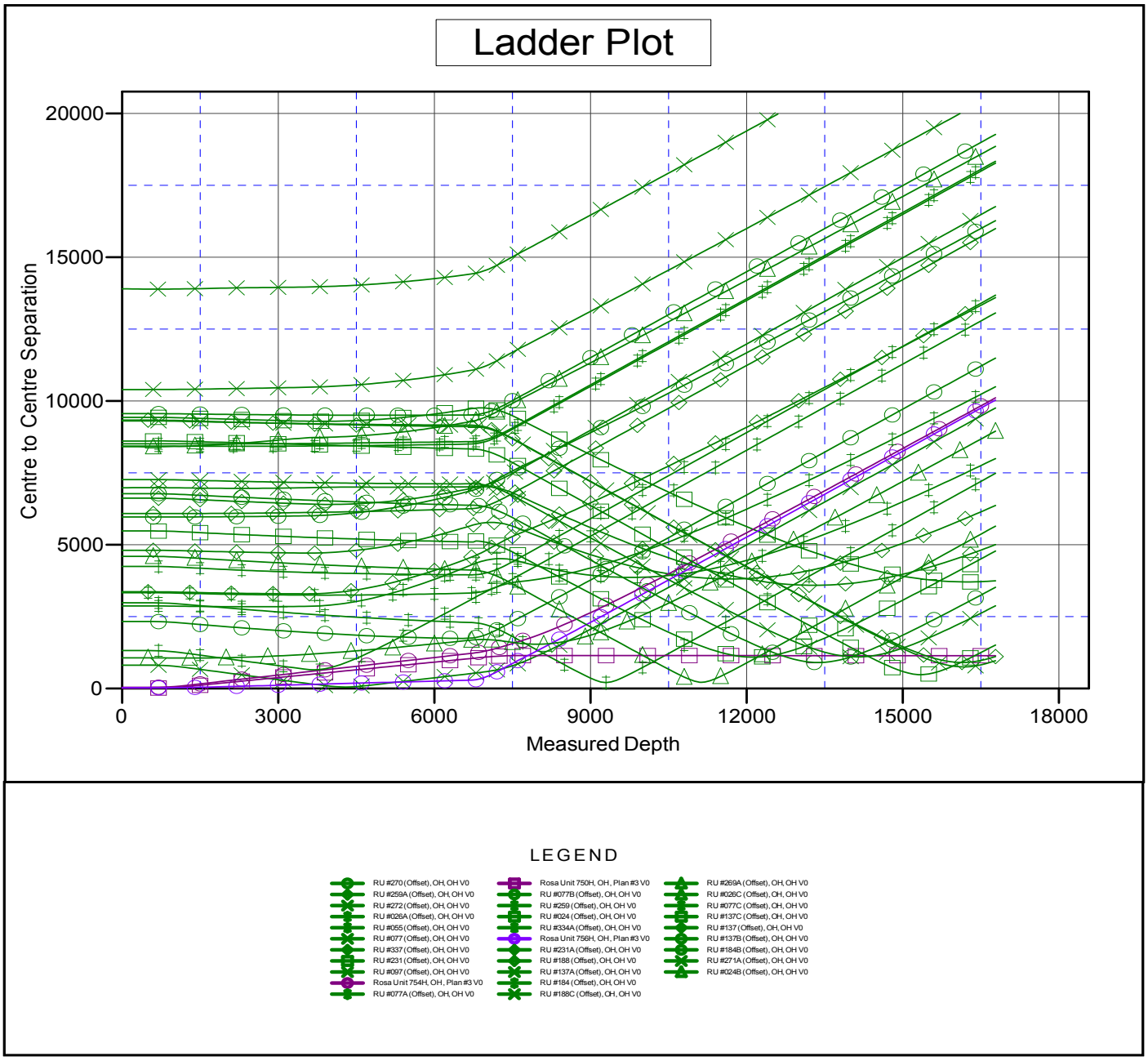
Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,300.00	7,062.16	3,351.00	3,350.60	42.87	67.23	14.68	-574.64	-4,774.56	4,624.29	4,539.90	84.40	54.793	
14,400.00	7,061.83	3,351.00	3,350.60	43.17	67.23	14.68	-574.64	-4,774.56	4,681.66	4,596.14	85.51	54.748	
14,500.00	7,061.50	3,351.00	3,350.60	43.47	67.23	14.68	-574.64	-4,774.56	4,740.43	4,653.83	86.60	54.738	SF
14,600.00	7,061.17	3,351.00	3,350.60	43.77	67.23	14.68	-574.64	-4,774.56	4,800.58	4,712.91	87.67	54.759	
14,700.00	7,060.84	3,351.00	3,350.60	44.07	67.23	14.68	-574.64	-4,774.56	4,862.03	4,773.32	88.71	54.809	
14,800.00	7,060.51	3,351.00	3,350.60	44.37	67.23	14.68	-574.64	-4,774.56	4,924.75	4,835.03	89.72	54.889	
14,900.00	7,060.18	3,351.00	3,350.60	44.67	67.23	14.68	-574.64	-4,774.56	4,988.69	4,897.97	90.71	54.994	
15,000.00	7,059.86	3,351.00	3,350.60	44.97	67.23	14.68	-574.64	-4,774.56	5,053.79	4,962.11	91.68	55.125	
15,100.00	7,059.53	3,351.00	3,350.60	45.27	67.23	14.68	-574.64	-4,774.56	5,120.02	5,027.40	92.62	55.279	
15,200.00	7,059.20	3,351.00	3,350.60	45.57	67.23	14.68	-574.64	-4,774.56	5,187.33	5,093.79	93.54	55.455	
15,300.00	7,058.87	3,351.00	3,350.60	45.87	67.23	14.68	-574.64	-4,774.56	5,255.69	5,161.25	94.44	55.652	
15,400.00	7,058.54	3,351.00	3,350.60	46.17	67.23	14.68	-574.64	-4,774.56	5,325.04	5,229.73	95.31	55.869	
15,500.00	7,058.21	3,351.00	3,350.60	46.47	67.23	14.68	-574.64	-4,774.56	5,395.36	5,299.19	96.17	56.103	
15,600.00	7,057.88	3,351.00	3,350.60	46.77	67.23	14.68	-574.64	-4,774.56	5,466.60	5,369.60	97.00	56.355	
15,700.00	7,057.55	3,351.00	3,350.60	47.07	67.23	14.68	-574.64	-4,774.56	5,538.73	5,440.91	97.82	56.623	
15,800.00	7,057.23	3,351.00	3,350.60	47.37	67.23	14.68	-574.64	-4,774.56	5,611.71	5,513.10	98.61	56.907	
15,900.00	7,056.90	3,351.00	3,350.60	47.67	67.23	14.68	-574.64	-4,774.56	5,685.52	5,586.13	99.39	57.204	
16,000.00	7,056.57	3,351.00	3,350.60	47.97	67.23	14.68	-574.64	-4,774.56	5,760.12	5,659.97	100.15	57.515	
16,100.00	7,056.24	3,351.00	3,350.60	48.27	67.23	14.68	-574.64	-4,774.56	5,835.48	5,734.59	100.89	57.839	
16,200.00	7,055.91	3,351.00	3,350.60	48.57	67.23	14.68	-574.64	-4,774.56	5,911.57	5,809.95	101.62	58.174	
16,300.00	7,055.58	3,351.00	3,350.60	48.87	67.23	14.68	-574.64	-4,774.56	5,988.36	5,886.03	102.33	58.521	
16,400.00	7,055.25	3,351.00	3,350.60	49.17	67.23	14.68	-574.64	-4,774.56	6,065.83	5,962.80	103.02	58.878	
16,500.00	7,054.92	3,351.00	3,350.60	49.47	67.23	14.68	-574.64	-4,774.56	6,143.95	6,040.24	103.70	59.244	
16,600.00	7,054.59	3,351.00	3,350.60	49.77	67.23	14.68	-574.64	-4,774.56	6,222.69	6,118.32	104.37	59.620	
16,619.57	7,054.53	3,351.00	3,350.60	49.83	67.23	14.68	-574.64	-4,774.56	6,238.17	6,133.67	104.50	59.695	
16,700.00	7,054.27	3,351.00	3,350.60	50.07	67.23	14.68	-574.64	-4,774.56	6,302.04	6,197.01	105.03	60.005	
16,782.16	7,054.00	3,351.00	3,350.60	50.32	67.23	14.68	-574.64	-4,774.56	6,367.67	6,262.12	105.55	60.327	

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 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 752H - Slot B06
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°

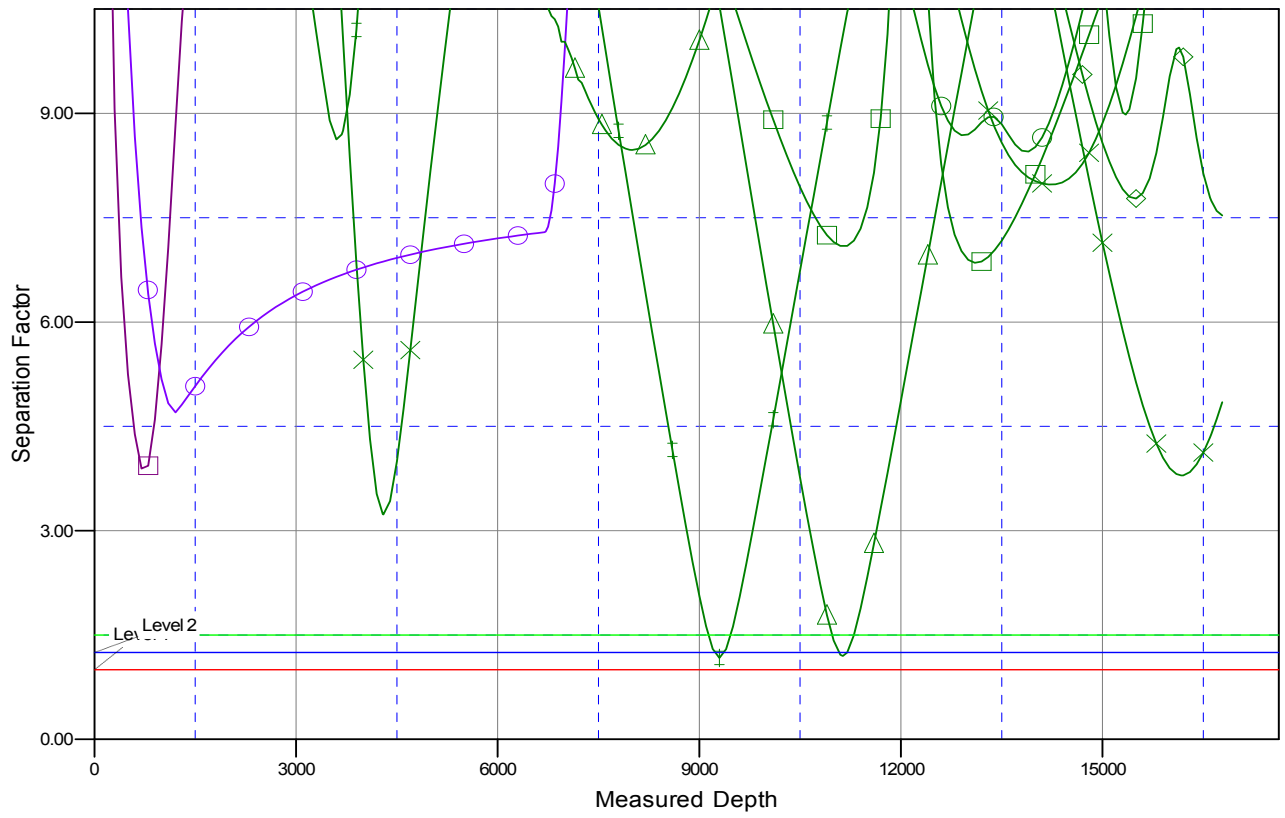


Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H - Slot B06
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+24.5 @ 6558.49usft (Ensign 223)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 752H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 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 752H - Slot B06
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°

Separation Factor Plot



LEGEND

RU #270 (Offset), OH, OH V0
RU #259A (Offset), OH, OH V0
RU #272 (Offset), OH, OH V0
RU #026A (Offset), OH, OH V0
RU #055 (Offset), OH, OH V0
RU #077 (Offset), OH, OH V0
RU #337 (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
Rosa Unit 750H, OH, Plan #3 V0
RU #077B (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 #188 (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 #077C (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
RU #024B (Offset), OH, OH V0

Conditions of Approval

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

The following conditions of approval will apply to Logos Operating's Rosa Unit Pad 32 Project, and other associated facilities, unless a particular Surface Managing Agency or private surface owner has supplied to Bureau of Land Management and the operator a contradictory environmental stipulation. The failure of the operator to comply with these requirements may result in an assessment or civil penalties pursuant to 43 CFR 3163.1 or 3163.2.

Disclaimers: BLM's approval of the APD does not relieve the lessee and operator from obtaining any other authorizations that may be required by the BIA, BOR, Tribes, State, or other jurisdictional entities.

Copy of Plans: A complete copy of the APD package, including Surface Use Plan of Operations, Bare Soil Reclamation Plan, Plan of Development (if required), Conditions of Approval, Cultural Resource Record of Review, Cultural Resources Compliance Form (if required), and Project Stipulations (if required) shall be at the project area at all times and available to all persons.

Review of NEPA documents: It is the responsibility of the operator to follow all the design features, best management practices, and mitigation measures as contained in the Environmental Assessment DOI-BLM-NM-F010-2023-0014-EA, which contains additional design features and best management practices that must be followed. Copies of the EA, Decision Record, and Finding of No Significant Impact may be obtained from the BLM FFO public room, or online at: EplanningUi (blm.gov).

Best Management Practices (BMPs): Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of well site pads, access roads, pipeline ties, facility placement or any other surface disturbing activity associated with this project. Bureau wide standard BMP's are found in the Gold Book, Fourth Edition-Revised 2007 and at https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/the-gold-book. Farmington Field Office BMPs are integrated into the Environmental Assessment, Surface Use Plan of Operations, Bare Soil Reclamation Plan, and COAs.

Construction, Production, Facilities, Reclamation & Maintenance

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

Production Facilities: design and layout of facilities will be deferred until an onsite with BLM-FFO surface protection staff is conducted to determine the best location. Logos or their contractor will contact the Bureau of Land Management, Farmington Field Office Surface and Environmental Protection Staff at (505) 564-7600 or by email to schedule a facility layout onsite.

Berms: Berms or firewalls will be constructed around all storage facilities sufficient in size to contain the storage capacity of 110% of the largest tank, or 110% of the combined capacity of tanks if a rupture could drain more than one tank. Berm walls will be compacted with appropriate equipment to assure proper construction. Metal containment barriers, used for secondary containment, will be properly installed, per the manufacturer directions.

Painting of Equipment: Within 90 days of installation, all above ground structures not subject to safety requirements shall be painted by the Holder to blend with the natural color of the landscape. A reflective material may be used to reduce hazards that may occur when such structures are near roads. Otherwise, the paint use shall be a non-glare, non-reflective, non-chalking color of: **Juniper Green.**

Staking: The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with the application. If stakes are disturbed, they shall be replaced before proceeding with construction.

Weather: No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts more than 6 inches deep, the soil shall be deemed too wet.

Stockpile of Soil: The top 6 inches of soil material will be stripped and stockpiled in the construction zones around the pad [construction zones may be restricted or deleted to provide resource avoidance]. The stockpiled soil will be free of brush and tree limbs, trunks, and roots. The stockpiled soil material will be spread on the reclaimed portions of the pad [including the reserve pit, cut and fill slopes] prior to re-seeding. Spreading shall not be done when the ground or topsoil is frozen or wet.

Storage Tanks: All open top permanent production or storage tanks regardless of diameter made of fiberglass, steel, or other material used for the containment of oil, condensate, produced or recycled water and or other production waste shall be screened, netted, or otherwise covered to protect migratory birds and other wildlife from access.

Compressors: Compressor units on this well location not equipped with a drip pan for containment of fluids shall be lined with an impervious material at least 8 mils thick and a 12-inch berm. The compressor will be painted to match the well facilities. Any variance to this will be approved by the Authorized Officer (AO). Noise mitigation may be required at the time of compressor installation.

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

Driving Surface Area: All activities associated within the construction, operation, maintenance, and abandonment of the well location is limited to areas approved in the APD or ROW permit. During the production of the well, vehicular traffic is limited to the daily driving surface area established during interim reclamation construction operations. This area typically forms a keyhole or teardrop driving surface from which all production facilities may be serviced or inspected. A v-type ditch will be constructed on the outside of the driving surface to further define the driving surface and to deter vehicular traffic from entering onto the interim reclamation areas.

Contouring of Cut and Fill Slopes: The interim cut and fill slope grade shall be as close to the original contour as possible. To obtain this ratio, pits and slopes shall be back sloped into the pad during interim reclamation. Only subsurface soil and material shall be utilized in the contouring of the cut and fill slopes. Under no circumstances shall topsoil be utilized as substrate material for contouring of cut and fill slopes.

Maintenance: In order to perform subsequent well operations, right-of-way (ROW) operations, or install new/additional equipment, it may be necessary to drive, park, and operate on restored, interim vegetation within the previously disturbed area. This is generally acceptable provided damage is promptly repaired and reclaimed following use. Where vehicular travel has occurred as a "convenience" and interim reclamation/vegetation has been compromised, immediate remediation of the affected areas is required. Additionally, where erosion has occurred and compromised the reclamation of the well location, the affected area must be promptly remediated so that future erosion is prevented, and the landform is stabilized.

Layflat Lines: Layflat lines used for development of the wells may be on the ground for a maximum of 6 months and shall be retrieved within 30 days of ending completion operations. If the layflat lines are needed for longer than 6 months or cannot be retrieved within 30 days of ending completion operations, a Sundry NOI shall be submitted to the BLM FFO for review and decision that includes a rationale for the time extension.

"Hotwork" and Construction Affecting Fire Safety: The holder or its contractors will notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. The holder or its contractors may be held liable for the cost of fire suppression, stabilization and rehabilitation. In the event of a fire, personal safety will be the first priority of the holder or its contractors. The holder or its contractors shall:

1. Operate all internal and external combustion engines (including off-highway vehicles, chainsaws, generators, heavy equipment, etc.) with a qualified spark arrester. Qualified spark arresters are maintained and not modified, and meet the Society of Automotive Engineers (SAE) Recommended Practices J335 or J350. Refer to 43 CFR §8343.1.
    a. *Refueling of any combustible engine equipment must be minimum of 3 meters away from any ignition source (open flame, smoking, etc.).*
2. Maintain and clean all equipment regularly to remove flammable debris buildup and prevent fluid leaks that can lead to ignitions.
3. Carry at least one shovel or wildland fire hand tool (combi, Pulaski, McLeod) per person working, minimum 5 gallons of water, and a fire extinguisher rated at a minimum as ABC - 10 pound on each piece of equipment and each vehicle.
4. When conducting "hotwork" such as, but not limited to welding, grinding, cutting, spark-producing work with metal, work that creates hot material or slag; choose an area large enough to contain all hot material that is naturally free of all flammable vegetation or remove the flammable vegetation in a manner compliant with the permitted activity. If adequate clearance cannot be made, wet an area large enough to contain all hot material prior to the activity and periodically throughout the activity to reduce the risk of wildfire ignition. Regardless of clearance, maintain readiness to respond to an ignition at all times. In addition, keep one hand tool per person and at least one fire extinguisher ready, minimum, as specified earlier (#3) during this activity.
5. Keep apprised of current and forecasted weather at https://www.weather.gov/abq/forecasts-fireweather-links and fire conditions at www.wfas.net and take additional fire precautions when fire danger is rated High or greater. Red Flag Warnings are issued by the National Weather Service when fire conditions are most dangerous, and ignitions escape control quickly. Extra precautions are required during these warnings such as additional water, designate a fire watch/patrol and tools. If work is being conducted in an area that is not clear of vegetation within 50 feet of work area; then, when fire danger is rated High or greater and 1. There is a predicted Red Flag warning for your area or 2. If winds are predicted to be greater than 10 mph, stop all hotwork activities for the day at 10 am.
6. In the event of an ignition, initiate fire suppression actions in the work area to prevent fire spread to or on federally administered lands. If a fire spreads beyond the capability of workers with the stipulated tools, all will cease fire suppression action and leave the area immediately via pre-identified escape routes.
7. Call **911** or the **Taos Interagency Fire Dispatch Center (575-758-6208)** immediately of the location and status of any fire.

AND

Notify the respective BLM field office for which the permit or contract was issued immediately of the incident.
Farmington Field Office at 505-564-7600

Noxious Weeds

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

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

a. Identified weeds will be treated prior to new surface disturbance if determined by the FFO Noxious Weed Coordinator. A Pesticide Use Proposal (PUP) must be submitted to and approved by the FFO Noxious Weed Coordinator prior to application of pesticide. The FFO Noxious Weeds Coordinator (505-564-7600) can provide assistance in the development of the PUP.

b. Vehicles and equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.

c. Fill dirt or gravel may be needed for excavation, road construction/repair, or for spill remediation. If fill dirt or gravel will be required, the source shall be noxious weed free and approved by the FFO Noxious Weed Coordinator.

d. The site shall be monitored for the life of the project for the presence of noxious weeds (includes maintenance and construction activities). If weeds are found the FFO Coordinator shall be notified at (505) 564-7600 and provided with a Weed Management Plan and if necessary, a Pesticide Use Proposal (PUP). The FFO Coordinator can provide assistance developing the Weed Management Plan and/or the Pesticide Use Proposal.

e. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and

state laws and used only in accordance with their registered use and limitations. Logos's weed-control contractor would contact the BLM-FFO prior to using these chemicals.

f. Noxious/invasive weed treatments must be reported to the FFO Noxious Weed Coordinator. A Pesticide Use Report (PUR) is required to report any mechanical, chemical, biological, or cultural treatments used to eradicate, and/or control noxious or invasive species. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.

Bare ground vegetation trim-out: If bare ground vegetation treatment (trim-out) is desired around facility structures, the operator will submit a bare ground/trim-out design included in their Surface Use Plan of Operations (SUPO). The design will address vegetation safety concerns of the operator and BLM while minimizing impacts to interim reclamation efforts. The design must include what structures to be treated and buffer distances of trim-out. Pesticide use for vegetation control around anchor structures is not approved. If pesticides are used for bare ground trim-out, the trim-out will not exceed three feet from the edge of any eligible permanent structure (i.e., well heads, fences, tanks). Additional distance/areas may be requested and must be approved by the FFO authorized officer. The additional information below must also be provided to the FFO:

a. Pesticide use for trim out will require a Pesticide Use Proposal (PUP). A PUP is required ***prior*** to any treatment and must be approved by the FFO Noxious Weed Coordinator. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. Logos's weed-control contractor would contact the BLM-FFO prior to using these chemicals and provide Pesticide Use Reports (PURs) post treatment.

b. A Pesticide Use Report (PUR) or a Biological Use Report (BUR) is required to report any chemical, or biological treatments used to eradicate, or control vegetation on site. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.

Paleontology

Any paleontological resource discovered by the Operator, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant scientific values. The Holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the Holder.

Visual Resources

All permanent lighting will use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above an imaginary horizontal plane passing through the lowest part of the light source). All permanent lighting will be pointed straight down at the ground in order to prevent light spill to the sides. All permanent lighting will be 4000° Kelvin or less with 3000° Kelvin preferred. Warmer light colors are less noticeable by humans and cause less impact to wildlife. All permanent lighting will be controlled by a switch and/or timer which allows the lights to be turned on when workers are on location during dark periods but will keep the lights off the majority of the time.

Wildlife Resources

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

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

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

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

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

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

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

Grazing Permittee Notification and Concerns: The operator will notify the grazing lease operator(s) at least ten business days prior to beginning any construction activity to ensure there

will be no conflicts between construction activities and livestock grazing operations. The operator is not obligated to cease or delay construction unless directed by the Authorized Officer (AO). Any range improvement (fences, pipelines, ponds, etc.) disturbed by construction activities will be repaired immediately following construction and will be repaired to the condition the improvement was in prior to disturbance. Cattle guards will be installed to replace any livestock fencing or gates removed for road construction.

Soil, Air, Water

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

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

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

Cultural Resources

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

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

Discovery of Cultural Resources in the Absence of Monitoring: Discovery of Cultural Resources in the Absence of Monitoring: If, in its operations, operator/holder discovers any previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the discovery promptly reported to BLM Field Manager. BLM will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the BLM will evaluate the significance of the discovery in accordance with 36 CFR Section 800.13, in

consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property, **or in accordance with an approved program alternative.** Minor recordation, stabilization, or data recovery may be performed by BLM or a third party acting on its behalf, such as a permitted cultural resources consultant. If warranted, more extensive **archaeological or alternative mitigation,** likely implemented by a permitted cultural resources consultant, may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any **mitigations determined appropriate through the agency's Section 106 consultation are completed**. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, **the Native American Graves Protection and Repatriation Act (NAGRPA) of 1990, as amended, and other applicable laws**.

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

Damage to Sites: If, in its operations, operator/holder damages, or is found to have damaged any previously documented or undocumented historic or prehistoric cultural resources, excluding "discoveries" as noted above, the operator/holder agrees at his/her expense to have a permitted cultural resources consultant prepare a BLM approved damage assessment and/or data recovery plan. The operator/holder agrees at his/her expense to implement a **mitigation** that the agency finds appropriate given the significance of the site, which the agency determines in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property. **This mitigation may entail execution of the data recovery plan by a permitted cultural resources consultant and/or alternative mitigations.** Damage to cultural resources may result in **civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, the Native American Graves Protection and Repatriation Act (NAGRPA) of 1990, as amended, and other applicable laws.**

United States Department of the Interior

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

In Reply Refer To:
3162.3-1(NMF0110)

* LOGOS OPERATING LLC

#752H ROSA UNIT

Lease: NMSF78773 Unit: NMNM78407E
SH: NW¼SW¼ Section 33, T.31 N., R.5 W.
Rio Arriba County, New Mexico
BH: Lot 4 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.

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 327979

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 327979
	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